FEDERAL HIGHWAY ADMINISTRATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
For

PROJECTS: IM 0901(108)40; IM 0901(148)40;
IM 0901(136)44; IM 0901(38)38; IM 0901(102)44
PCNs: 3465; 01KK; 00GC; 5580; 3183

MEADE COUNTY, SOUTH DAKOTA

The FHWA has determined that the South Service Road Alternative Alignment 1, North Service Road Alternative Alignment 4, widening and realigning I-90 mainline from Exit 40 to Exit 51, and reconstructing Exit 44 and Exit 46 interchanges in diamond configuration will have no significant impact on the human environment. This FONSI is based on the attached Environmental Assessment (EA), which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. The FHWA takes full responsibility for the accuracy, scope and content of the attached EA.

9/25/08
Date

Ginger R. Massie
Federal Highway Administration

ENVIRONMENTAL ASSESSMENT
I-90 FROM EXIT 40 TO EXIT 51

Projects: IM 0901(108)40; IM 0901(148)40;
IM 0901(136)44; IM 0901(38)38; IM 0901(102)44

MEADE COUNTY, SOUTH DAKOTA

Submitted Pursuant to 42 U.S.C. 4332(2)(c)
49 U.S.C. 303
In Accordance with Executive Order 11990
U.S. Department of Transportation
Federal Highway Administration
S.D. Department of Transportation

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9-23-08
Date

Ginger R Massie
for Federal Highway Administration

9-23-08
Date

Terrence G. Keller
for South Dakota Department of Transportation

I-90 ENVIRONMENTAL ASSESSMENT (EXIT 40 TO EXIT 51)

Prepared for:

South Dakota Department of Transportation
Federal Highway Administration

Prepared by:

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FHU Reference No. 05-235
September 2008

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ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ADT	average daily traffic
APE	area of potential effect
AST	above ground storage tank
ASTM	American Society for Testing and Materials
BMP	Best Management Practice
BO	Biological Opinion
CBC	concrete box culvert
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	carbon monoxide
dBA	A-weighted decibels
DM&E	Dakota, Minnesota and Eastern Railroad
EA	Environmental Assessment
EB	Eastbound
EDR	Environmental Data Resources
FEMA	Federal Emergency Management Agency
FHU	Felsburg Holt & Ullevig
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GIS	Geographic Information Systems
HTRW	Hazardous Toxic and Radioactive Waste
I-90	Interstate 90
Leq	equivalent continuous sound level
LOS	level of service
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
MRM	Mile Reference Marker
MFI	Median Family Income
mg/L	milligrams per liter
mph	miles per hour
NAC	Noise Abatement Criteria
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PDO	property damage only
SARC	State Archaeological Research Center
SDDENR	South Dakota Department of Environment and Natural Resource
SDDOT	South Dakota Department of Transportation
SHPO	State Historic Preservation Officer
STIP	Statewide Transportation Improvement Program
SPUI	Single Point Urban Interchange
T&E	Threatened and Endangered
TNM	FHWA's Traffic Noise Model
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Department of Interior Fish and Wildlife Service
UST	underground storage tank
vpd	vehicles per day
WB	westbound

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1.0 PURPOSE AND NEED

1.1 Project Area Location and Description

The interstate highway system in western South Dakota was built in the late 1950s and early 1960s and is approaching the end of its life expectancy. Interstate 90 (I-90) is on the National Interstate Highway System, where it is classified as a South Dakota rural interstate highway. The South Dakota Department of Transportation (SDDOT) has identified the portion of the I-90 corridor between Sturgis and Rapid City, South Dakota, as an interstate that would benefit from improvements to accommodate existing and future travel needs, population growth, and land development 40 to 50 years into the future. The I-90 corridor serves as the primary connection between Sturgis and Rapid City, South Dakota. Nationally, I-90 crosses the United States east to west connecting Boston, Massachusetts and Seattle, Washington.

The proposed I-90 project is located along a 10-mile segment of I-90, which traverses the edge of the Black Hills National Forest in a northwest direction from Rapid City. The project area extends southeast from Tilford (Exit 40), which is about ten miles southeast of Sturgis to Exit 51, which is about two miles northwest of Black Hawk and seven miles from Rapid City (**Figure 1**). The Exit 51 limit matches the limit of an SDDOT project that will reconstruct the interchange at I-90 Exit 51, for which an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) was approved in February 2006 (FHWA, 2006a, 2006b). The only communities of any substantial population within or adjacent to the project area are Piedmont, located on the west side of eastbound (EB) I-90 between Exits 44 and 46, and Summerset, located near MRM 50.

While I-90 typically trends in an east-west direction, I-90 is oriented northwest and southeast throughout the project area. While references to the mainline of I-90 will be to the eastbound and westbound directions, though oriented northwest and southeast, other references in this EA will be described on a true north compass for purposes of discussion. For example, Deer View Road extends east from westbound (WB) I-90.

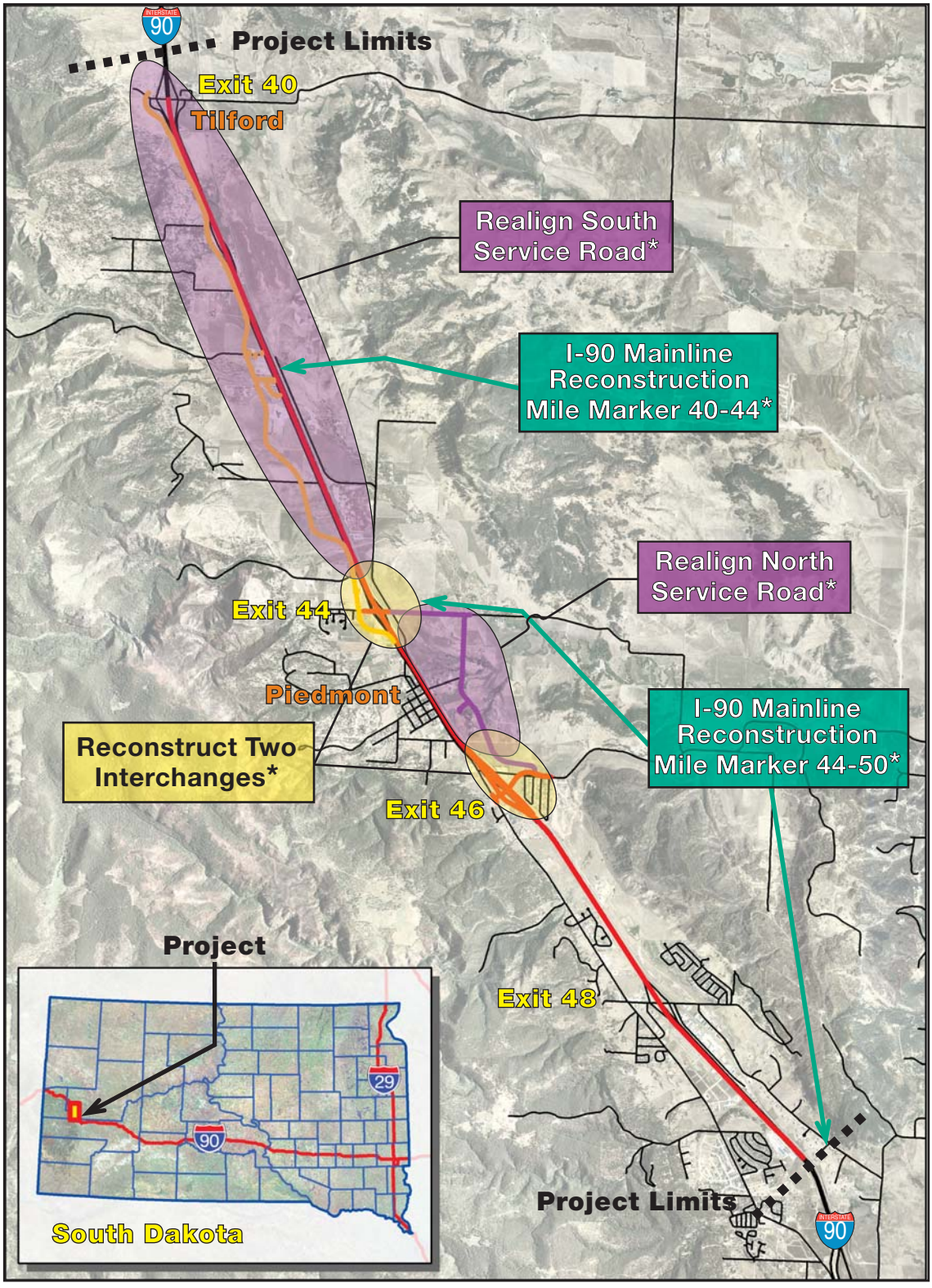
1.2 Project History

In 2004, SDDOT conducted the *Interstate 90 Black Hawk – Sturgis Corridor Preservation Study* (FHU, 2004). The purpose of the study was to assess the long term transportation needs for the I-90 corridor, and to identify needed right-of-way to be preserved for roadway improvements.

The Corridor Preservation Study extended from MRM 32 to MRM 52, including six freeway interchanges (Exits 34, 37, 40, 44, 46 and 48), along the I-90 corridor. After analysis of several alternatives for the corridor, the Corridor Preservation Study recommended the relocation of several service roads, the redesign of several interchanges, and the reconstruction and widening of the I-90 mainline in some areas. The Corridor Preservation Study prioritized the projects within the corridor and identified those of high, moderate, and low priority.

The Corridor Preservation Study also recommended accident countermeasures to improve safety such as:

- Static advisory signs warning drivers of curves in the road
- Variable Message Signs warning drivers of hazardous conditions (i.e. icy/wet roadway conditions, limited sight etc.)



*Construction schedules for the proposed improvements will be determined by availability of future funding

Figure 1

Project Overview

North

Using the Corridor Preservation Study as a base for further decision making, SDDOT and the Federal Highway Administration (FHWA) decided to evaluate the portion of I-90 between Exit 40 and Exit 51 to identify the most feasible alternatives for improvements. Further evaluation of the transportation benefits and environmental impacts of the identified Preferred Alternative were carried forward from the Corridor Preservation Study in accordance with the requirements of the National Environmental Policy Act (NEPA) through the conduct of this EA.

1.3 Purpose of the Project

The primary purpose of this project is to improve interstate operations, in addition to providing safe local access, and addressing future transportation demands throughout the corridor. There are multiple geometric interchange and roadway design issues that need to be corrected along the I-90 corridor. Objectives within this overall project purpose are to:

- Increase spacing between substandard ramp terminal intersections and adjacent frontage roads and local access intersections
- Improve limited sight distances at ramp intersections and off-ramps due to horizontal and vertical curves, and bridge skew angles
- Correct inadequate tapers at the end of interstate on-ramps where merging vehicles enter high speed mainline traffic
- Increase safety along I-90 and on service roads by increasing distances between service roads and mainline I-90
- Improve future traffic operations along I-90, including the Exit 44 and Exit 46 interchanges, and along the service roads

1.4 Need for the Project

The I-90 corridor serves local commuting residents as the primary connection between Sturgis and Rapid City in Meade County. It is also used for interstate and inter-regional travel, and to transport goods. Areas near the interstate have been the setting of recent population growth and land development, which is expected to continue in the future. Much of the recent development has clustered around the freeway interchanges. The annual growth rate in population for Meade County between 1990 and 2000 was one percent according to the Rapid City Area Metropolitan Planning Organization's 2030 Long Range Transportation Plan (LSA Associates, 2005).

Traffic volumes within the project area have been increasing, and are expected to increase in the future. According to the SDDOT Transportation Inventory Management Office, the 2006 average daily traffic volume (ADT) on I-90 in the project area was 17,500 vehicles per day (vpd) (SDDOT, 2006). By the year 2026, that number is projected to increase to about 28,000 vpd ADT. For both present and future years, trucks comprise an estimated 14.3 percent of those daily volumes, or about 2,500 in 2006 and 4,000 in 2026.

Statistics from the South Dakota Department of Public Safety's Accident Records Office indicate that between January 1, 2004 and December 31, 2006, 217 accidents occurred in the project area totaling an estimated $1,173,000 worth of property damage (SDDPS, 2007). This compares to a total of 546 accidents on I-90 within Meade County and 3,892 accidents on I-90 in the State within the same timeframe. Of the 217 accidents, two involved fatalities, 47

involved injuries, and 91 were animal vehicle collisions. About two-thirds of the accidents occurred during dry road surface conditions. The following accidents occurred at interchanges:

- **Exit 40** – Two injury and three property damage only (PDO) accidents
- **Exit 44** – Four injury accidents and 10 PDO accidents
- **Exit 46** – Two injury and one PDO accidents
- **Exit 48** – Four injury and two PDO accidents

Proposed improvements to existing geometrics will enhance traffic operations and reduce congestion and conflict points, providing additional safety. The outer separation distance between the existing service roads and I-90 needs to be improved to acceptable standards. In addition, the control of access to and from the interstate is compromised due to the proximity of the service road and lack of control of access fencing. The interchange ramp terminals and the intersections of cross streets with the service road at Exit 40, Exit 44, and Exit 46 are also in close proximity to each other.

The existing South Service Road along much of the segment between Exit 40 (Tilford Road) at the north end of the project and Exit 44 (Chimney Canyon Road) has insufficient outer separation distance from mainline I-90. The existing North Service Road, or Sidney Stage Road which parallels WB I-90 between Exit 44 and Exit 46, also has insufficient distance from mainline I-90 for most of this segment. The proximity of these roads to mainline I-90 presents safety concerns due to headlight intrusion (glare) for drivers of oncoming vehicles and insufficient clear zone distance.

The existing concrete pavement of I-90 has been cracking and has been repaired in patches, but the overall surface condition remains poor. The pavement structure is deteriorating at an accelerating rate and will require continuous repair or eventual replacement. Continued degradation of the pavement will compromise safe travel along I-90. Reconstruction or treatment of the mainline pavement will need to be completed in the near future.

Other safety and maintenance concerns include the narrow I-90 median and its less desirable slopes in some segments adversely affecting a driver's ability to correct, which increases safety concerns for errant vehicles and makes mowing difficult. Many of the existing bridges have substandard shoulder widths. Upgrading this facility to current design standards will improve safety and highway operations.

The SDDOT seeks to maintain Level of Service (LOS) C or better conditions within their transportation facilities. LOS rating is a qualitative assessment of the traffic flow at an intersection based on the estimated average stopped delay. LOS is described by letter designation ranging from "A" to "F" with A representing essentially uninterrupted flow, and LOS F representing traffic flow with excessive congestion and delay. Accordingly, widening of I-90 from 4 to 6 lanes would be needed when traffic operations reach a condition below LOS C. Based on SDDOT goals as outlined in the *Interstate 90 Black Hawk – Sturgis Corridor Preservation Study* (FHU, 2004), maintaining LOS C or traffic conditions is the reason for future widening of I-90.

Projected Year 2025 demand for travel along I-90 is expected to reach a level near that which would require widening from 4 to 6 lanes, particularly closer to Rapid City (FHU, 2004). Widening of I-90 between Exits 40 and 51 is anticipated to be progressively needed between the Years 2026 and 2035 (FHU, 2004).

The need for improvements to I-90 has been recognized within the regional transportation planning process. Improvements have been formally incorporated into the Rapid City Area 2030 Long Range Transportation Plan, which shows widening to six lanes from Exit 46 (Elk Creek Road) east into Rapid City between the years 2020 and 2030 (LSA Associates, 2005).

The widening of I-90 from four to six lanes is listed in four parts in the *SDDOT 2008-2012 Statewide Transportation Improvement Program (STIP)*, within the Interstate 3R Program (SDDOT, 2007a). The STIP provides the Department with a general plan to provide the projected highway construction needs of the state through the year 2012. The STIP includes the following related projects in Meade County:

- **IM 0901(108)40:** Preserve right-of-way to relocate Service Road from Exit 40 to Exit 44 in Fiscal Year 2009, replace structures at Elk Creek & Little Elk Creek in Fiscal Year 2010, and construct relocated Service Road in Fiscal Year 2011
- **IM 0901(136)44:** Preserve right-of-way for Frontage Road reconstruction in Fiscal Year 2009, reconstruct Frontage Road from Exit 44 to Exit 46, in Fiscal Year 2011
- **IM 0901(38)38:** Reconstruct Mainline, remove & replace structures, from Exit 40 to just West of Exit 44 at Piedmont, in Fiscal Year 2013 or beyond
- **IM 0901(102)44:** Reconstruct Mainline and Interchanges, Exit 44 to Exit 46 near Piedmont, in Fiscal Year 2013 or beyond

These improvements would be constructed in phases as federal funding becomes available.

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2.0 ALTERNATIVES

A range of alternatives were examined throughout the planning and NEPA process. Technical screening, detailed evaluation and public involvement narrowed down the list of alternatives and resulted in the identification of the Preferred Alternative Alignments. This chapter presents the No Action Alternative, Alternatives Considered, and the Preferred Alternative Alignments in detail.

The following build alternative actions are discussed in this chapter:

- reconstruction of the mainline of I-90 to two lanes (and eventually three) in each direction
- relocating the South Service Road between Exit 40 and Piedmont
- relocating the North Service Road between Exit 44 and Elk Creek Road
- reconstruction of the two interchanges at Exits 44 and 46

A Corridor Steering Committee, comprised of SDDOT staff and representatives of FHWA, Meade County, and the City of Summerset (with technical support from engineering firm Felsburg Holt & Ullevig [FHU]), was convened early in the project process to facilitate discussions with the public regarding the process to develop project alternatives to satisfy the purpose and need, discuss updates on process, design, and analysis, and to receive input on the development of the Preferred Alternative. The public and agency participation was key to development of the Preferred Alternative.

The public and agency participation is presented in detailed discussion in **Chapter 4**. However, continued involvement of the public has been critical for selecting the Preferred Alternative alignment and is presented here briefly. Public and agency involvement program has included:

- Three public meetings held with the general public to provide information on the alternatives development
- Meetings with individual landowners to refine alternative development
- Steering Committee meetings to guide alternative screening and development and to facilitate public involvement

2.1 No Action Alternative

The No Action Alternative is the alternative that would be selected if the Preferred Alternative is not selected. While the No Action Alternative does not satisfy the purpose and need for the project, it has been fully assessed and included in the environmental analysis. This alternative provides a baseline for comparison with the Preferred Alternative and is analyzed in accordance with Council on Environmental Quality (CEQ) regulations for implementing NEPA.

The No Action Alternative would not provide any improvements beyond the existing transportation system. I-90 and its service roads would remain in their current alignment with no improvements. The No Action Alternative would not support the vision set forth in the *SDDOT 2008-2012 STIP* (SDDOT, 2007a).

2.2 Alternatives Considered

The project involves four basic elements which together would improve traffic operations on and near I-90:

- reconstruction of the I-90 mainline, from Exit 40 to Exit 51, to a future six-lane section, including realignment of I-90 from Exit 48 to Exit 51
- relocation of most segments of the South Service Road from Exit 40 to Piedmont
- relocation of all segments of the North Service Road between Exits 44 and 46
- reconstruction of the interchanges at Exit 44 and at Exit 46

Alternative concepts that were created for each of these elements, and identifications of the Preferred Alternative are discussed below.

2.2.1 I-90 Alignment

In consideration of the constraints that adjacent development, the abutting alignment of the Dakota Minnesota and Eastern (DM&E) Railroad line, and J.B. Road (southeast of Exit 48) impose on any realignment, only one alternative for reconstruction of the I-90 mainline was evaluated (**Figure 1**).

I-90 between Exit 48 and 51 was not surveyed and, therefore, displays only a proposed horizontal layout along an assumed centerline. Proposed right-of-way for this section of I-90 has been determined based upon the assumed horizontal alignment and assessor's map property lines.

Widening of I-90 would occur along the existing alignment with a subtle shift. The subtle shift of the alignment between Exits 40 and 46 (and the future addition of one lane in each direction) would be possible by the prior relocation of the two existing service roads away from the mainline. Between Exit 48 and Exit 51, where the alignment ties into the reconstructed segment of I-90 approved in the Exit 51 at Black Hawk EA and FONSI, the six-lane realignment would be shifted southwest to avoid impacts to J.B. Road and the many businesses it serves.

Detail on right-of-way and typical sections for the Preferred Alternative alignment for I-90 is presented in *Section 2.3.1*.

2.2.2 South Service Road realignment between Exit 40 and Exit 44

One of the objectives within the overall project purpose is to "increase safety along I-90 and on service roads by increasing distances between service roads and mainline I-90". In accordance with American Association of State Highway Officials (AASHTO) *Geometric Design of Highways*, the "outer separation" width, defined as the area between the traveled way of the main lanes and a frontage road, should typically range between 80 to 150 feet. The outer separation provides a buffer zone to accommodate shoulders, side slopes, drainage, and fencing for access control. In the case of I-90 and the South Service Road, the greater separation distance would minimize the effects of the two approaching traffic streams, particularly headlight glare, and provide the proper clear zone on I-90 for errant vehicles that leave the freeway. SDDOT and Meade County determined for this project that the separation distance from the proposed outer lane of I-90 and the service road lane would be maintained at 125 feet with an 80 feet minimum.

Three alternatives were considered for the South Service Road alignment between Exits 40 and 44: South Alignment 1, South Alignment 2, and South Alignment 3 (**Figure 2A, 2B, and 2C**). All three alternatives have the same alignment for approximately three-quarters of a mile beginning at the Exit 40 interchange and heading south. The South Service Road intersection with Tilford Road would shift west of its current location to create a greater separation distance, approximately 500 feet, from the ramp terminal of the interchange. From that location south the alignment parallels the current service road alignment to the west at the desired separation distance (approximately 125 feet) from the proposed outside EB lane of I-90, until it reaches the area just north of the Tilford campground.

South Alignment 1 begins at Tilford Road or Exit 40 (**Figure 2A, 2B, and 2C**). The separation distance from the I-90 outside lane would be reduced to the minimum 80 feet along a 1,500-foot segment, including along the east property line of the Tilford campground, to minimize impacts to an existing pond and two rock wall dams. Continuing south, South Alignment 1 would then follow along the existing service road alignment adjacent to the I-90 rest area, then shift west parallel to I-90, at the approximate desirable separation distance of 125 feet, to south of Homer Smith Road. To avoid the acquisition or relocation of some homes and businesses between Bethlehem Road and Elk Creek, South Alignment 1 would curve west away from I-90 and pass to the west of the Bob Gallant Trucking property. The alignment would be about 750 feet west of its current location between Bethlehem Road and Elk Creek. After crossing Elk Creek it would curve east along the existing alignment of the access road parallel to and south of Elk Creek along the north property line of Jack's Campers. It then turns southeasterly and parallel to I-90 at the desirable 125 foot separation distance. The alignment continues parallel to I-90 to just north of Little Elk Creek. At that point the alignment curves south away from I-90 across Little Elk Creek, then turns southeasterly, intersecting with Little Elk Creek Road, until it intersects Chimney Canyon Road. At that point the alignment would curve east toward I-90 and connect to North 1st Street as it enters Piedmont.

South Alignment 2 is the same as South Alignment 1, except for the segment between a point just south of Homer Smith Road and Elk Creek (**Figure 2B and 2C**). South Alignment 2 in this segment continues parallel to I-90 and would maintain a separation distance of between 80 to 125 feet. Some residential and business relocations in this segment would be required. The notable difference between South Alignment 1 and 2 is that after passing south of the rest area along the existing service road alignment, South Alignment 2 would consistently parallel I-90 for over two miles until curving west away from I-90 and intersecting Chimney Canyon Road.

South Alignment 3 would generally be aligned further west from I-90 than the other two alignments (**Figure 2A, 2B, and 2C**). From just north of the Tilford campground the South Alignment 3 shifts west behind two residential properties then through the west portion of the Tilford campground. After turning toward I-90 past the rest area, it would traverse the two larger parcels adjacent to Bethlehem Road, passing along the west property line of Bob Gallant Trucking, crossing Elk Creek, and then along the west property line of Jack's Campers. South Alignment 3 would then traverse the two large properties adjacent to Piedmont Meadows Road in a straight line, and then turn southeasterly to a point common with the other two alternatives, just north of Chimney Canyon Road.

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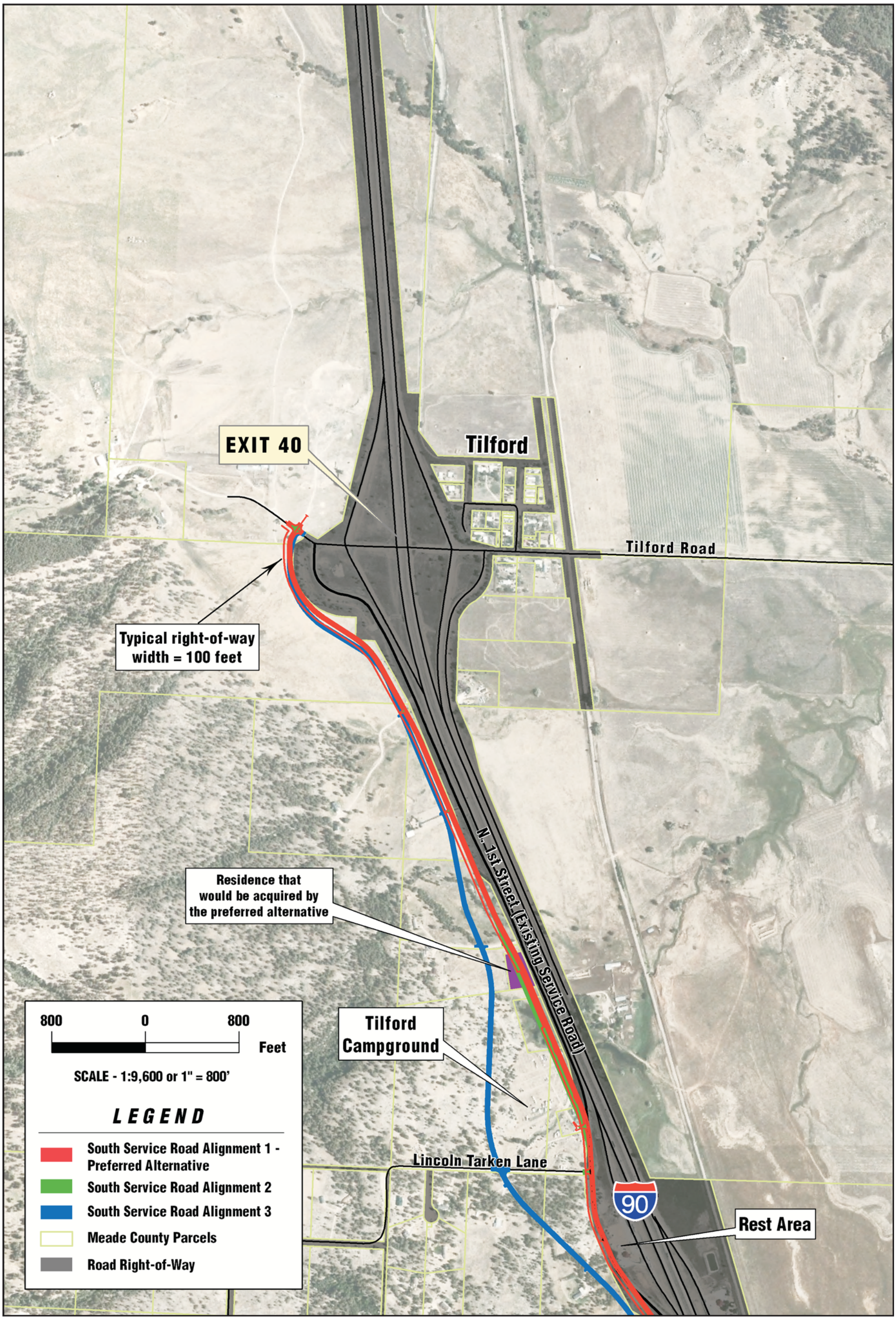

Figure 2a

South Service Road Alignments

North

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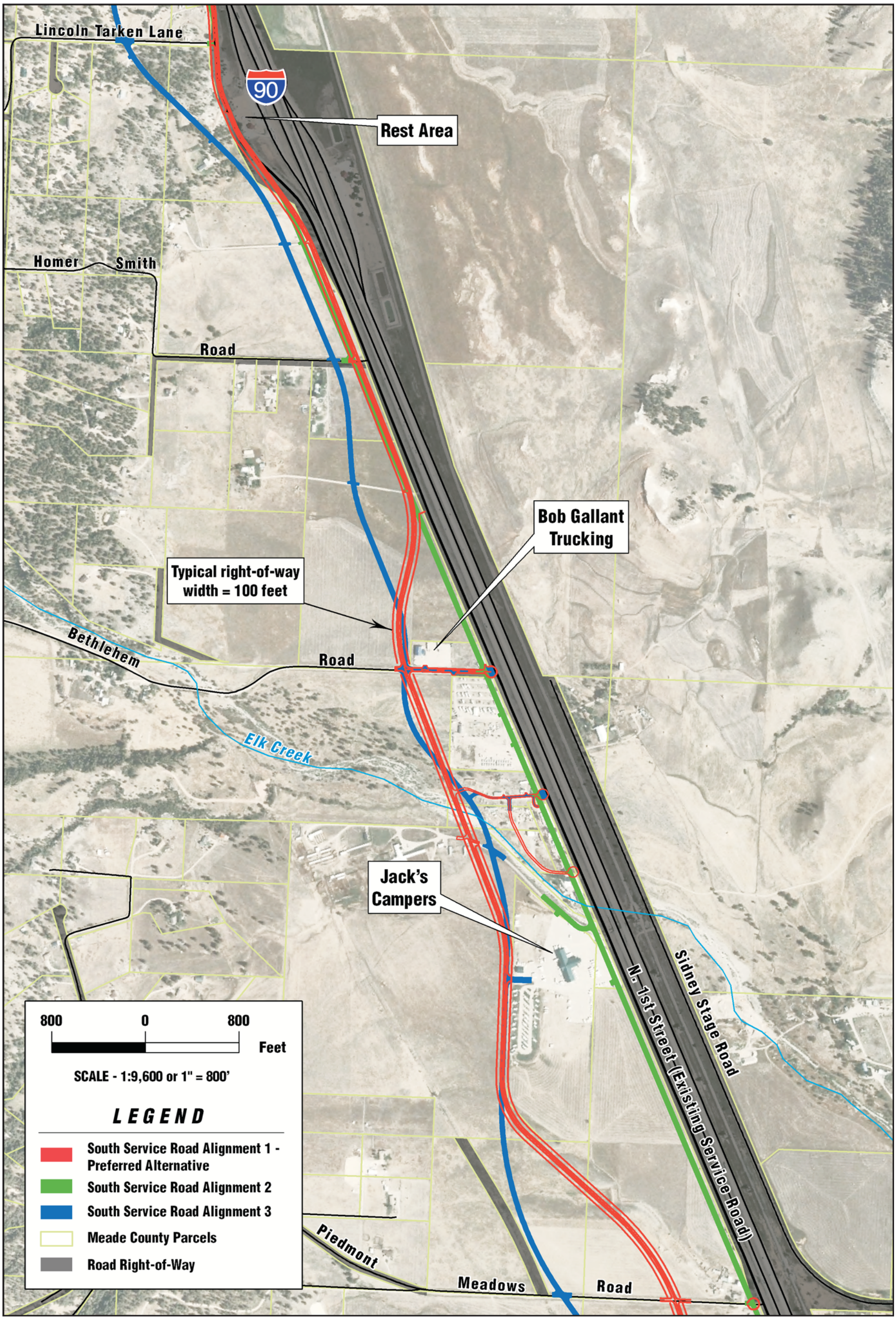

Figure 2b

South Service Road Alignments

North

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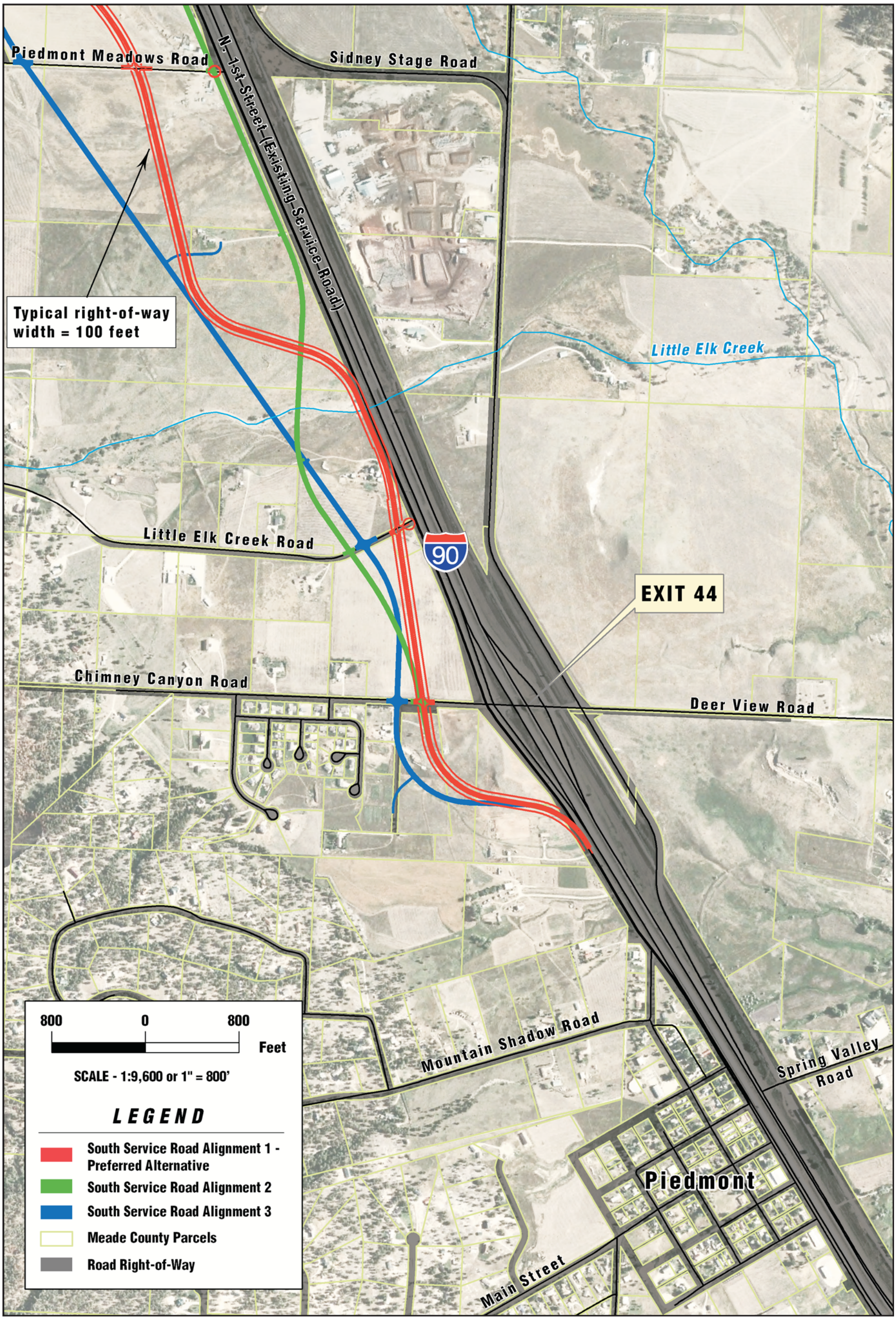

Figure 2c

South Service Road Alignments

North

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South Alignment 1 was selected as the Preferred Alternative for the following reasons:

- Its alignment avoids the need to acquire some homes and businesses that are next to the existing South Service Road between Bethlehem Road and Elk Creek.
- It minimizes impacts to the Tilford Campground.
- It avoids a historic root cellar, and minimizes impacts to two rock wall dams.

SDDOT made some alignment revisions to South Alignment 1 between the south property line of Jack's Campers and Chimney Canyon Road at the request of some affected property owners. Revisions and further refined detail on the South Alignment 1 is presented in *Section 2.3.2*.

2.2.3 North Service Road realignment between Exit 44 and Exit 46

The existing North Service Road, currently Sidney Stage Road, between Exit 44 and Exit 46 is parallel to, and for a good portion is extremely close to, the outside lane of WB I-90. From Exit 44 at the intersection of Deer View Road to the south it is located on the east side of the DM&E Railroad tracks, then crosses the tracks at-grade and lies between the tracks and I-90. The North Service Road continues along WB I-90 until it joins with the WB entrance ramp of the Exit 46 interchange, an unconventional two-way roadway that connects the frontage road to Elk Creek Road. To meet the project purpose to improve the safety along I-90 and maintain the function of the service road, four alternatives were considered for the North Service Road alignment between Exits 44 and 46: North Alignment 1, North Alignment 2, North Alignment 3, and North Alignment 4 (**Figure 3**).

North Alignment 1 would follow the existing Sidney Stage Road for approximately the first quarter-mile south from the Deer View Road intersection (**Figure 3**). Instead of crossing the railroad, North Alignment 1 would continue along the east property line of and parallel to the railroad. The North Alignment 1 through this segment would form T-intersections at Spring Brook Lane and Old Stoneville Road. As it approaches the vicinity of the existing interchange at Exit 46, it would curve to the east away from I-90 then intersect the realigned Elk Creek Road.

North Alignment 2 is identical to North Alignment 1 except for the segment between the point on Sidney Stage Road approximately a quarter-mile from the Deer View Road intersection and the intersection of Old Stoneville Road (**Figure 3**). In this segment, North Alignment 2 would curve farther east and pass between a church to the east and a residence to the west, intersect with Spring Brook Lane approximately 700 feet east of the railroad, then curve west back towards the railroad where it would intersect with Old Stoneville Road. At that point North Alignment 2 follows the North Alignment 1 continuing to realigned Elk Creek Road.

North Alignment 3 follows the same quarter-mile segment along Sidney Stage Road as North Alignments 1 and 2 and then curves farther east to the east side of the church property, intersecting with Spring Brook Lane approximately 1,100 feet east of the railroad (**Figure 3**). The North Alignment 3 then continues southeast relatively the same distance from and parallel to the railroad, and intersects realigned Elk Creek Road at the same location as North Alignments 1 and 2.

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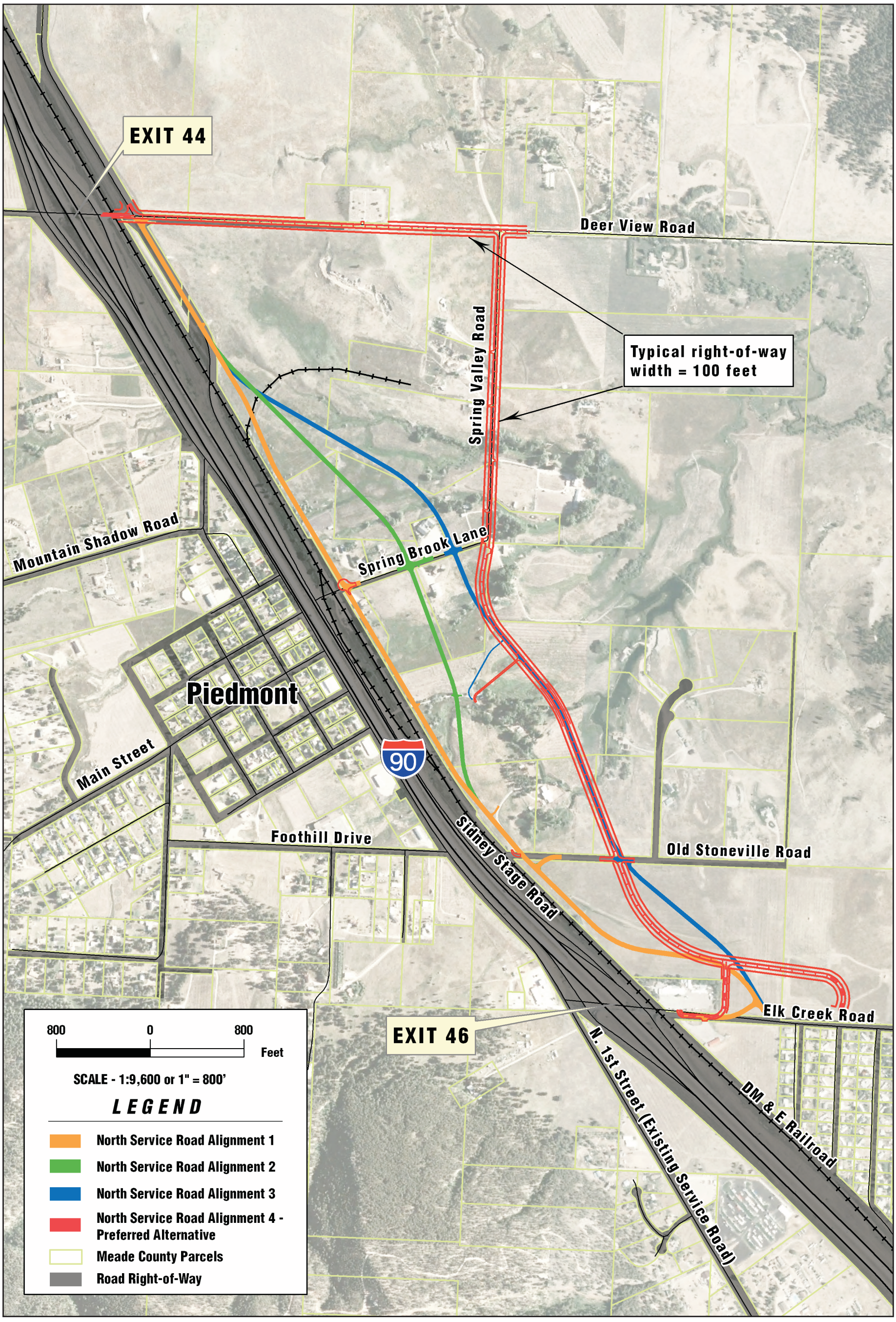

Figure 3

North Service Road Alignments

North

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North Alignment 4 follows existing Deer View Road east from the Exit 44 interchange then turns south onto the existing Spring Valley Road (**Figure 3**). At Spring Brook Lane, Spring Valley Road ends but the North Alignment 4 would continue and be the same as North Alignment 3 to realigned Elk Creek Road.

North Alignment 4 was selected by the Steering Committee as the Preferred Alternative because it:

- uses existing roads for most of its alignment
- minimizes impacts to the undeveloped property southeast of the existing intersection at Deer View Road and Sidney Stage Road
- avoids relocations
- eliminates Sidney Stage Road south of Deer View Road
- preserves the large horse pasture south of Deer View Road

Further detail on the North Alignment 4 is presented in *Section 2.3.3*.

2.2.4 New interchanges at Exit 44 and Exit 46

As indicated in the project purpose and need, the Preferred Alternative would replace the interchanges at Exit 44 and Exit 46 (**Figure 1**). The existing interchanges at Exits 40 and 48 would remain and the proposed widened section of I-90 would be constructed under the existing bridges. The sequence for the construction of the various project elements is outlined in the current funding plan previously discussed (SDDOT, 2007a).

EXIT 44 INTERCHANGE

Two alternative interchange configurations were considered at Exit 44: Exit 44 with I-90 over the cross roads, and Exit 44 with I-90 under the cross roads (**Figure 4**). Both alternative configurations would include reconstruction of a diamond interchange at the current location. The cross roads, Chimney Canyon Road to the east and Deer View Road to the west, currently pass over I-90.

Exit 44 with I-90 over Chimney Canyon Road/Deer Valley Road
The proposed concept for the Exit 44 interchange is to reconstruct the interchange in its current configuration (**Figure 4**). The east ramp intersection at Chimney Canyon Road would be rebuilt slightly further west from I-90, but the west ramp intersection at Deer View Road and the at-grade intersection with the railroad would remain in their current locations.

Exit 44 with I-90 under Chimney Canyon Road/Deer View Road
Another alternative configuration for the Exit 44 interchange, includes the reconstruction of Chimney Canyon and Deer View roads over I-90.

Exit 44 with I-90 over Chimney Canyon Road/Deer Valley Road was selected as the Preferred Alternative because raising the grade of Deer View Road would require the grade separation over the railroad and potential relocation of the intersection at Sidney Stage Road away from the railroad to avoid the added cost of retaining walls.

Further detail on the Exit 44 interchange is presented in *Section 2.3.4*.

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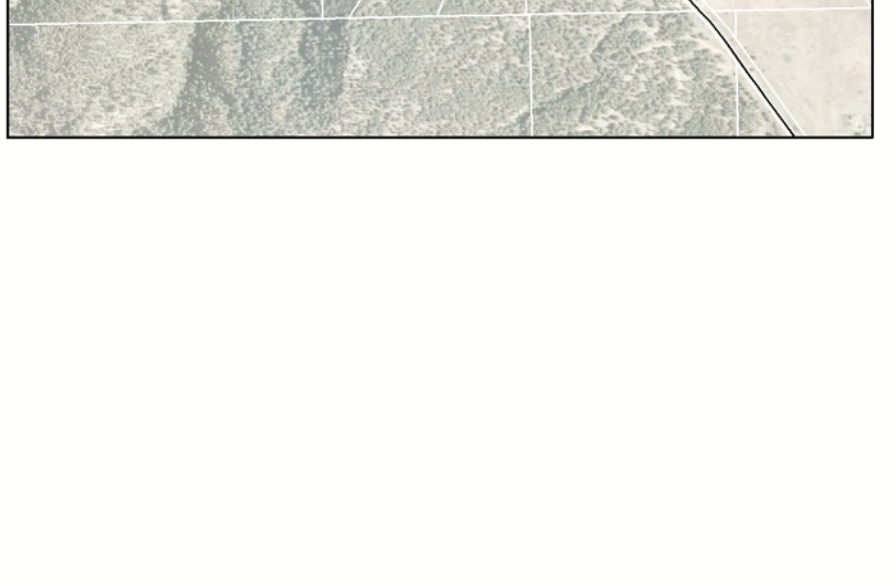

Figure 4

Interchange Configurations

North

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EXIT 46 INTERCHANGE

The existing diamond interchange at Elk Creek Road has two east ramp terminals that are extremely close to the interstate service road. The traffic operations under these conditions and especially in the future require reconfiguration of the interchange to improve safety. Two alternative interchange configurations were considered at Exit 46: a single-point urban interchange (SPUI) and a diamond interchange (**Figure 4**). Both alternatives would require the realignment of Elk Creek Road to the south to provide a greater separation distance between the east interchange ramps and the interstate service road intersection. Realigned Elk Creek Road would be grade separated over both the railroad tracks and I-90.

The **Exit 46 SPUI** configuration is similar to the diamond design except that the four exit and entrance ramps converge to one intersection at the cross street (**Figure 4**). The single point intersection provides a good separation distance from the interstate service road and is desirable for traffic operations. A single traffic signal would be required at the intersection in order to safely direct traffic movements in this configuration. Current traffic volumes to support a traffic signal would not likely be warranted at this location until some time after the year 2020. SPUI designs are typically implemented in urban settings where there is high cross-street traffic and/or limited amount of right-of-way that is constrained by land and/or land uses that would be costly to acquire. The SPUI design typically requires more retaining walls than the diamond configuration due to its tight design between the ramps and mainline.

The **Exit 46 diamond interchange** is a typical configuration along this corridor (**Figure 4**). The two entrance/exit ramp intersections at Elk Creek Road would be approximately 450 feet apart. Although the diamond interchange requires more land to construct than the SPUI, no building structures would have to be acquired at this location. Construction costs for the diamond interchange will be less than the SPUI, because the bridge is much smaller and fewer retaining walls would be required.

The **Exit 46 Interchange diamond configuration** was selected as the Preferred Alternative over the SPUI because:

- The SPUI configuration at this location is not practical. A traffic signal is required for all SPUI designs in order to provide for safe traffic operations because of the type of traffic movements at the intersection of the ramps and cross street. Stop signs instead of a signal would not safely function for the SPUI because the conflicting traffic movements at the intersection are too complex for the motorist. The cost to construct and maintain a traffic signal would not be justified because existing traffic operations at this interchange are satisfactory with stop sign control and do not justify signalization. The SPUI interchange would not benefit traffic operations. It is important to note that this LOS improvement could be provided using traffic signals at the two standard diamond ramp terminal intersections instead of installing a SPUI interchange.
- Cost of the diamond interchange would be substantially lower than the SPUI because the SPUI would require a larger bridge structure, a traffic signal, and more retaining walls.

Further detail on the Exit 46 diamond interchange is presented in *Section 2.3.5*.

PREFERRED ALTERNATIVE

A Preferred Alternative for each of the basic elements has been identified on the basis of recommendations from the 2004 Corridor Preservation Study, input from the project's Steering Committee (including SDDOT design staff and Meade County representatives), public comments received at the three public meetings conducted for the EA, and from subsequent one-on-one meetings with some of the affected landowners. An overview of the primary elements of the proposed project is shown in **Figure 1**. The Preferred Alternative includes:

- I-90 Alignment
- South Alignment 1
- North Alignment 4
- Exit 44 diamond interchange with I-90 over the cross roads
- Exit 46 diamond interchange

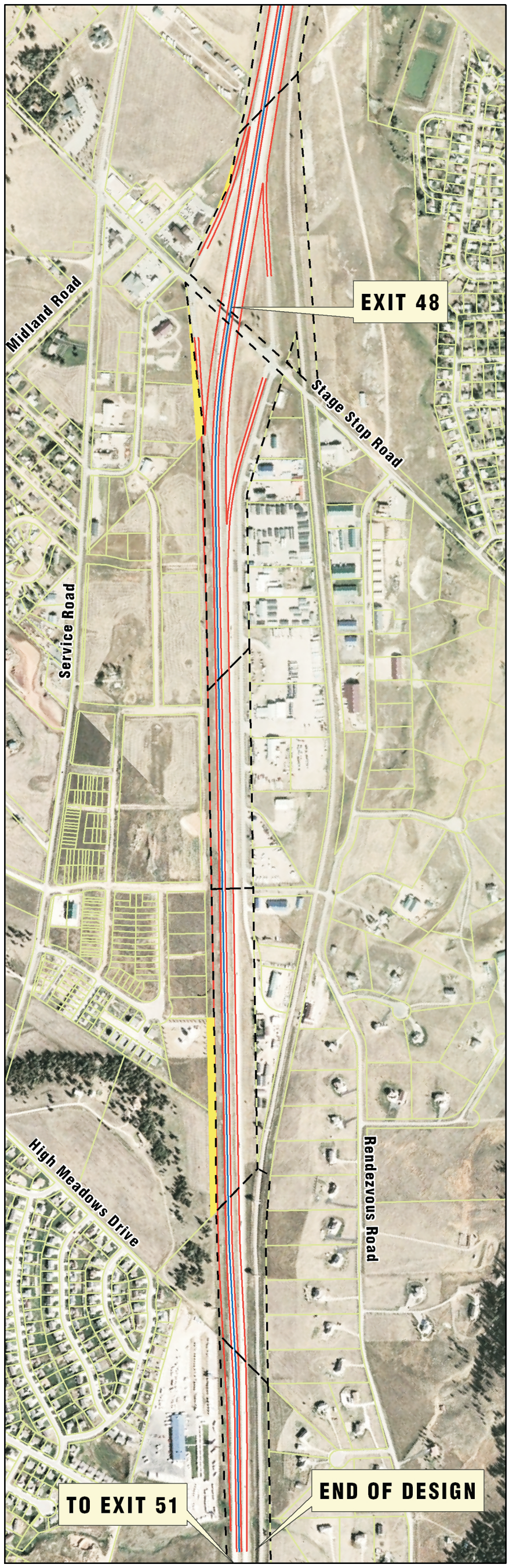
Details and refinements that were developed after the Preferred Alternative was selected are presented in this section.

2.2.5 I-90 Alignment

This EA covers the impacts associated with improving I-90 to six lanes. The design for the reconstructed lanes of I-90 within the project area (Exit 40 to Exit 51), essentially maintains the existing alignments and right-of-way for the mainline lanes of I-90 (**Figures 2A, 2B, 2C, 3** and **5**). The widening would be built in two phases, based on traffic volumes. Initial reconstruction would provide two lanes in both the EB and WB directions comprised of two 12-foot driving lanes, 10-foot inside and 10-foot outside shoulders, and a depressed median separating the EB and WB lanes (**Figure 6**). Relocation of the adjacent service roads would allow space for three lanes in each direction and for a wider median.

The Preferred Alternative would accommodate future widening to the outside to three 12-foot lanes in each direction when funding is available. These new lanes would eventually be built throughout the entire 10-mile project area. If traffic volumes grow at an expected average annual rate of four percent, then the third lanes would not be warranted by traffic volumes alone until after the year 2025. The posted speed limit on I-90 is currently is 75 miles per hour (mph), and is expected to remain posted at 75 mph. The I-90 design speed will be 80 mph.

Reconstruction of the mainline south of Exit 48 to the project limits at Exit 51 requires shifting both the WB and EB lanes to the southwest in order to avoid impacts to J.B. Road, a frontage road which serves 15-20 businesses in Black Hawk. That alignment shift, and a wider median which meets current clear zone design criteria, would require acquisition of right-of-way from two properties near the Exit 48 ramps and one further south adjacent to the WB lanes of I-90.



North

Figure 5
I-90 Alignment

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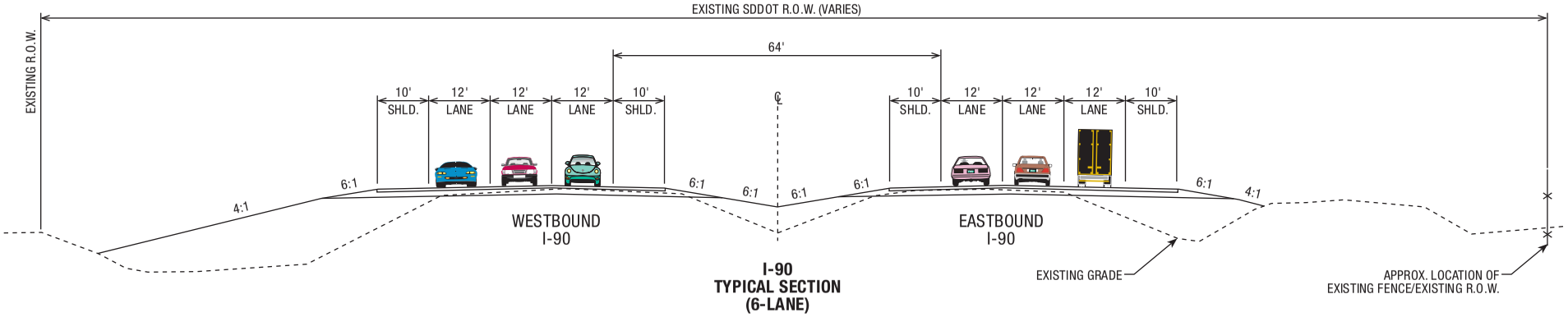
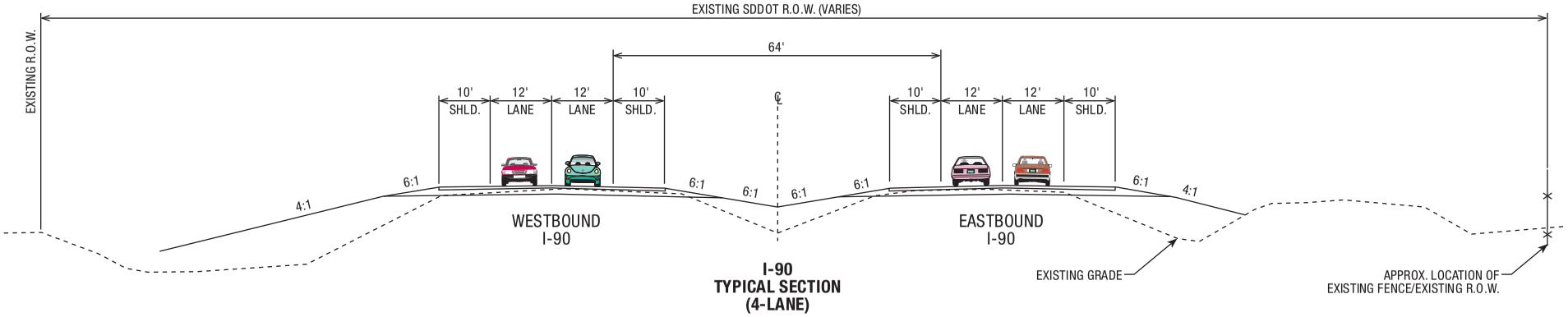
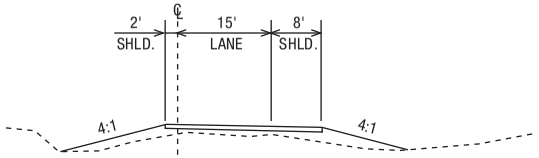


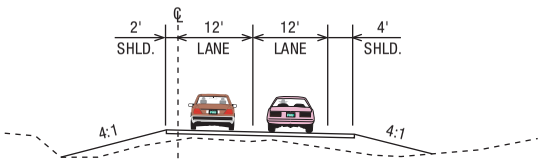
I-90 TYPICAL SECTION (6-LANE)



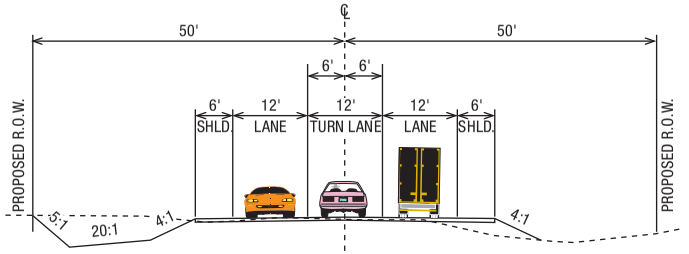
I-90 TYPICAL SECTION (4-LANE)



INTERCHANGE RAMP SINGLE LANE TYPICAL SECTION



INTERCHANGE RAMP TWO LANE TYPICAL SECTION



ELK CREEK ROAD TYPICAL SECTION

Figure 6

Preferred Alternative -
I-90 Typical Section

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2.2.6 South Alignment 1

The South Alignment 1 was selected as the Preferred Alternative for the South Service Road and was previously presented in *Section 2.2.2*. The South Service Road intersection with Tilford Road would shift west of its current location to create a greater separation distance, approximately 500 feet, from the ramp terminal of the interchange. From that location south the alignment parallels the current service road alignment, but further to the west at the desired separation distance (approximately 125 feet) from the proposed outside EB lane of I-90, until it reaches the area just north of the Tilford campground.

After South Alignment 1 was selected as the Preferred Alternative, SDDOT made the following revisions at the request of some property owners. Subsequent to the public meetings a landowner of a large parcel south of Piedmont Meadows Road requested an alignment change so that the service road would transect the property in half to improve future access to the property. The affected property owners to the north and south of this property and SDDOT concurred. The alignment change also included shifting the alignment across Little Elk Creek close and parallel to I-90, and to the east of the property with the root cellar, before curving south to Chimney Canyon Road. This alignment was selected because of comments received from property owners in the vicinity of Little Elk Creek Road and Chimney Canyon Road who prefer that the alignment be further from their homes.

The refined portion of South Alignment 1 begins at a point just south of the southwest corner of Jack's Campers parcel, the alignment traverses southeast across the first landowner's property and then turns to nearly parallel I-90 south of Piedmont Road. It then curves toward I-90 and crosses Little Elk Creek at the minimum separation distance of 80 feet from the interstate. It continues east of the root cellar property and then curves south to intersect with Chimney Canyon Road.

The design speed for the South Service Road is 45 mph desirable, 40 mph minimum. The typical cross section for the South Service Road includes two 12-foot lanes and 6-foot outside shoulders (**Figure 7**). The existing South Service Road parallel to EB I-90 would be removed and re-graded once the new alignment is open to traffic.

2.2.7 North Alignment 4

The North Alignment 4 was selected as the Preferred Alternative for the North Service Road and was previously presented in *Section 2.2.3*. A slight alignment modification was made to Alternative 4 near the intersection of relocated Elk Creek Road to better accommodate access to the adjacent properties (**Figure 3**). A majority of affected homeowners who attended the April 25, 2006 open house public meeting supported North Alignment 4.

The North Alignment 4 from the Exit 44 interchange ramps follows existing Deer View Road east then turns south onto the existing Spring Valley Road (**Figure 3**). At Spring Brook Lane, existing Spring Valley Road ends but its alignment continues through open fields southeasterly and intersects with Old Stoneville Road. The alignment then curves and aligns east then south and intersects with relocated Elk Creek Road at Hills View Drive in the Trail West subdivision. The existing North Service Road, Sidney Stage Road, is in close proximity to I-90 between Exits 44 and 46 and would be removed once the new alignment is opened to traffic.

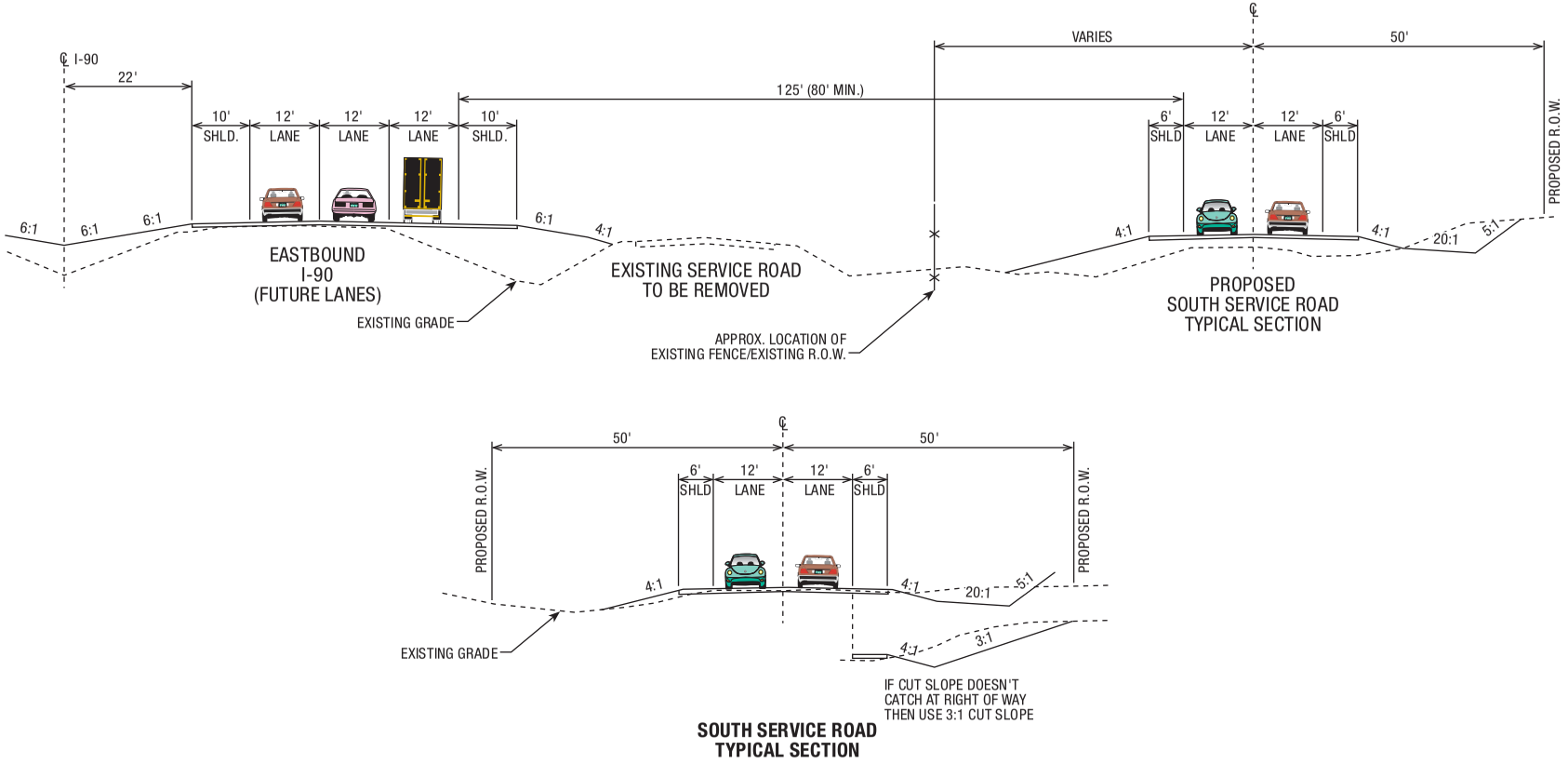


Figure 7

Preferred Alternative -
South Alignment 1 - South Service Road Typical Section

The rebuilt and extended sections of Spring Valley Road would have a design speed of 35 mph, and would be posted at 35 mph. The typical cross section for the Deer View Road portion of the service road includes two 12-foot lanes with 4-foot shoulders. The typical section for the Spring Valley Road portion includes two 11-foot lanes with 4-foot shoulders (**Figure 8**). Existing Deer View Road and Spring Valley Road have a gravel pavement surface. The North Alignment 4 may be paved with asphalt or remain gravel. Sidney Stage Road, the existing service road, would be removed once the new North Service Road is opened to traffic. The existing railroad crossing at Spring Brook Lane would be removed and Spring Brook Lane would terminate at a new cul-de-sac just east of the railroad property. Residences on Spring Brook Lane would have access to and from the new service road. Old Stoneville Road would also terminate at the railroad property and only serve the residence to the north. A private driveway that currently crosses the railroad and connects to Sidney Stage Road would be removed and relocated to connect to the new North Service Road. Altogether, four at-grade railroad crossings would be eliminated with construction of the North Alignment 4: Sidney Stage Road, Spring Brook Lane, Old Stoneville Road, and a private driveway.

2.2.8 Exit 44 with I-90 Over Chimney Canyon Road/Deer Valley Road

A diamond interchange with I-90 over the existing Chimney Canyon Road/Deer Valley Road was selected as the Preferred Alternative for the Exit 44 interchange and was previously presented in *Section 2.2.4* (**Figure 4**)**.** No additional refinements have been made to Exit 44 beyond those discussed in *Section 2.2.4.*

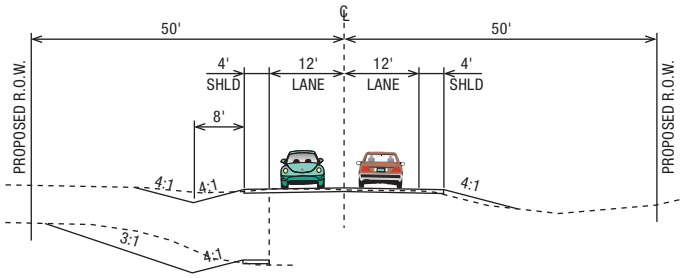
2.2.9 Exit 46 Diamond Interchange

A diamond interchange was selected as the Preferred Alternative for the interchange at Exit 46 as presented in *Section 2.2.4* (**Figure 4**)*.* The existing diamond interchange at Exit 46 would be reconstructed approximately 1,000 feet southeast of its current location for the following reasons:

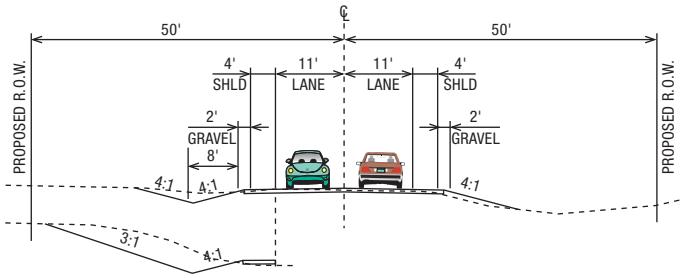
- The new location of Elk Creek Road over I-90 would be perpendicular to the interstate eliminating the sharp skew angle at the current location.
- The new location of the east interchange ramp terminals at Elk Creek Road would be further from the interstate service road improving traffic operations.
- Shifting the interchange south will allow for safer and more efficient traffic operations and would not require the relocation of any of the businesses and residences adjacent to the existing interchange.

Replacing the bridge would greatly improve sight distance because the vertical curve on the existing bridge has restrictive sight distance.

The realignment of Elk Creek Road would begin west of I-90 at a new T-intersection with the interstate service road, about a quarter-mile south of the existing one. It would cross over both I-90 and the railroad at a perpendicular angle. The vertical grade of realigned Elk Creek Road would be relatively flat through this segment. The alignment then curves east to match the existing Elk Creek Road alignment near Valley View Road. In order to meet minimum vertical clearance requirement over the railroad and connect to the existing Elk Creek Road alignment and grade just north of the Trail West subdivision, a maximum desirable vertical grade descent of 5 percent will be required in this segment. Existing access points to Hill View Drive and the



NORTH SERVICE ROAD
DEER VIEW ROAD
TYPICAL SECTION



NORTH SERVICE ROAD
SPRING VALLEY ROAD
TYPICAL SECTION

Figure 8

Preferred Alternative -
North Alignment 4 - North Service Road Typical Section

residential street to the east would be maintained by simply extending them to the relocated Elk Creek Road. Access to the restaurant next to the interchange would be from the new North Service Road and then a new access road that would begin about 150 feet west of the relocated Elk Creek Road intersection (**Figure 4**).

2.2.10 Conceptual Engineering Drawings

Conceptual engineering drawings were prepared for the Preferred Alternative. These drawings were assembled into three separate plan sets that include a title sheet, design criteria, typical roadway sections, and roadway plan and profile sheets. The plan sets contain detailed information regarding the design aspects of the preferred alternatives and are available by request. The Exit 44 Interchange is being further designed by SDDOT; however, a conceptual engineering drawing is presented in the I-90/Exit 46 Interchange package. The Preferred Alternatives plan sets are packaged as follows:

- PCN 3183 – I-90/Exit 46 Interchange (SDDOT, 2007b)
- PCN 3465 - South Service Road (SDDOT, 2007c)
- PCN 00GC – North Service Road (SDDOT, 2007d)

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3.0 ENVIRONMENTAL CONSEQUENCES

This section summarizes the results of the environmental analyses conducted for this EA. The resources that were analyzed were selected based on the characteristics of the project area. The resources that were considered and the analyses performed are consistent with NEPA, its implementing regulations, and with SDDOT and FHWA guidelines. Environmental consequences discussed would occur as a result of implementing the Preferred Alternative.

3.1 Land Use

Within the past 10 years, land use within the project area has changed from predominantly rangeland to a relatively even mixture of rangeland/agricultural, residential, commercial, and industrial uses. It is generally characterized by ranching, camping, retail, construction and development activities. The major land cover types include grass, croplands, both deciduous and coniferous trees, low intensity residential development, and agricultural lands (pasture/hay).

Small clusters of medium density residential development occur throughout the corridor. Continued residential and commercial growth is occurring at increasing rates as owners of large tracts subdivide their properties for both types of uses. Despite the fact that a large portion of the corridor remains agricultural, recent new development and plans for additional parcels indicate more intensive future land use. A consistently moderate rate of growth is expected to continue over an extended period of time.

3.1.1 Environmental Consequences

Implementation of the Preferred Alternative would change land use in several areas from prairie land to that being utilized for roadways. While some parcels of land would have land uses changed, the basic character of land uses adjacent to the project area would not be impacted and the corridor would likely remain rural in nature, with the pace of development continuing in response to the local and regional economy.

Under the No Action Alternative, land use would remain unchanged.

No mitigation measures were recommended, or determined to be required, for land use.

3.2 Farmland

The Farmland Protection Policy Act (FPPA) of 1981, as amended, protects prime and unique farmland as identified by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The purpose of the act is to minimize the extent to which federally-funded projects contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. The FPPA requires that federal agencies comply with local government and private farmland programs and policies.

3.2.1 Environmental Consequences

The NRCS uses a land evaluation and site assessment system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. The NRCS Farmland Conversion Impact Rating for Corridor Type Projects, Form NRCS-CPA-106, was submitted to the South Dakota division of the NRCS on May 4, 2007. According to the NRCS form returned on June 13, 2007, the Total Points in Part VII received by the corridor was 70 (**Appendix A**). NRCS regulation indicates that if the total points are less than 160, then there is no significant impact to the important farmlands, and that no further alternatives need be considered for farmland purposes. Therefore, significant impacts are not expected to prime and unique farmlands in Meade County from the Preferred Alternative.

Under the No Action Alternative, prime and unique farmland would not be impacted.

No mitigation measures were recommended, or determined to be required, for farmland.

3.3 Socioeconomics and Environmental Justice

This section provides information on economic, social, and community conditions within and adjacent to the project area. Census data and other sources have been used to provide a general overview of populations within the project area.

Data for minority populations was obtained from the 2000 Census from the US Census Bureau American FactFinder website (Census, 2000). The two census tracts encompassing the project area, Tract 203.01 and 203.02 include a population of an estimated 10,529 individuals (in the year 2000). Since the make-up of communities can change over time, it is important to note that the 2000 Census data may be slightly dated, but still remains useful for demographic composition of the corridor.

Table 1. Demographics of the Project Area

Area	Total Population	Minority Populations (%)				
		Black/ African American	American Indian /Alaska Native	Asian/ Pacific Islander	Hispanic or Latino[1]	Total Minority[2]
State of South Dakota	754,844	0.6	8.3	0.6	1.4	11.0
Meade County*	24,253	1.5	**2.0**	0.7	2.1	6.3
Census Tracts in the Project Area						
Tract 203.01	6,037	0.4	**2.1**	0.3	1.1	3.9
Tract 203.02	4,492	0.2	2.0	0.3	0.9	3.4

Source: Census, 2000
[1] Hispanic/Latino can be of any race
[2] Total minority includes all individuals except non-Hispanic whites
Percentages shown in **BOLD** exceed the county average (also shown in BOLD for comparison)

Based on the information presented in **Table 1**, the following observations can be made about the demographics of the corridor:

- The census block groups in the project area vicinity generally have lower proportions of minorities than Meade County and the State of South Dakota as a whole.
- The percent of American Indian/Alaska Natives present within the project area slightly exceeds (by 0.1 percent) the percentage within Meade County but is much lower than in South Dakota as a whole.
- Other minority populations (Black/African American, Asian/Pacific Islander, and Hispanic) were generally found in proportions smaller than the Meade County averages.

Using the 2000 census data for Meade County, the average household size of 2.7 was determined. The total households and table of ranges of household incomes was derived for the two census tracts containing the project area, and for Meade County as a whole. The 2000 median family income (MFI) for Meade County for Fiscal Year 2000 is $40,537 (Census, 2006). Using 30 percent of the MFI, the low-income threshold was determined for the project area. The low-income threshold, based on a household average of 2.7, was determined to be $12,161. Since census income statistics are divided into increments of $5,000, any household (regardless of the number of people), in Meade County with an income below $14,999 is considered low-income. Approximately five percent of households in Meade County are below the identified threshold and are considered low-income. Socio-economic detail is only available at the at the Block Group level. For the four block groups in the project area, 7 percent of the homes had an income below $14,999.

3.3.1 Environmental Consequences

It is expected that construction workers for construction of the Preferred Alternative would be drawn primarily from the existing workforce in surrounding communities or from outside contractors, resulting in beneficial, short-term, effects on the local economy. Construction employment workforces would be concentrated within the local area, thereby reducing the probability of a change in population growth based on the construction of the project. After construction, there is the potential for commercial and residential development within the corridor which would have a positive economic contribution to the area.

While the project area displays a higher percentage of low-income households than Meade County averages, it has been determined that the project is not expected to have a disproportionate impact on low-income populations. Construction impacts will be borne by all income levels, and not just low-income populations. The improvements would improve interstate options for all populations. The public and individual property owners were involved and contacted individually throughout the alternative selection and alignment process. A strong and concerted effort was made to first avoid (where possible), then minimize, and finally mitigate adverse impacts to property owners. It has been concluded based on individual property owner meetings, and public input that the Preferred Alternative is not likely to have disproportionately high and adverse impacts on minority and/or low income populations. Therefore, this project has met the provisions of Executive Order 12898, as it is supported by Title VI of the Civil Rights Act.

Under the No Action Alternative, the socioeconomic conditions in the project area would remain essentially unchanged; and no disproportionately high and adverse impacts would be expected to environmental justice populations.

No mitigation measures were recommended, or determined to be required, for socioeconomics and environmental justice.

3.4 Acquisition and Relocation

3.4.1 Environmental Consequences

The implementation of the Preferred Alternative would have impacts due to the physical right-of-way requirements needed for the project. The Preferred Alternative, as is currently designed, would require approximately 88 acres of additional right-of-way. The right-of-way needs are broken out as follows:

- Approximately 13 acres needed along I-90 between Exit 46 and Mile Post 50
- Approximately 22 acres needed for the North Service Road
- Approximately 53 acres needed for the South Service Road

The Preferred Alternative will require the acquisition of one residence, several outbuildings (i.e. sheds) and no businesses. However, some property of one business adjacent to the alignment may be required to improve sight distance at a curve.. Property owners have been extensively involved in the Preferred Alternative alignment process and are aware of potential acquisition needs for the project. Right-of-way plan sheets with specific property parcel impacts are available in the *I-90 Exit 40 to Exit 51 Conceptual Design Right-of-Way Drawings* (FHU, 2008).

Several billboards are located within the project area and have the potential to be impacted as a result of the Preferred Alternative.

Under the No Action Alternative, no relocations or acquisitions would be required.

3.4.2 Mitigation Measures

For any person(s) whose real property interests may be impacted by the Preferred Alternative, the acquisition of those property interests will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, (Uniform Act).

Federal policy will be followed for the acquisition of billboards.

3.5 Joint Development

No joint development projects are planned in conjunction with this project.

3.6 Pedestrian and Bicyclists

Consideration was given to pedestrian and bicycle facilities. No existing walkway/bicycling paths were identified within the existing I-90, North Service Road, South Service Road or beneath interchanges. However, increased shoulder widths are included to better accommodate pedestrians and bicyclists.

3.6.1 Environmental Consequences

The project will increase shoulder widths of the North and South Service Road; thereby, allowing pedestrians and bicyclists better accommodations on these roads. Shoulder widths would also be increased at roads crossing beneath the interchanges.

Under the No Action Alternative, the project area would remain without pedestrian/bicycle facilities.

No mitigation measures were recommended, or determined to be required, for pedestrian and bicyclists.

3.7 Surface Water Quality

The classification and numeric water quality standards for South Dakota are contained within the Administrative Rules of South Dakota (SDDENR, 2007). All streams in South Dakota are assigned the beneficial uses of irrigation and fish and wildlife propagation, recreation, and stock watering. The classifications designate, by number (i.e. 2, 7), the quality at which the waters are to be maintained and protected. Elk Creek, Little Elk Creek, and some tributaries within the project are assigned beneficial uses discussed below:

The segment of Elk Creek within the project area is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

- (2) Coldwater permanent fish life propagation waters – beneficial use assigned to surface waters of the state which are capable of supporting aquatic life and are suitable for supporting a permanent population of coldwater fish from natural reproduction or fingerling stocking. Warmwater fish may also be present
- (7) Immersion recreation waters – beneficial use assigned to surface waters of the state which are suitable for uses where the human body may come in direct contact with the water, to the point of complete submersion and where water may be accidentally ingested or where certain sensitive organs such as the eyes, ears, and nose may be exposed to water
- (8) Limited contact recreation waters – beneficial use assigned to surface waters of the state which are suitable for boating, fishing, and other water-related recreation other than immersion recreation where a person's water contact would be limited to the extent that infections of eyes, ears, respiratory or digestive systems, or urogenital areas would normally be avoided
- (9) Fish and wildlife propagation, recreation, and stock watering waters – beneficial use classification assigned to all surface waters of the state that may support recreation in and on the water and fish and aquatic life, when sufficient quantities of water are present for sufficient duration to support those uses; that provide habitat for aquatic and semiaquatic wild animals and fowl; that provide natural food chain maintenance; and that are of suitable quality for watering domestic and wild animals
- (10) Irrigation waters – beneficial use assigned to surface waters of the state which are suitable for irrigating farm lands, ranch lands, gardens, and recreational areas

The segment of Little Elk Creek within the project area is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

- (3) Coldwater marginal fish life propagation waters – beneficial use assigned to surface waters of the state which support aquatic life and are suitable for stocked catchable-size coldwater fish during portions of the year, but which, because of critical natural conditions including low flows, siltation, or warm temperatures, are not suitable for a permanent coldwater fish population. Warmwater fish may also be present
- (8) Limited contact recreation waters – defined above
- (9) Fish and wildlife propagation, recreation, and stock watering waters – defined above
- (10) Irrigation waters – defined above

The other tributaries within the project area are classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

- (9) Fish and wildlife propagation, recreation, and stock watering waters – defined above
- (10) Irrigation waters – defined above

3.7.1 Environmental Consequences

Because of the beneficial uses listed above for Elk Creek, Little Elk Creek, and tributaries, special construction measures may have to be taken to ensure that the regulated standards for total suspended solids for Elk Creek, and Little Elk Creek are not violated.

Under the No Action Alternative, water quality would remain unchanged with current discharge conditions remaining.

3.7.2 Mitigation Measures

The Preferred Alternative that is being considered would require sediment and erosion control measures during and after construction. Best Management Practices (BMP) that are to be followed are described in the 2004 SDDOT Erosion Control guide. The intent of these measures is to provide the contractor with guidelines so that erosion and sedimentation would be minimized during construction. Compliance with the Clean Water Act is required with regard to erosion and sedimentation minimization. The purposes of the sediment and erosion control measures are listed below.

- Reduce soil loss from the construction site to the maximum extent practicable as outlined in the SDDOT Erosion Control manual. This includes the use of erosion control blankets, rock check dams, silt fence, floating silt curtains, and temporary diversion channels. Other methods may be used if approved by SDDOT.
- Improve the water quality of storm runoff to the maximum extent practicable by seeding and mulching disturbed areas that are not to be paved. Other methods may be used if approved by SDDOT.
- Prevent accumulations of soil and debris in the storm drainage system of the SDDOT right-of-way originating from construction activity by mulching disturbed areas that are not to be paved. Other methods may be used if approved by SDDOT.

- Prevent discharges of chemicals, chemical wastes and other pollutants from leaving the construction site. All of these will be stored or handled in a covered area within the project limits. The covered area will be designed to confine the spill for immediate removal and disposal at a suitable place. All spills will be reported to the SWMP Administrator. Fertilizer should not be delivered to the site until just prior to application. Absorbents for fuel areas and containers for used absorbents will be available. The South Dakota Department of Environment and Natural Resources (SDDENR) must be notified immediately if possible but no later than twenty-four (24) hours of any spill of twenty-five gallons or larger. In the event of a major spill, the National Spill Response Hot Line must be contacted (toll free (800) 424-8802 or web site at http://www.nrc.uscg.mil/nrchp.html).
- Prevent migration of construction debris off site. This will be achieved by utilizing the erosion control methods outlined above.
- Prevent damage to properties adjacent to the construction site arising from sediment, debris, chemical wastes or other pollutants. This will be achieved by utilizing the erosion control methods outlined above.
- Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges associated with construction activities. Additional information can be obtained from the SDDENR.
- Protect state waters and wetlands from damage caused by erosion, sedimentation, chemical wastes, or other pollutants arising from construction activity. Wetland impacts will be avoided when possible. Any impacts near wetlands will have measures that protect the wetlands from construction activities, erosion and sedimentation as described above.
- All newly created and disturbed areas above the ordinary high water mark which are not riprapped will be seeded or otherwise revegetated to protect against erosion.
- Protect state waters and wetlands from damage caused by erosion, sedimentation, chemical wastes, or other pollutants arising from construction activity
- All newly created and disturbed areas above the ordinary high water mark which are not riprapped will be seeded or otherwise revegetated to protect against erosion

3.8 Air Quality

There are typically two elements to an air quality impact evaluation for transportation projects (regional conformity and local conformity), unless a determination has been made that the project is exempt from an air quality impact evaluation. The level of analysis and documentation for the air quality evaluation depends on the scope of the project and environmental category.

3.8.1 Regional Conformity

The Preferred Alternative is within an area that is in attainment of the National Ambient Air Quality Standards (NAAQS). Therefore, there are no State Implementation Plans, Regional Transportation Plans or other relevant air quality plans to which the Preferred Alternative must conform. Since the project is in an attainment area, no further regional air quality analysis is necessary.

3.8.2 Local Conformity

Individual projects must also demonstrate that they will not cause violations of the NAAQS in localized areas, known as “hot-spots”. Among the NAAQS pollutants, an approved quantitative method for hot-spot analysis is available only for carbon monoxide (CO).

Areas likely to become air pollution hot-spots are identified based primarily on traffic volumes and congestion, as measured by the intersections LOS, previously defined in **Section 1.4**. Generally, the need for hot-spot analysis of intersections is determined by three criteria, as suggested by United States Environmental Protection Agency (USEPA):

1. Will the LOS of a project intersection be D, E or F?
2. Will the project affect locations identified in the State Implementation Plan as sites of actual or potential violations of the CO NAAQS?
3. Is a project intersection one of the top three in the State Implementation Plan with respect to traffic volume or worst LOS?

If an intersection does not meet any of the above criteria, it is unlikely to be a hot-spot and therefore does not need to be assessed further. If a project intersection meets any of the above criteria, the intersection may be selected for detailed analysis. The goal of the intersection selection process is to identify the most congested and heavily trafficked intersections for CO analysis. If the most congested intersections would not produce hot-spot problems in the year 2030, less congested intersections also would not.

The geographic region considered for the air quality analysis is along I-90 approximately between Exits 40 and 50, including adjacent highways and streets. A preliminary evaluation of intersections in the region was conducted to identify intersections along the corridor that might require a detailed air quality analysis for CO. The preliminary evaluation for this project consisted of two components:

- Review of the overall LOS from the traffic operations analysis for signalized intersections currently within or proposed to be within the project corridor; and
- Comparison of LOS from the traffic operations analysis for major intersections adjoining the project corridor both with and without the Preferred Alternative improvements.

A review and comparison of the LOS for the project intersections shows that no intersection has an LOS of D or worse under the Preferred Alternative. Therefore, there are no intersections likely to become CO hot-spots and no quantitative CO analysis is necessary. No local violations of the NAAQS are predicted for the Preferred Alternative.

3.8.3 Environmental Consequences

Construction has the potential to cause temporary, localized air emissions during associated activities. Adjoining properties in the project area would be near construction activities when the Preferred Alternative is built.

Construction emissions differ from regular traffic emissions in several ways:

- Construction emissions only occur during the duration of the construction period.
- Construction activities generally are short-term, and depending on the nature of the construction operations, could last from seconds (e.g., a truck passing) to months (e.g., constructing a bridge).
- Construction can involve other emission sources, such as fugitive dust from ground disturbance.
- Construction emissions tend to be intermittent and depend on the type of operation, its location, the function of the equipment, and the equipment usage cycle. Traffic emissions are generally present continuously after construction activities are completed.

Construction emission impacts would be minimal because very little of the project area abuts sensitive areas, such as residences or schools. Even so, neighboring properties could be exposed to construction-related emissions. The Preferred Alternative is similar in nature to other highway projects and the construction emissions should be representative of projects of this type and magnitude.

Under the No Action Alternative, the air quality within the project area would remain unchanged.

3.8.4 Mitigation Measures

Given that air pollutants are not predicted to exceed the NAAQS in the future as a result of the Preferred Alternative, mitigation measures for air quality during highway operations are not necessary for the project. This project area is below any of the NAAQS thresholds for both regional and local conformity and therefore presents no air quality impacts from the roadway design changes being proposed. Even without mitigation measures, future emissions from on-road mobile sources will be minimized globally through federal regulations.

To address the temporarily elevated air emissions that may occur during construction, standard construction mitigation measures should be incorporated into construction contracts. These include the following BMPs and relevant SDDOT construction specifications.

The contract requirements should include:

- Keep engines and exhaust systems on equipment in good working order. Maintain equipment on a regular basis, and subject equipment to inspection by the project manager to ensure maintenance.
- Control fugitive dust systematically through diligent implementation of a dust control plan.
- Prohibit excessive idling of inactive or unnecessary equipment or vehicles.
- Locate stationary equipment as far from sensitive receivers as possible.

3.9 Hazardous Waste

This section discusses potential for soil and groundwater contamination to be encountered along I-90 between Exit 40 and Exit 51. The purpose of this hazardous, toxic and radioactive waste (HTRW) section is to identify recognized and potential environmental conditions in the project area that could adversely affect the project.

The methodology for evaluating the potential for HTRW to occur in the project area included:

- Performance of a limited site reconnaissance or 'windshield survey' of sites within the project area for readily identifiable site activities
- Review of readily available local, state and federal environmental agency databases within a maximum distance of one mile of the centerline of each alternative corridor or as dictated by American Society of Testing Materials (ASTM) Standard E1527-05
- Interview of certain business owners regarding the potential for historical releases of hazardous substances or petroleum products on sites within the project area
- Identification of sites requiring additional evaluation or investigation to assist in project alternative feasibility assessment, project design, right-of-way acquisition, and development of specific-materials management or institutional controls required during construction

A site reconnaissance was conducted by FHU environmental staff November 28 through December 1, 2005, focusing on identifying visual areas of chemical and petroleum usage, storage, and discharges. The visual reconnaissance of sites within the project area was conducted from public right-of-way. The interior of buildings, fenced areas, and rear lots were not inspected during the site reconnaissance due to limited access.

Environmental Database Resources Inc. (EDR) was contracted to provide information from local, state, and federal environmental agency database records (EDR, 2005). Seven sites were identified by EDR as being located within one mile of the project area. These sites are presented in **Table 2**, as well as sites or locations that were identified during the site reconnaissance not referenced by EDR. The table provides information regarding each site or location, identifies potential HTRW material impacts, and recommends mitigation for HTRW issues, if any is needed.

3.9.1 Environmental Consequences

Table 2. Hazardous, Toxic, and Radioactive Waste Summary for I-90 Project Area (Exit 40 – Exit 51)

Property Name and Address/Location	Location in Relation to project	Environmental Conditions	Further Investigation Warranted
Soil rubble debris pile: Southwest quadrant of Exit 40/Tilford Road	Within proposed project footprint; impacts expected.	Obvious construction debris or dumping with unknown source and contents	No. Recent 2008 site visits could no longer identify the location of the soil pile**.**
Tilford Gulch Campground 13157 Deer Meadow Rd	Directly adjacent to, but outside of proposed project footprint.	Abandoned, rusted aboveground storage tank (AST) with unknown contents. Gray water pond with drains from showers.	No. Implement standard mitigation measures in **Section 3.9.2.**
Frerichs William Operation Southwest quadrant of Exit 44/Chimney Canyon Road	Within proposed project footprint; will be impacted by South Service Road.	Mine: Alverson Pit original boundaries of mine and any potential hazards associated with remaining contaminants were not reasonably available through research.	Yes. Implement standard mitigation measures in **Section 3.9.2.**
Gypsum Mine*: Southwest quadrant of Deer View Road/Spring Valley Road	Adjacent to and potentially within project footprint.	Mine: Gypsum Mine with underground shafts present. Unknown conditions present health and safety threat.	Yes. Implement standard mitigation measures in **Section 3.9.2**.
Elk Creek Market/ Howdy's Grocery Store 101 Pine Street	Outside of proposed project footprint not expected.	Underground Storage Tank (UST) and Leaking Underground Storage Tank (LUST): historical gasoline filling station. Residual petroleum impacted soil and groundwater may be present.	No. Implement standard mitigation measures in **Section 3.9.2.**
Conoco – Valley Market Exit 46/Piedmont	Outside of proposed project footprint impacts not expected.	USTs: 2 – 6,000 gallon petroleum tanks present and 1 – 10,000 gallon diesel tank. According to corporate office, no known spills or leaks.	No. Implement standard mitigation measures in **Section 3.9.2.**
Haggar's Grocery 8031 Stage Stop Road	Outside of proposed project footprint impacts not expected.	UST: No leaks or spills reported. According to Corporate Office, no known spills or leaks	No. Implement standard mitigation measures in **Section 3.9.2.**
Stagestop C-Store 8018 Stagestop Road	Outside of proposed project footprint impacts not expected.	Spill: petroleum spill in 2001 USTs: 2 – 10,000 gallon tanks removed	No. Implement standard mitigation measures in **Section 3.9.2.**
East West Motor Express 11470 JB Drive	Outside of proposed project footprint impacts not expected.	AST: two large ASTs observed with secondary containment.	No. Implement standard mitigation measures in **Section 3.9.2.**
Dakota Minnesota and Eastern RR	Parallel to I-90 throughout corridor. Not impacted with proposed project footprint	Constructed as early as 1903. Potential for soil or groundwater contamination from historical/ undocumented drips, leaks, spills, hydrocarbon exhaust residues.	No. Implement standard mitigation measures in **Section 3.9.2.**

*source: Honerkamp, 1978

The No Action Alternative would result in no impacts to or from HTRW sites.

3.9.2 Mitigation Measures

In addition to the information provided in **Table 2** *Further Investigation Warranted* column, several other mitigation measures are necessary as discussed below.

Should any hazardous waste be generated during the implementation of this project, the generator must abide by all applicable hazardous waste regulations found in ARSD 74:28 and 40 CFR Part 262.

If any contamination is encountered during construction activities, the contractor, owner, or party responsible for the release must report the contamination to the SDDENR (605) 773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements.

Methods will be implemented to minimize the spillage of petroleum oils and lubricants used in vehicles during construction activities. If a discharge does occur, suitable containment procedures such as banking or diking will be used to prevent entry of these materials in the waterway.

Final engineering drawings should indicate areas where mining activities have historically occurred and where the potential for unknown mine shafts exists. Standard safety precautions will be taken during construction in areas where the potential to encounter mine shafts occurs.

Hazardous materials investigations generally are valid for one year from completion. It is recommended that an updated hazardous materials investigation occur during final design and prior to construction.

3.10 Noise

An analysis was performed to assess potential impacts from traffic noise to properties neighboring the project area. Present land uses bordering both existing and potential new roads in the project area include residences, businesses, motels, churches, and some undeveloped lands. Residential areas are typically the land use most sensitive to traffic noise. Future (year 2030) noise levels for both the No Action and the Preferred Alternative were evaluated , and compared with existing conditions noise levels to determine noise level increases from the alternatives. FHU performed field measurements of existing traffic noise at several locations in the project area. More detailed information regarding the noise analysis can be found in the *Noise Impact Assessment Report* and supporting graphics in **Appendix B** (FHU, 2007).

Traffic noise varies over time with traffic volumes, vehicle types, and speeds. This variation makes it difficult to describe the traffic noise through a single value. FHWA and the SDDOT use the one-hour equivalent sound level (Leq) as the metric for assessing traffic noise impacts. The Leq is the “average” of the noise levels over a time period (usually one hour), or the constant noise level that would produce the same sound energy as the fluctuating noise level. The noisiest traffic condition generally results during LOS C for a highway, because under these conditions a relatively high traffic volume can travel at relatively high speeds.

3.10.1 Noise Impact Analysis Methods

The SDDOT Noise Abatement Criteria (NAC) for residences and other Category B receivers is an exterior Leq of 66 A-weighted decibels (dBA), and for commercial areas (Category C) is a

Leq of 71 dBA for the peak hour. Under SDDOT guidelines, equaling or exceeding the NAC is viewed as a noise impact and triggers an investigation of noise mitigation measures.

A "substantial" noise increase would also be considered a noise impact and lead to evaluation of traffic noise mitigation actions. A "substantial" noise increase is indicated if the future noise level is expected to increase by 15 dBA or more over existing levels. For the noise impact discussion, the "peak hour" refers to the highest traffic noise hour, which may or may not correspond to the hour of most traffic. Traffic noise can actually decrease during rush hour due to lower vehicle speeds from overloaded or congested roads and vehicle backups.

3.10.2 Noise Modeling

The existing traffic conditions that were modeled included the current road configurations and traffic volumes. Future 2030 traffic conditions were also modeled based on projected 2030 traffic and the corresponding roads for the No Action and Preferred Alternative. The conditions examined in these analyses used predicted traffic volumes for I-90 afternoon peak hour traffic volumes, as it generally had more traffic than the morning peak hour.

FHWA's Traffic Noise Model (TNM) software was used to estimate noise levels at approximately 290 discrete receiver locations at major buildings within approximately 500 feet of I-90. The modeled roadways were those roads that would be built or changed by the Preferred Alternative, or were important local traffic noise sources. The same receiver locations were used in each model for consistency.

The existing traffic noise conditions were assessed through a combination of measurements and modeling. The traffic noise assessment focused on the major roads that are of importance to the Preferred Alternative. The results of the traffic noise measurements taken within the project area are listed in **Table 3**.

Table 3. Noise Measurement Data

Date	Time	Location	L_{eq} (dBA)
2/1/06	3:40 pm	Rest Area (South of I-90)	62
2/1/06	4:12 pm	Piedmont Senior Center	64
2/1/06	4:47 pm	Stables Drive (Stagebarn Canyon Subdivision)	62

3.10.3 Noise Model Results

A noise model was developed in FHWA's TNM to evaluate existing conditions on a broader basis than allowed by the measurements alone. This traffic model used the major existing roads (I-90 and service roads) that could be affected by the project, with existing (2005) traffic volumes and road layouts.

Of the modeled receivers calculated, 54 have existing traffic noise above the respective NAC during the PM peak hour. There are 48 properties that currently exceed the Category B (homes) NAC and six that exceed the Category C (businesses) NAC along I-90. Category C areas by definition are less sensitive to traffic noise than Category B areas.

3.10.4 Environmental Consequences

2030 NO-ACTION ALTERNATIVE NOISE MODEL RESULTS

Of the model receivers calculated 121 would have traffic noise levels above the respective NAC during the PM peak hour for this scenario. These included both Category B properties (homes) and Category C (business) properties. No receivers were calculated to increase by 15 dBA.

Noise levels were estimated to exceed the Category B NAC for 107 residences along I-90. There were 14 Category C noise receivers which exceeded the NAC for businesses along I-90.

2030 PREFERRED ALTERNATIVE TRAFFIC MODEL RESULTS

Of the model receivers calculated, 156 would have traffic noise above the respective NAC during the PM peak hour under the Preferred Alternative. The receivers included both Category B properties (homes and churches) and Category C (business) properties. None of the receivers were predicted to increase by 15 dBA or more.

Noise levels were estimated to exceed the SDDOT Category B NAC for 141 residences along I-90 and exceed the Category C for 15 businesses along I-90. The Preferred Alternative was predicted to impact 102 more receivers than existing conditions and 35 more receivers than the No-Action Alternative.

Table 4. Traffic Noise Model Results

Alternative	Impacted Category B Receivers	Impacted Category C Receivers
Existing Conditions (2005)	48	6
No Action Alternative (2030)	107	14
Preferred Alternative (2030)	141	15

CONSTRUCTION NOISE

Adjoining properties in the project area could be exposed to noise from road construction activities when the Preferred Alternative is built. Construction noise differs from traffic noise in several ways:

- Construction noise lasts only for the duration of the construction event, with most construction activities in noise sensitive areas being conducted during hours that are least disturbing to adjacent and nearby residents;
- Construction activities generally are of a short term nature, and depending on the nature of the construction operations, could last from seconds (e.g., a truck passing a receiver) to months (e.g., constructing a bridge); and
- Construction noise is intermittent and depends on the type of operation, location, and function of the equipment, and the equipment usage cycle. Traffic noise, on the other hand, is present in a more continuous fashion after construction activities are completed.

3.10.5 Mitigation Measures

The traffic noise results indicated that 156 receivers would equal or exceed the SDDOT NAC under the Preferred Alternative. Therefore, traffic noise mitigation measures for the impacted areas were investigated. It is important to note that impacted areas are not guaranteed mitigation measures, but mitigation measures must be evaluated.

Noise barriers appeared to be the only viable noise mitigation action and were the only type of mitigation evaluated in detail. SDDOT's goal for noise barriers is a minimum noise reduction of 7 dBA. However, based upon SDDOT traffic noise mitigation guidelines it was determined that none of the impacted locations along I-90 are being recommended for noise mitigation. The overall feasibility and reasonableness of noise reduction actions that provide a minimum acceptable mitigation benefit for the impacted receivers were evaluated, and these actions were determined to be neither feasible nor reasonable based on SDDOT's criteria, for reasons further discussed in **Appendix B**.

To provide noise impact information that may be useful to Meade County for development planning reviews and considerations, the distances from the edge of the I-90 travel way to 66 dBA and 71 dBA noise levels were calculated for the Preferred Alternative for the year 2045.

Based upon the noise model described above, the 66 dBA noise contours are between 380 feet to 430 feet from I-90, and the 71 dBA noise contours are approximately 250 feet to 270 feet from I-90. Detailed noise contour mapping and discussion is provided in **Appendix B.** Future land uses that may be constructed within those distances could experience highway noise impacts in 2045.

The project area passes near several residential areas. To address the temporary elevated noise levels that may be experienced during construction, standard mitigation measures should be incorporated into construction contracts. These would include:

- Exhaust systems on equipment will be in good working order. Equipment would be maintained on a regular basis, and equipment may be subject to inspection by the project manager to ensure maintenance.
- Properly designed engine enclosures and intake silencers will be used where appropriate.
- New equipment would be subject to new product noise emission standards.
- Stationary equipment will be located as far from sensitive receivers as possible.
- Most construction activities in noise sensitive areas would be conducted during hours that are least disturbing to adjacent and nearby residents.

3.11 Floodplains

Federal Emergency Management Agency (FEMA) designated floodplains have been delineated for five creeks within the I-90 corridor: Morris Creek, Elk Creek, Little Elk Creek, Priest Canyon Creek, and Priest Canyon Creek Tributary 1. Thirteen drainage crossings of the five creeks have been identified along the I-90 corridor between MRM 40.0 and 46.0 (FHU, 2006). Additional drainages and proposed crossings exist within the corridor that do not have FEMA designated floodplains.

The *Interstate 90 Corridor Environmental Assessment – South Dakota Department of Transportation Floodplains and Drainage Report*, was prepared in support of this EA and provides a detailed and more technical analysis of floodplains within the project area (FHU, 2006).

Morris Creek is an intermittent stream that has a basin area of 2.4 square miles above I-90, passing from west to east under I-90 via a triple cell 8 foot by 6 foot (span X rise) Concrete Box Culvert (CBC) constructed in 1958. The existing structure was determined adequate to pass the 100-year flow of 1,024 cubic feet per second (cfs).

Elk Creek is an intermittent stream that has a basin area of 50 square miles above I-90. Flows pass from west to east under I-90 via a five-span 150 foot long bridge that was built in 1964. Elk Creek is in FEMA's flood Zone A which includes areas of the 100-year flood hazard area where base flood elevations have not been determined. The existing structure was determined to be inadequate to pass a 100-year flow of 10,530 cfs and it is expected that I-90 would be overtopped.

Little Elk Creek has a basin area of 16 square miles upstream of I-90 and passes from west to east via a 5 span 150 foot long bridge that is considered to be in fair to good condition. Little Elk Creek is in the designated FEMA flood Zone A. The existing structure was determined adequate to pass the 100-year flow of 2,506 cfs.

Priest Canyon Creek has a basin area of 1.7 square miles upstream of I-90. The structure at I-90 is currently a double cell 6 foot by 6 foot box culvert. This existing structure is inadequate to pass the 100-year flow of 1,215 cfs downstream and would overtop I-90 by about 0.5 feet. Priest Canyon Creek's crossing at I-90 is within FEMA designated floodplain Zone A4 where 100-year base flood elevations are shown.

Priest Canyon Creek Tributary 1 has a basin area of 0.8 square miles upstream of I-90 and has a structure that is 8 feet by 3 feet. The tributary is in the FEMA designated floodplain Zone A. The existing structure was determined adequate to pass the 100-year flow of 1,140 cfs.

3.11.1 Environmental Consequences

Based on the functional level design, it is anticipated that encroachment to the 100-year floodplain and varying impacts to floodplains would occur under the Preferred Alternative, as a result of widening I-90 and associated access roads; and from reconstruction of structures at Elk Creek, Priest Canyon Creek, and Priest Canyon Creek 1. Impacts to floodplains occur with bridge and culvert construction/rehabilitation or where roadway fill will encroach onto the flood fringe areas. Anticipated changes to floodplains will include filling where the widened roadway is adjacent to a floodplain and regarding at the structure entrances and exits. Quantitative estimates will be established during final design as detailed grading, toes of fill, and top of cut are available.

Under the No Action Alternative, the floodplains within the project area would remain unchanged.

3.11.2 Mitigation

The project will adhere to floodplain regulations that include Executive Order 11988 – Floodplain Management, which directs all federal agencies to avoid to the extent practicable and feasible all adverse impacts associated with floodplain modification. Also, the US Department of Transportation Order 5650.2, titled *Floodplain Management and Protection* will be followed. This requires proper consideration to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs and budget requests.

Any structure replacements will be designed to minimize disruption of the environment, have non-erosive velocities, adequate erosion protection, and backwater depths that will not flood adjacent structures. Adherence to the regulatory requirements identified above will ensure that the project does not have substantial impacts to floodplains. Any improvements to I-90 or the frontage road that impact FEMA regulated floodplains will coordinate with FEMA and will be designed accordingly.

3.12 Wetlands

Due to the early stage of this project, wetland areas were not formally delineated and jurisdictional determinations were not obtained from the U.S. Army Corps of Engineers (USACE). The project is currently at a functional level design. As the design is further refined, wetland impacts from the project will need to be coordinated with the USACE in order to obtain the appropriate permits for the project for wetland impacts. As portions of the Preferred Alternative are designed for implementation, coordination with the USACE and permits will be obtained for each phase.

Potential wetland areas were estimated based on the availability of geographic information system (GIS) data from the National Wetlands Inventory, general field observations, and aerial photograph interpretation. No attempt to determine jurisdictional status of wetlands was performed at this time. Impacts to potential wetlands are likely overestimated because of the conservative identification methodologies. As the level of design and the identification of wetlands increases, it is anticipated that the estimate of wetland impacts will decrease. The Preliminary Wetlands Findings Report is included in **Appendix C**. To date, the USACE, USFWS, and DENR have reviewed and provided input on the wetland Preliminary Wetlands Findings Report (**Appendix C**) based on the conceptual level design. Agency correspondence is included in **Appendix A.**

The wetlands in the project area fall into two general categories: 1) those associated with streams and drainages and 2) those associated with springs. Wetland vegetation in the project area are generally dominated by cattails (*Typha latifolia*). Wetlands associated with springs are supported by a relatively large volume of water from the springs. As with the other wetlands, cattails dominate the spring wetlands; however, wetland grasses can also occur within the wetlands associated with springs.

3.12.1 Environmental Consequences

Opportunities to avoid and minimize impacts to potential wetlands were considered and applied during development of the Preferred Alternative. At the current design phase, Elk Creek is proposed to have a bridge structure. Other crossings, such as Little Elk Creek, are proposed to have culverts or other structural components.

Based on the current level of roadway design and identification of wetlands, the Preferred Alternative would result in approximately 2.1 acres of potential wetlands being permanently impacted. **Figures 9** and **10** depict the location of the corridor and provide numeric identifications (Wetland ID) for the impacted wetlands. **Tables 5** through **7** show the impacts to potential wetlands from each project component by Wetland ID.

Table 5. Impacts to Potential Wetlands from I-90 Widening

Wetland ID	Wetland Type	Acres Present	Acres Impacted
5	Estimated Wetland	0.24	0.11
15	PABFh	0.94	0.051
Totals		**1.2**	**0.16**

PABFh = a diked/impounded palustrine, aquatic bed, and semipermanently flooded wetland

Table 6. Impacts to Potential Wetlands from North Alignment 4

Wetland ID	Wetland Type	Acres Present	Acres Impacted
29	Estimated Wetland	0.42	0.024
30	Estimated Wetland	0.49	0.039
31	Estimated Wetland	0.21	0.0041
59	Estimated Wetland	0.11	0.036
60	Estimated Wetland	0.05	0.017
61	Estimated Wetland	0.52	0.17
Totals		**1.8**	**0.29**

Table 7. Impacts to Potential Wetlands from South Alignment 1

Wetland ID	Wetland Type	Acres Present	Acres Impacted
1	Estimated Wetland	0.10	0.10
2	Estimated Wetland	0.023	0.023
3	Estimated Wetland	0.056	0.022
13	PABFh	0.81	0.46
17	PABFh	0.12	0.10
22	Estimated Wetland	5.5	0.79
25	Estimated Wetland	0.50	0.16
55	PEMC	0.098	0.019
Totals		**7.2**	**1.7**

PABFh = a diked/impounded palustrine, aquatic bed, and semipermanently flooded wetland
PEMC = a palustrine, emergent, seasonally flooded wetland

Table 8 presents areas of anticipated temporary impacts to wetlands. These potential wetland areas are adjacent to areas where asphalt from the current service roads would be removed.

Table 8. Temporary Impacts to Potential Wetlands

Wetland ID	Wetland Type	Acres Present	Acres Impacted
23	Estimated Wetland	5.5	0.035
24	Estimated Wetland	0.18	0.18
Totals		**5.7**	**0.22**

Under the No Action Alternative, the wetlands within the project area would remain unchanged.

3.12.2 Mitigation Measures

Two locations have been identified for mitigation for the potential permanent wetland loss of 2.1 acres. These locations are near Wetland 13 (Carter's Pond) and one-quarter mile northwest of Exit 46 (**Figure 9** and **10**). The two mitigation sites were deemed suitable because they are fed by springs to create/maintain the three characteristics of wetlands. The proposed mitigation areas have been preliminarily approved by the USACE. The combined proposed mitigation areas would result in a total of 2.0 to 2.25 acres of replacement wetlands. It should be noted that at this current level of wetland identification, the wetland impact numbers are likely overestimates; therefore, these mitigation sites should be sufficient in attaining the appropriate mitigation for the possible wetland impacts. When more detailed design and wetland identification become available, additional information, including contributing drainage areas, pipe sizing, and proposed grading drawings will be developed. The Preliminary Wetland Finding has been reviewed by the USACE, receiving preliminary concurrence. Correspondence and concurrence information from other resource agencies will be included in an appendix to the decision document (FONSI if no significant impacts).

The temporary impacts shown in **Table 8** will be minimized during construction and the wetlands will be restored to their natural conditions. Hydric soils will be stockpiled and re-distributed on the newly graded areas to assist in the re-establishment of wetlands, ensuring that the natural topography in the area is returned. Material identified in the application as removed waste material, material stockpiles, dredged or excavated material will be placed for either temporary or permanent disposal in an upland site that is not a wetland, and measures taken to ensure that the material cannot enter the watercourse through erosion or any other means.

3.13 Invasive Species

An invasive species is a species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic or environmental harm or harm to human health.

3.13.1 Environmental Consequences

Under the Preferred Alternative, construction activities would disturb soil and increase the potential for the spread of noxious weeds and other invasive plant species.

Under the No Action Alternative, invasive species within the project area may actually spread because weeds would continue to establish, uncontrolled in roadside areas.

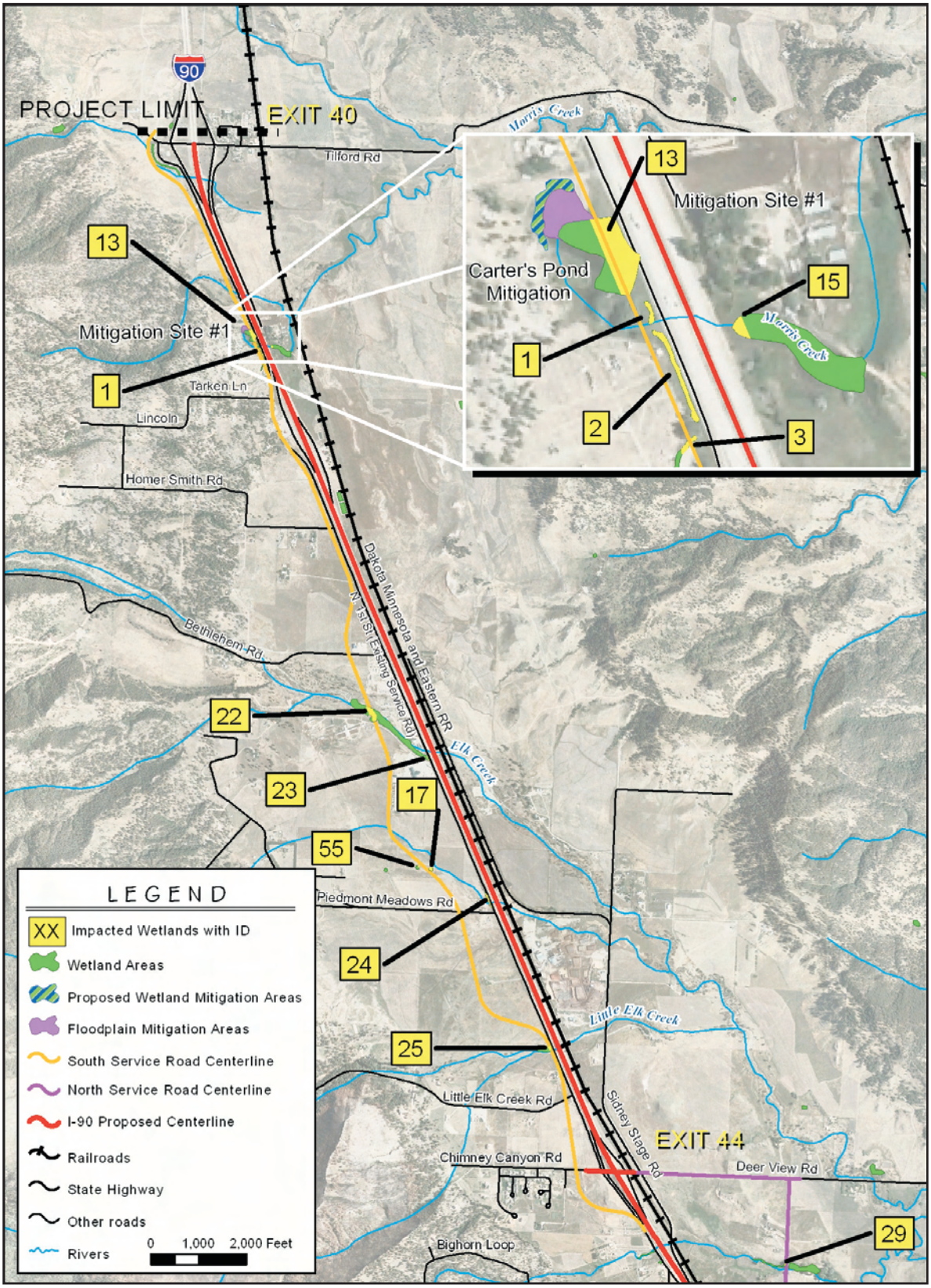

Figure 9

Wetlands Impacts - Project Area North

North

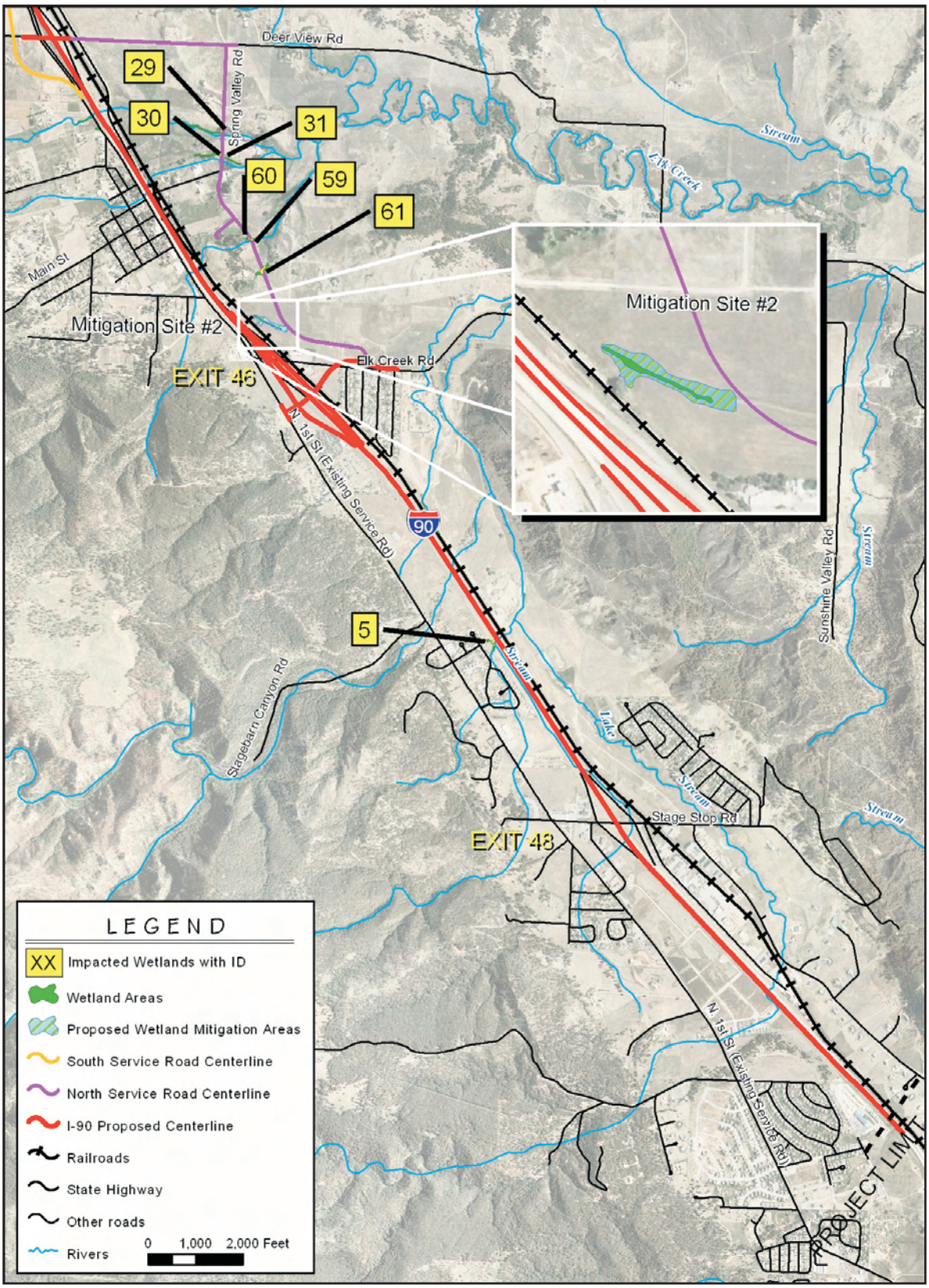

Figure 10

Wetlands Impacts - Project Area South

North

3.13.2 Mitigation Measures

The work limits will be seeded with mixtures that comply with South Dakota Seed Laws, which will reduce the potential for invasive plant infestation. The SDDOT will monitor post project revegetation, and will utilize herbicides in upland area to control the spread of invasive species. Spraying near wetland areas or water bodies will only use herbicides that are appropriate for use near wetlands or water bodies. Removal of vegetation will be confined to those areas absolutely necessary to construction.

3.13.3 Mitigation Measures

The work limits will be seeded with mixtures that comply with South Dakota Seed Laws, which will reduce the potential for invasive plant infestation. The SDDOT will monitor post project revegetation, and will utilize herbicides in upland area to control the spread of invasive species. Spraying near wetland areas or water bodies will only use herbicides that are appropriate for use near wetlands or water bodies. Removal of vegetation will be confined to those areas absolutely necessary to construction.

3.14 Historical and Cultural Resources

Intensive-level cultural resources surveys were completed in 2006 and 2007 by the State Archaeological Research Center (SARC) on behalf of SDDOT and FHWA (Bruce and Donohue 2006a, 2007). Additional studies were conducted by SARC in 2006 to evaluate the significance of specific historic structures (Hanson and Donohue, 2006) and archaeological sites (Bruce and Donohue, 2006b) subject to possible disturbance by the project. Additionally, two earthen dams were re-evaluated for significance by SARC in 2007 (Dasovich and Bruce, 2007). FHU also verified that the historic Custer Black Hills Expedition Trail did not enter into the project's Area of Potential Effect (APE).

FHWA initiated tribal consultations with Native American tribes who could have an interest in archaeological sites and traditional cultural properties located within or close to the project's APE. The tribes consulted include; Cheyenne River Sioux Tribe, Lower Brule Sioux Tribe, Oglala Sioux Tribe, Sisseton-Wahpeton Sioux Tribe, Standing Rock Sioux Tribe, and Three Affiliated Tribes. Only one response was received, from the Sisseton-Wahpeton Sioux Tribe, who requested (and was provided) a copy of the cultural resources survey report. No concerns or issues were raised by any of the tribes consulted. Section 106 correspondence between SDDOT, SARC, and the SHPO is provided in **Appendix A**.

3.14.1 Environmental Consequences

The Preferred Alternative would result in ground disturbance associated with construction, realignment, and improvement of roadways and associated features, and therefore has the potential to impact historic and archaeological resources. Because the Preferred Alternative is a federal undertaking, consideration of such impacts to significant historic and archaeological properties is mandated by federal legislation, including the National Historic Preservation Act of 1966 (as amended), and Section of the Department of Transportation Act.

Section 106 consultation was completed between SDDOT and the State Historic Preservation Officer (SHPO), to officially determine the National Register of Historic Places (NRHP)-eligibility of sites identified by the cultural resource surveys, and to determine the effects of the Preferred Alternative on NRHP-eligible cultural resources. One NRHP-eligible structure (MD-012-00002, a

dugout root cellar) was identified in the project's APE, along with eight unevaluated/potentially NRHP-eligible prehistoric archaeological sites (39MD724, 39MD725, 39MD728, 39MD730, 39MD731, 39MD102, 39MD111, and 39MD2003). The design of the Preferred Alternative avoids direct impacts to the NRHP-eligible dugout root cellar (MD-012-00002) as well as the eight unevaluated/potentially eligible prehistoric sites.

There are three railroad-related linear resources in the APE, including a short abandoned RR spur (39MD2003), an isolated segment of the abandoned Black Hills-Ft. Pierre-Deadwood RR (39MD2005), and the active DM&E Railroad which closely parallels I-90. After consultation with the SHPO, it was officially determined that railroad spur 39MD2003 is eligible for the NRHP under Criterion A, but lies outside the APE and would not be affected by the Preferred Alternative, thus, no determination of effect was made. The abandoned segment of 39MD2005 was re-evaluated for this project as a non-contributing portion of the overall eligible rail line, and it will not be impacted by the Preferred Alternative. SDDOT consulted with the SHPO and determined that the project would result in a *No Adverse Effect* to the entire abandoned railroad (39MD2005). This project will not adversely affect any 4(f) properties.

Under the No Action Alternative, the historical and cultural resources within the project area would remain unchanged.

3.14.2 Mitigation Measures

To insure the protection of these sites from project impacts, including staging areas for heavy equipment and materials storage, on-the-ground mitigation measures will be implemented to clearly delineate the boundaries of all unevaluated and eligible sites for complete avoidance. Given these protective measures, the SHPO concurred with FHWA's determination of No Adverse Effect for this undertaking on September 17, 2007.

3.15 Wildlife and Threatened and Endangered Species

The project area lies along the boundary between the Rocky Mountains and the Great Plains. I-90 lies in a shallow valley with ponderosa pine and a mixture of deciduous trees at higher elevations, and a mixture of rangeland and grasslands in the valley bottom. The rangelands and grasslands are a mixed mid-grass prairie with deciduous trees occurring along drainage ways and streams. The prairie has a well-balanced supply of moisture, with seasonally flowing streams and creeks. The Preferred Alternative would occur in the rangeland and grassland areas.

The project area has been disturbed from its natural condition through residential and commercial development, farming, and livestock grazing. The residential and commercial development is limited, however, the distribution has fragmented wildlife habitat to an extent. Due to the size of the project corridor habitat is provided for a number of wildlife species.

Tree stands were identified in areas throughout the corridor which may be designated for removal during project construction and could, potentially, be used as nesting sites by migratory bird species such as hawks, owls and various songbirds. Migratory birds are protected by the Migratory Bird Treaty Act (MBTA) of 1918.

SDDOT conducted an analysis of threatened or endangered species (T&E species) known to occur in Meade County, which determined that: whooping crane (*Grus americana*—endangered), bald eagle (*Haliaeetus leucocephalus*—threatened), and the least tern (*Sterna*

antillarum—endangered) may occur within the project area (USFWS, 2006). Since the time of the T&E species analysis, the bald eagle has been removed from the Federal T&E species list. The project area is within the area of coverage of the Programmatic Biological Opinion (BO): *Stream-Crossing Projects Administration/Funded by the South Dakota Department of Transportation and Federal Highway Administration* (USFWS, 2004). Correspondence that occurred as part of the T&E consultation is included in **Appendix A**.

3.15.1 Environmental Consequences

The majority of impacts to wildlife habitat would occur as a result of the North and South Service Road realignments associated with the Preferred Alternative (South Alignment 1, and North Alignment 4). Habitat loss and fragmentation due to roads can affect wildlife by disrupting natural movement patterns, which can result in collisions with vehicles as wildlife move across the roadway. From January 1, 2004 to December 31, 2006, 42 percent of 217 total accidents on I-90 within the project area were due to animal-vehicle collisions (SDDPS, 2007). Although the type of animals involved in the accidents were not reported, collisions with deer and other large mammals can cause severe damage to vehicles, and injury or death to wildlife and motorists. Roads can also cause impediments to movement for many other species, including reptiles, birds, amphibians, and small and medium-sized mammals, such as rodents, fox, raccoons, and coyote. However, the number of accidents involving these species is typically under-reported. Consequently, in the absence of mitigation measures, as the traffic volumes and the roadway footprint increase, the impacts to wildlife species, particularly as a result of animal-vehicle collisions, are expected to increase.

In accordance with section 7 of the Endangered Species Act of 1973, as amended (26 U.S.C. 1531 et seq.), the US Fish and Wildlife Service (USFWS) concluded that the Preferred Alternative would have “no effect” on the least tern and the whooping crane and “may affect, not likely to adversely affect” the bald eagle (USFWS, 2006). It should be noted that since this consultation, the bald eagle has been removed as a federal T&E species. Three programmatic BO forms were submitted to the USFWS and approved with the condition that certain mitigation measures are adhered to during construction. These are presented in the following section.

Adherence to the requirements of the MBTA (16 USC 703-711) and its associated amendments, Executive Order 13186, and USFWS regulations should result in the avoidance of most impacts to migratory birds. Impacts to migratory birds also result from the loss of some feeding, resting and nesting habitat associated with the removal of trees, some wetlands and some open prairie habitat.

Under the No Action Alternative, animal vehicle collisions within the project area would continue to occur and potentially at a higher rate than the Preferred Alternative, assuming that mitigation measures discussed below for the Preferred Alternative are implemented.

3.15.2 Mitigation Measures

Incorporating wildlife mitigation measures into the project can increase driver safety, and reduce impacts to wildlife species, by providing alternate means of passage across the roadway. For instance, bridge structures over creeks and natural drainages can be designed to accommodate wildlife by providing a ‘dry’ passage for terrestrial species along one side or both sides of the structure. When designing a structure to accommodate wildlife movement, it is important to consider the species of concern, since species have different preferences for structure sizes and characteristics. When designing appropriate structures to accommodate wildlife,

consultation with the South Dakota Department of Game, Fish and Parks and USFWS is recommended. While wildlife mitigation is currently not required by the USFWS, it should be considered during final design as a safety enhancement for the corridor, particularly where such mitigation can be included at minimal or reasonable cost.

Vegetation removal activities will be timed to the extent possible to avoid the migratory bird breeding season (April 1 through August 15). Areas that must be scheduled to have vegetation removed between April 1 and August 15 will be surveyed for nests and cleared by a qualified biologist prior to the initiation of work, and a migratory bird nest depredation permit under the MBTA will be obtained (if necessary), or appropriate inactive nest removal and hazing/exclusion measures will be incorporated into the work to avoid the need to disturb active migratory bird nests.

The following mitigation measures for the Elk Creek and Little Elk Creek crossings have been identified by the USFWS to comply with the programmatic BO:

- Instream work will not be undertaken during fish spawning periods.
- Stream bottoms and wetlands impacted by construction activities will be restored to pre-project elevations.
- Removal of vegetation and soil will be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible.
- Grading operations and reseeding of native species will begin immediately following construction.
- Trees and/or brush may be impacted by the project will be replaced at a ratio of at least 2:1 acres planted versus acres impacted and will be incorporated into mitigation plans for the project.
- All fill material will be free of substances in quantities, concentrations, or combinations which are toxic to aquatic life (SDDENR, 2006)

SDDOT will provide and submit individual report forms for each of the completed crossing structures (Elk Creek, Little Elk Creek, and Morris Creek) to USFWS to comply with the reporting requirements for the programmatic BO.

Even though the bald eagle is no longer a federal T&E species, it is still afforded protection under the Bald and Golden Eagle Protection Act and the MBTA. If an occupied bald eagle nest is within one-mile of the construction site, then the project will comply with the guidelines presented in National Bald Eagle Guidelines (USFWS, 2007). Additionally, SDDOT will preserve any tree with active or unoccupied eagle nests.

3.16 Visual Resources

The I-90 corridor is situated within a valley that lies in the Black Hills mountain range. The I-90 corridor is characterized by the Black Hills landform in the background, which is a linear feature along the east and west side. I-90 generally follows the natural diagonal lines in the natural valley floor. The Black Hills transition from steep hills/ridges covered with stands of coniferous trees to rolling hills with a prairie type landscape. Areas immediately adjacent to the Preferred Alternative are generally low-lying, marked with deciduous trees, prairie grasses, and transected by several creeks. The valley varies in width throughout the corridor with the proximity of the Black Hills being narrow on the southeast end and widening toward the northwest end of the corridor.

The right-of-way expansion associated with widening I-90 along the mainline from a 4-lane to a 6-lane design configuration would widen the highway to a 180-foot typical section. The mainline reconstruction would generally be centered on the existing alignment with slight shifts in some areas but would increase the scale and visual dominance of the highway in the landscape.

3.16.1 Environmental Consequences

The degree to which the I-90 mainline realignment would affect visual resources within the corridor depends on the amount of visual contrast that is created by project components in relation to the existing landscape character. A change in the highway location may affect both the view of the highway from nearby residences and overlooks, and the view from drivers on the highway. However, the widening of I-90 would potentially improve the driving experience and therefore, increase the value of scenic driving.

Realignment of the South Service Road under the Preferred Alternative would require up to 100 feet of new right of way in areas where there currently is no road. The South Service Road would impact the natural prairie vegetation and land use in areas. Several residences, facilities, and business' including; a rest stop and campground, currently have unobstructed views of prairie/grassland in the foreground and the Black Hills in the background. The realignment of the South Service Road would impact the quality of the scenery as viewed from several locations.

The North Service Road under the Preferred Alternative would require up to 100 feet of new right-of-way in areas where there currently is no road. Construction of the North Service Road, specifically the southern portion, would impact natural prairie and riparian vegetation along the road. The visual character of the North Service Road would change the existing roads (Deer View Road and Spring Valley Road) from relatively narrow rural road corridor utilized to access several residences, to a Service Road providing through access between Exit 44 and Exit 46. While the North Service Road would still be utilized to access local residences and businesses it would be replacing the existing service road alignment. The expanded roadway footprint would change the rural character to some extent; however, it is expected to provide motorists with an improved driving experience since existing gravel roads (North Service Road) in areas may be paved and striped.

Under the No Action Alternative, the visual resources within the project area would remain unchanged.

3.16.2 Mitigation Measures

The visual impact of the Preferred Alternative can be minimized utilizing roadway components that blend with the existing landscape. Roadside vegetation removed as part of the project will be minimized where possible.

3.17 Energy Consumption

The primary energy consideration is the use of petroleum and other fuels to power vehicles using, constructing, and maintaining the corridor's transportation facilities.

3.17.1 Environmental Consequences

The Preferred Alternative is not expected to cause major increases in energy consumption. Construction associated with the Preferred Alternative would increase energy consumption over the short-term; however, long-term consumption is expected to remain unchanged.

Under the No Action Alternative, the energy consumption within the project area would remain unchanged.

No mitigation measures were recommended, or determined to be required, for energy consumption.

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4.0 CUMULATIVE IMPACTS

This section outlines potential cumulative impacts related to the Preferred Alternative described in this EA. Cumulative impacts are defined in the CEQ guidance as:

"The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions and regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time ". (40 CFR § 1508.7)

The following have been identified as the resources to be considered for cumulative impacts, on the basis of the environmental consequences of implementing the Preferred Alternative as described in *Chapter 3*:

- Land Use
- Farmland
- Acquisition and Relocation
- Noise
- Wetlands
- Wildlife and Threatened and Endangered Species

4.1.1 Past and Present

The DM&E Railroad, previously the Chicago and North Western Railway, has been present within the project area since the mid-1800s. Historical residential and commercial development within the project area most likely began with the presence of the railroad and has continued over the past 50 years, since construction of I-90 through the project area.

4.1.2 Other Future Transportation Projects

In 2006, the *I-90 Exit 51 at Black Hawk Reconstruct Interchange, Structures and Mainline* EA and FONSI was completed (FHWA, 2006a; 2006b). This project will redesign the sharp I-90 S-curve and will replace the split-ramp configuration on Exit 51 with a diamond interchange. This project is expected to start construction in spring 2008. Impacts from this project include the displacement of four residences, temporary air and noise impacts, and 2.6 acres of impact to wetlands. Impacts from the Exit 51 project would be offset by established mitigation measures.

4.1.3 Cumulative Impacts Evaluation

LAND USE

Land use patterns have changed continually, with more recent decades experiencing more rapid growth and change. The establishment of small towns and communities, such as Piedmont, within the corridor has changed the character of the valley over time. Regardless of whether or not the Preferred Alternative is constructed, it is expected that a portion of the land within the project area would be converted to residential and commercial purposes over time.

FARMLAND

Future commercial and residential development, including roads, have the potential to impact and convert prime and unique farmland. The *I-90 Exit 51* EA/FONSI did not predict any significant impact on prime and unique farmlands, as defined by the NRCS. Construction of the Preferred Alternative is expected to contribute a negligible cumulative amount of prime and unique farmland conversion.

ACQUISITION AND RELOCATION

The I-90 Exit 51 project is predicted to require displacement of four residences, several outbuildings, and no businesses. In addition, the Preferred Alternative would contribute to one additional residential displacement. The project area has sufficient housing available for displaced residents to relocate and therefore is not a substantial cumulative impact.

NOISE

Continuing traffic volume increases due to growth and development in the region have contributed to the existing noise environment and would contribute with or without implementation of the Preferred Alternative. The future noise levels in the preceding EA sections have been projected using the typical 20-year planning horizon from start of construction, which is Year 2030 traffic. However, the uncertainty surrounding project funding and timing also causes uncertainty in selecting the design year, so for project thoroughness and to provide Meade County with the best planning data, Year 2045 traffic noise conditions were also examined.

The noise impact and mitigation analyses for the future building condition used a 6-lane profile for I-90 with Year 2030 traffic. For noise analysis purposes, the 4-lane versus 6- lane I-90 profile matters only for receivers very close to I-90, in which case the 6-lane would be worse. Receivers close to I-90 are identified as impacted regardless of the number of lanes; as the traffic volume matters more. There are concerns with identifying 2045 as the "design year" rather than 2030, namely the lack of a firm date for widening of I-90 to 6-lanes and the uncertainty in predicting traffic volumes 40 to 50 years into the future without the presence of a long term development plan. Nevertheless, a decision was made to perform the impact/mitigation analysis for 2030 (6-lane) and to develop noise contour maps for 2045 (**Appendix B**) to support long-term planning in the project corridor.

In cumulative terms, future noise impacts can be avoided or minimized if future development efforts are sensitive to placement of residential and commercial properties in relation to existing and planned transportation facilities.

WETLANDS

Cumulative impacts to wetlands have occurred in the project area over time due to land development and construction of transportation facilities. Future development and transportation projects may cause additional wetland impacts. The I-90 Exit 51 project is expected to impact 2.6 acres of wetlands. In addition, the Preferred Alternative is expected to impact 2.1 acres of wetlands. The total loss of wetlands is expected to be mitigated; therefore, no substantial loss of wetlands is expected.

WILDLIFE AND THREATENED AND ENDANGERED SPECIES

Transportation and development projects (past, present, and future) are expected to contribute to wildlife habitat fragmentation and reduction of suitable habitat. Expansion and construction of roads typically causes an increase in traffic on roads and thereby contributes to an increase in wildlife killed on the road. Development projects (i.e. residential, commercial) causes displacement of wildlife through removal of habitat. Construction of the I-90 widening and realignment of the North and South Service Roads would contribute to a wider roadway footprint, therefore, continued mortality from vehicle collisions is expected. However, an increase in mortality is difficult to predict.

4.1.4 Conclusions Regarding Cumulative Impacts

In summary, implementation of the Preferred Alternative would have a minor contribution to cumulative impacts since the majority of impacts will be offset with mitigation measures or are expected to remain unchanged.

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5.0 COORDINATION

In accordance with NEPA requirements, the project team coordinated with the public, and local, state, and federal agencies that were determined to have specific technical expertise and regulatory oversight on various environmental issues and potential impacts associated the Preferred Alternative.

5.1 Public

Public involvement activities to date have included three public meetings, individual meetings with property and business owners, a project website, and three newsletter mailings.

A website was established in 2006 to provide public access to information on the project, including alternatives development, screening, and meetings. The website address is www.i90corridor.com. The website was updated in July 2008..

Newsletters were mailed to the public prior to the three public meetings. The newsletters were mailed in January and April of 2006, and July 2008.

Meetings with the public occurred during key points in the process to provide input into the alternative development and selection of the Preferred Alternative. Meeting summaries are provided below.

February 2, 2006 – The first open house public meeting for the I-90 EA was held to gather public input on any issues along the project corridor, such as alternative service road realignments, access to properties, safety, traffic operations, and potential environmental impacts. It was held at the Stage Stop reception hall near Exit 48.

About 85 people signed in at the door. Two 25-minute presentations, held at 4:00 and 6:30 pm, presented the proposed project's purpose, process and schedule. There were many informal one-on-one discussions between citizens and SDDOT and consultant personnel, who discussed alternatives, listened to input, and answered questions.

April 25, 2006 – A second in a series of three meetings was held to get more public input on the preferred service road alignments and the reconstructed interchanges, as well as any other issues of interest along the corridor. About 75 citizens signed in at the door. Two brief presentations were made on the project's purpose, process, and schedule.

Written comments were collected at both public meetings and were considered throughout the alternative selection process. Comments generally expressed interest in the placement of the North and South Service Roads.

August 12, 2008 – The third meeting was to present the Preferred Alternative and Final Draft EA to the public and to receive any further comments on the alignment. About 45 people signed in at the door. One presentation was given and then time was allowed for verbal public comment.

Written comments were received from nine individuals and generally were regarding the right-of-way acquisition process and potential impact to property improvements. Several questions were received regarding the schedule of the project, and estimated timeframe for construction.

Written comments are being addressed by SDDOT in the form of letter communication to each commenter.

5.2 Agency

The lead agency for the project is FHWA, and SDDOT is the applicant agency. A Corridor Steering Committee was convened with representatives of FHWA, SDDOT, Meade County, City of Summerset (with technical support from FHU). In addition to the Corridor Steering Committee, several other agencies were consulted during the course of the project.

- Natural Resources Conservation Service
- South Dakota Department of Tourism and State Development – State Historic Preservation Officer
- South Dakota Department of Environment and Natural Resources (SDDENR) – Department of Environmental Regulation
- United States Department of the Interior Fish and Wildlife Service – Biological Opinion
- South Dakota Department of Game, Fish and Parks
- United States Army Corps of Engineers

The SDDENR supplied correspondence indicating that they had no objections to the Preferred Alternative, so long as it did not result in any violations of applicable local, state, or federal statutes or regulations (**Appendix A**).

6.0 MITIGATION SUMMARIZATION

Table 9 summarizes the mitigation measures for the Preferred Alternative. Mitigation measures were not identified or deemed necessary for the following resources:

- Land Use
- Farmland
- Socioeconomics and Environmental Justice
- Joint Development
- Pedestrian and Bicyclists
- Energy Consumption
- Cumulative Impacts

Table 9. Summary of Mitigation Measures

Environmental Resource	Mitigation Measure
Acquisition and Relocation	▸ For any person(s) whose real property interests may be impacted by the Preferred Alternative, the acquisition of those property interests will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, (Uniform Act). ▸ Federal policy will be followed for the acquisition of billboards.
Surface Water Quality	▸ Reduce soil loss from the construction site to the maximum extent practicable as outlined in the SDDOT Erosion Control manual. This includes the use of erosion control blankets, rock check dams, silt fence, floating silt curtains, and temporary diversion channels. Other methods may be used if approved by SDDOT. ▸ Improve the water quality of storm runoff to the maximum extent practicable by seeding and mulching disturbed areas that are not to be paved. Other methods may be used if approved by SDDOT. ▸ Prevent accumulations of soil and debris in the storm drainage system of the SDDOT right-of-way originating from construction activity by the use of mulching disturbed area that are not to be paved. Other methods may be used if approved by SDDOT. ▸ Prevent discharges of chemicals, chemical wastes, and other pollutants from leaving the construction site. All of these will be stored or handled in a covered area within the project limits. The covered area will be designed to confine the spill for immediate removal and disposal at a suitable place. All spills will be reported to the SWMP Administrator. Fertilizer should not be delivered to the site until just prior to application. Absorbents for fuel areas and containers for used absorbents will be available. The SDDENR must be notified immediately if possible but no later than twenty-four (24) hours of any spill of twenty-five gallons or larger. In the event of a major spill, the National Spill Response Hot Line must be contacted (toll free (800) 424-8802

Environmental Resource	Mitigation Measure
	or web site at http://www.nrc.uscg.mil/nrchp.html). ▸ Prevent migration of construction debris off site. This will be achieved by utilizing the erosion control methods outlined above. ▸ Prevent damage to properties adjacent to the construction site arising from sediment, debris, chemical wastes or other pollutants. This will be achieved by utilizing the erosion control methods outlined above. ▸ Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges associated with construction activities. Additional information can be obtained from the SDDENR. ▸ Protect state waters and wetlands from damage caused by erosion, sedimentation, chemical wastes, or other pollutants arising from construction activity. Wetland impacts will be avoided when possible. Any impacts near wetlands will have measures that protect the wetlands from construction activities, erosion and sedimentation as described above. ▸ All newly created and disturbed areas above the ordinary high water mark which are not riprapped will be seeded or otherwise revegetated to protect against erosion.
Air Quality	▸ Keep engines and exhaust systems on equipment in good working order. Maintain equipment on a regular basis, and subject equipment to inspection by the project manager to ensure maintenance. ▸ Control fugitive dust systematically through diligent implementation of a dust control plan. ▸ Prohibit excessive idling of inactive or unnecessary equipment or vehicles. ▸ Locate stationary equipment as far from sensitive receivers as possible.
Hazardous Waste	▸ Should any hazardous waste be generated during the implementation of this project, the generator must abide by all applicable hazardous waste regulations found in ARSD 74:28 and 40 CFR Part 262. ▸ If any contamination is encountered during construction activities, the contractor, owner, or party responsible for the release must report the contamination to the Department of Environment and Natural Resources at (605) 773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements. ▸ Methods will be implemented to minimize the spillage of petroleum oils and lubricants used in vehicles during construction activities. If a discharge does occur, suitable containment procedures such as banking or diking will be used

Environmental Resource	Mitigation Measure
	to prevent entry of these materials in the waterway. ▸ Final engineering drawings will indicate areas where mining activities have historically occurred and where the potential for unknown mine shafts exists. Standard safety precautions should be taken during construction in areas where the potential to encounter mine shafts exists. ▸ Hazardous materials investigations generally are valid for one year from completion. It is recommended that an updated hazardous materials investigation occur during final design and prior to construction.
Noise	▸ Exhaust systems on equipment will be in good working order. Equipment would be maintained on a regular basis, and equipment may be subject to inspection by the project manager to ensure maintenance. ▸ Properly designed engine enclosures and intake silencers will be used where appropriate. ▸ New equipment would be subject to new product noise emission standards. ▸ Stationary equipment will be located as far from sensitive receivers as possible. ▸ Most construction activities in noise sensitive areas would be conducted during hours that are least disturbing to adjacent and nearby residents.
Floodplains	▸ The project will adhere to floodplain regulations that include Executive Order 11988 – Floodplain Management, which directs all federal agencies to avoid to the extent practicable and feasible all adverse impacts associated with floodplain modification. Also, the US Department of Transportation Order 5650.2, titled *Floodplain Management and Protection* will be followed. This requires proper consideration to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs and budget requests. ▸ Any structure replacements will be designed to minimize disruption of the environment, have non-erosive velocities, adequate erosion protection, and backwater depths that will not flood adjacent structure. Adherence to the regulatory requirements identified above will ensure that the project does not have substantial impacts to floodplains. Any improvements to I-90 or the frontage road that impact FEMA regulated floodplains will coordinate with FEMA and will be designed accordingly.
Wetlands	▸ Two locations have been identified for mitigation for the potential permanent wetland loss of 2.1 acres. These locations are near Wetland 13 (Carter's Pond) and one-quarter mile northwest of Exit 46. The two mitigation sites were deemed suitable because they are fed by springs to create/maintain the three characteristics of wetlands. The combined proposed mitigation

Environmental Resource	Mitigation Measure
	areas would result in a total of 2.0 to 2.25 acres of replacement wetlands. ▸ Wetlands impacts will be minimized during construction and restored to their natural conditions through the planting of wetland species and ensuring that natural topography in the area is returned. ▸ All material identified in the application as removed waste material, material stockpiles, dredged or excavated material will be placed for either temporary or permanent disposal in an upland site that is not a wetland, and measures taken to ensure that the material cannot enter the watercourse through erosion or any other means (SDDENR, 2006).
Invasive Species	▸ The work limits will be seeded with mixtures that comply with South Dakota Seed Laws, which will reduce the potential for invasive plant infestation. ▸ The SDDOT will monitor post project revegetation, and will utilize herbicides in upland area to control the spread of invasive species. ▸ Spraying near wetland areas or water bodies will only use herbicides that are appropriate for use near wetlands or water bodies. ▸ Removal of vegetation will be confined to those areas absolutely necessary to construction
Historical and Cultural Resources	▸ The design of the Preferred Alternative avoids direct impacts to the NRHP-eligible dugout root cellar (MD-012-00002) as well as the eight unevaluated/potentially eligible prehistoric sites. To insure the protection of these sites from project impacts, including staging areas for heavy equipment and materials storage, on-the-ground mitigation measures will be implemented to clearly delineate the boundaries of all unevaluated and eligible sites for complete avoidance. Given these protective measures, the SHPO concurred with FHWA's determination of No Adverse Effect for this undertaking on September 17, 2007.
Wildlife and Threatened and Endangered Species	▸ Vegetation removal activities will be timed to the extent possible to avoid the migratory bird breeding season (April 1 through August 15). Areas that must be scheduled to have vegetation removed between April 1 and August 15 will be surveyed for nests and cleared by a qualified biologist prior to the initiation of work, and a migratory bird nest depredation permit under the MBTA will be obtained (if necessary), or appropriate inactive nest removal and hazing/exclusion measures will be incorporated into the work to avoid the need to disturb active migratory bird nests. ▸ Instream work will not be undertaken during fish spawning periods. ▸ Stream bottoms and wetlands impacted by construction activities

Environmental Resource	Mitigation Measure
	will be restored to pre-project elevations. ▸ Removal of vegetation and soil will be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible. ▸ Grading operations and reseeding of native species will begin immediately following construction. ▸ Trees and/or brush impacted by the project will be replaced at a ratio of at least 2:1 acres planted versus acres impacted and will be incorporated into mitigation plans for the project. ▸ All fill material will be free of substances in quantities, concentrations, or combinations which are toxic to aquatic life (SDDENR, 2006) ▸ If an occupied bald eagle nest is within one-mile of the construction site, then the project will comply with the guidelines presented in National Bald Eagle Guidelines (USFWS, 2007). ▸ SDDOT will preserve any tree with active or unoccupied eagle nests.
Visual	▸ The visual impact of the Preferred Alternative can be minimized utilizing roadway components that blend with the existing landscape. Roadside vegetation removed as part of the project will be minimized where possible.

ADDITIONAL MITIGATION RECOMMENDATIONS:

Some mitigation measures are not required by state and federal agencies (i.e. USFWS), however, would serve to enhance the safety of the corridor. Such mitigation measures can be incorporated during final design where such mitigation is minimal or has a reasonable cost. The following mitigation measures were identified because of their potential to enhance the driver safety of the corridor and, while not required, should be considered during final design:

- Incorporate into the design, bridge structures over creeks and natural drainages to accommodate wildlife by providing a 'dry' passage for terrestrial species along one side or both sides of the structure.
- To maximize the use of bridge structures for wildlife movement, standard game fencing (8 feet) should be incorporated into the structure design to help guide animals to the structure. When designing a structure to accommodate wildlife movement, it is important to consider the species of concern, since species have different preferences for structure sizes and characteristics. When designing appropriate structures to accommodate wildlife, consultation with the South Dakota Department of Game, Fish and Parks and USFWS is recommended.

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7.0 REFERENCES

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APPENDIX A AGENCY CORRESPONDENCE

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

July 16, 2008

Alex Pulley
Felsburg Holt & Ullevig
6300 South Syracuse Way
Suite 600
Centennial, CO 80111

Dear Mr. Pulley:

This letter is in regards to the I-90 Environmental Assessment Meade County – Wetland Mitigation Finding Report dated May 28, 2008. After reviewing the report it appears the wetland mitigation sites will be sufficient to mitigate any surface water impacts from the project. Thank you for contacting the South Dakota Department of Environment and Natural Resources concerning this report.

Sincerely,

John Miller
Environmental Program Scientist
Surface Water Quality Program
Phone: (605) 773-3351

-----Original Message-----
From: Natalie_Gates@fws.gov [mailto:Natalie_Gates@fws.gov]
Sent: Wednesday, July 16, 2008 11:03 AM
To: Alex.Pulley
Subject: I-90 preliminary wetland mit. plans

Hi Alex,

I've reviewed the preliminary plans to mitigate for wetland impacts along the I-90 corridor in Meade County, SD, sent by your office on June 3, 2008. As noted in your document and per our phone conversations, important details are lacking at this point and you are currently only seeking initial input regarding potential value of the mitigation sites. There were no photos provided, your document contains limited detail regarding construction actions associated with the mitigation, and there's no discussion of long-term monitoring/contingency plans. Additionally, the exact acreage of wetland impacts has not yet been determined. Accordingly, I can only provide general information regarding the proposed sites and plans:

- Given that the sites are spring-fed, it appears the water source will be reliable, assuming the project itself does not impact the springs.
- Grading to enlarge existing wetlands and subsequently spreading existing seedbed materials within the created areas should be helpful to establish vegetation, as noted in your document.
- Note that there is the potential for increased wildlife/vehicle interactions via this expansion of wetland habitats immediately adjacent to the interstate, thus it may be prudent to consider off-site mitigation for this project.
- Although the level of wetland impact is not yet quantified, USFWS recommends a 2:1 mitigation ratio when new wetland acres will be established and 1:1 if wetland acres will be restored.
- "Guidelines for Restoring and Creating Wetlands Associated with Highway Projects in South Dakota" is a valuable resource for practices to implement for this project. This publication (authors Charles Berry and Sara Juni, published in 2000) should be available from the SDDOT and/or the South Dakota Cooperative Fish & Wildlife Research Unit at South Dakota State University.

Thank you for the opportunity to provide early input on this project. Per our phone conversation, I look forward to additional coordination on this project as the details evolve.

-Natalie Gates

Natalie Gates
U.S. Fish and Wildlife Service
Ecological Services, South Dakota Field Office
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501
Phone: (605) 224-8693 x234
Fax: (605) 224-9974
Email: Natalie_Gates@fws.gov

-----Original Message-----
From: Kutz, Carolyn M NWO [mailto:Carolyn.M.Kutz@usace.army.mil]
Sent: Friday, May 09, 2008 10:07 AM
To: Alex.Pulley
Subject: RE: SDDOT I-90 EA

Alex:

Tom Lowin and I have both reviewed the EA you sent us and we think it looks good. When the 404 permit application is submitted to us we will just adapt the EA for our purposes and the mitigation seems to be reasonable at this time. The final project, of course, could change the mitigation needs, but that can be evaluated at that time.

Carolyn Kutz
SD Regulatory Office
28563 Powerhouse Road, Rm 118
Pierre, SD 57501
605-224-8531

-----Original Message-----
From: Alex.Pulley [mailto:Alex.Pulley@FHUENG.COM]
Sent: Tuesday, April 29, 2008 9:28 AM
To: Kutz, Carolyn M NWO
Subject: RE: SDDOT I-90 EA

Hi Carolyn,

I was following up to see if I could get your thoughts on the wetland mitigation areas. Please feel free to call and we can discuss, if that helps.

Take care,

Alex

Alex Pulley

Environmental Scientist

Felsburg Holt & Ullevig

303-721-1440

alex.pulley@fhueng.com <blocked::mailto:alex.pulley@fhueng.com>

DEPARTMENT OF GAME, FISH AND PARKS
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

April 25, 2006

Mr. Gregg Mugele
Felsburg, Holt & Ullevig
6300 South Syracuse Way, Suite 600
Centennial, CO 80111

RE: I90 Environmental Assessment: Exit 40 to Mile Marker 50 in Meade County
Relocate I90 Service Roads, Reconstruct I90's 4-Lanes to allow for future 6-Lane Section, Reconstruct interchanges at Exits 44 and 46
FHU Project No. 05-235

Dear Mr. Mugele:

This letter is in response to your request for environmental comments regarding the above referenced project which involves construction activities on Interstate 90 from Exit 40 to Mile Marker 50 in Meade County, South Dakota.

According to the National Wetland Inventory maps, wetlands may exist within the project area. If a project may impact wetlands or other important fish and wildlife habitats, the South Dakota Department of Game, Fish and Parks, Division of Wildlife, first recommends avoidance of these areas, if possible; followed by minimization of adverse impacts to these areas; then replacement of any lost acres. All project alternatives should be considered and the least damaging practical alternative selected. If impacts to wetlands are determined to be unavoidable, a mitigation plan addressing the number and types of impacted acres and methods of replacement should be submitted to the resource agencies for review.

Best management practices, including sediment and erosion control measures, should be included in the project design and implemented effectively on-site where needed. Additional detailed comments may be provided by this Department as the project plans develop further.

Thank you for the opportunity to provide comments on this project. If you have any questions, or if the project design changes, please contact me at (605) 773-6208.

Sincerely,

Leslie Petersen

Leslie Petersen
Aquatic Resource Coordinator

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

June 30, 2006

Mr. Alex Pulley
Felsburg Holt & Ullevig
6300 South Syracuse Way, Suite 600
Centennial, Colorado 80111

Re: Review of Interstate 90 Reconstruction, Exit 40 to Mile Marker 50, Meade County, South Dakota, for Inclusion Under the Formal Programmatic Biological Opinion: Stream-Crossing Projects Administered/Funded by the South Dakota Department of Transportation and Federal Highway Administration dated April 28, 2004, and Amended August 23, 2004 (Log #04-0210)

Dear Mr. Pulley:

This letter is in response to your May 23, 2006, proposal on behalf of the South Dakota Department of Transportation (SDDOT) to include the above referenced project, which includes three stream-crossings, under the formal programmatic Biological Opinion (BO): Stream-Crossing Projects Administered/Funded by the South Dakota Department of Transportation and Federal Highway Administration. The U.S. Fish and Wildlife Service (Service) has reviewed the information submitted for these projects in your letter received by this office on May 26, 2006, and in your electronic mail received on June, 26, 2006. This response is provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.).

The Service's April 28, 2004, BO analyzed SDDOT/Federal Highway Administration (FHWA) stream-crossing projects conducted throughout the state of South Dakota (with exception of projects affecting the Missouri River) and the effects of those projects on the federally listed threatened and endangered species of South Dakota. A complete administrative record for this consultation is available in our office.

Proposed Action

The proposed Interstate 90 (I-90) project involves work at three stream crossings described below. Although three Biological Assessments (BA) were submitted, we herein respond with one letter appending the following projects to the BO:

- The Morris Creek crossing project (structure number not available) is an extension of an existing 7.5' wide x 180' long box culvert located in Section 20, Township 4 North, Range 6 East (44° 17' 29.71" Latitude, 103° 25' 45.75" Longitude).

- The Elk Creek crossing (structure number 47080534) involves moving a bridge (new structure to be a bridge or box culvert) from its current location to approximately 1,200 feet west coinciding with the new I-90 alignment. Location: Section 4, Township 3 North, Range 6 East (44° 16' 4.68" Latitude, 103° 25' 3.84" Longitude).

- The Little Elk Creek project (structure number 47085546) includes removing an existing bridge on a frontage road and installing either a bridge or box culvert at a location approximately 750' south of the existing structure. Location: Section 32, Township 4 North, Range 6 East (44° 14' 56.43" Latitude, 103° 25' 3.84" Longitude).

The types of replacement structures are unknown at this time; however, the SDDOT/FHWA's template BA submitted for this project states that the structures and the methods that will be used to construct them will be consistent with the information discussed in the FHWA's January 5, 2004, BA and evaluated in the Service's April 28, 2004, BO which was amended August 23, 2004. If the project differs from that analyzed in the formal programmatic consultation, then your proposal should be resubmitted for an individual consultation.

Threatened/Endangered Species

In accordance with section 7 of the ESA, the SDDOT has made the following determinations of impacts to federally listed threatened and endangered species that may occur at the project sites:

Species	Status	SDDOT's Determination
Bald eagle (Haliaeetus leucocephalus)	Threatened	May Affect, Not Likely to Adversely Affect.
Least tern (Sterna antillarum)	Endangered	No Effect.
Whooping crane (Grus americana)	Endangered	No Effect.

Effects

The Service concurs with the above determinations; however, we reiterate information in the BO regarding the SDDOT's responsibilities related to the bald eagle. Your letter states that, should an occupied bald eagle nest be located within one quarter mile of these projects, the SDDOT will contact the Service, while the BAs state that the distance will be one mile. As per the BO, the correct distance is one mile. Also, please note that the SDDOT has agreed to preserve any trees containing bald eagle nests, whether they are active or inactive. Steps should be taken to ensure that onsite SDDOT personnel and contractors have this information.

Incidental Take

The only take anticipated to occur as a result of SDDOT/FHWA stream-crossing projects in South Dakota is that of Topeka shiners and/or their habitat. Since the proposed structures are not located within known or potential Topeka shiner waterways, incidental take is not of issue with this I-90 reconstruction project, Exit 40 to Mile Marker 50.

Monitoring and Reporting

To facilitate the Service's tracking effort and to fulfill the SDDOT's responsibilities under 50 CFR 402.14(i)(3), please submit to this office individual report forms for the completed structures along with the annual report to be submitted by the SDDOT/FHWA on these projects (see pages 35-37 of the BO for reporting requirements). The Service will reevaluate the effectiveness of this programmatic BO on an annual basis upon receipt of these reports to ensure that continued implementation will not result in unanticipated effects to federally listed species or the habitats upon which they depend.

Additional Considerations

Fishery: Elk Creek and Little Elk Creek have been classified by the Service as a Type IV, Limited Fisheries Resources. Riverine and riparian areas are among the highest resource priorities in this region of the Service. We recommend minimization of impacts to these resources and mitigation of all unavoidable habitat losses. Some of the following methods are reiterated in the BO and should be implemented to minimize environmental impacts to the fishery:

- Instream work should not be undertaken during fish spawning periods. Please consult with the South Dakota Department of Game, Fish and Parks for those dates on these waterways.
- Stream bottoms and wetlands impacted by construction activities should be restored to pre-project elevations.
- Removal of vegetation and soil should be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible.
- Grading operations and reseeding of native species should begin immediately following construction.
- If trees or brush will be impacted by the project, a ratio of at least 2:1 acres planted versus acres impacted should be incorporated into mitigation plans for the project.

If changes are made in the project plans or operating criteria, or if additional information becomes available, the Service should be informed so that the above determinations can be reconsidered.

This concludes consultation under the programmatic BO for these three stream-crossing projects, I-90 Reconstruction, Exit 40 to Mile Marker 50. The Service appreciates the opportunity to provide comments. If you have any questions on these comments, please contact Natalie Gates of this office at (605) 224-8693, Extension 34.

Sincerely,

Pete Gober
Field Supervisor
South Dakota Field Office

cc: FHWA; Pierre, SD
(Attention: Ginger Massie)

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

July 20, 2006

Gregg Mugele
Felsburg Holt & Ullevig
6300 South Syracuse Way, Suite 600
Centennial, Colorado 80111

RE: I-90 Environmental Assessment
Meade County

Dear Mr. Mugele:

The South Dakota Department of Environment and Natural Resources (DENR), Division of Environmental Regulation, has reviewed the above referenced project.

This office has no objections to the project, which should not result in any violations of applicable statutes or regulations provided the Department of Transportation and/or its contractor(s) comply with the following requirements.

SURFACE WATER QUALITY

1. All fill material shall be free of substances in quantities, concentrations, or combinations which are toxic to aquatic life.

2. Removal of vegetation shall be confined to those areas absolutely necessary to construction.

3. At a minimum and irregardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (737-8676) or www.state.sd.us/denr/des/surfacewater/stormwater.htm.

4. All material identified in the application as removed waste material, material stockpiles, dredged or excavated material shall be placed for either temporary or permanent disposal in an upland site that is not a wetland, and measures taken to ensure that the material cannot enter the watercourse through erosion or any other means.

5. Methods shall be implemented to minimize the spillage of petroleum, oils and lubricants used in vehicles during construction activities. If a discharge does occur, suitable containment procedures such as banking or diking shall be used to prevent entry of these materials into the waterway.

6. All newly created and disturbed area above the ordinary high water mark which are not riprapped shall be seeded or otherwise revegetated to protect against erosion.

7. This segment of Elk Creek is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

(2) Coldwater permanent fish life propagation waters;
(7) Immersion recreation waters;
(8) Limited contact recreation waters;
(9) Fish and wildlife propagation, recreation, and stock watering waters; and
(10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 30 mg/L is not violated.

8. This segment of Little Elk Creek is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

(3) Coldwater marginal fish life propagation waters;
(8) Limited contact recreation waters;
(9) Fish and wildlife propagation, recreation, and stock watering waters; and
(10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 90 mg/L is not violated.

9. The other tributaries are classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

(9) Fish and wildlife propagation, recreation, and stock watering waters; and
(10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that these tributaries are not impacted.

HAZARDOUS WASTES

1. Should any hazardous waste be generated during the implementation of this project, the generator must abide by all applicable hazardous waste regulations found in ARSD 74:28 and 40 CFR Part 262.

2. If any contamination is encountered during construction activities, the contractor, owner, or party responsible for the release must report the contamination to the department at (605) 773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements.

AIR QUALITY

1. It appears that Department of Transportation projects may have only a minor impact on the air quality in South Dakota. This impact would be through point source and fugitive emissions.

2. Equipment with point source emissions in many cases are required to have an air quality permit to operate. Permit applications can be obtained from the Air Quality or Minerals and Mining Programs.

3. Fugitive emissions, although not covered under State air quality regulations, are a common source of public concern and may be subject to local or county ordinances. Fugitive emissions add to the deterioration of the ambient air quality and should be controlled to protect the health of communities within the construction areas.

4. For further air quality information, please contact Brad Schultz, Air Quality Program, telephone number (605) 773-3151.

This office requests the opportunity to review and comment on any significant changes that may be proposed before the project is completed. Thank you for the opportunity to comment on the proposed project. If you have any questions, please contact this office.

Sincerely,

John Miller
Environmental Program Scientist
Surface Water Quality Program
Phone: (605) 773-3351

Connecting South Dakota and the Nation

Department of Transportation

Office of Project Development
700 E Broadway Avenue
Pierre, South Dakota 57501-2586
PHONE: 605/773-3268 FAX: 605/773-6608

December 15, 2006

Paige Hoskinson, Review & Compliance Coordinator
SD Dept. of Education and Cultural Affairs
Cultural Heritage Center
900 Governors Drive
Pierre, SD 57501-2217

RE: IM 90-1(136)44 PCN 00GC MEADE COUNTY
I-90 Corridor from Exit 40 (Tilford) to Exit 46 (Piedmont) - Relocate Service Roads, Reconstruct for Future 6-lane Section, Reconstruct Interchanges at Exits 44 and 46

Dear Ms. Hoskinson:

Enclosed are copies of the following SARC reports:

1. *An Intensive Cultural Resources Survey of the I-90 Corridor from Exit 40, Tilford to Exit 46, Piedmont, SDDOT Project No. 238, Meade County, South Dakota* (CIS 2054), by Terri Bruce;

2. *National Register Evaluation of sites 39MD722, 39MD726, 39MD727, 39MD729 and 39MD2005 along the I-90 Corridor from Exit 40, Tilford to Exit 46, Piedmont, Meade County, South Dakota* (CIS 2094), by Terri Bruce, and;

3. *A National Register of Historic Places (NRHP) Evaluation of MD-000-00249 – MD-000-00255, MD-012-00001 – MD-012-00003, MD-13-00001 – MD-013-00002, and MD-014-00001 – MD-014-00007 in Project 238, Meade County, South Dakota (CIS 2062) by Rick D. Hanson.*

The following tables provide information on the sites identified and evaluated in the above reports:

	Report # 1 Sites Identified & SARC Recommendations	SDDOT Comments	Report # 2 – Sites Evaluated & SDDOT Comments
1.	39MD4 – Prehistoric Site No Impact	Site is outside project work limits & will be avoided	N/A
2.	39MD111 –Lithic Scatter Avoid or Evaluate	Site is outside project work limits & will be avoided	N/A
3.	39MD348 – Historic Site Not Eligible	SDDOT Concurs	N/A
4.	39MD2003 – Abandoned Chicago NW RR Spur NRHP Eligible	Site is outside project work limits & will be avoided.	N/A
5,	39MD2005 – Short segment of Black Hills/Ft. Pierre/Deadwood RR – Avoid or Evaluate	Evaluation Requested	Isolated segment of RR grade; Non-Contributing; Report recommends ***No Adverse Affect.*** SDDOT Concurs. Project will not alter any of the characteristics of the RR which make it eligible for inclusion on the NRHP.

6.	39MD722 - Historic Period Artifact Scatter	Evaluation Requested	Not Eligible SDDOT Concurs
7.	39MD724 – Lithic Scatter Avoid or Evaluate	Site is outside project work limits & will be avoided	N/A
8.	39MD725 – Prehistoric Lithic Scatter – Avoid or Evaluate	Site is outside project work limits & will be avoided	N/A
9.	39MD726 – Foundation Depression & Capped Well Avoid or Evaluate	Evaluation Requested	Not Eligible SDDOT Concurs
10.	39MD727 – 1 Chert Flake Avoid or Evaluate	Evaluation Requested	Not Eligible SDDOT Concurs
11.	39MD728 – Lithic Scatter Avoid or Evaluate	Site is outside project work limits & will be avoided	N/A
12.	39MD729 – Historic Period Foundation – Avoid or Evaluate	Evaluation Requested	Not Eligible SDDOT Concurs
13.	39MD730 – Historic Period Site Avoid or Evaluate	Site is outside project work limits & will be avoided	N/A
14.	39MD731 – Historic Period Site Avoid or Evaluate	Site is outside project work limits & will be avoided	N/A

Structures Evaluated in Report # 3		
	Structures Evaluated & SARC Recommendations	**SDDOT Comments**
1.	MD-000-00251, 00252, 00253 & MD-012-00001 - Houses	SDDOT Concurs
2.	MD-012-00002 – Dugout Root Cellar – NRHP Eligible	Root Cellar will be avoided by pulling in the project right-of-way & adding curb & gutter. A "Do Not Disturb" note will be put in the plans to ensure the site will be avoided.
3.	MD-013-00001 & 00002 – Garage & Barn – Not Eligible	SDDOT Concurs
4.	MD-014-00001 to MD-014-00007 Houses & Buildings – Not Eligible	SDDOT Concurs
5.	MD-000-00249 & MD-000-00250 Rock Faced Earthen Dams NRHP Eligible	A shift in alignment to avoid both dams would result in impacts to archaeological Sites 39MD724 & 39MD025, both of which have a high potential for buried cultural deposits. To mitigate, SDDOT will pull in the ROW to avoid MD-000-00250, but will take MD-000-00249. In addition, SDDOT will provide SHPO with photographic documentation of Site MD-000-0249 prior to construction. A "Do Not Disturb" note will be put in the plans for Site 39-MD-000250. SDDOT requests a ***No Adverse Affect*** determination for the dams.
6.	MD-000-00254 & MD-000-00255 Concrete Box Culverts - Not Eligible	SDDOT Concurs

Based on the above, I am requesting SHPO concurrence in a Section 106 finding of ***No Adverse Affect*** for the above project.

Sincerely,

Alice Whitebird

Alice Whitebird
Environmental Senior Scientist
Office of Project Development
(605) 773-3309

Enclosures

Department of Transportation
Division of Planning/Engineering
Office of Project Development - Environmental
700 E Broadway Avenue
Pierre, South Dakota 57501-2586 605/773-3268
FAX: 605/773-6608

January 5, 2007

Paige Hoskinson, Review & Compliance Coordinator
State Historic Preservation Office
Cultural Heritage Center
900 Governors Drive
Pierre, SD 57501-2217

RE: IM 90-1(136)44 PCN 00GC MEADE COUNTY
I-90 Corridor from Exit 40 (Tilford) to Exit 46 (Piedmont) – Relocate Service Roads, Reconstruct for Future 6-Lane Section, Reconstruct Interchanges at Exits 44 and 46
Cultural Resources Survey Addendum

Dear Ms. Hoskinson:

Attached for your review is a copy of a cultural resources survey entitled, *An Intensive Cultural Resources Survey of an Addendum to SDDOT Project 238, the I-90 Corridor from Tilford to Piedmont, Meade County, South* Dakota, CIS 2123, by Terri Bruce. The SDDOT requested the additional cultural resources survey due to an alignment shift. No previously recorded sites will be impacted and no cultural resources were discovered in the area surveyed. The report recommends that a Section 106 finding of *No Historic Properties Affected* be granted for the new area surveyed. The SDDOT concurs with this recommendation.

Based on the above, I am requesting SHPO concurrence in a finding of *No Historic Properties Affected* for this project area.

Sincerely,

Alice Whitebird

Alice Whitebird
Environmental Senior Scientist
Environmental Office
(605) 773-3309

Attachment

South Dakota Department of Tourism and State Development

January 8, 2007

Alice Whitebird
Department of Transportation
700 E Broadway Avenue
Pierre SD 57501-2586

SECTION 106 PROJECT CONSULTATION – EVALUATION/EFFECT
Project: 061220001F – IN 90-1(136)44 PCN 00GC; I-90 Corridor from Exit 40 (Tilford) to Exit 46 (Piedmont) – Relocate service roads, reconstruct for future 6-lane section, reconstruct interchanges at Exits 44 and 46
Location: Meade County
(FHWA/DOT)

Dear Ms. Whitebird:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the National Historic Preservation Act (NPHA) of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) has made the following determination regarding the effect of your proposed undertaking on the non-renewable cultural resources of South Dakota.

The SHPO has made the following consensus determination based upon the information provided in your correspondence and reports ("A National Register of Historic Places Evaluation of MD-000-00249 – MD-000-00255, MD-012-00001 – MD-012-00003, MS-13-00001 – MD-013-00002, and MD-014-00001 – MD-014-00007 in Project 238, Meade County, South Dakota"; "National Register Evaluation of sites 39MD722, 39MD726, 39MD727, 39MD729, and 39MD2005 along the I-90 Corridor from Exit 40, Tilford to Exit 46, Piedmont, Meade County, South Dakota"; and "An Intensive Cultural Resources Survey of the I-90 Corridor from Exit 40, Tilford to Exit 46, Piedmont, SDDOT Project No. 238, Meade County, South Dakota") prepared by the State Archaeological Research Center and received on December 20, 2006, and additional correspondence received on January 8, 2007.

- The SHPO concurs that the following sites should be considered **Not Eligible** for listing to the National Register of Historic Places (NRHP): 39MD722, 39MD726, 39MD727, 39MD729, 39MD2005 (portion within project area).

- The following sites are **unevaluated** for listing to the NRHP and **must be evaluated or avoided** by all ground disturbing activities associated with the proposed construction project, including all staging areas for heavy equipment and material storage: 39MD724, 39MD725, 39MD728, 39MD730, 39MD731, 39MD102, 39MD111, 39MD2003.

- The SHPO concurs that the following structures should be considered **Not Eligible** for listing to the NRHP: MD-000-00251, MD-000-00252, MD-000-00253, MD-012-00001, MD-013-00001, MD-013-00002, MD-014-00001 to MD-014-00007, MD-000-00254, MD-000-00255.

- The SHPO concurs that the following structures should be considered **Eligible** for listing to the National Register: MD-012-00002, MD-000-00249, MD-000-00250. The SHPO notes that the South Dakota Department of Transportation (SDDOT) will pull in the project right-of-way to avoid MD-012-00002 (dugout root cellar) and MD-000-00250 (earthen dam). The SHPO further notes that SDDOT will not be able to avoid MD-000-00249 (earthen dam).

Given the above, the SHPO does not concur with your agency's determination of No Adverse Effect for this undertaking and believes the removal of MD-000-00249 will result in an Adverse Effect. Therefore, the SDDOT should consult with the SHPO, Advisory Council on Historic Preservation (ACHP), and consulting parties to resolve the Adverse Effect pursuant to 36 CFR part 800.6.

Should you require any additional information, please do not hesitate to contact Kate Divis at (605) 773-6005. Your concern for the non-renewable cultural heritage of our state is appreciated.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer

Kate Divis
Restoration Specialist

CC: Jane Watts, State Archaeological Research Center

FILE COPY

U.S.Department of Transportation
Federal Highway Administration

South Dakota Division

116 East Dakota Avenue, Suite A
Pierre, South Dakota 57501

May 17, 2007

In Reply Refer To: HDA-SD

See Enclosed List

Dear Chairman/Chairperson/President:

The South Dakota Department of Transportation (SDDOT), in cooperation with the South Dakota Division of the Federal Highway Administration, is proposing to relocate service roads and design the roadways and interchanges of I-90 so the interstate may be expanded to three lanes in each direction in the future [IM 90-1(136)44 PCN 00GC]. The proposed project is located west of Rapid City, SD and extends six miles from I-90 Exit 40 (Tilford) to I-90 Exit 46 (Piedmont). A site map is enclosed for your information. For purposes of the National Historic Preservation Act, we are initiating consultation with your organization to assist us in identifying properties that may be of traditional, religious, and/or cultural importance to your Tribe.

A cultural resources survey was completed in 2006 by the State Archaeological Research Center located in Rapid City, SD. Nine new sites were recorded including three historic period sites, five prehistoric lithic scatters, and one two-component historic and prehistoric site. One previously recorded prehistoric site and three previously recorded Historic period sites were revisited. The project is anticipated to impact a rock faced earthen dam (Site 39-MD-000-0249) that has been determined as eligible for the National Register of Historic Places (NRHP) and four archeological sites considered Not Eligible for the NRHP (one homestead site, one foundation depression and capped well site, one site with a single chert flake, and one foundation site). An environmental assessment is being prepared for the project.

If you have any questions or comments or would like to discuss the proposed project, I can be reached at the above address or at (605) 224-8033 or Terry Keller with SDDOT can be reached at (605) 773-3721.

Sincerely,

VIRGINIA R. MASSIE

Ginger R. Massie, P.E.
Environmental Engineer

Enclosure

CC: Terry Keller, SDDOT (w/o enclosure)
See Enclosed List

GRMassie:/S/Shared/grm/TribalconsultI90CorridorExit 40 to 46.doc:Project File:srs:070517

MOVING THE AMERICAN ECONOMY

SOUTH DAKOTA TRIBAL MAILING LIST

May 17, 2007

JOSEPH BRINGS PLENTY, CHAIRMAN
CHEYENNE RIVER SIOUX TRIBE
P O BOX 590
EAGLE BUTTE SD 57625

cc: ALBERT LeBEAU, THPO
CULTURAL PRESERVATION OFFICE
P O BOX 590
EAGLE BUTTE SD 57625

MICHAEL G. JANDREAU, CHAIRPERSON
LOWER BRULE SIOUX TRIBE
187 OYATE CIRCLE
LOWER BRULE SD 57548

cc: SCOTT JONES
CULTURAL RESOURCES OFFICE
187 OYATE CIRCLE
LOWER BRULE, SD 57548

JOHN YELLOW BIRD STEELE, PRESIDENT
OGLALA SIOUX TRIBE
P O BOX H
PINE RIDGE SD 57770

cc: JEFF WHALEN, DIRECTOR
DEPARTMENT OF TRANSPORTATION
OGLALA SIOUX TRIBE
P O BOX 335
PINE RIDGE SD 57770

cc: CULTURAL RESOURCE & HISTORIC
PRESERVATION PROGRAM
OGLALA SIOUX TRIBE
P O BOX 2070
PINE RIDGE SD 57770

MIKE SELVAGE, CHAIRMAN
SISSETON-WAHPETON SIOUX TRIBE
P O BOX 509
AGENCY VILLAGE SD 57262

cc: DIANNE DESROSIERS, THPO
SISSETON-WAHPETON OYATE
P O BOX 907
SISSETON SD 57262

RON HIS-HORSE-IS THUNDER, CHAIRMAN
STANDING ROCK SIOUX TRIBE
P O BOX D
FORT YATES ND 58538

cc: TIM MENTZ, THPO
HISTORIC PRESERVATION OFFICE
P O BOX D
FORT YATES ND 58538

MARCUS WELLS JR., CHAIRMAN
THREE AFFILIATED TRIBES
404 FRONTAGE ROAD
NEW TOWN ND 58763

cc: ELGIN CROWS BREAST, THPO
THREE AFFILIATED TRIBES
404 FRONTAGE ROAD
NEW TOWN ND 58763

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
Federal Building, 200 Fourth St. SW
Huron, South Dakota 57350

Helping People
Help the Land

Phone: (605) 352-1200
Fax: (605) 352-1270

May 22, 2007

Ms. Jessica Myklebust
Felsburg Holt and Ullevig
6300 South Syracuse Way, Suite 600
Centennial, Colorado 80111

RE: Environmental Review-Proposed I-90 Project (Exit 40 to Exit 51)
FHU Reference No. 05-235

Dear Ms. Myklebust:

We have reviewed the site map for the above project in Meade County.

The construction will affect soils designated as important farmland. We have completed Parts II through V of the enclosed CPA-106, Farmland Conversion Impact Rating form. Please finish completing Parts VI and VII of the form. If the Total Points in Part VII is less than 160, then there is no significant impact to the important farmlands in Meade County, and no alternatives need be considered for impact to farmlands. Please return a copy of the completed form to this office.

Sincerely,

FOR

JEROME M. SCHAAR
State Soil Scientist

Enclosure

cc: Tate Lantz, DC, NRCS, Sturgis FO

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 5/4/07	4. Sheet 1 of 1
1. Name of Project I-90 Improvements (Exit 40 to Exit 51)	5. Federal Agency Involved FHWA	
2. Type of Project Corridor Improvement Project	6. County and State Meade County, South Dakota	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 5/9/2007	2. Person Completing Form D. Shurtliff
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐		4. Acres Irrigated – / Average Farm Size 2,490

5. Major Crop(s) Wheat - Alfalfa	6. Farmable Land in Government Jurisdiction Acres: 558,755 % 48	7. Amount of Farmland As Defined in FPPA Acres: 430,185 % 38
8. Name Of Land Evaluation System Used SD Dept of Revenue	9. Name of Local Site Assessment System None	10. Date Land Evaluation Returned by NRCS 5/22/2007

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	200			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	–			
C. Total Acres In Corridor	~~0~~ 200	0	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	0			
B. Total Acres Statewide And Local Important Farmland	53.3			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.01			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	95			
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*	25			
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))* — Maximum Points				
1. Area in Nonurban Use — 15	14			
2. Perimeter in Nonurban Use — 10	10			
3. Percent Of Corridor Being Farmed — 20	4			
4. Protection Provided By State And Local Government — 20	0			
5. Size of Present Farm Unit Compared To Average — 10	1			
6. Creation Of Nonfarmable Farmland — 25	0			
7. Availablility Of Farm Support Services — 5	5			
8. On-Farm Investments — 20	2			
9. Effects Of Conversion On Farm Support Services — 25	0			
10. Compatibility With Existing Agricultural Use — 10	9			
TOTAL CORRIDOR ASSESSMENT POINTS — 160	45	0	0	0
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland (From Part V) — 100	25			
Total Corridor Assessment (From Part VI above or a local site assessment) — 160	45	0	0	0
TOTAL POINTS *(Total of above 2 lines)* — 260	70	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
			YES ☐ NO ☒

5. Reason For Selection:

Signature of Person Completing this Part: D. Shurtliff — DATE 6/13/2007

NOTE: Complete a form for each segment with more than one Alternate Corridor

South Dakota Department of Tourism and State Development

September 17, 2007

Dave Graves
Department of Transportation
700 E Broadway Avenue
Pierre SD 57501-2586

SECTION 106 PROJECT CONSULTATION – EVALUATION/EFFECT
Project: 061220001F – IN 90-1(136)44 PCN 00GC; I-90 Corridor from Exit 40 (Tilford) to Exit 46 (Piedmont) – Relocate service roads, reconstruct for future 6-lane section, reconstruct interchanges at Exits 44 and 46
Location: Meade County
(FHWA/DOT)

Dear Mr. Graves:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the National Historic Preservation Act (NPHA) of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) has made the following determination regarding the effect of your proposed undertaking on the non-renewable cultural resources of South Dakota.

The SHPO has made the following consensus determination based upon the information provided in your correspondence and reports ("A National Register of Historic Places Evaluation of MD-000-00249 – MD-000-00255, MD-012-00001 – MD-012-00003, MS-13-00001 – MD-013-00002, and MD-014-00001 – MD-014-00007 in Project 238, Meade County, South Dakota"; "National Register Evaluation of sites 39 MD722, 39MD726, 39MD727, 39MD729. amd 39MD2005 along the I-90 Corridor from Exit 40, Tilford to Exit 46, Piedmont, Meade County, South Dakota"; and "An Intensive Cultural Resources Survey of the I-90 Corridor from Exit 40, Tilford to Exit 46, Piedmont, SDDOT Project No. 238, Meade County, South Dakota") prepared by the Archaeological Research Center and received on December 20, 2006, and additional correspondence received on January 8, 2007.

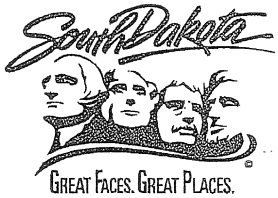
In accordance with our letter dated January 8, 2007, the following determinations remain valid.

Office of Tourism
Governor's Office of Economic Development
Tribal Government Relations
711 E. Wells Ave. / Pierre, SD 57501-3369
Phone: 605-773-3301 / Fax: 605-773-3256
travelsd.com / sdgreatprofits.com / sdtribalrelations.com

South Dakota Arts Council
800 Governors Dr. / Pierre, SD 57501-2294
Phone: 605-773-3131 or 1-800-423-6665 in S.D.
Fax: 605-773-6962
sdac@state.sd.us / sdarts.org

South Dakota State Historical Society
900 Governors Dr. / Pierre, SD 57501-2217
Phone: 605-773-3458 / Fax: 605-773-6041
sdhistory.org

South Dakota Housing Development Authority
PO Box 1237 / Pierre, SD 57501-1237
Phone: 605-773-3181 / Fax: 605-773-5154
sdhda.org



- The SHPO concurs that the following sites should be considered **Not Eligible** for listing to the National Register of Historic Places (NRHP): 39MD722, 39MD726, 39MD727, 39MD729, 39MD2005 (portion within project area).

- The following sites are **unevaluated** for listing to the NRHP and **must be evaluated or avoided** by all ground disturbing activities associated with the proposed construction project, including all staging areas for heavy equipment and material storage: 39MD724, 39MD725, 39MD728, 39MD730, 39MD731, 39MD102, 39MD111, 39MD2003.

- The SHPO concurs that the following structures should be considered **Not Eligible** for listing to the NRHP: MD-000-00251, MD-000-00252, MD-000-00253, MD-012-00001, MD-013-00001, MD-013-00002, MD-014-00001 to MD-014-00007, MD-000-00254, MD-000-00255.

- The SHPO concurs that the following structure should be considered **Eligible** for listing to the NRHP: MD-012-00002 (dugout root cellar). The SHPO notes that the South Dakota Department of Transportation (SDDOT) will pull in the project right-of-way to avoid MD-012-00002.

Based upon the new report "Evaluation of the Significance of Earthern Dam Structures MD-000-00249 and MD-000-00250, Meade County, South Dakota," prepared by Steve J. Dasovich and Terri Bruce and received on September 4, 2007, structures MD-000-00249 and MD-000-00250, which were previously considered Eligible for listing to the NRHP, should be considered **Not Eligible** for listing to the NRHP.

Given the above, the SHPO concurs with your agency's determination of No Adverse Effect for this undertaking provided that the following stipulations are met:

1. Unevaluated sites 39MD724, 39MD725, 39MD728, 39MD730, 39MD731, 39MD102, 39MD111, 39MD2003 must be avoided by all ground disturbing activities associated with the proposed construction project, including all staging areas for heavy equipment and material storage.
2. Eligible structure MD-012-00002 must be avoided by all ground disturbing activities associated with the proposed construction project, including all staging areas for heavy equipment and material storage.
3. On-the-ground measures must be taken to delineate the boundaries of all unevaluated and eligible sites for avoidance by heavy equipment.

Activities occurring in areas not identified in your request will require the submission of additional documentation pursuant to 36 CFR part 800.4.

If historic properties are discovered or unanticipated effects on historic properties are found after the agency official has completed the Section 106 process, the agency official shall avoid, minimize or mitigate the adverse effects to such properties and notify the SHPO/THPO and Indian tribes that might attach religious and cultural significance to the affected property within 48 hours of the discovery, pursuant to 36 CFR part 800.13.

Concurrence of the SHPO does not relieve the federal agency official from consulting with other appropriate parties, as described in 36 CFR part 800.2(c).

Should you require any additional information, please do not hesitate to contact Kate Divis at (605) 773-6005. Your concern for the non-renewable cultural heritage of our state is appreciated.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer

Kate Divis

Kate Divis
Restoration Specialist

CC: Jane Watts, Archaeological Research Center

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APPENDIX B TRAFFIC NOISE ANALYSIS AND MITIGATION REPORT

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I-90 ENVIRONMENTAL ASSESSMENT (EXIT 40 TO EXIT 51)

TRAFFIC NOISE ANALYSIS AND MITIGATION REPORT

Prepared for:

South Dakota Department of Transportation
Federal Highway Administration

Prepared by:

Felsburg Holt & Ullevig
6300 South Syracuse Way, Suite 600
Centennial, CO 80111
303/721-1440

April 2008

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LIST OF TABLES

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1.0 NOISE

An analysis was performed as part of the Environmental Assessment (EA) to assess potential impacts from traffic noise to properties neighboring the Preferred Alternative improvements. Present land uses bordering both existing and potential new roads in the Project Area include residences, businesses, motels, churches, and some undeveloped lands. Residential areas are typically the land use most sensitive to traffic noise. Future (year 2030) noise levels for both the No Action and the Preferred Alternative were evaluated, and compared with existing conditions noise levels to determine noise level increases from the alternatives.

1.1 Noise Analysis Approach

The purpose of the noise analysis was to assess traffic noise levels at properties near the proposed project roads and conclude both whether noise impacts would occur and whether noise mitigation considerations would be necessary in the project design. The analysis presented in the following sections included major roads that would be altered or constructed by the project; it did not include neighborhood streets or other minor roads in the Project Area.

The overall traffic noise analysis was based on measurements of existing noise conditions and on computer modeling of traffic noise for both existing and expected future traffic conditions. Current conditions and both future alternatives (No Action and the Preferred Alternative) being considered in the EA were examined. Felsburg Holt & Ullevig (FHU) performed field measurements of existing traffic noise at several locations in the Project Area. Computer modeling was used to predict the existing and the expected future average traffic noise, focusing on potential impacts to the most sensitive receivers. The noise levels were compared to applicable noise criteria to assess for and identify impacted areas. The efficacy of various mitigation measures for the impacted areas was evaluated, as appropriate.

1.2 Basics of Sound

Sound is created when an object vibrates and radiates part of that energy as acoustic pressure or waves through a medium, such as air, water, or a solid. Sound and noise are measured in units of decibels (dB). The dB scale is logarithmic. As an example, two identical noise sources, each producing 60 dB, will produce 63 dB when operated together. Likewise, a 10-dB increase in sound levels represents ten times as much sound energy.

The human ear can accommodate a wide range of sound energy levels, including pressure fluctuations that increase by more than a million times. The human ear is not equally receptive to all frequencies of sound-producing vibrations. A-weighting of sound levels by frequency is a method used to approximate how the human ear would perceive a sound, mostly by reducing the contribution from lower frequencies by a specified amount. A-weighted sound levels are reported in dBA. In general, people will not notice a difference in loudness of sound levels of 3 dBA or less, which is a two-fold change in the sound energy. Most people relate a 10-dBA increase in sound levels to a doubling of sound loudness.

Sound levels diminish with distance from the source because of spreading, atmospheric absorption, interference from surrounding objects and ground effects. "Hard" ground (such as asphalt) and "soft" ground (such as grass) transmit sound differently. “Hard” ground is more reflective and will produce louder sound levels farther from the source. Using traffic noise

traveling over “hard” ground as an example, a 3-dBA increase in noise could be caused by doubling the traffic volume or by cutting the distance from the roadway in half.

Traffic noise varies over time with traffic volumes, vehicle types, and speeds. This variation makes it difficult to describe the traffic noise through a single value. Federal Highway Administration (FHWA) and the South Dakota Department of Transportation (SDDOT) use the one-hour equivalent sound level (Leq) as the metric for assessing traffic noise impacts. The Leq is the “average” of the noise levels over a time period (usually one hour), or the constant noise level that would produce the same sound energy as the fluctuating noise level. On busy roads and highways, the loudest traffic noise generally occurs when the largest traffic volume can travel at the highest speed, not when traffic becomes overly congested and slows. The noisiest traffic condition generally results at Level of Service (LOS) C for a highway, because under these conditions a relatively high traffic volume can travel at relatively high speeds.

2.0 NOISE IMPACT ANALYSIS METHODS

Noise impacts were evaluated through a combination of field measurements and computer modeling. Traffic noise impacts were assessed on the basis of the noise levels' relationship to SDDOT's Noise Abatement Criteria (NAC). The SDDOT NAC for residences and other Category B receivers is an exterior Leq of 66 dBA, and for commercial areas (Category C) is an Leq of 71 dBA for the peak hour. Under SDDOT guidelines, equaling or exceeding the NAC is viewed as a noise impact and triggers an investigation of noise mitigation measures.

A "substantial" noise increase would also be considered a noise impact and lead to evaluation of traffic noise mitigation actions. A "substantial" noise increase is indicated if the future noise level is expected to increase by 15 dBA or more over existing levels. For the noise impact discussion, the "peak hour" refers to the highest traffic noise hour, which may or may not correspond to the hour of most traffic. Traffic noise can actually decrease during rush hour due to lower vehicle speeds from overloaded or congested roads and vehicle backups.

2.1 Noise Measurement Methods

Short-term (10-minute) traffic noise measurements were performed in the afternoon at three locations in the Project Area to document existing ambient conditions. These locations included residential and commercial areas along the project area. Actual traffic counts, including the number of large trucks, were collected when traffic was visible during the noise measurement periods. This approach spread the measurements over a variety of locations in the Project Area.

The noise measurements were performed using a Svantek 945A Type 1 sound level meter calibrated at the site with a Norsonic 1251 calibrator. Measurements were made during meteorological conditions, including wind speed, that are acceptable according to FHWA guidance.

2.2 Noise Modeling

Computer modeling was performed for both current conditions and expected future conditions. Modeling is used because day-to-day variations in traffic or weather conditions that affect noise levels cannot be captured or quantified by brief noise measurements alone, and because future noise levels can not be measured before they exist. The modeling results represent typical average traffic conditions.

The ultimate purpose of the noise models is to show whether future traffic noise levels caused by the Preferred Alternative would be high enough to impact neighboring properties and whether noise mitigation should be provided for any such impacts within the Project Area. The traffic noise modeling software used for the analyses was FHWA's Traffic Noise Model (TNM) Version 2.5.

The existing traffic conditions that were modeled included the current road configurations and traffic volumes. Future traffic conditions (No Action and Preferred Alternative) were also modeled based on projected 2030 traffic and the corresponding roads for each alternative, including a 6-lane profile for I-90. The conditions examined in these analyses used predicted traffic volumes for I-90 afternoon peak hour traffic volumes, as it generally had more traffic than the morning peak hour.

FHWA's TNM noise model was used to estimate noise levels at approximately 290 discrete receiver locations at major buildings within about 500 feet of I-90. The modeled roadways were those roads that would be built or changed by the Preferred Alternative, or were important local traffic noise sources. The same receiver locations were used in each model for consistency.

The computer noise models require a considerable amount of input data regarding the geometry of the roadways as well as traffic volumes, vehicle mix (vehicle types) and vehicle speeds. Traffic studies were completed for the project area (FHU, 2005) to provide traffic volumes. The existing road/street layout was mapped and used for the existing conditions model. The roadway additions and changes for the Preferred Alternative were also modeled to assess the possible noise impacts. In general, the following data were used in the models:

- **Units**- English and miles per hour
- **Current Roadway Alignments**- XY coordinates from CAD files and aerial photographs
- **Future Roadway Alignments**- XY coordinates from CAD design files
- **Vehicle Speeds**-ranged from 35-75 miles per hour (mph) depending on the road type
- **Traffic Volumes**- (Blackhawk-Sturgis Corridor Preservation) traffic study
- **Vehicle Mix**-from noise measurement vehicle count data and data from FHU traffic engineers
- **Barriers**- structure and terrain barriers used as needed to emulate the existing area; mitigation barriers were added where appropriate within SDDOT right-of-way for mitigation evaluation

3.0 EXISTING CONDITIONS

Existing traffic noise conditions were assessed through a combination of measurements and modeling. The traffic noise assessment focused on the major roads that are of importance to the Preferred Alternative.

3.1 Noise Measurement Results

The results of the traffic noise measurements taken along I-90 are listed below.

Table 1. Noise Measurement Data

Date	Time	Location	L_{eq} (dBA)
2/1/06	3:40 pm	Rest Area (South of I-90)	62
2/1/06	4:12 pm	Piedmont Senior Center	64
2/1/06	4:47 pm	Stables Drive (Stagebarn Canyon Subdivision)	62

3.2 Model Verification

As a check on noise model parameters, the traffic conditions observed during the noise measurement episodes were used to verify TNM model parameters. The intent was to check the accuracy of calculated noise levels through a model that reflected the road alignment, traffic volumes and receiver locations at the time of field measurements. A close match between measurements and model results would ensure that the models were providing accurate noise results.

The verification model utilized the areas where noise level measurements were made near roads of interest. The model was constructed in TNM using the same approach as the alternatives models.

The results were in close agreement, as the measured and modeled results for most noise measurement locations differed by 2 dBA or less. Overall, the results were acceptable according to SDDOT guidelines.

3.3 Noise Model Results

A noise model was developed in TNM to evaluate existing conditions on a broader basis than allowed by the measurements alone. This traffic model used the major existing roads (I-90 and service roads) that could be affected by the project, with existing (2005) traffic volumes and road layouts.

Of the modeled receivers calculated, 54 have existing traffic noise above the respective NAC during the PM peak hour. There are 48 properties that currently exceed the Category B (homes) NAC and six that exceed the Category C (businesses) NAC along I-90. Category C areas by definition are less sensitive to traffic noise than Category B areas.

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4.0 POTENTIAL FUTURE NOISE IMPACTS

The alternatives evaluated were described in Section 1.1. The traffic noise modeling effort was conducted as described in Section 2.0.

4.1 2030 No-Action Alternative Noise Model Results

Of the model receivers calculated, 121 would have traffic noise levels above the respective NAC during the PM peak hour for this scenario. These included both Category B properties (homes) and Category C (business) properties. No receivers were calculated to increase by 15 dBA.

Noise levels were estimated to exceed the Category B NAC for 107 residences along I-90. There were 14 Category C noise receivers which exceeded the NAC for businesses along I-90.

4.2 2030 Preferred Alternative Traffic Model Results

Of the model receivers calculated, 156 would have traffic noise levels above the respective NAC during the PM peak hour under the Preferred Alternative. The receivers included both Category B properties (homes and churches) and Category C (business) properties. None of the receivers were predicted to increase by 15 dBA or more.

Noise levels were estimated to exceed the SDDOT Category B NAC for 141 residences along I-90 and exceed the Category C for 15 businesses along I-90. The Preferred Alternative was predicted to impact 102 more receivers than existing conditions (**Table 2**) and 35 more receivers than the No-Action Alternative.

Table 2. Traffic Noise Model Results

Alternative	Impacted Category B Receivers	Impacted Category C Receivers
Existing Conditions (2005)	48	6
No Action Alternative (2030)	107	14
Preferred Alternative (2030)	141	15

4.3 Construction Noise

Adjoining properties in the Study Area could be exposed to noise from road construction activities when the Preferred Alternative is built. Construction noise differs from traffic noise in several ways:

- Construction noise lasts only for the duration of the construction event, with most construction activities in noise sensitive areas being conducted during hours that are least disturbing to adjacent and nearby residents
- Construction activities generally are of a short term nature, and depending on the nature of the construction operations, could last from seconds (e.g., a truck passing a receiver) to months (e.g., constructing a bridge)

- Construction noise is intermittent and depends on the type of operation, location, and function of the equipment, and the equipment usage cycle. Traffic noise, on the other hand, is present in a more continuous fashion after construction activities are completed.

The project area passes near several residential areas. To address the temporary elevated noise levels that may be experienced during construction, standard mitigation measures should be incorporated into construction contracts. These would include:

- Exhaust systems on equipment would be in good working order. Equipment would be maintained on a regular basis, and equipment may be subject to inspection by the project manager to ensure maintenance.
- Properly designed engine enclosures and intake silencers would be used where appropriate.
- New equipment would be subject to new product noise emission standards.
- Stationary equipment would be located as far from sensitive receivers as possible.
- Most construction activities in noise sensitive areas would be conducted during hours that are least disturbing to adjacent and nearby residents.

5.0 MITIGATION EVALUATION

The traffic noise results indicated that 156 receivers will meet or exceed the SDDOT NAC under the Preferred Alternative. Therefore, traffic noise mitigation measures for the impacted areas were investigated. It is important to note that impacted areas are not guaranteed mitigation measures, but mitigation measures must be evaluated.

Traffic noise impacts will affect multiple geographic areas and various land uses. Several types of mitigation were considered. Noise barriers are a common mitigation action and were evaluated, but other kinds of mitigation were also considered. The overall feasibility and reasonableness of noise reduction actions that provide a minimum acceptable mitigation benefit for the impacted receivers were evaluated, and these actions were then either recommended or dismissed.

For reasons described below, barriers appeared to be the only viable mitigation action and were the only type of mitigation evaluated in detail. SDDOT's goal for noise barriers is a minimum noise reduction of 7 dBA.

5.1 Non-Barrier Mitigation Evaluation

Traffic management measures such as reduced speeds do not appear to be reasonable for the roads of primary interest to the project. The major source of traffic noise in the Study Area is I-90 which is a freeway-class road. Significantly reducing vehicle speeds would reduce noise levels, but would conflict with the purpose and designed function of the interstate highway. Reducing traffic speeds on the service roads could reduce traffic noise, but the benefit would be small and overwhelmed by noise from nearby I-90.

Changes in the horizontal alignments of the roads near the impacted receivers is limited within the project area due to the neighboring railroad which runs parallel to I-90 along the north side. Additionally, some of the impacted Category B receivers are in areas that are reasonably fully developed. Therefore, possible horizontal realignments of roads are constrained by the development of the land adjacent to the project area. Moving the roads horizontally away from impacted receivers could reduce noise impacts in some areas but could transfer the impacts to other neighboring areas and could require disruptions of adjoining property uses, utilities or other land uses.

Changes in vertical alignments are also limited by physical constraints. An overriding constraint with the vertical alignment is that the project roads must tie back into the connecting roads in the Study Area in a reasonable manner. Wholesale changes in project road elevations could have secondary impacts on connecting roads that would not be reasonable or desirable. Impacts to underground utilities are another consideration.

Pavement types and surfaces can affect traffic noise. Quieter pavement types will be preferred for the project when minimum requirements for safety, durability, etc. are also met. However, this cannot be counted as a mitigation action under the noise reduction evaluation because it is not permanent.

5.2 Noise Barrier Evaluation

Potential barrier locations that would adequately protect the impacted areas were developed for the computer models and the models were run to assess barrier effectiveness. Each barrier was optimized to meet the SDDOT feasibility criteria. Each feasible barrier was evaluated for reasonability according to SDDOT guidance. The feasibility and reasonableness of each barrier determined whether the barrier was recommended for construction.

It is important to note that the noise barriers could be either earth berms or constructed walls. Either material can be an effective noise barrier. However, berms require considerably more land to construct than walls. Throughout the Project Area, the impacted receivers tend to be rather close to the project roads. In many places, the minimum barrier may be rather tall (15-25 feet), which would require considerable space for a berm. Barriers more than 25 feet tall were considered to be not feasible because of the impracticality of such large barriers. This combination of constraints usually makes earth berms impractical or impossible choices for the noise barriers.

Physical placement of the barriers is also a consideration. In many locations in the Project Area, there would be long-term ownership, access, maintenance and cost concerns if a barrier were placed on private property. Therefore, the noise barriers evaluated in this analysis were intended to be located entirely on SDDOT road right-of-way.

SDDOT guidelines state that a traffic noise mitigation action is unreasonable if the cost is more than $15,000 per residence. Isolated receivers (e.g., dispersed homes) are a special case worth noting in this context. For a barrier reducing noise by 7 dBA for a single receiver to be reasonable, the barrier can be no more than about 259 square feet (assuming $58 per square foot of barrier). It is a rare situation where a barrier of such small size provides that much noise reduction. Therefore, it is nearly always unreasonable to construct barriers for isolated receivers, and such barriers were not recommended for the isolated impacted receivers in this project. The barrier evaluations and recommendations for the project are presented in **Table 3**. No barriers are being recommended for this project.

Table 3. Traffic Noise Mitigation Barrier Summary

Noise Impacted Area	Barrier Height (feet)	Barrier Length (feet)	Cost Analysis ($/residence)	Reduction (dBA)	Recommended?
Barrier South of Mile Post 48	25	790	190,000	5-7	No
Barrier South of Exit 44 (City of Piedmont)	10-25	3,260	108,000	5-14	No
Barrier N of Exit 44 at Rest Stop	10-15	1,000	208,000	7	No
Barrier N of Exit 44 at Rest Stop 2	5-10	1,420	118,000	7-11	No
Barrier N of Exit 44 by Overpass	20	1,040	242,000	7-10	No
Barrier South of Exit 46 East Side	25-35	1,050	205,000	5-10	No
Barrier at Mile Post 48 Stagebarn Canyon Subdivision	11	2,900	28,000	5-13	No
Barrier South of Exit 46 Overpass	35	2,270	124,000	5-12	No
Category B / Isolated Receiver South of Exit 40	19	410	226,000	4-7	No
Category C / Isolated Receiver South of Piedmont	7	220	89,000	7	No

5.3 Summary of Noise Findings

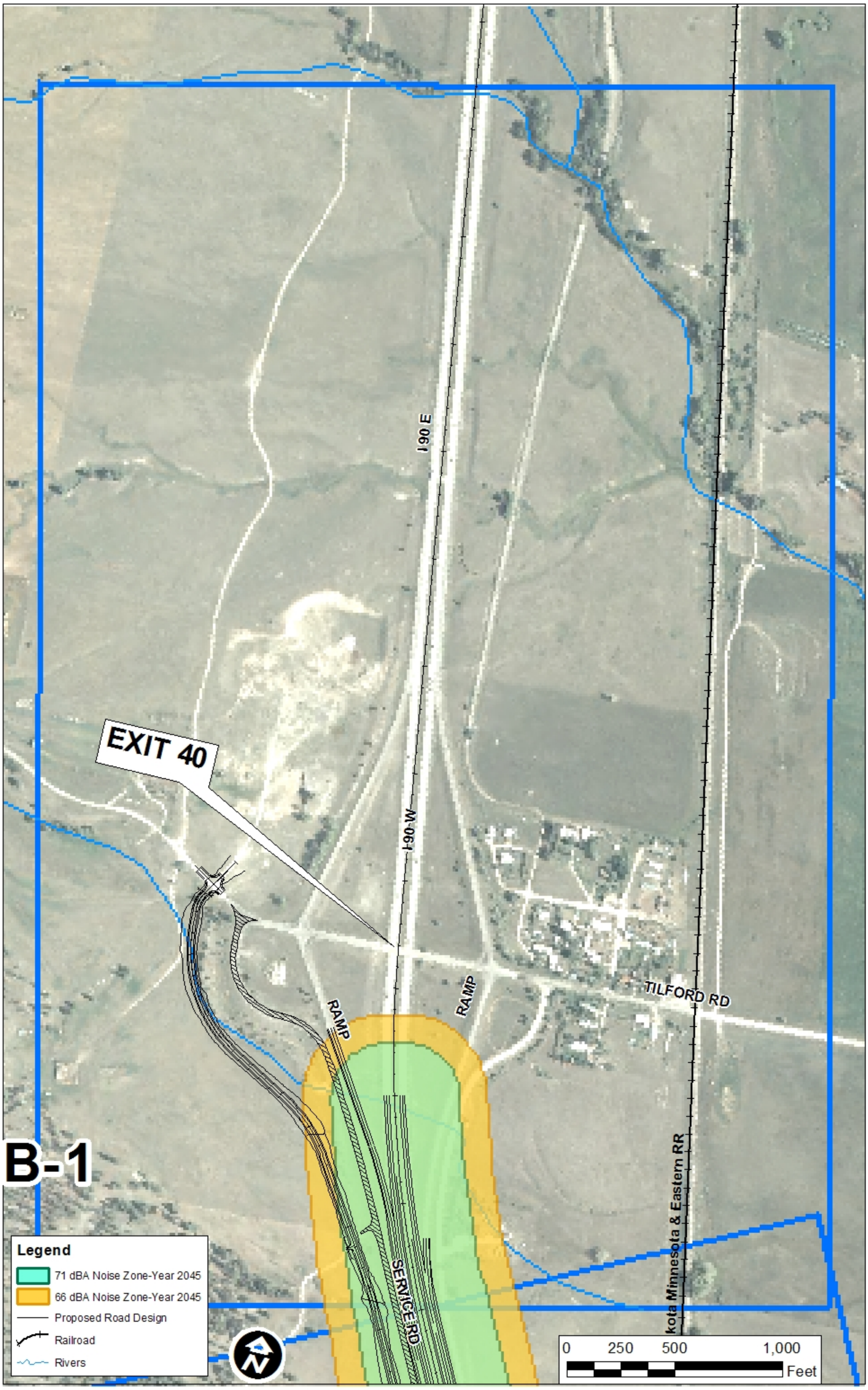
The results in Section 5.2 are based on assumed specific project road designs. If the final designs for I-90 in the future differ significantly from the design used in these evaluations, corresponding adjustments to the mitigation evaluations may be required.

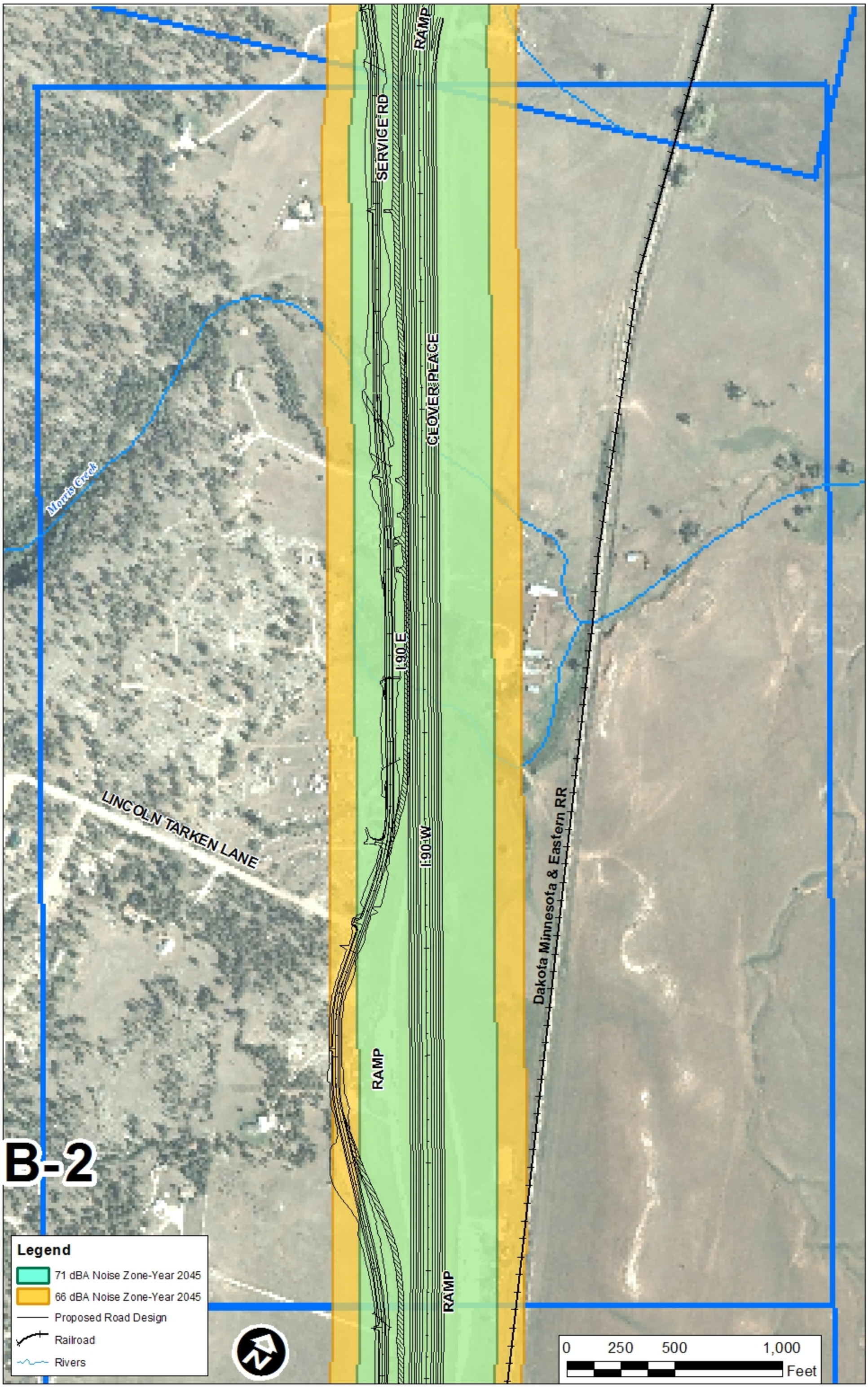
Based upon SDDOT traffic noise mitigation guidelines it was determined that none of the impacted locations along I-90 are being recommended for noise mitigation (**Table 3**).

To provide noise impact guidance to Meade County for development planning reviews and considerations, the distances from the edge of the I-90 travel way to 66 dBA and 71 dBA noise levels were calculated for the Preferred Alternative in the year 2045. Based upon the noise model described above, the 66 dBA noise contours and the 71 dBA noise contours are listed in (**Table 4**) below. Future land uses that may be constructed within the distances outlined in (**Table 4**) could experience highway noise impacts in 2045. Figures B-1 thru B-10 depicts the noise contour distances from the edge of I-90 travel way to the 66 dBA and 71 dBA noise levels.

Table 4. 2045 Noise Contours Summary Along I-90

I-90 Exit 40-44		I-90 Exit 44-46			I-90 Exit 46-48	
66dBA	380 ft	66dBA	400	ft	66dBA	430 ft
71dBA	250 ft	71dBA	250	ft	71dBA	270 ft


I 90 E
I-90-W
EXIT 40
RAMP
RAMP
SERVICE RD
TILFORD RD
Dakota Minnesota & Eastern RR
B-1
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
0
250
500
1,000
Feet


SERVICE RD
RAMP
CLOVER LEAF
I-90 E
I-90 W
RAMP
RAMP
Morris Creek
LINCOLN TARKEN LANE
Dakota Minnesota & Eastern RR
B-2
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
N
0
250
500
1,000
Feet

RAMP

HOMER SMITH RD

Dakota Minnesota & Eastern RR

I-90 E

BETHLEHEM RD

SERVICE RD

I-90 W

SIDNEY STAGE RD

Elk Creek

B-3

Legend

71 dBA Noise Zone-Year 2045

66 dBA Noise Zone-Year 2045

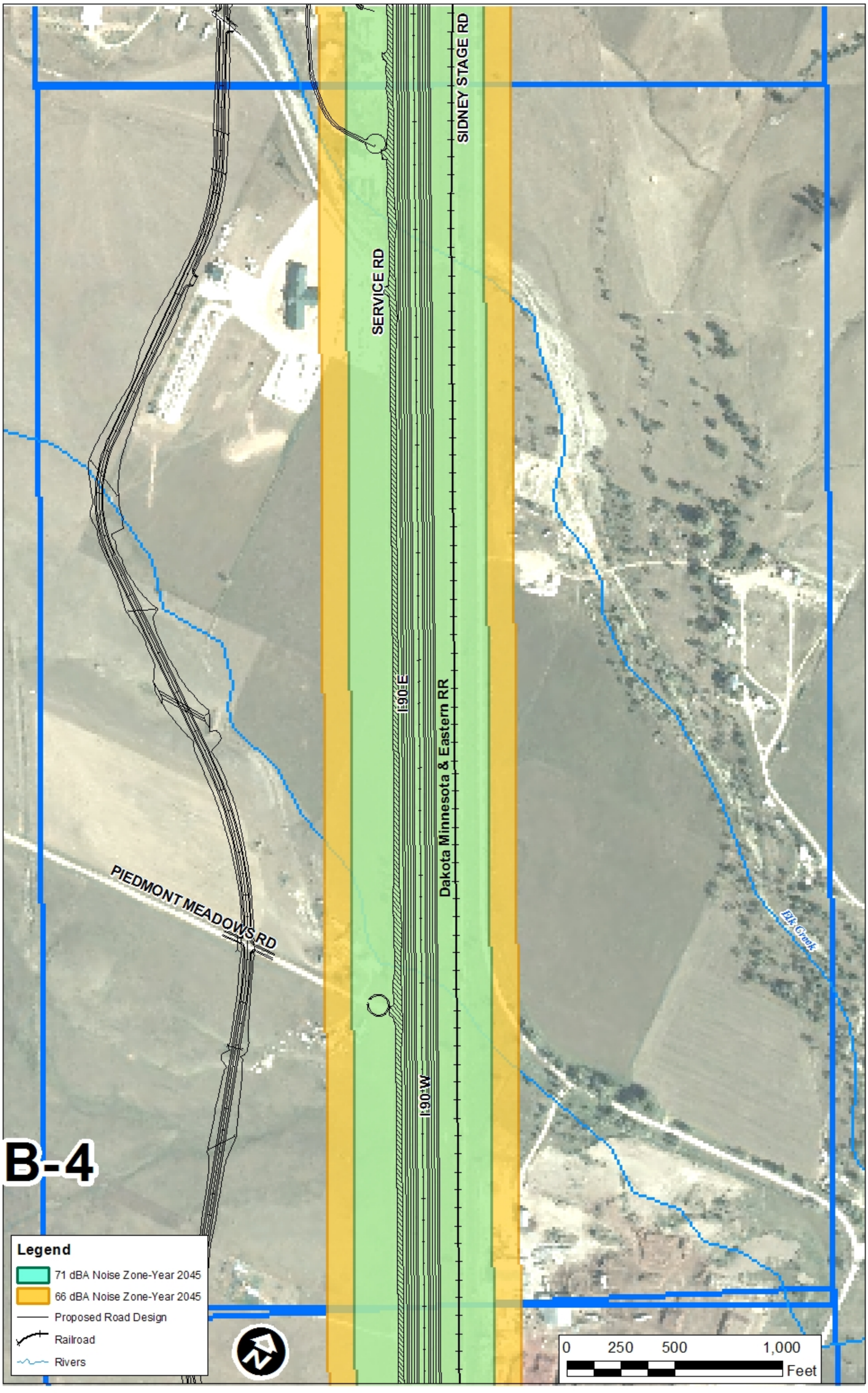
Proposed Road Design

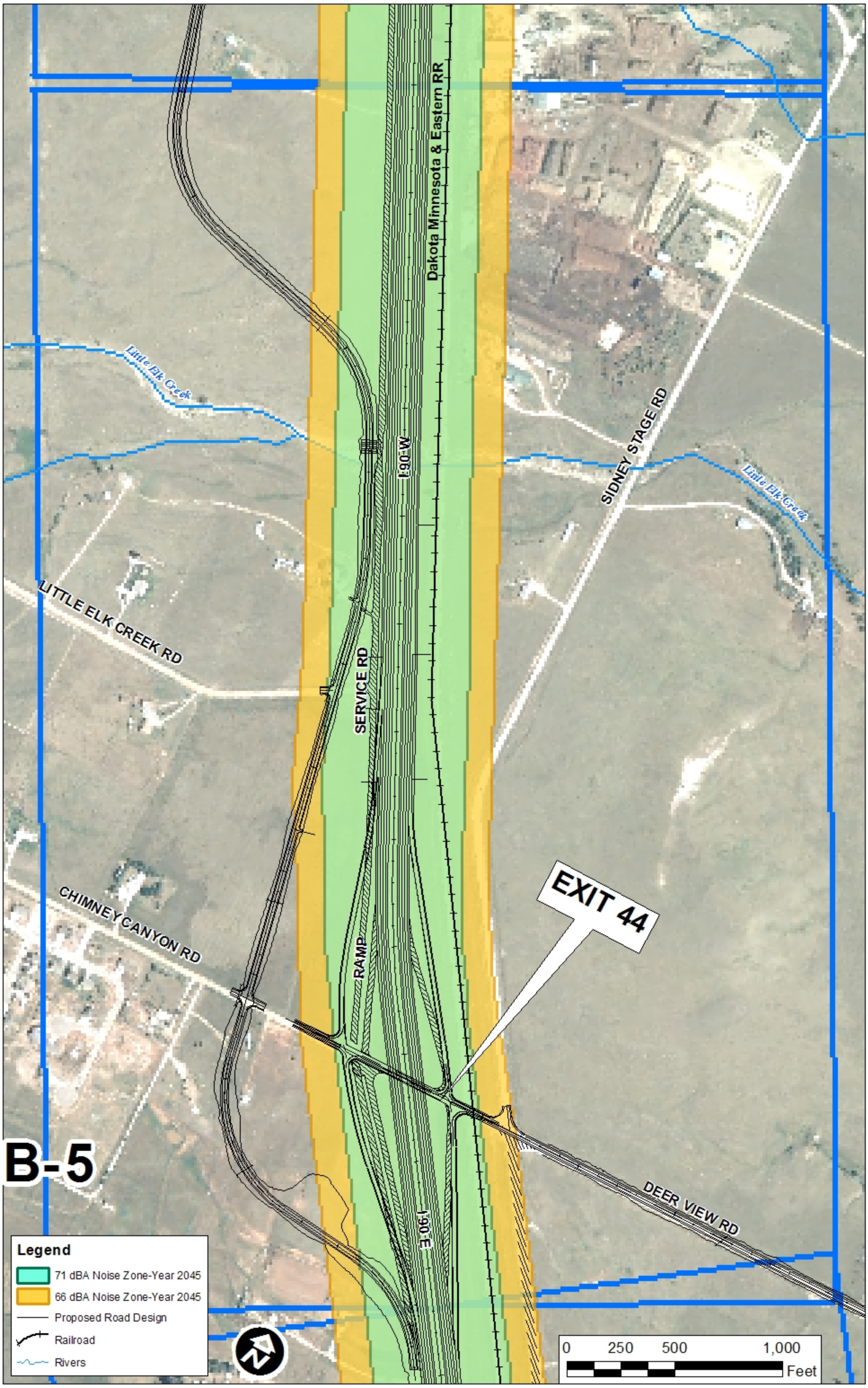
Railroad

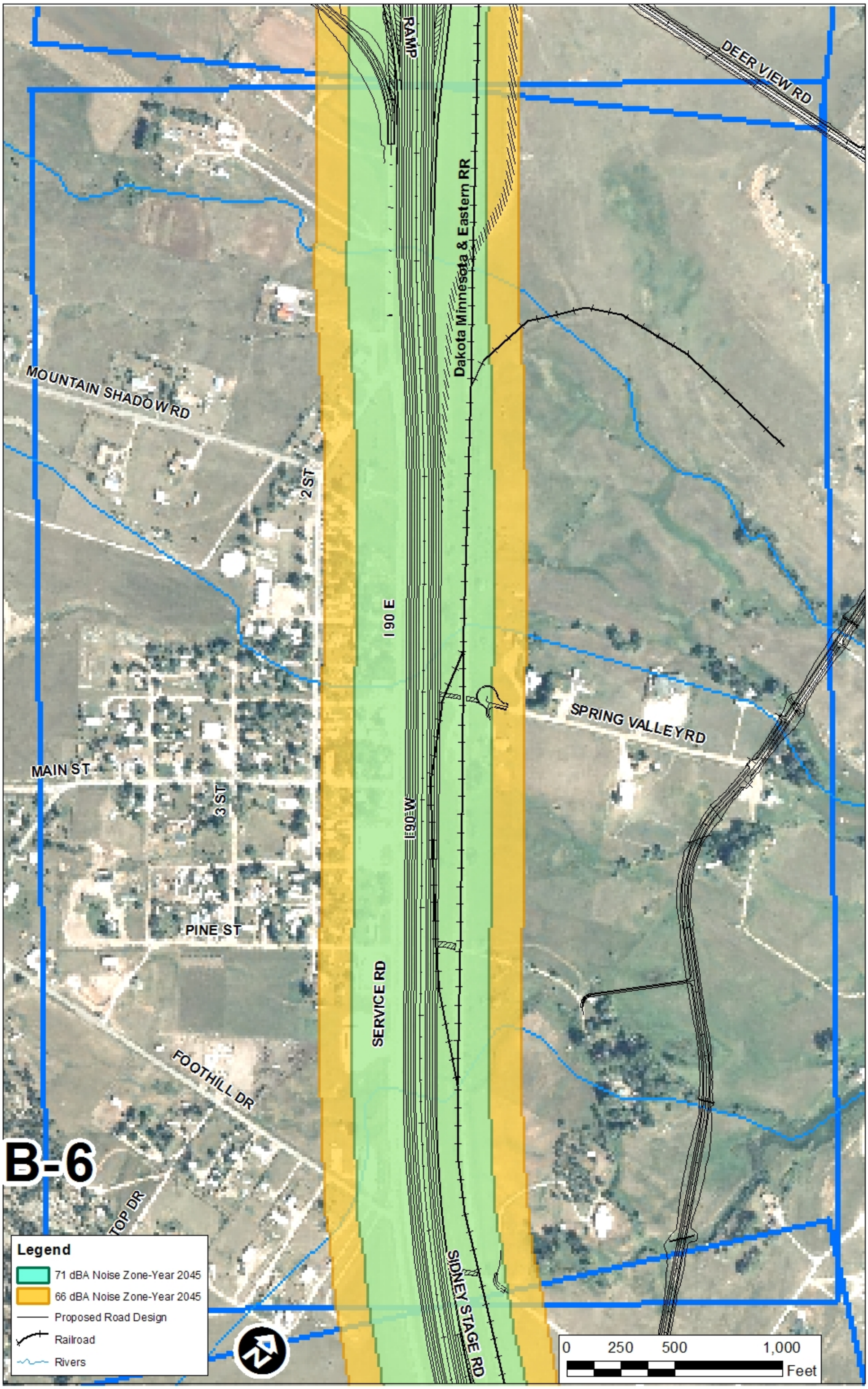
Rivers

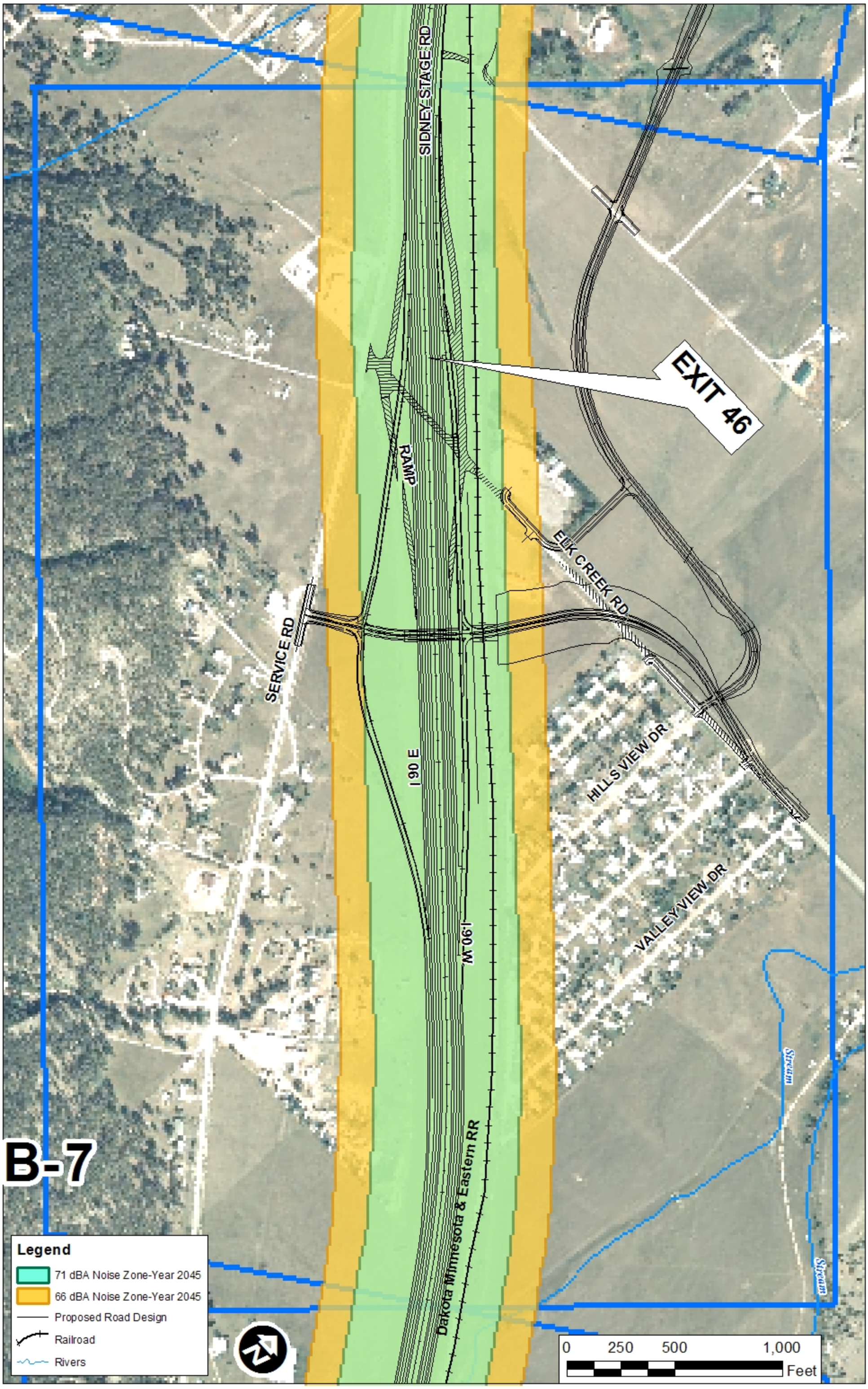
0 250 500 1,000

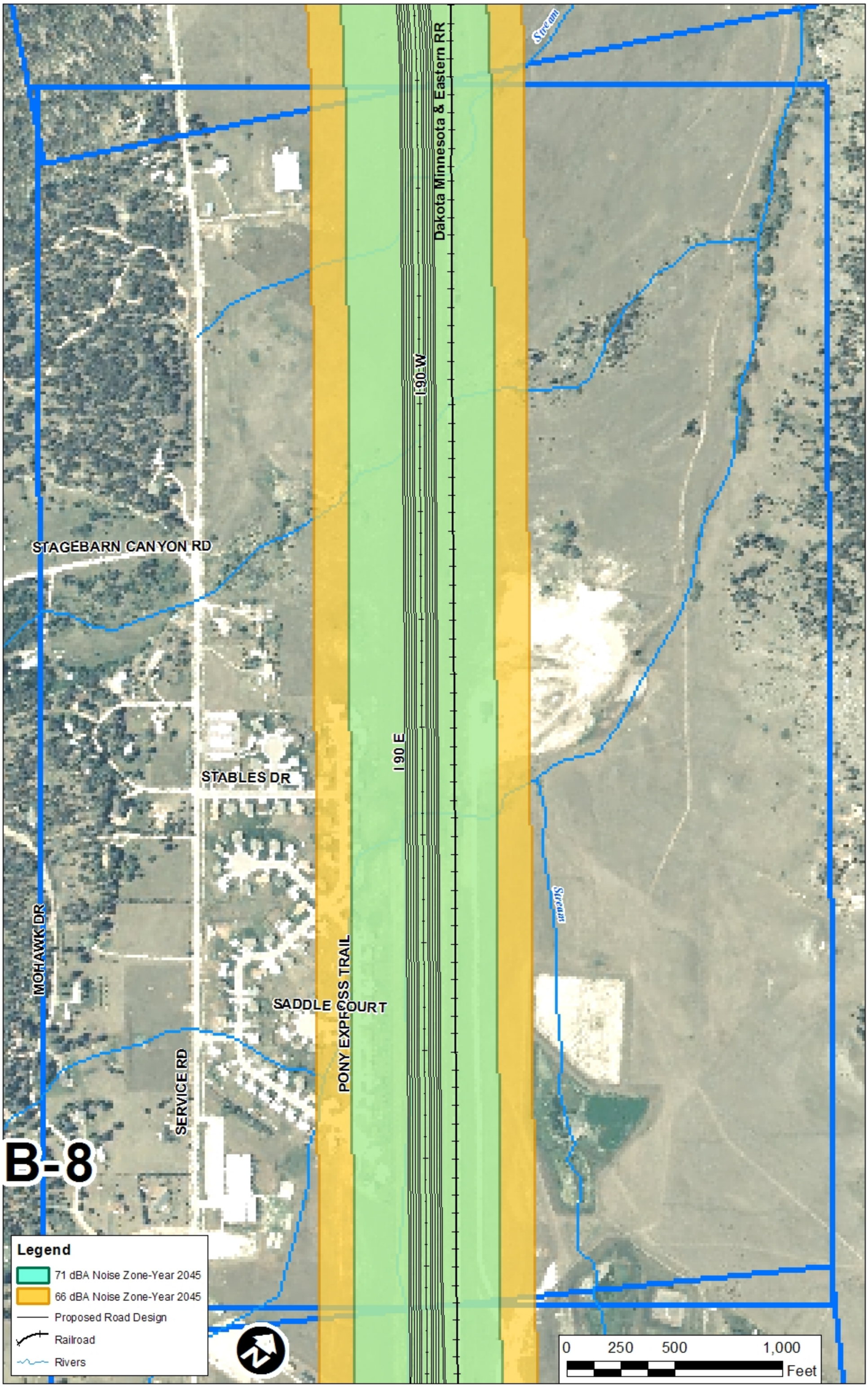
Feet

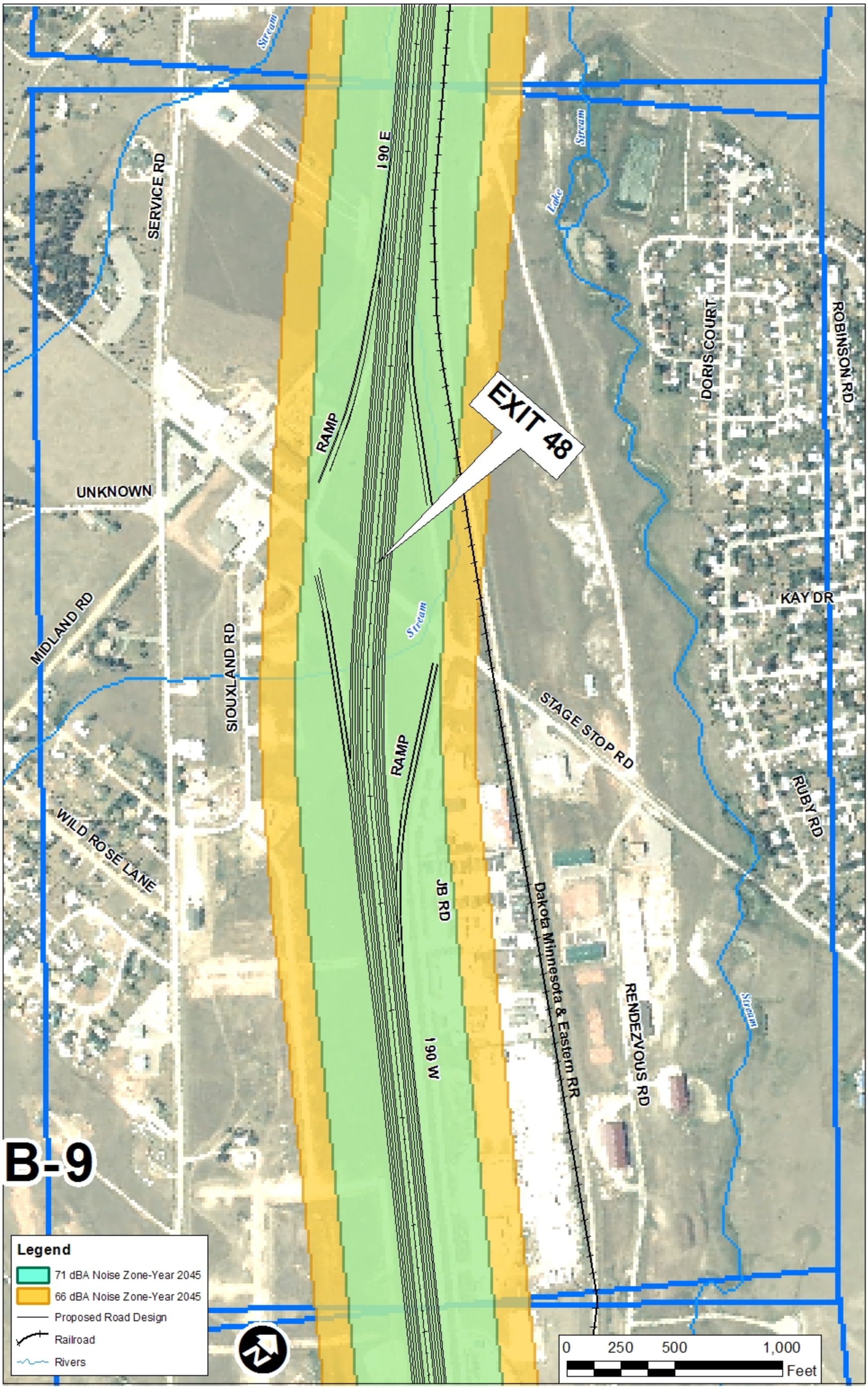

SIDNEY STAGE RD
SERVICE RD
I-90 E
Dakota Minnesota & Eastern RR
I-90 W
PIEDMONT MEADOWS RD
Elk Creek
B-4
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
0
250
500
1,000
Feet

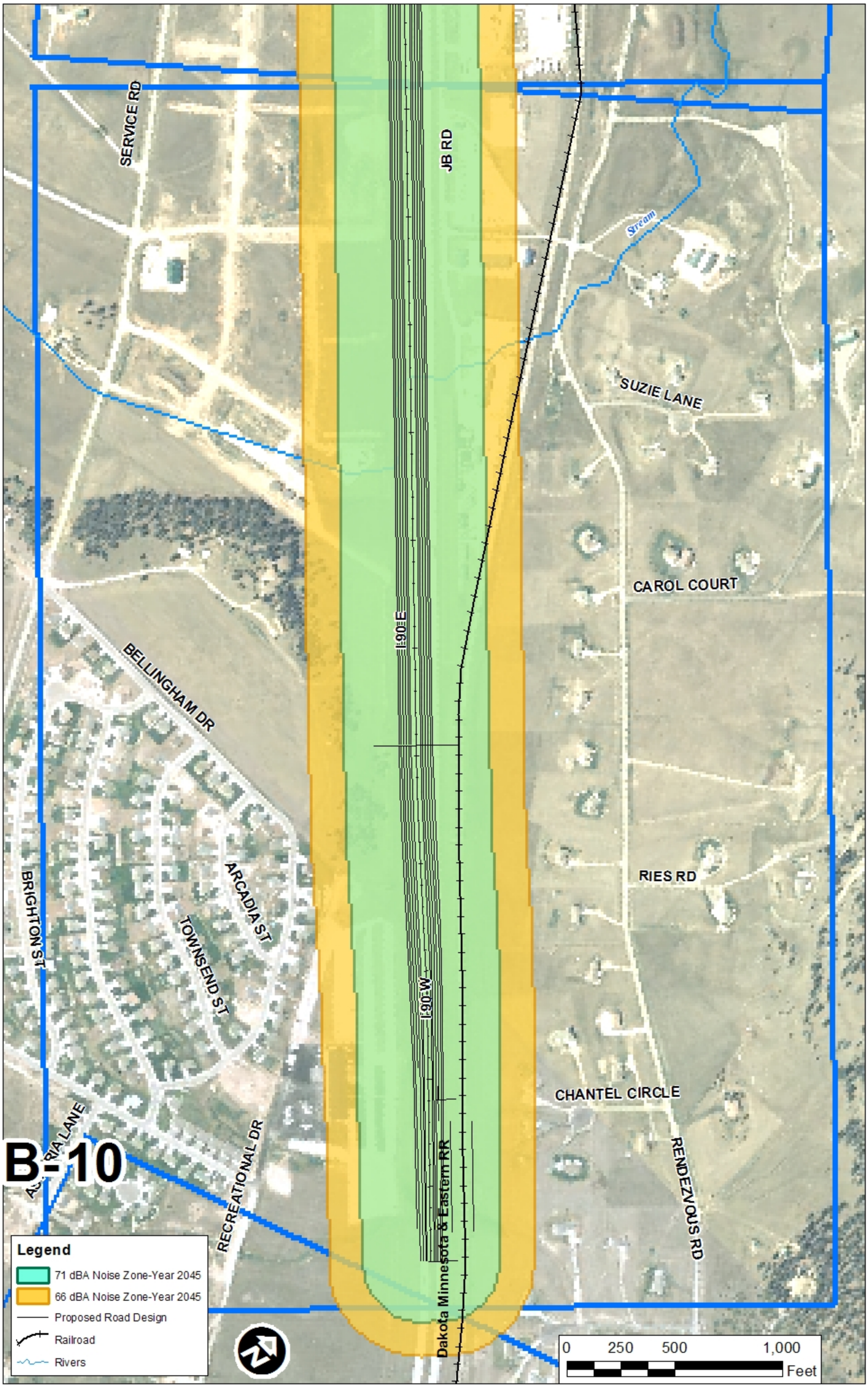

Dakota Minnesota & Eastern RR
I-90-W
I-90-E
SERVICE RD
RAMP
SIDNEY STAGE RD
LITTLE ELK CREEK RD
CHIMNEY CANYON RD
DEER VIEW RD
Little Elk Creek
Little Elk Creek
EXIT 44
B-5
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
0
250
500
1,000
Feet


RAMP
DEER VIEW RD
Dakota Minnesota & Eastern RR
MOUNTAIN SHADOW RD
2 ST
I 90 E
I 90 W
SPRING VALLEY RD
MAIN ST
3 ST
PINE ST
SERVICE RD
FOOTHILL DR
SIDNEY STAGE RD
B-6
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
0
250
500
1,000
Feet


SIDNEY-STAGE RD
EXIT 46
RAMP
ELK CREEK RD
SERVICE RD
I 90 E
I 90 W
HILLS VIEW DR
VALLEY VIEW DR
Stream
Stream
Dakota Minnesota & Eastern RR
B-7
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
0
250
500
1,000
Feet


Dakota Minnesota & Eastern RR
I-90 W
I 90 E
Stream
Stream
STAGEBARN CANYON RD
STABLES DR
MOHAWK DR
SADDLE COURT
PONY EXPRESS TRAIL
SERVICE RD
B-8
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
0
250
500
1,000
Feet


Stream
SERVICE RD
I 90 E
Stream
Lake
ROBINSON RD
DORIS COURT
EXIT 48
RAMP
UNKNOWN
KAY DR
MIDLAND RD
SIOUXLAND RD
Stream
STAGE STOP RD
RUBY RD
WILD ROSE LANE
RAMP
JB RD
Dakota Minnesota & Eastern RR
RENDEZVOUS RD
Stream
I 90 W
B-9
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
0
250
500
1,000
Feet


SERVICE RD
JB RD
Stream
SUZIE LANE
CAROL COURT
I-90 E
BELLINGHAM DR
BRIGHTON ST
ARCADIA ST
TOWNSEND ST
I-90 W
RIES RD
CHANTEL CIRCLE
ARCADIA LANE
RECREATIONAL DR
Dakota Minnesota & Eastern RR
RENDEZVOUS RD
B-10
Legend
71 dBA Noise Zone-Year 2045
66 dBA Noise Zone-Year 2045
Proposed Road Design
Railroad
Rivers
N
0 250 500 1,000
Feet

APPENDIX C PRELIMINARY WETLAND FINDINGS

I-90 ENVIRONMENTAL ASSESSMENT (EXIT 40 to EXIT 51)

PRELIMINARY WETLAND FINDINGS

Prepared for:

South Dakota Department of Transportation
Federal Highway Administration

Prepared by:

Felsburg Holt & Ullevig
6300 South Syracuse Way, Suite 600
Centennial, CO 80111
303/721-1440

April 2008

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

E.O. 11990 — *PRELIMINARY* WETLAND FINDING

PROJECT _____ PCEMS_____
MEADE COUNTY

I-90 Widening from Exit 40 to Exit 51 from four to six lanes
and the realignment of a North Service Road and South Service Road

This Action Complies with Executive Order 11990, Protection of Wetlands

Signed: Ginger J. Massie
FHWA Environmental Engineer

9-23-08
Date

Signed: Dennis A. Keller
SDDOT Environmental Engineer

9-23-08
Date

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

E.O. 11990—*PRELIMINARY* WETLAND FINDING

PROJECT _____ PCEMS_____
MEADE COUNTY

I-90 Widening from Exit 40 to Exit 51 from four to six lanes
and the realignment of a North Service Road and South Service Road

This statement sets forth the basis for a finding that there is no practicable, prudent, or economical alternative to the placing of fill for highway construction in certain wetlands adjacent to I-90, the North Service Road, and South Service Road in Meade County, South Dakota. All practicable measures to minimize the fill areas and so reduce harm to the wetlands have been taken.

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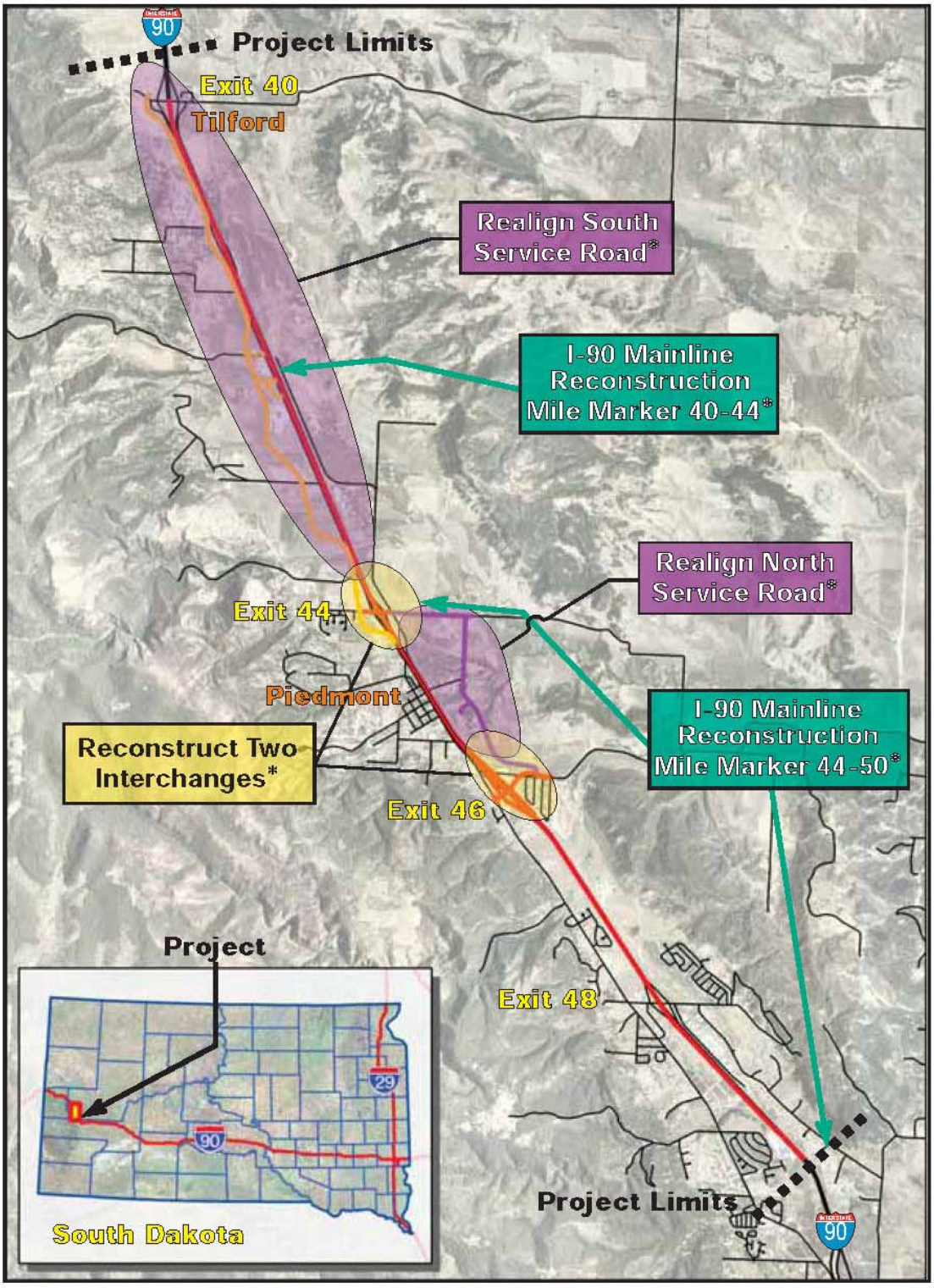
1.0 STUDY LOCATION AND DESCRIPTION

The proposed I-90 project is located along a 10-mile segment of I-90, which traverses the edge of the Black Hills National Forest in a northwest direction from Rapid City. The project area extends southeast from Tilford (Exit 40), which is about ten miles southeast of Sturgis to Exit 51, which is about two miles northwest of Black Hawk and seven miles from Rapid City (**Figure 1**). The Exit 51 limit meets project area limit of an South Dakota Department of Transportation (SDDOT) project that will reconstruct the interchange at I-90 Exit 51, for which an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) was approved in February 2006 (FHWA, 2006a, 2006b). The only communities of any substantial population in the project area are Piedmont, located on the west side of eastbound (EB) I-90 between Exits 44 and 46, and Summerset, located near Exit 51.

Figure 1. Project Overview



* Construction schedules for the proposed improvements will be determined by availablity of future funding

2.0 PROJECT HISTORY

In 2004, the SDDOT conducted the *Interstate 90 Black Hawk – Sturgis Corridor Preservation Study* (FHU, 2004) to assess the long term transportation needs for the I-90 corridor, and to identify needed right-of-way to be preserved for roadway improvements. The Corridor Preservation Study recommended the relocation of several service roads, the redesign of several interchanges, and the reconstruction and widening of the I-90 mainline in some areas.

Using the Corridor Preservation Study as a base for decision making purposes, SDDOT and the Federal Highway Administration (FHWA) decided to evaluate the portion of I-90 between Exit 40 and Exit 51 to identify the most feasible alternatives for improvements. Further evaluation of the transportation benefits and environmental impacts of the identified Preferred Alternative are carried forward from the Corridor Preservation Study in accordance with the requirements of the National Environmental Policy Act (NEPA) through the conduct of an EA.

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3.0 PURPOSE AND NEED FOR THE PROJECT

The purpose of this project is to improve interstate operations in addition to providing safe local access, and addressing future transportation demands throughout the corridor. There are multiple geometric interchange and roadway design issues that need to be corrected along the I-90 corridor.

The I-90 corridor serves local commuting residents as the primary connection between Sturgis and Rapid City in Meade County. It is also used for interstate and inter-regional travel, and to transport goods. Areas near the interstate have been the setting of recent population growth and land development, which is expected to continue in the future. Much of the recent development has clustered around the freeway interchanges.

Traffic volumes have also grown over the past decades, and are expected to continue to increase in the future. According to the SDDOT Transportation Inventory Management Office, the 2006 average daily traffic volume (ADT) on I-90 in the project area was 17,500 vehicles per day (vpd) (SDDOT, 2006). By the year 2026, that number is projected to increase to about 28,000 vpd ADT. For both present and future years, trucks comprise an estimated 14.3 percent of those daily volumes, or about 2,500 in 2006 and 4,000 in 2026.

Statistics from the South Dakota Department of Public Safety's Accident Records Office indicate that between January 1, 2004 and December 31, 2006, 217 accidents occurred in the project area totaling an estimated $1,173,000 worth of property damage (SDDPS, 2007). This compares to a total of 546 accidents on I-90 within Meade County and 3,892 accidents on I-90 in the State within the same timeframe. Of the 217 accidents, two involved fatalities, 47 involved injuries, and 91 were animal vehicle collisions. About two-thirds of the accidents occurred during dry road surface conditions.

Proposed improvements to existing geometrics will enhance traffic operations and reduce congestion and conflict points, providing additional safety. The widening of I-90 from four to six lanes is listed in four parts in the *SDDOT 2008-2012 Statewide Transportation Improvement Program (STIP)*, within the Interstate 3R Program (SDDOT, 2007). The 2008-2012 STIP provides the Department with a general plan to provide the projected highway construction needs of the state for the time period covered by the STIP.

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4.0 ALTERNATIVES

The project involves four basic elements which together would improve traffic operations on and near I-90:

- reconstruction of the I-90 mainline, from Exit 40 to Exit 51, to a future six-lane section, including realignment of I-90 from Exit 48 to Exit 51
- relocation of most segments of the South Service Road from Exit 40 to Piedmont
- relocation of all segments of the North Service Road between Exits 44 and 46
- reconstruction of the interchanges at Exit 44 and at Exit 46

A range of alternatives were examined throughout the planning and NEPA process. Technical screening, detailed evaluation, and public involvement narrowed down the list of alternatives and resulted in the identification of the Preferred Alternative alignments, which are further evaluated in *I-90 Environmental Assessment (Exit 40 to Exit 51)* EA. A Corridor Steering Committee, comprised of SDDOT staff and representatives of FHWA, Meade County, and the City of Summerset (with technical support from Felsburg Holt & Ullevig [FHU]), was convened early in the project process to facilitate discussions with the public regarding the process to develop project alternatives to satisfy the purpose and need, discuss updates on process, design, and analysis, and to receive input on the development of the Preferred Alternative. The public and agency participation was key to development of the Preferred Alternative.

4.1 No Action Alternative

The No Action Alternative is the alternative that would be selected if the Preferred Alternative is not selected. While the No Action Alternative does not satisfy the purpose and need for the project, it has been fully assessed and included in the environmental analysis. This alternative provides a baseline for comparison with the Preferred Alternative and is analyzed in accordance with Council on Environmental Quality (CEQ) regulations for implementing NEPA.

The No Action Alternative would not provide any improvements beyond the existing transportation system. I-90 and its service roads would remain in their current alignment with no improvements. The No Action Alternative would not support the vision set forth in the *SDDOT 2008-2012 STIP* (SDDOT, 2007a).

4.2 Preferred Alternative

Between the project limits of Exit 40 and Exit 51, the Preferred Alternative would include:

- relocating the South Service Road between Exit 40 and Piedmont
- relocating the North Service Road between Exit 44 and Elk Creek Road
- reconstruction of the two interchanges at Exits 44 and 46
- reconstruction of the mainline of I-90 to two lanes (and eventually three) in each direction

The Preferred Alternative would replace the interchanges at Exits 44 and 46. The existing interchanges at Exits 40 and 48 would remain and with the proposed widened section of I-90 constructed under the existing bridges.

4.2.1 I-90 Alignment

Widening of I-90 would occur along the existing alignment with a subtle shift. The subtle shift of the alignment between Exits 40 and 46 (and the future addition of one lane in each direction) would be possible by the prior relocation of the two existing service roads away from the mainline. Between Exit 48 and Exit 51, where the alignment ties into the reconstructed segment of I-90 approved in the Exit 51 at Black Hawk EA and FONSI, the six-lane realignment would be shifted southwest to avoid impacts to J.B. Road and the many businesses it serves.

4.2.2 South Service Road Alignment 1

SDDOT and Meade County determined for this project that the separation distance from the proposed outer lane of I-90 and the service road lane would be maintained at 125 feet with an 80 feet minimum. South Alignment 1 begins at Tilford Road or Exit 40. The separation distance from the I-90 outside lane would be reduced to the minimum 80 feet along a 1,500-foot segment, including along the east property line of the Tilford campground, to minimize impacts to an existing pond and two rock wall dams. Continuing south, South Alignment 1 would then follow along the existing service road alignment adjacent to the I-90 rest area, then shift west parallel to I-90, at the approximate desirable separation distance of 125 feet, to south of Homer Smith Road. To avoid the acquisition or relocation of some homes and businesses between Bethlehem Road and Elk Creek, South Alignment 1 would curve west away from I-90 and pass to the west of the Bob Gallant Trucking property. The alignment would be about 750 feet west of its current location between Bethlehem Road and Elk Creek. After crossing Elk Creek it would curve east along the existing alignment of the access road parallel to and south of Elk Creek along the north property line of Jack's Campers. It then turns southeasterly and parallel to I-90 at the desirable 125 foot separation distance. The alignment continues parallel to I-90 to just north of Little Elk Creek. At that point the alignment curves south away from I-90 across Little Elk Creek, then turns southeasterly, intersecting with Little Elk Creek Road, until it intersects Chimney Canyon Road. At that point the alignment would curve east toward I-90 and connect to North 1st Street as it enters Piedmont.

4.2.3 North Service Road Alignment 4

The existing North Service Road, currently Sidney Stage Road, between Exit 44 and Exit 46 is parallel to, and for a good portion is extremely close to, the outside lane of WB I-90. This service road follows existing Deer View Road east from the Exit 44 interchange then turns south onto the existing Spring Valley Road. At Spring Brook Lane, Spring Valley Road ends but the North Alignment 4 would continue and be the same as North Alignment 3 to realigned Elk Creek Road.

The existing railroad crossing at Spring Brook Lane would be removed and Spring Brook Lane would terminate at a new cul-de-sac just east of the railroad property. Altogether, four at-grade railroad crossings would be eliminated with construction of the North Alignment 4.

4.2.4 Exit 44 with I-90 Over

The proposed concept for the Exit 44 interchange is to reconstruct the interchange in its current configuration. The east ramp intersection at Chimney Canyon Road would be rebuilt slightly further west from I-90, but the west ramp intersection at Deer View Road and the at-grade intersection with the railroad would remain in their current locations.

4.2.5 Exit 46 Diamond Interchange

This type of configuration is typical along this corridor. The two entrance/exit ramp intersections at Elk Creek Road would be approximately 450 feet apart. Although the diamond interchange requires more land to construct than a Single Point Urban Interchange (SPUI), no building structures would have to be acquired at this location. Construction costs for the diamond interchange will be less than the SPUI, because the bridge is much smaller and fewer retaining walls would be required.

4.3 Other Alternatives Considered

Alternatives to the Preferred Alternative were considered, but eliminated from further analysis. This section briefly describes the alternatives that were removed from further consideration.

4.3.1 South Service Road Realignment Between Exit 40 and Exit 44

Three alternative alignments were considered for the South Service Road alignment between Exits 40 and 44: South Alignment 1, South Alignment 2, and South Alignment 3. All three alignments have the same alignment for approximately three-quarters of a mile beginning at the Exit 40 interchange and heading south. The primary difference between the two alternatives that were not selected is that Alternative 1 results in some business relocations and Alternative 3 is much further west than the selected alignment.

South Alignment 1 was selected as the Preferred Alternative for the following reasons:

- Its alignment avoids the need to acquire some homes and businesses that are next to the existing South Service Road between Bethlehem Road and Elk Creek.
- It minimizes impacts to the Tilford Campground.
- It avoids a historic root cellar, and minimizes impacts to two rock wall dams.

4.3.2 North Service Road Realignment Between Exit 44 and Exit 46

Four alternatives for the North Service Road Realignment were considered. The three alternatives that were not further evaluated as part of the preferred alternative are briefly described below. The Steering Committee selected North Alignment 4 as the Preferred Alternative and did not select North Alignments 1, 2, or 3 because North Alignment 4 better:

- uses existing roads for most of its alignment
- minimizes impacts to the undeveloped property southeast of the existing intersection at Deer View Road and Sidney Stage Road
- avoids relocations

- eliminates Sidney Stage Road south of Deer View Road
- preserves the large horse pasture south of Deer View Road

4.3.3 New interchanges at Exit 44 and Exit 46

The proposed project will replace the interchanges at Exit 44 and Exit 46. Two alternative interchange designs were considered at Exit 44 and Exit 46.

At Exit 44 one was with I-90 over the Chimney Canyon Road/Deer Valley Road cross-street, and the other with I-90 under the Chimney Canyon Road/Deer Valley Road cross-street. The interchange over the cross-streets was selected as the Preferred Alternative because raising the grade of Deer View Road would require the grade separation over the railroad and potential relocation of the intersection at Sidney Stage Road away from the railroad to avoid the added cost of retaining walls.

A SPUI and a diamond interchange design were considered at Exit 46. The SPUI design would require more retaining walls and a traffic signal that would not likely be warranted by future traffic volumes. Although the diamond will require more land than the SPUI, no structures will be required. Another advantage to the diamond design is its lower cost, because the bridge is smaller than the one that would be required for a SPUI. For these reasons, the diamond design was selected as the Preferred Alternative for the interchange at Exit 46.

5.0 METHODOLOGY FOR DETERMINING WETLAND AREAS

Due to the early stage of this project, wetland areas were not formally delineated and jurisdictional determinations were not obtained from the U.S. Army Corps of Engineers (USACE). Potential wetland areas were estimated based on the availability of geographic information system (GIS) data from the National Wetlands Inventory, general field observations, and aerial photograph interpretation. No attempt to determine jurisdictional status of wetlands was performed at the time. Impacts to potential wetlands are likely overestimates because of the conservative identification methodologies. As the level of design and the identification of wetlands increases, it is anticipated that potential impacts will decrease.

The wetlands in the project area fall into two general categories: 1) those associated with streams and drainages and 2) those associated with springs. The stream wetlands occur along the fringes of the stream channels and sometimes result in areas of ponding. The hydrology of these wetlands is supported by water carried in the stream channel or from adjacent runoff. The vegetation in these wetlands is generally dominated by cattails (*Typha latifolia*).

Wetlands associated with springs are supported by a relatively large volume of water from the springs. Springs in the project area have been observed to produce enough water during typical dry times of the year, such as late November and early December, to have standing water. As with the other wetlands, cattails dominate the spring wetlands; however, wetland grasses can also occur within the wetlands associated with springs.

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6.0 BASIS FOR DETERMINING THE PREFERRED ALTERNATIVE INCLUDES ALL PRACTICABLE MEASURES TO MINIMIZE HARM TO WETLANDS

Opportunities to avoid and minimize impacts to potential wetlands were considered and applied during development of the Preferred Alternative. The largest wetland impact area (Wetland 13) is a ponded area where three alternatives were considered to avoid the pond. The alternatives that would have avoided impacts to wetlands would have either removed the operations facilities or permanently disrupted an adjacent campground's operations. Because of the proximity to Sturgis, this campground accommodates large numbers of campers attending the motorcycle rally. Because the influx of tourism from the rally and its associated economic benefits, impacts to the campground from these avoidance alternatives were considered to be severe.

Measures taken to reduce wetland impacts include crossings at major creek channels having bridge structures, rather than culverts or other structural components that would create more wetland impacts.

Based on the current level of roadway design and identification of wetlands, the Preferred Alternative would result in approximately 2.1 acres of potential wetlands being permanently impacted. **Figures 2** and **3** depict the location of the corridor and provide numeric identifications (Wetland ID) for the impacted wetlands. **Tables 1** through **3** show the impacts to potential wetlands from each project component by Wetland ID.

Table 1. Impacts to Potential Wetlands from I-90 Widening

Wetland ID	Wetland Type	Acres Present	Acres Impacted
5	Estimated Wetland	0.24	0.11
15	PABFh	0.94	0.051
	Totals	**1.2**	**0.16**

PABFh = a diked/impounded palustrine, aquatic bed, and semipermanently flooded wetland

Table 2. Impacts to Potential Wetlands from North Alignment 4

Wetland ID	Wetland Type	Acres Present	Acres Impacted
29	Estimated Wetland	0.42	0.024
30	Estimated Wetland	0.49	0.039
31	Estimated Wetland	0.21	0.0041
59	Estimated Wetland	0.11	0.036
60	Estimated Wetland	0.05	0.017
61	Estimated Wetland	0.52	0.17
	Totals	**1.8**	**0.29**

Table 3 Impacts to Potential Wetlands from South Alignment 1

Wetland ID	Wetland Type	Acres Present	Acres Impacted
1	Estimated Wetland	0.10	0.10
2	Estimated Wetland	0.023	0.023
3	Estimated Wetland	0.056	0.022
13	PABFh	0.81	0.46
17	PABFh	0.12	0.10
22	Estimated Wetland	5.5	0.79
25	Estimated Wetland	0.50	0.16
55	PEMC	0.098	0.019
	Totals	**7.2**	**1.7**

PABFh = a diked/impounded palustrine, aquatic bed, and semipermanently flooded wetland
PEMC = a palustrine, emergent, seasonally flooded wetland

Table 4 presents areas of anticipated temporary impacts to wetlands. These potential wetland areas are adjacent to areas where asphalt from the current service roads will be removed.

Table 4. Temporary Impacts to Potential Wetlands

Wetland ID	Wetland Type	Acres Present	Acres Impacted
23	Estimated Wetland	5.5	0.035
24	Estimated Wetland	0.18	0.18
	Totals	**5.7**	**0.22**

Figure 2. Wetlands Impacts – Project Area North

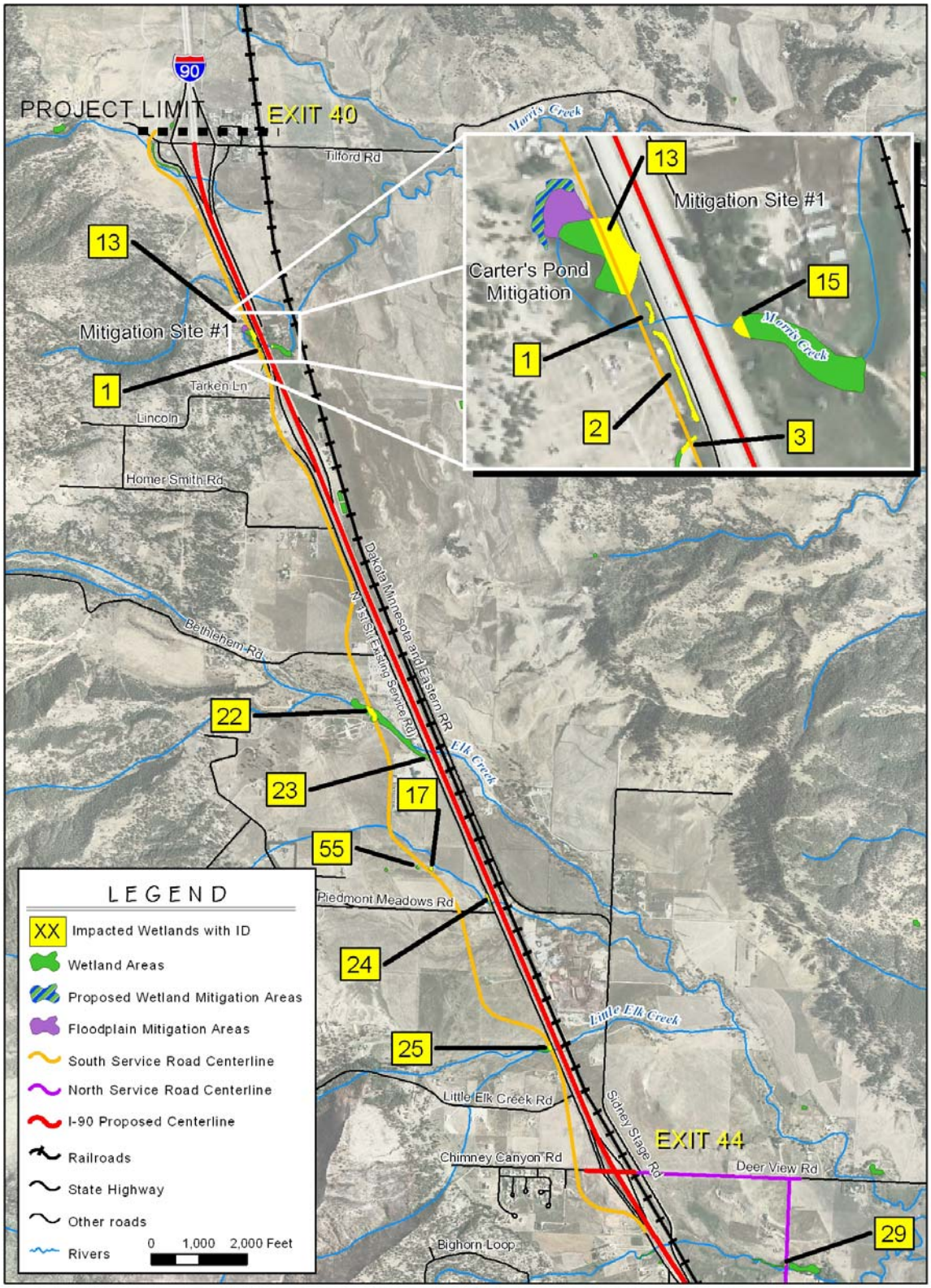
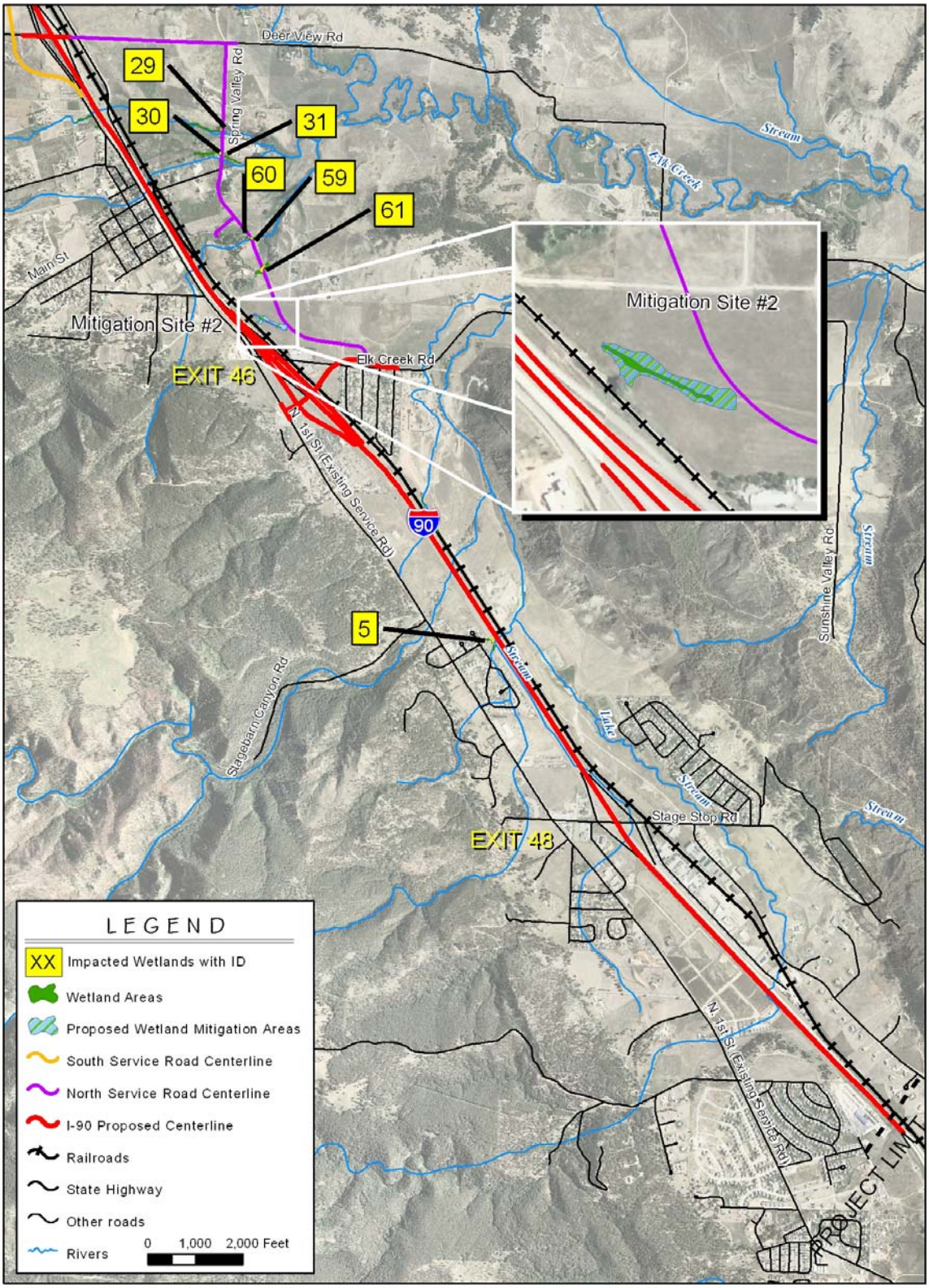


Figure 3. Wetlands Impacts – Project Area South



7.0 MITIGATION

Two possible mitigation locations have been identified for the potential permanent wetland loss of 2.1 acres.

Mitigation Site #1 is located near Wetland 13 (Carter's Pond) where the edges of the pond will be re-graded to achieve approximately 0.5 to 0.75 acres of wetland mitigation. This is a suitable mitigation site because the existing pond is fed by a spring, which can supply the pond and the re-graded areas with sufficient water to inundate and/or provide saturated soils for a period long enough to allow for the development of hydric soils and establishment of hydrophytic vegetation. The pond will be re-graded and the hydric soils will be placed on the newly graded areas to assist in the establishment of wetlands. Specifics regarding establishment of vegetation will be developed during the Section 404 permitting process. SDDOT will develop an easement agreement with the landowner and ensure that it is protected in perpetuity.

Mitigation Site #2 is located approximately one-quarter mile northwest of the Exit 46. This site has an existing linear wetland that is not impacted by the project. The wetland is fed by a spring supplying the majority of the water for the wetland. This wetland is also receiving runoff from open areas from the east and is transferred under I-90. This area is currently owned by SDDOT. The slopes along the edge of the wetland can be flattened to allow for the expansion of the wetland. It is estimated that approximately 1.5 acres of additional wetlands can be attained in this area.

The combined proposed mitigation areas would result in a total of 2.0 to 2.25 acres of replacement wetlands. It should be noted that at this current level of wetland identification, the wetland impact numbers are likely overestimates; therefore, these mitigation sites should be sufficient in attaining the appropriate mitigation for the possible wetland impacts. When more detailed design and wetland identification become available, additional information, including contributing drainage areas, pipe sizing, proposed grading drawings will be developed.

Temporary impacts shown in **Table 4** will be minimized during construction and areas restored to their natural conditions through stockpiling and re-distributing hydric soils to assist in the re-establishment of wetlands. Material identified in the application as removed waste material, material stockpiles, dredged or excavated material shall be placed for either temporary or permanent disposal in an upland site that is not a wetland, and measures taken to ensure that the material cannot enter the watercourse through erosion or any other means.

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8.0 COORDINATION

This project was coordinated with the following agencies:

- United States Army Corps of Engineers
- Natural Resources Conservation Service
- South Dakota Department of Tourism and State Development – State Historic Preservation Officer
- South Dakota Department of Environment and Natural Resources – Department of Environmental Regulation
- United States Department of the Interior Fish and Wildlife Service – Biological Opinion
- South Dakota Department of Game, Fish and Parks

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9.0 FINDING

In accordance with Executive Order 11990, NEPA, and the Federal-Aid Highway Act, it has been determined that there is no feasible or practicable alternative to the proposed construction in wetlands. The Preferred Alternative includes all practicable measures to minimize harm, which may result from such use.

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10.0 REFERENCES

Federal Highway Administration (FHWA). 2006a. Final Environmental Assessment Project IM-PH 90-1(61)49 PCN 5586 Meade County, South Dakota I-990 Exit 51 at Black Hawk Reconstruct Interchange, Structures and Mainline.

Federal Highway Administration (FHWA). 2006b. Finding of No Significant Impact for Project IM-PH 90-1(61)49 PCN 5586, Meade County, South Dakota. February 6.

Felsburg Holt & Ullevig (FHU). 2004. Interstate 90 Black Hawk – Sturgis Corridor Preservation Study. December.

South Dakota Department of Public Safety's Accident Records Office (SDDPS). 2007. Accident Data Summaries sent to Felsburg Holt & Ullevig by Jenny Serbousek with SDDOT. May 17, 2007.

South Dakota Department of Transportation (SDDOT). 2007. 2008 to 2012 State Transportation Improvement Plan. June 29, 2007.