

North Sheridan Interchange

Environmental Assessment





ENVIRONMENTAL ASSESSMENT

FHWA-WY-EA-12-02
Wyoming Project: 0901091

North Sheridan Interchange
Sheridan County, Wyoming

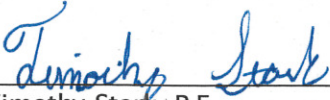
Prepared for:
Wyoming Department of Transportation
and
U.S. Department of Transportation Federal Highway Administration

Submitted Pursuant To:
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Abstract:

The proposed improvements include reconstructing and potentially relocating the North Sheridan Interchange, improvements to I-90, and improvements to North Main Street. The North Sheridan Interchange is the first interchange serving the city of Sheridan, Wyoming for eastbound vehicles on I-90 and the last interchange for westbound vehicles on I-90. Three alternatives were analyzed in the Environmental Assessment - The No-Build, Reconstruct Interchange at the Existing Location (Alternative 2), and Interchange close to Decker Road (Modified Alternative 4). WYDOT has identified Modified Alternative 4 as the Preferred Alternative due to cost, operations, fewer wetland impacts, and no commercial or residential relocations.

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CHAPTER I

PURPOSE AND NEED

Supporting Documents

The following documents provide more detailed information supporting this environmental assessment:

- Purpose and Need Technical Memorandum
- Alternatives Technical Memorandum
- Air Quality Technical Memorandum
- Planning Review Technical Memorandum
- Socioeconomic Technical Memorandum
- Visibility Technical Memorandum
- Noise Technical Memorandum
- Wetland Report
- Wildlife/Plant Survey Report
- Climate Technical Memorandum
- Public Information Meeting Summaries

These documents will be available via CD or in hard copy at Wyoming Department of Transportation offices in Cheyenne and Sheridan.

Documents can also be downloaded from the WYDOT Environmental Services web page.

The Wyoming Department of Transportation (WYDOT) and the Federal Highway Administration (FHWA) are studying improvements to the North Main Street/ Interstate 90 (I-90) interchange, also known as the North Sheridan Interchange.

WHAT IS THE NORTH SHERIDAN INTERCHANGE PROJECT?

The proposed Project includes reconstructing and potentially relocating the North Sheridan Interchange, improving I-90, and improving North Main Street. The North Sheridan Interchange is the first interchange serving the City of Sheridan, Wyoming, for eastbound vehicles on I-90 and the last interchange for westbound vehicles on I-90.

Sheridan is located at the foot of the Big Horn Mountains in north-central Wyoming, about 30 miles south of the Wyoming-Montana border. Billings, Montana, is the largest city within 200 hundred miles of Sheridan. Other large communities in the vicinity of Sheridan are Buffalo, Wyoming (40 miles south); Hardin, Montana (85 miles north); and Gillette, Wyoming (100 miles east).

Sheridan is located along the route commonly used to reach Little Bighorn Battlefield National Monument, Yellowstone National Park, and Mount Rushmore National Memorial. Sheridan is an important stop along I-90 for tourists and truck traffic because of its proximity to the mountains and its distance from the closest communities. Consequently, the interchange is important to pass-through traffic as well as local traffic.

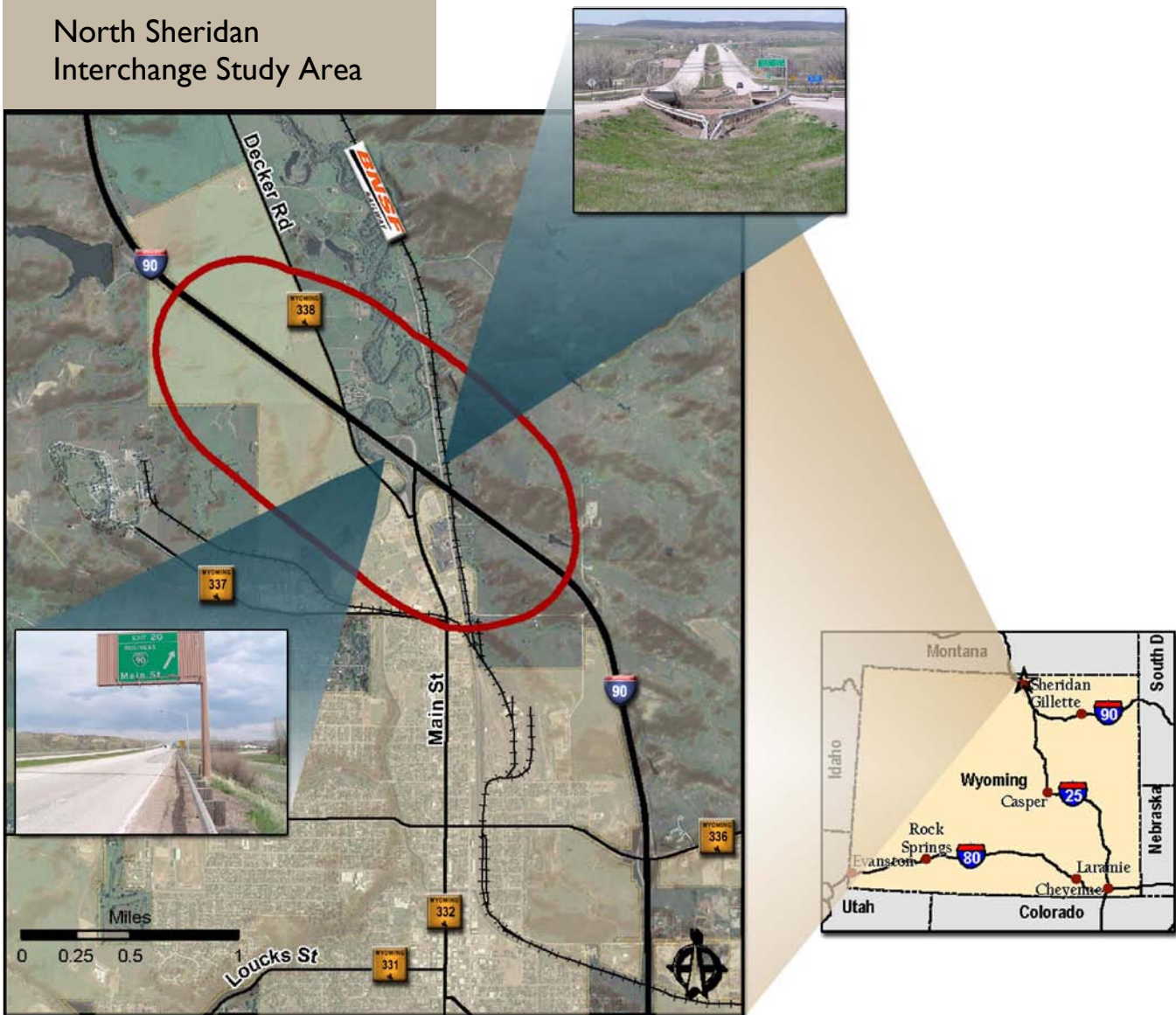
WHO IS INVOLVED IN THE DEVELOPMENT OF THIS PROJECT?

The Project and this environmental assessment are being developed by the FHWA and WYDOT, with participation from United States Forest Service, the City of Sheridan, local residents, and resource agencies.

Environmental Assessment

An environmental assessment is completed in compliance with the National Environmental Policy Act. The intent of an environmental assessment is to evaluate alternative courses of action and ensure decisions be made in the best overall public interest based upon a balanced consideration of the need for safe and efficient transportation, of the social, economic, and environmental impacts of the proposed transportation improvement, and of national, state, and local environmental protection goals.

North Sheridan Interchange Study Area



Data Sources: Imagery (City of Sheridan)



HASN'T WYDOT ALREADY STUDIED THE NORTH SHERIDAN INTERCHANGE PROJECT?

WYDOT considered improvements to the North Sheridan Interchange along with improvements to the port-of-entry in the late 1990s. The port-of-entry project advanced through construction, but the interchange improvements were postponed. Prior to being postponed, multiple conceptual alternatives were developed and presented to the public.

Three alternatives were recommended, including upgrading the existing interchange, constructing an interchange at Wyoming 338 (Decker Road), and constructing an interchange north of Decker Road.

WYDOT is now moving forward with the interchange improvements and has developed a range of alternatives, including the previously recommended alternatives for further consideration in this environmental assessment, which is being prepared in compliance with the National Environmental Policy Act process.

WHAT IS THE PURPOSE OF THIS PROJECT?

The Project is being proposed to provide safe, direct regional access from I-90 to the north Sheridan area in support of local land use plans, and to improve deteriorating segments of I-90 and North Main Street. The

Project must comply with current design standards and with FHWA's interstate access policy.

WHY IS THIS PROJECT NEEDED?

The need for this Project is demonstrated by the following major issues:

- **Interchange Deficiencies:** Existing geometric conditions of the interchange include substandard horizontal curves, excessive grades, and insufficient acceleration and deceleration lanes that contribute to safety hazards.
- **System and Regional Connectivity:** Regional and system connectivity are limited to the south side of the interstate with no direct access provided north of the interstate to support existing uses or long-range planning and expected growth.
- **Deteriorating Roadway Segments:** The current pavement section has outlived its design life and is in disrepair.

Interstate Access Policy

As part of its 2009 Interstate Access Policy, FHWA requires a comprehensive interstate network study for new or relocated interchanges and in areas where there is potential for future multiple interchange additions. These additions must be within the context of a long-term plan. Sheridan identified an interchange as part of its study of the West Corridor transportation facility, and it must be considered when determining a location for the North Sheridan Interchange. Minimum spacing between adjacent interchanges, whether existing or planned, also must be considered.

WHAT ARE THE INTERCHANGE DESIGN DEFICIENCIES AND WHY DO THEY MATTER?

Design standards for roadways are based on A Policy on Geometric Design of Highways and Streets, published by the American Association of State Highway Transportation Officials (AASHTO). WYDOT has developed a set of design standards that are based on the AASHTO publication, which is also known as the "Green Book." These design standards are presented in the Wyoming Road Design Manual. Minimum standards are established to ensure that roads are as safe as possible.

The North Sheridan Interchange was constructed 50 years ago and met design standards at that time. Standards have been revised over time, however, taking into account new safety information. The existing interchange does not meet current standards. When these standards are not met, the safety of the interchange is diminished, which can lead to an increase in crashes or unsafe driving conditions.

Three interchange design elements of the North Sheridan Interchange have been identified as not meeting current design standards: horizontal curves, insufficient acceleration and deceleration lanes, and steep grades.

HORIZONTAL CURVATURE

The horizontal curvature of a road, or what is referred to as the curves of the road (in comparison to vertical curvature or hills), depends on the following factors:

- Type of traffic using the road (such as cars, trucks, or recreational vehicles)
- Number of vehicles using the road
- Speed the road is designed for (such as interstate or city street traffic speeds)
- Topography of the surrounding area

- Angle of intersecting roads
- Type of ramps used for the exiting roads, such as diamond or trumpet

The topography in the project area can be generally described as rolling, which influences the horizontal and vertical curvatures of the roads. The topography and presence of Goose Creek and the Burlington Northern Santa Fe (BNSF) railroad constrained the existing North Sheridan Interchange's design.

The Project's crash analysis shows that the westbound on- and off-ramps and the eastbound on-ramp, where horizontal curves are the sharpest, have the highest crash rates. Approximately 79 percent of all crashes at the interchange (15 of 19) involved only one vehicle. Nearly half of these crashes involved an overturned vehicle, and four more involved a vehicle hitting the guardrail. These four could have been overturned vehicles if the guardrail had not been in place. High speeds accounted for a majority of these crashes, but the ramp speeds are below what drivers would expect for ramps entering or exiting an interstate highway. Weather was not a factor in the crashes. Improving geometry and standardizing horizontal curves are proven means for reducing crashes.

The Purpose and Need Technical Memorandum provides more detail on the crashes that have occurred at the North Sheridan Interchange.

ACCELERATION AND DECELERATION LANES

Acceleration and deceleration lanes need to be long enough to ensure that the driver can safely enter or exit the interstate at a constant rate of speed. Any horizontal curves along the interchange ramps need to account for the length of the acceleration and deceleration lanes. Neither of the existing deceleration lanes meets the required deceleration lengths outlined in the AASHTO standards. The result is that the westbound off-ramp does not provide enough room for exiting traffic to slow down. This condition has likely contributed to the eight crashes that have occurred at this interchange between 1998 and 2008.

The lengths of the existing acceleration lanes do not meet the required acceleration lengths outlined in the AASHTO standards. As a result, 5 out of the last 8 years, the crash

rate has exceeded the statewide average. Twelve crashes occurred along the on-ramps and at the merge points on westbound and eastbound I-90 between 1998 and 2008.

The physical constraints posed by Goose Creek, the BNSF railroad tracks, and surrounding topography, combined with the skewed angle of North Main Street at I-90 make it difficult to lengthen the acceleration and deceleration lanes along the existing I-90 mainline. Longer lanes would require widening bridges over the railroad and Goose Creek.

Acceleration and Deceleration Lanes

A driver's ability to enter and exit a roadway at a constant speed and in a continuous flow is linked to the horizontal curves of accelerations and deceleration lanes. Deceleration and acceleration lanes are short lanes provided to assist drivers in transitioning from one rate of speed to another rate of speed.

STEEP GRADES

Steep grades are associated with vertical curves, or hills. It is desirable to maintain constant speed along high-speed roads such as I-90 to keep the flow of traffic as constant as possible. Grades that are too steep can cause vehicles to slow down excessively as they travel up the hill. Likewise, vehicles can gain excess speed when they are traveling down steep hills. Both conditions can lead to increased conflicts for drivers. These problems can be exacerbated by rain, snow, or ice.

Generally, cars can negotiate an uphill grade of 7 to 8 percent, but trucks lose speed when the grade is 5 percent. Cars typically do not gain excessive speeds when the downhill grade is less than 8 percent; trucks, however, begin to gain speed when the grades are more than 3 percent. The AASHTO standards define impactful grades as those that exceed 3 percent when there are sharp horizontal curves or a significant amount of truck traffic. As noted above, there are sharp horizontal curves at the existing North Sheridan Interchange.

The North Sheridan Interchange's eastbound on-ramp has a vertical grade of 4.6 percent to allow clearance over the existing BNSF railroad tracks. The high point of this vertical grade is reached before the acceleration lane length begins, which means the ramp does not require as much additional acceleration length as is typically required when the grade is designed into the acceleration lane. However, this ramp is used by a large number of trucks coming out of the Common Cents truck stop and recreational vehicles entering the interstate from the KOA campground, so the 4.6 percent uphill grade is a limiting factor. These factors affect the ability of some vehicles entering the interstate to accelerate to highway speed as they approach and enter the interstate. The relocation of the port-of-entry did not improve crash rates.

Existing Interchange Ramp Deficiencies



The current interchange is a trumpet interchange. North Main Street is at a skewed angle to the mainline of I-90, which results in sharp curves at the North Sheridan Interchange. These curves do not meet current design standards. The westbound on- and off-ramps are posted at 20 mph. The eastbound on-ramp is posted with a 30 mph advisory, meaning that caution should be taken when driving this ramp at 30 mph. The eastbound off-ramp is posted with a 45 mph advisory.

WHY IS IT IMPORTANT TO IMPROVE SYSTEM AND REGIONAL CONNECTIVITY?

The North Sheridan Interchange provides the northernmost interchange access to and from I-90 within Sheridan. North Main Street, which has direct access to I-90, is the major north-south travel corridor in the city. It serves northern Sheridan, as well as the historic downtown area that has many active businesses. North and west of the existing interchange are several rural residences, and active agricultural fields.

The City recently annexed this area, and it has been identified in local planning documents as a future growth area for Sheridan. It is being considered for a combination of commercial, light industrial, and residential developments. An efficient, safe, regionally convenient interchange is needed to support the long-term growth of the north Sheridan area, while serving local trips. Direct access to Decker Road from I-90 is needed to support long-term planning and growth and regional access to the north Sheridan area.

Decker Road, which is a state highway (Wyoming 338), crosses through northern Sheridan County and continues into Montana. At its southern terminus, Decker Road connects to Main Street at Canfield Street. Decker Road is a two-lane rural arterial road posted for a majority of its length at 55 miles per hour (mph). Closer to Sheridan, the speed is reduced to 40 mph, then to 30 mph near its intersection with Main Street.

Decker Road is a significant regional connector servicing industrial (particularly mining), recreational, agricultural, and residential needs and it has been identified by county officials as an important primary and secondary access route. The Sheridan County Comprehensive Plan identifies Decker Road as both a heavy truck corridor and as an alternative cross-county route. Although Decker Road intersects Main Street, it does not have a direct connection to I-90.

Currently, a daily average of 146 cars and trucks, or 7 percent of traffic traveling on Decker Road, connect to North Main Street to gain access to I-90. Likewise, 197 cars and trucks, or 5.5 percent of daily traffic, exit I-90 at Main Street but continue on to Decker Road.

The North Sheridan Interchange does not have a direct north connection between I-90 and Decker Road, which limits overall regional and system connectivity and direct access to existing uses and areas north of I-90. Mobility of vehicle trips will be limited for any development along Decker Road north of I-90 in the area annexed by the city.

The selected location of the North Sheridan Interchange must allow for existing or planned interchanges consistent

Existing and Future Growth Areas



with FHWA access requirements between the proposed North Sheridan Interchange and the port-of-entry interchange. Sheridan has studied a north to south transportation facility serving the western area of Sheridan, known as the West Corridor, which would provide access to I-90. To date, the specific I-90 tie-in has not been identified in adopted city plans, but the location for a transportation corridor has been identified in city plans south of 5th Street. To maintain consistency with the West Corridor plan, the North Sheridan Interchange should be located so that it would not preclude an additional interchange for the West Corridor tie-in.

WHAT IS THE CONDITION OF THE ROADWAYS THAT ARE BEING CONSIDERED FOR IMPROVEMENT?

Three elements of the roadway system within the study area have been identified as non-existent or deteriorating along segments of I-90, North Main Street, and Decker Road including pavement condition, drainage, and sidewalks.

The pavement along North Main Street and stretches of I-90 is showing signs that it needs to be replaced. The North Sheridan Interchange and corresponding segments of I-90 are the last segments of I-90 around Sheridan to be improved. I-90 and the interchanges at Brundage Lane and at 5th Street, which were built around the same time as the North Sheridan Interchange, have been replaced.

Pavement Conditions

Road Segment	Mile Post	Surfacing Type	Condition
I-90 Mainline	19.70-21.30	Asphalt	Fair
I-90 Mainline	21.30-21.68	Asphalt	Fair
I-90 Mainline	21.68-22.45	Asphalt	Fair
Main Street	20.92-21.09	Asphalt	Poor
Main Street	21.09-21.19	Asphalt	Poor
Main Street	21.19-21.65	Asphalt	Poor
Decker Road	0.00-0.12	Concrete	Poor
Decker Road	0.12-1.00	Asphalt	Excellent

Source: WYDOT 2010

According to the Reconnaissance Report prepared for the Project, WYDOT performed pavement recycle projects in 1991 and 2000, but the pavement life was not extended as much as expected. The pavement is rutting, which may be due to aggregate problems. Full reconstruction of the pavement is necessary to solve the problem.

Drainage along I-90 is provided through a series of existing culverts and an outfall channel to Goose Creek, which is

currently choked with vegetation. Along North Main Street, the curb-and-gutter and sewer inlets are crumbling with visible portions missing in several locations. A few storm sewer inlets are partially blocked by overhanging vegetation. The drainage along Decker Road is provided through roadside ditches, but in some locations, the drainage runs off the road to adjacent land. The area along the road is generally flat with little slope to promote runoff.

There is sidewalk along short stretches of the east side of North Main Street, but there is no sidewalk along the west side of the street. There is no sidewalk along Decker Road. FHWA's policy is to include bicycling and walking facilities in transportation projects.

Bolstering Safety

Improving North Main Street and Decker Road with added sidewalks and/or widened shoulders would improve safety along each road, and it would satisfy the bicycle and pedestrian accommodation goals of the Joint Land Use Plan, the North Main Area Master Plan, and the Transportation Policy Plan.

SUMMARY

The Project is being proposed to provide safe, direct regional access from I-90 to the north Sheridan area to support local land use plans, improve deteriorating segments of I-90 and North Main Street, and comply with FHWA's Interstate Access Policy.

The project is needed to correct existing substandard geometric conditions, improve limited regional and system connectivity, and improve poor pavement conditions, and a lack of continuous drainage and sidewalks through the study area.

The range of alternatives developed for the Project were guided by the purpose and need as documented in this section and within the *Purpose and Need Technical Memorandum*. The alternatives developed and the process for refining and identifying alternatives for additional consideration are presented in Chapter 2, Alternatives Analysis, and in the *Alternative Technical Memorandum*.

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CHAPTER 2

ALTERNATIVES ANALYSIS

To meet the purpose of and need for the Project, a range of alternatives was developed and evaluated. Three alternatives have been carried forward for further evaluation in the environmental assessment. These alternatives are the No-Build Alternative and two Build Alternatives: Alternative 2 and Alternative 4.

This chapter presents the alternatives that were considered, those that were eliminated, those that were carried forward for detailed environmental study, and the rationale for these decisions.

1990 North Sheridan Interchange Improvement Study Alternatives

After completing an alternatives analysis, the team recommended the following three alternatives:

- *Upgrade the existing interchange.*
- *Construct an interchange at Decker Road.*
- *Construct an interchange north of Decker Road.*

The Alternatives Technical Memorandum provides more information about the analysis.

HOW WERE ALTERNATIVES DEVELOPED AND SCREENED?

The alternatives development process was an iterative process that began with the development of preliminary alternatives, followed by the solicitation of public input and subsequent refinement by the project team. The refined alternatives were screened using a two-step

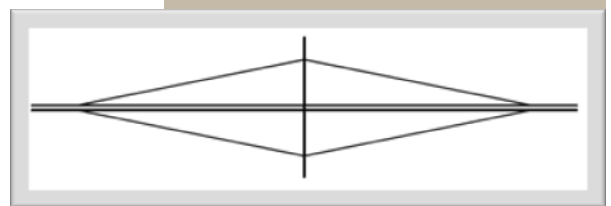
screening process to determine which alternatives should be carried forward for further analysis in the environmental assessment.

DIDN'T WYDOT DEVELOP ALTERNATIVES FOR THE NORTH SHERIDAN INTERCHANGE ALREADY?

In the late 1990s, WYDOT studied improvements for the North Sheridan Interchange and the port-of-entry in concurrently developed projects: The *North Sheridan Interchange Improvement Study* and the *Camino Real Corridor Study*. The *North Sheridan Interchange Improvement Study* was put on hold and the *Camino Real Corridor Study*, or “Port-of-Entry Study” moved forward into construction. The port-of-entry was moved from its location near the North Sheridan Interchange to a new interchange several miles north of Sheridan.

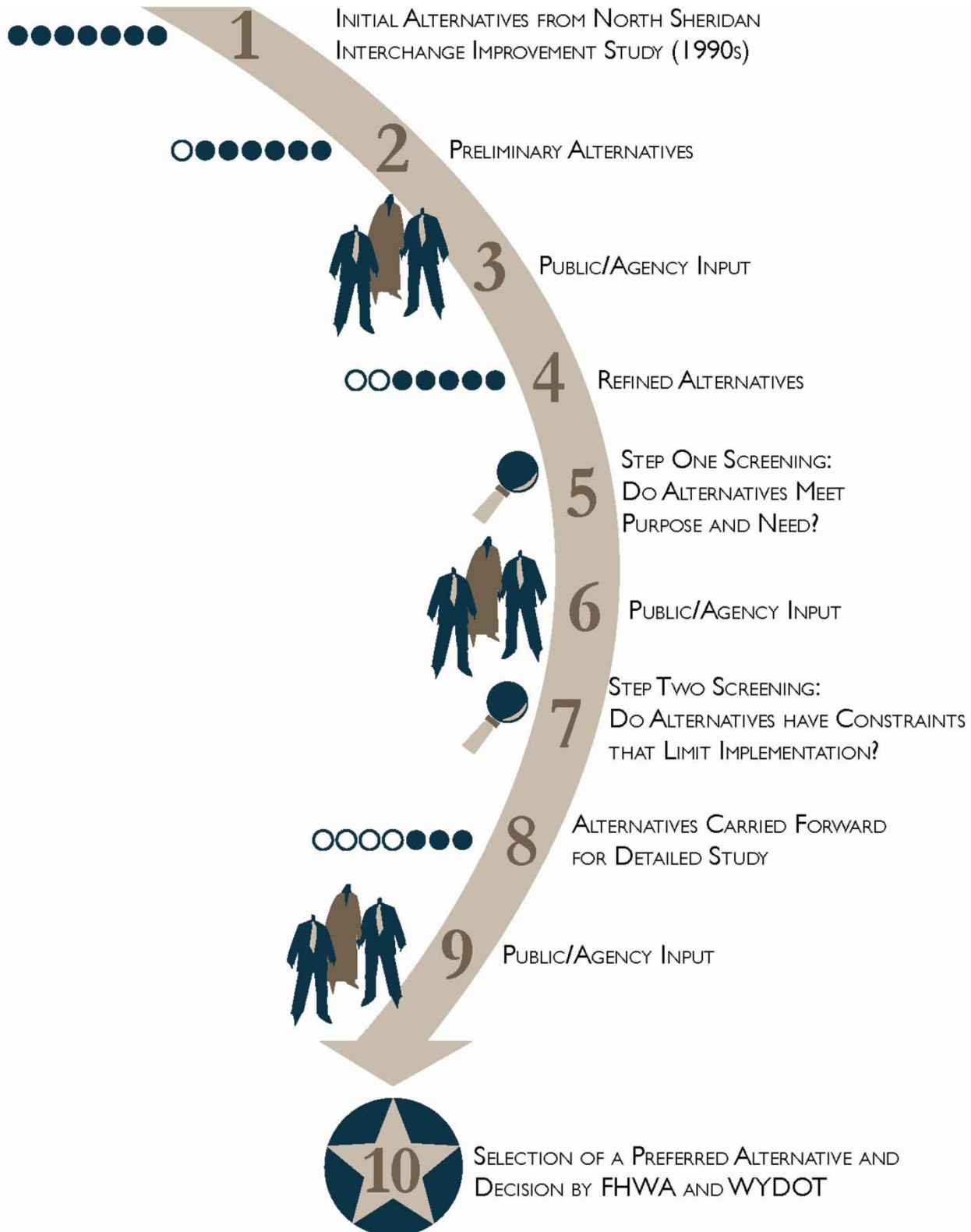
The study team for the *North Sheridan Interchange Improvement Study* in the 1990s developed seven conceptual-level alternatives for consideration, including the no-build alternative, upgrade the existing interchange, reconstruct the existing interchange with a compressed diamond, two variations of a diamond interchange between the existing interchange and Wyoming 338/Decker Road, a diamond interchange at Decker Road, a split diamond between the existing location and Decker Road, and a new diamond interchange north of Decker Road.

Standard Diamond Interchange



Alternatives that raised the elevation of I-90 main line, introduced safety concerns, such as steeper grades, or had negative environmental impacts to Goose Creek were not carried forward.

Alternatives Development and Screening Process



WHICH ALTERNATIVES DID WYDOT INITIALLY CONSIDER FOR THE ENVIRONMENTAL ASSESSMENT?

Five preliminary Build Alternatives plus the No-Build Alternative were developed based on the recommendations from the *North Sheridan Interchange Improvement Study*. Changes that have occurred since the original study were used to develop the preliminary alternatives, such as relocation of the port-of-entry, new planning efforts under way in the north Sheridan area, and annexation of land into the City.

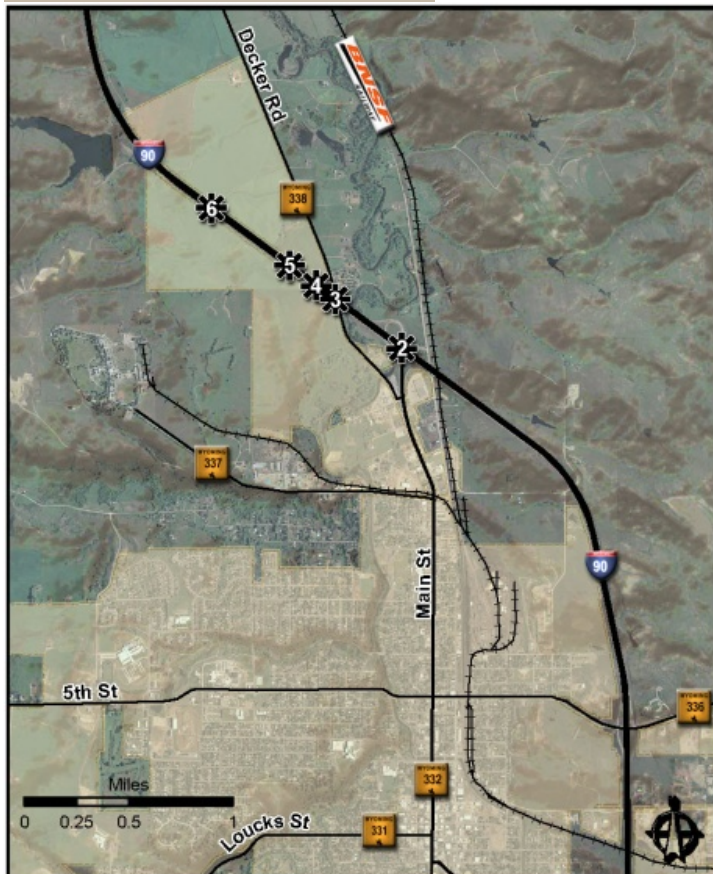
The Project team studied changes in existing traffic patterns, traffic projections, and crash data since the port-of-entry was relocated to determine if the previous alternatives were still valid and what additional considerations needed to be included in the preliminary alternatives. The project team used current AASHTO and WYDOT design guidelines to ensure the alternatives being developed would meet applicable design standards and ensure safety.

The preliminary alternatives were presented at a public meeting on August 12, 2009. At the public meeting and during the public scoping period, the community commented on the ability of the alternatives to meet the purpose of and need for the Project and expressed opinions about which alternatives should be carried forward for further analysis and refinement.

Nearly 75 percent of the respondents said that if the interchange were rebuilt, it should be rebuilt at the existing location (Alternative 2). There was some support for rebuilding at Decker Road (Alternative 3). Several respondents indicated they preferred the No-Build Alternative or a Limited-Build Alternative. Little support was raised for Alternative 5.

More information about public input can be found in Chapter 4, Comments and Coordination.

Preliminary Build Alternatives



WHICH ALTERNATIVES WERE REFINED AND CARRIED FORWARD FOR ADDITIONAL ANALYSIS?

Subsequent to the public scoping meeting, refinements to the preliminary alternatives were considered. The disposition table shows the status of alternatives following the public scoping meeting.

Alternative 2

Because of such a favorable response to Alternative 2, refinements were considered that would improve Alternative 2's ability to meet current design standards. As presented at the public meeting, Alternative 2 did not meet current design standards or the purpose of and need for the Project.

It is not possible to design a diamond interchange in the exact location of the current interchange and meet current design standards because of topography, the BNSF railroad, existing businesses, and Goose Creek. WYDOT considered refinement options for Alternative 2 that would meet the purpose of and need for the Project but would remain in the general footprint of the existing interchange.

Alternative 4

Because of the safety concerns associated with Alternative 3, which could not be corrected due to its location, Alternative 4 was refined to address public comments and the purpose of and need for the Project.

Other Alternatives

The upgrade of existing interchange was not carried forward. During the previous study, it was determined to be a marginal improvement over the existing conditions. Because this alternative does not meet the current purpose of and need for the Project, or the goals of the Project, it was not refined into a preliminary alternative for consideration in the environmental assessment.

Conclusions

Alternatives 2 and 4 (refined) were carried forward for further evaluation. These are now called simply Alternative 2 and Alternative 4, respectively. Alternative 3 was carried forward for further evaluation. Alternative 5 was dropped because it was very similar to Alternative 4 but didn't have as much support. Alternative 6 is now called Alternative 5 and was carried forward for further evaluation.

Disposition of Alternatives

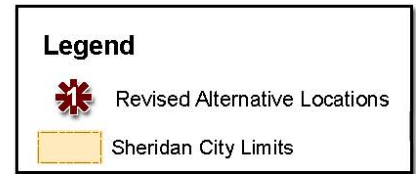
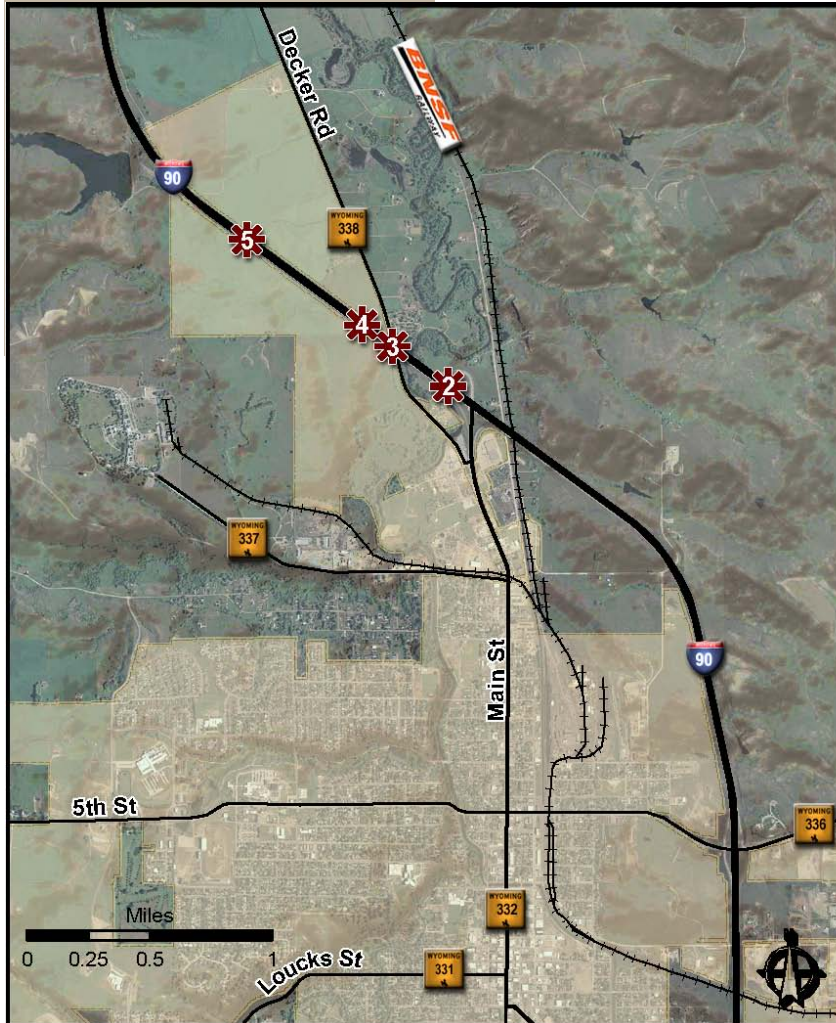
Alternative	Disposition Following Public and Agency Scoping
1 – No-Build	Carried forward for two-step screening evaluation
2 – Reconstruct Interchange at existing location	Refined alternative; carried forward for two-step screening evaluation
3 – Interchange at Decker Road	Carried forward for two-step screening evaluation
4 – Interchange close to Decker Road	Refined alternative; carried forward for two-step screening evaluation
5 – Interchange north of Decker	Eliminated because this alternative is similar to the refined Alternative 4
6 – Interchange farther north of Decker Road	Renamed (Alternative 5); carried forward for two-step screening evaluation

WHICH ALTERNATIVES WERE CARRIED FORWARD TO THE NEXT LEVEL OF EVALUATION?

Two existing preliminary Build Alternatives, two refined Build Alternatives, and the No-Build Alternative were carried forward for a detailed two-step evaluation process:

- Alternative 1: No-build
- Alternative 2: Reconstruct interchange at existing location
- Alternative 3: Interchange at Decker Road
- Alternative 4: Interchange close to Decker Road
- Alternative 5: Interchange farther north of Decker Road

Refined Build Alternatives



EVALUATION PROCESS

A two-step screening process was developed to evaluate the refined alternatives to determine which alternatives should be carried forward for a more detailed environmental and engineering analysis in the environmental assessment. The screening process involved two steps.

Step 1 Screening Criteria

Three screening criteria were established to narrow the range of initial alternatives by determining which alternatives could satisfy the purpose of and need for the

Project: safety (geometric evaluation), regional access (connectivity evaluation), and roadway deterioration (deteriorating roadway segment evaluation). These criteria and their measure, which indicates how the alternative meets purpose and need are listed in the following table and are described in text below the table.

If an alternative did not meet the Step 1 Screening Criteria, Step 2 Screening Criteria are not discussed in the following alternatives evaluation.

Step 1 Screening Criteria

Step 1 Screening Criterion	Measure
Geometric Evaluation (Safety)	Provide sufficient horizontal curves.
	Provide acceptable up/down grades.
	Provide acceleration lanes of adequate length.
	Provide deceleration lanes of adequate length.
	Provide acceptable sight distance.
Connectivity Evaluation (Regional Access)	Provide regional and system connectivity through direct access to Main Street and Decker Road to support long-range planning and growth in north Sheridan area.
	Maintain consistency with FHWA Interstate Access Policy.
Deteriorating Roadway Segment Evaluation (Deteriorating Roads)	Improve pavement condition.
	Provide drainage.
	Provide continuous pedestrian facilities.

Geometric Evaluation Criteria

The geometric evaluation criteria focus on the geometric standards that are outlined in A Policy of Geometric Design of Highways and Streets, published by AASHTO. This criterion is meant to ensure that alternatives developed are designed to the highest safety standards based on driving and physical conditions in the area.

Step 2 Secondary Screening Criteria

The second step of the screening process looked at other factors that affect the viability of each alternative, including metrics such as access, right-of-way impacts, cost, environmental impacts, and consistency with local community planning. It reflected the considerations provided by the public as well as a gauge of support for the alternatives.

Step 2 Screening Criteria

Step 2 Screening Criterion	Measure
Local Access Evaluation	Maintain acceptable travel times.
	Maintain acceptable business visibility.
Constructability	Constructible in accordance with reasonable engineering and cost measures.
Regulatory Evaluation	Minimize impacts to waters of the United States.
	Minimize use of Section 4(f) properties.
Right-of-Way Evaluation	Additional right-of-way needed.
	Businesses impacted.
Community Planning Evaluation	Sustain natural resources and environmental quality.
	Expand open space.
	Preserve viewsheds.
	Ensure compatibility with local transportation system designation.
	Maintain interchange as close as possible to existing interchange.
Cost Evaluation	Cost needed to develop and construct an alternative.

ALTERNATIVE I – NO-BUILD

The No-Build Alternative represents the conditions if major improvements are not recommended as a result of this study.

Step 1 Screening

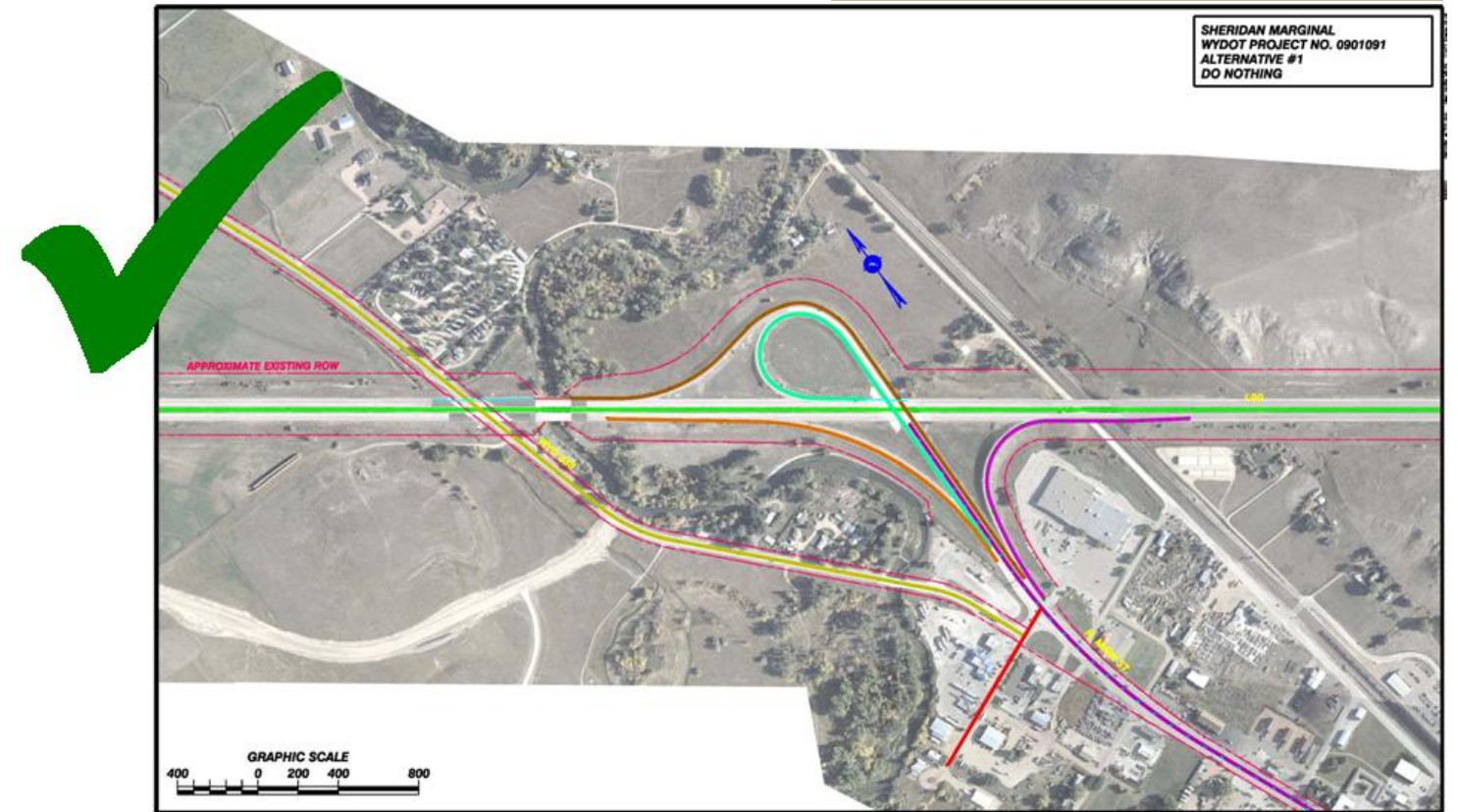
Geometric Evaluation

- This alternative would not improve the existing geometric deficiencies, regional connectivity shortcomings, or deteriorating roadway segments within the study area.

Conclusion

The No-Build Alternative does not meet the purpose of and need for action but is assessed in the environmental assessment as a baseline for comparison with the Build Alternatives.

Alternative I No-Build



Conclusion: Carry it forward to the environmental assessment for comparison to other alternatives.

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ALTERNATIVE 2 – RECONSTRUCT INTERCHANGE AT EXISTING LOCATION

This alternative would construct a tight diamond interchange about 750 feet north of the existing interchange but within the same general interchange footprint. The crossroad connecting I-90 to North Main Street would use a T intersection.

New bridges would be needed over the railroad for the westbound off-ramp, mainline, North Main Street over Goose Creek, and over Goose Creek for the westbound on-ramp. Widening would be required over Decker Road for the westbound on-ramp and North Main Street over Goose Creek. The existing interchange would need to be demolished in order to build the new interchange.

Step 1 Screening

Geometric Evaluation

- Relocation of the interchange would allow for construction of an interchange that provides adequate acceleration and deceleration lanes and resolves vertical and horizontal geometry issues. This interchange provides acceptable sight distance.

Connectivity Evaluation

- This alternative provides an improved connection from I-90 to Decker Road, but it does not provide direct access to northbound Decker Road. Cars have free flow onto Decker Road/North Main Street but must travel under I-90 to go north.
- Future land use as designated in local land use plans is not precluded.
- It does not preclude another interchange between the North Sheridan Interchange and the Port-of-Entry Interchange.

Deteriorating Roadway Segment Evaluation

- This alternative would improve pavement condition, provide drainage, and provide continuous pedestrian facilities as appropriate.

Step 2 Screening

Local Access Evaluation

- This alternative maintains current business visibility from I-90.
- Interchange located 750 feet west of the existing North Main Street Interchange.

Constructability

- This alternative would require a closure of the North Sheridan Interchange for a period of time during construction of the new interchange.

Regulatory Evaluation

- Two new bridge crossings of Goose Creek would be needed in addition to widening the existing bridge over Goose Creek. Goose Creek is considered a water of the United States.
- This alternative would potentially impact 3 acres of wetlands. Wetland impacts were calculated based on proposed right-of-way. Actual wetland impacts may be less after actual construction limits are determined.
- There are no historic properties, publicly owned, open to the public parks and recreational properties or wildlife refuges, known as Section 4(f) properties, that would be impacted by this alternative.

Right-of-Way Evaluation

- Reconstructing the interchange at its current location would minimize the total right-of-way required; approximately 1 acre of new right-of-way would be needed.
- This alternative would affect the KOA campground, three to five potential residential relocations, and one potential commercial relocation.

Community Planning Evaluation

- This alternative would have limited impacts to natural resources and environmental quality as documented in Chapter 3, Environment, Impacts, and Mitigation.
- It would be designed to minimize impacts to open space and viewsheds.

- This alternative is compatible with local transportation system designations and is considered to be within the existing interchange footprint.

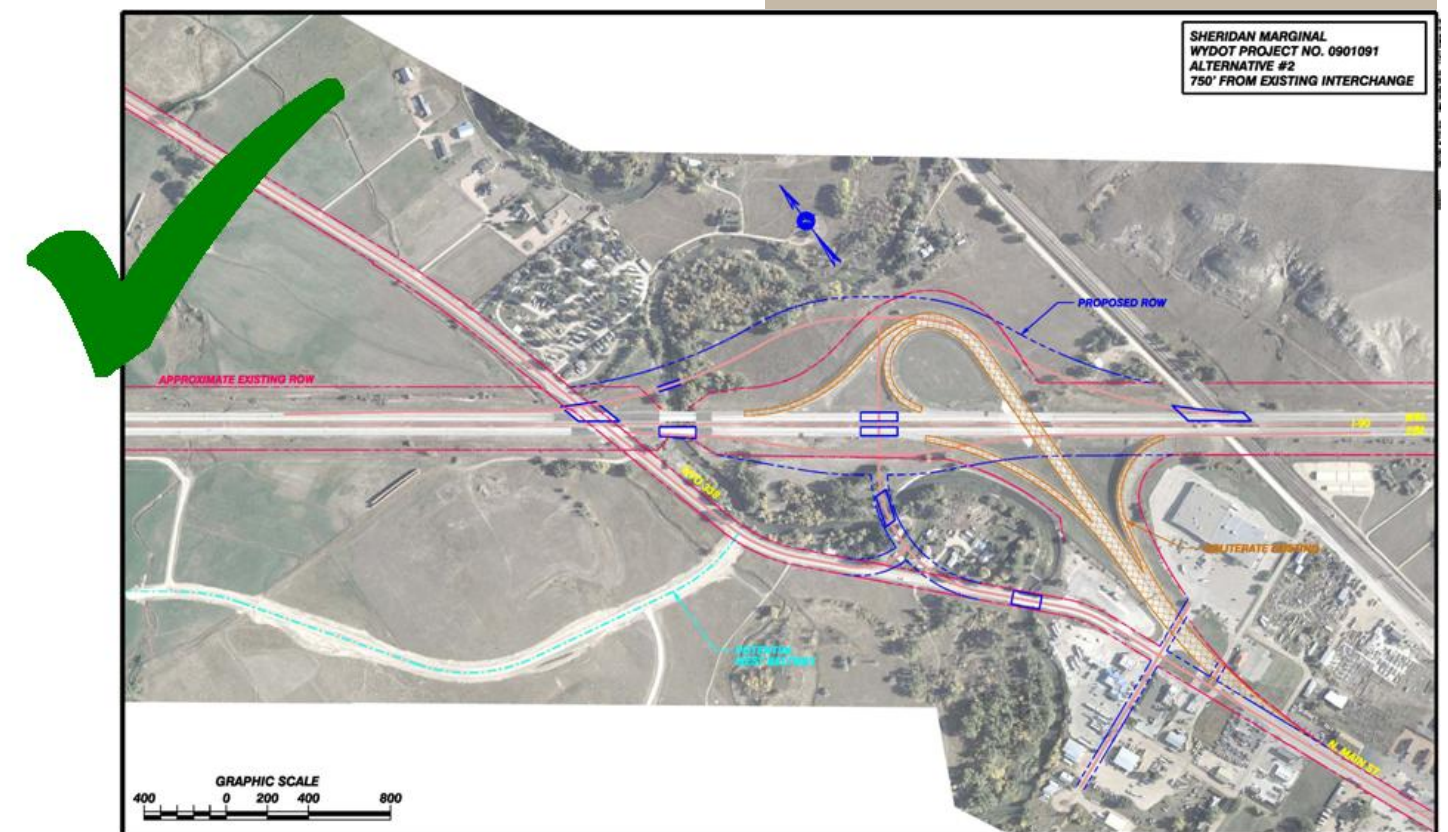
Cost Evaluation

- Estimated 2012 total project cost was \$30.7 million.

Conclusion

This alternative meets purpose and need and is being carried forward for further evaluation in the environmental assessment. More detailed information regarding the impacts of this analysis can be found in Chapter 3, Affected Environment, Impacts, and Mitigation.

Alternative 2 Reconstruct Interchange at Existing Location



Conclusion: Carry it forward for evaluation in the environmental assessment.

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ALTERNATIVE 3 – INTERCHANGE AT DECKER ROAD

This alternative would construct a diamond interchange at existing Decker Road, which is approximately 2,100 feet northwest of the existing North Sheridan Interchange. This alternative would provide direct access from Decker Road to I-90. Decker Road would continue to cross under I-90 in its current alignment, which would result in the interchange ramps connecting to Decker Road at a skewed angle. North Main Street would be aligned with Decker Road and would provide continuous flow from North Main Street, Decker Road, and I-90.

The westbound exit ramp would require widening of the existing I-90 bridge over Goose Creek and an additional structure over the creek. A new bridge over the creek would also be required for the eastbound entrance ramp.

Step 1 Screening

Geometric Evaluation

- This alternative would allow for construction of an interchange that provides adequate acceleration and deceleration lanes and resolves vertical and horizontal issues. This alternative would not provide acceptable sight distance.

Connectivity Evaluation

- It provides a direct connection to Decker Road and full access both north and south of I-90.
- Future land use as designated in local land use plans is not precluded.
- This alternative would not preclude another interchange between the North Sheridan Interchange and the Port-of-Entry Interchange.

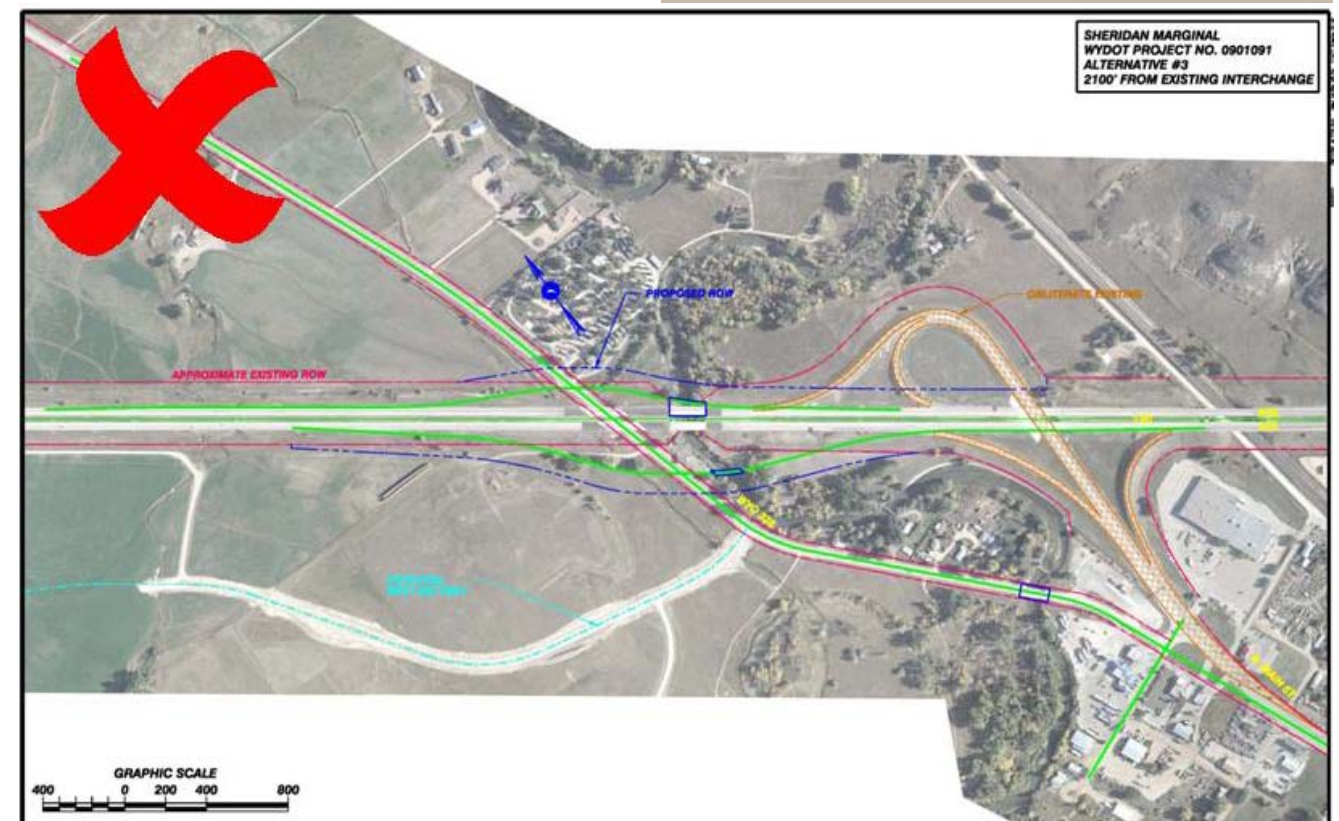
Deteriorating Roadway Segment Evaluation

- This alternative would improve pavement condition, provide drainage, and provide continuous pedestrian facilities as appropriate.

Conclusion

The alternative would introduce a skewed angle at Decker Road and I-90, which would decrease sight distance and safety. This alternative does not meet purpose and need and is not being carried forward for further analysis.

Alternative 3 Interchange at Decker Road



Conclusion: Do not carry it forward for evaluation in the environmental assessment.

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ALTERNATIVE 4 – INTERCHANGE CLOSE TO DECKER ROAD

This alternative would construct a diamond interchange 3,150 feet northwest of the existing interchange and about 1,300 feet west of existing Decker Road. The “straight through” alignment of Decker Road would be eliminated. Traffic would flow along the realigned Decker Road, perpendicular to I-90.

Widening the eastbound on-ramp over Goose Creek, widening North Main Street over Goose Creek, and constructing a new bridge over the I-90 mainline would be required. The proposed interchange could be constructed while leaving the existing North Sheridan Interchange in place.

Step 1 Screening

Geometric Evaluation

- Relocation of the interchange would allow for construction of an interchange that provides adequate acceleration and deceleration lanes and resolves vertical and horizontal geometry issues. This alternative would have acceptable sight distance.

Connectivity Evaluation

- Traffic traveling westbound on I-90 can proceed directly to Decker Road northbound and southbound.
- Future land use as designated in local land use plans is not precluded.
- This alternative does not preclude another interchange between the North Sheridan Interchange and the Port-of-Entry Interchange.

Deteriorating Roadway Segment Evaluation

- This alternative would improve pavement condition, provide drainage, and provide continuous pedestrian facilities as appropriate.

Step 2 Screening

Local Access Evaluation

- Interchange would be located 3,150 feet west of the existing North Main Street Interchange, but impacts on travel times are not onerous.

- Travel time north on Decker Road from I-90 would be improved.
- Views of existing businesses would be partially blocked along the eastbound route by a change in elevation associated with Goose Creek and the vegetation along Goose Creek. It is possible that this could be mitigated with signage along I-90.

Constructability

- This alternative would not require a closure of the North Sheridan Interchange during construction of the new interchange.

Regulatory Evaluation

- This alternative would require widening the eastbound on-ramp over Goose Creek and widening the North Main Street bridge over Goose Creek; Goose Creek is considered a water of the United States.
- This alternative would potentially impact 1.5 acres of wetlands. Wetland impacts were calculated based on proposed right-of-way. Actual wetland impacts may be less after construction limits are determined.
- No publicly owned, open to the public parks and recreational properties or wildlife refuges, known as Section 4(f) properties, would be affected by this alternative.
- Wrench Ranch property including original farm buildings, eligible for the National Register of Historic Places, is located near this alternative; SHPO concurred that the alternative would not adversely affect this property so there would be no use under Section 4(f).

Right-of-Way Evaluation

- This alternative would require approximately 24 acres of new right-of-way.
- This alternative may affect the KOA tent area; but no residential or commercial relocations would be necessary.

Community Planning Evaluation

- This alternative would have limited impacts to natural resources and environmental quality as

documented in Chapter 3, Environment, Impacts, and Mitigation.

- It would be designed to minimize impacts to open space and viewsheds.
- This alternative is compatible with local transportation system designations and would be located near the interchange designation in local land use plans.

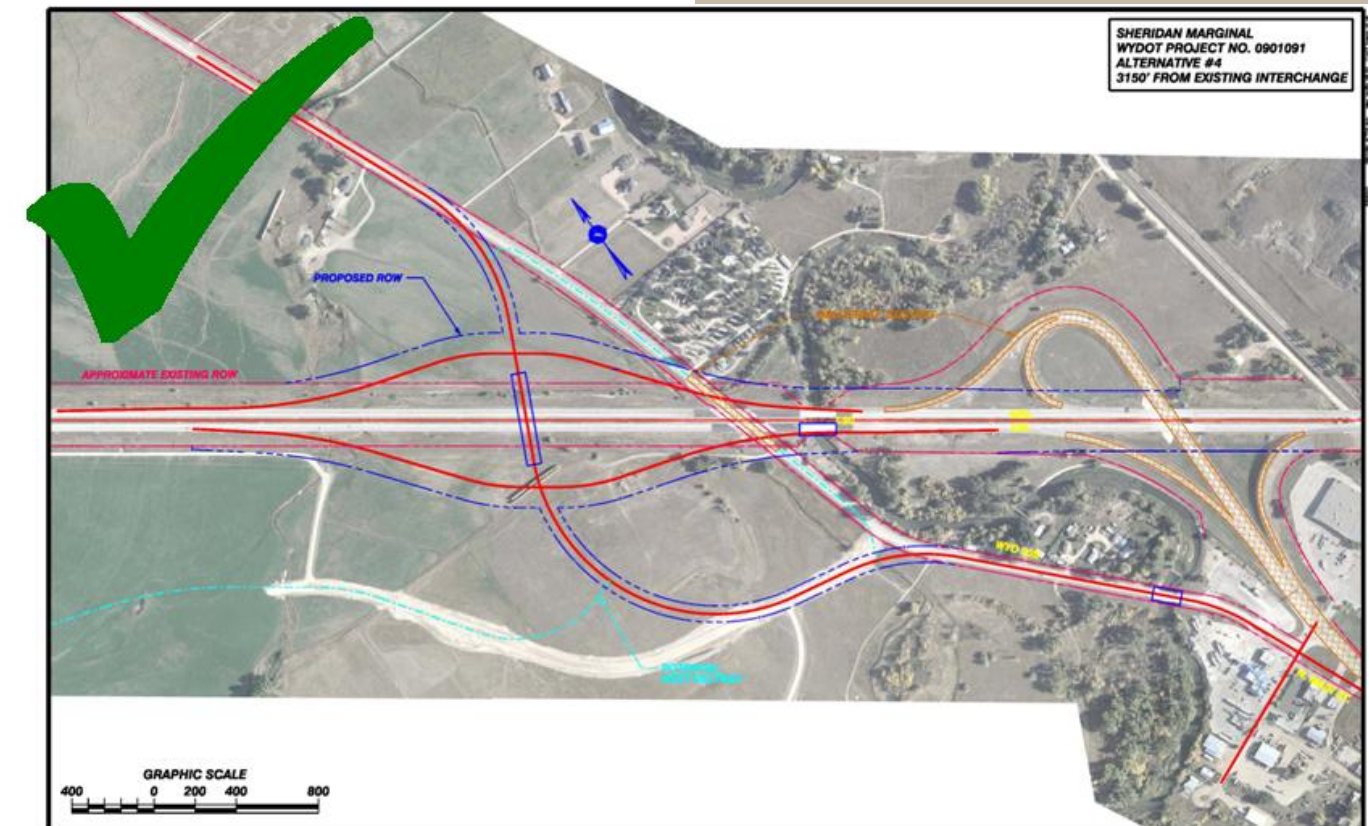
Cost Evaluation

Estimated 2010 total project cost is \$23.9 million.

Conclusion

This alternative meets purpose and need and was carried forward for further evaluation in the environmental assessment. However, because of subsequent land use changes near this alternative it was modified. The modified alternative is described in more detail at the end of this section and detailed information regarding the impacts of that alternative can be found in Chapter 3, Environment, Impacts, and Mitigation.

Alternative 4 Interchange Close to Decker Road



Conclusion: Carry it forward for evaluation in the environmental assessment.

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ALTERNATIVE 5 – INTERCHANGE FARTHER NORTH OF DECKER ROAD

This alternative would construct a new interchange approximately 3,900 feet west of Decker Road, or 6,000 feet northwest of the existing interchange. Decker Road would be realigned to the new interchange location perpendicular to I-90, generally following the proposed Wrench Ranch access road. North Main Street would be realigned with Decker Road. This alternative could leave existing Decker Road and the I-90 bridge in place if the city of Sheridan were to take over jurisdiction of the road.

This alternative would not require structures over Goose Creek, but two new structures would be needed for the new Decker Road to cross under I-90. This alternative would not require the construction of new structures or the widening of existing structures over Goose Creek, but it would require right-of-way on both sides of I-90 to accommodate the new interchange.

Geometric Evaluation

- This alternative would allow for construction of an interchange that provides adequate acceleration and deceleration lanes and resolves vertical and horizontal issues. This alternative provides acceptable sight distance.

Connectivity Evaluation

- This alternative does not provide a direct connection to Decker Road.
- Future land use as designated in local land use plans is not precluded.
- It does not meet the FHWA location and access requirement, which would allow for another interchange (the future West Corridor as proposed) to be constructed between the proposed North Sheridan Interchange and the existing Port-of-Entry Interchange.

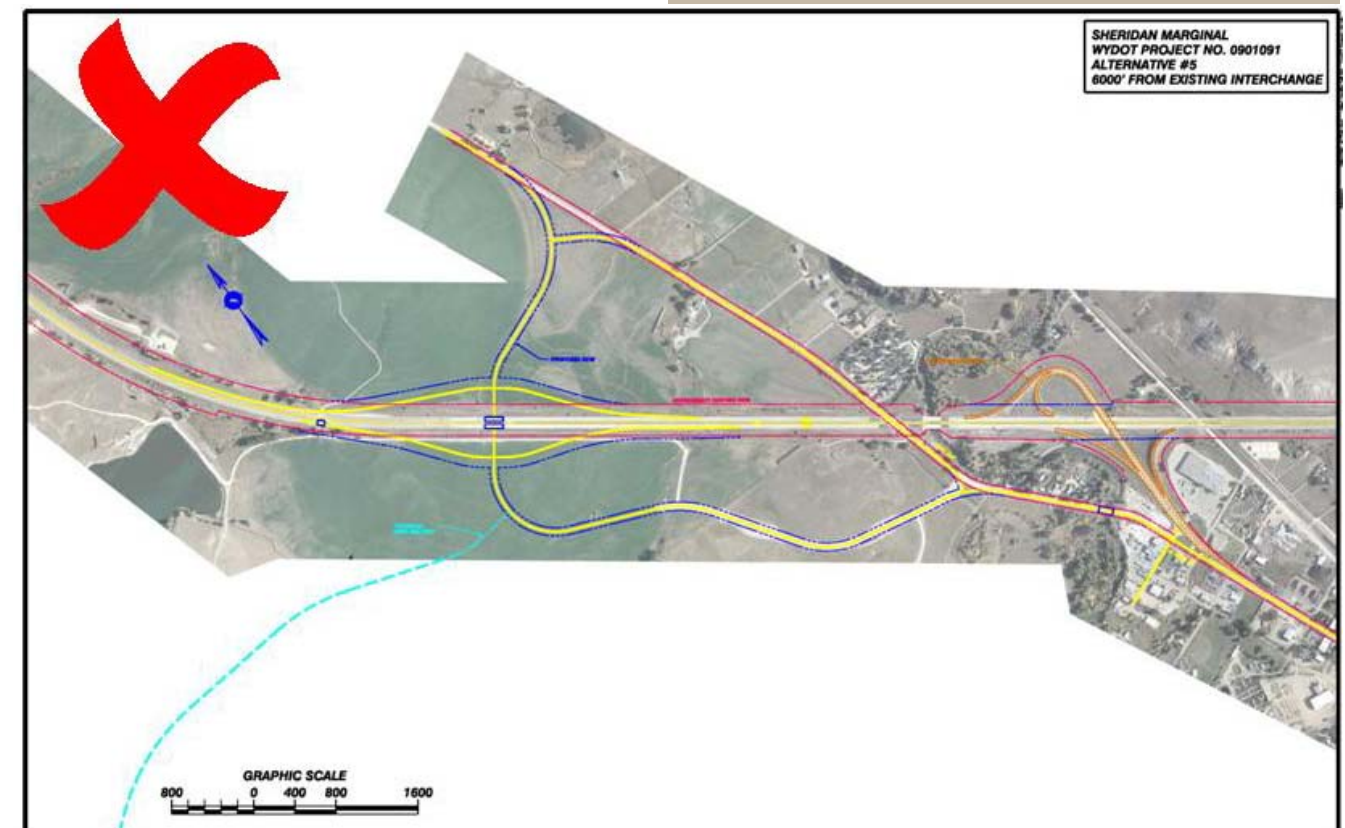
Deteriorating Roadway Segment Evaluation

- This alternative would improve pavement condition, provide drainage, and provide continuous pedestrian facilities as appropriate.

Conclusion

This alternative does not satisfy the purpose of and need for the Project as it does not provide a direct connection from I-90 to Decker Road. Further, it would not allow for the West Corridor tie-in as proposed. It is not being carried forward for further evaluation.

Alternative 5 Interchange Farther North of Decker Road



Conclusion: Do not carry it forward for evaluation in the environmental assessment.

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WHICH ALTERNATIVES WERE ADVANCED FOR DETAILED ENVIRONMENTAL ANALYSIS?

The result of this refined alternative evaluation is to carry forward Alternative 1, Alternative 2 (refined), and Alternative 4 (refined) for detailed environmental analysis in the environmental assessment. Alternative 3 was not carried forward because it introduces safety concerns associated with decreases in sight distance and does not provide benefits over Alternative 4. Alternative 5 was not carried forward because it would not meet the purpose of and need for the Project.

PUBLIC INPUT

A second public meeting was held on June 24, 2010. The intent of this meeting was to present the refined alternatives and the results of the screening evaluation to the public and solicit public input. The majority of the comments submitted were in favor of Alternative 4. This is in contrast to the response from first public meeting where Alternative 2 was preferred. Several of the respondents stated support for improvements other than these three Alternatives or provided feedback on elements that were important in identifying a Preferred Alternative, such as a the need to maintain a connection between the North Sheridan Interchange and businesses along North Main Street.

Alternative 2 (Refined)

Alternative 2 was refined from the first public meeting and found to be less acceptable than refined Alternative 4 at the second public meeting. See Chapter 4 for more information regarding public input.

WHY WAS ALTERNATIVE 4 MODIFIED?

Subsequent to the analysis completed for Alternative 2 and Alternative 4, land use changes were approved in the vicinity of Alternative 4 that necessitated changes to Alternative 4. The City of Sheridan approved a minor

subdivision plat for the Sheridan Baseball Academy Doubleday Park (Doubleday Park). Under Alternative 4, the Doubleday Park parcel would be affected and the function of the baseball complex impaired. To avoid impacts to this recently platted but undeveloped parcel, WYDOT looked at options to reconfigure Alternative 4 that would avoid impacts to Doubleday Park and avoid impacts to the Wrench Ranch farm buildings that are eligible for the National Register of Historic Places. The resulting configuration is Modified Alternative 4.

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MODIFIED ALTERNATIVE 4

This alternative would construct a diamond interchange about 2,300 feet west of existing Decker Road and about 4,560 feet northwest of the existing interchange. The “straight through” alignment of Decker Road would be eliminated, and traffic would flow along a realigned North Main Street/Decker Road that would cross I-90 perpendicular.

Widening the bridge on North Main Street over Goose Creek and constructing a new bridge over the I-90 mainline would be required. The proposed interchange could be constructed while leaving the existing North Sheridan Interchange in place.

Step 1 Screening

Geometric Evaluation

- Relocation of the interchange would allow for construction of an interchange that provides adequate acceleration and deceleration lanes and resolves vertical and horizontal geometry issues. This alternative provides acceptable sight distance.

Connectivity Evaluation

- Traffic traveling westbound on I-90 can proceed directly to Decker Road northbound and southbound.
- Future land use as designated in local land use plans is not precluded.
- This alternative does not preclude another interchange between the North Sheridan Interchange and the Port-of-Entry Interchange but would require the future West Corridor I-90 tie in to be shifted farther north to meet the FHWA location and access policy.

Deteriorating Roadway Segment Evaluation

- This alternative would improve pavement condition, provide drainage, and provide continuous pedestrian facilities as appropriate.

Step 2 Screening

Local Access Evaluation

- Interchange would be located 4,560 feet west of the existing North Main Street Interchange, but impacts on travel times are not onerous.

- Travel time north on Decker Road from I-90 would be improved.
- Views of existing businesses would be partially blocked along the eastbound route by a change in elevation associated with Goose Creek and the vegetation along Goose Creek. It is possible that this could be mitigated with signage along I-90.

Constructability

- This alternative would not require a closure of the North Sheridan Interchange during construction of the new interchange.

Regulatory Evaluation

- This alternative would require the North Main Street bridge over Goose Creek; Goose Creek is considered a water of the United States.
- This alternative would potentially impact 1.5 acres of wetlands. Wetland impacts were calculated based on proposed right-of-way. Actual wetland impacts may be less after construction limits are determined.
- This alternative would avoid North Park and Doubleday Park. No publicly owned, open-to-the-public parks and recreational properties or wildlife refuges, known as Section 4(f) properties, would be affected by this alternative.
- Wrench Ranch, including original farm buildings, eligible for the National Register of Historic Places is located near this alternative; SHPO concurred that this alternative would not adversely affect the property so there would be no use under Section 4(f).

Right-of-Way Evaluation

- This alternative would require approximately 35 acres of new right-of-way.
- This alternative would require land from the Sheridan High-Tech Business Park stormwater facility and the United States Forest Service work area and storage location; no residential or commercial relocations would be necessary.

Community Planning Evaluation

- This alternative would have limited impacts to natural resources and environmental quality as

documented in Chapter 3, Environment, Impacts, and Mitigation.

- It would be designed to minimize impacts to open space and viewsheds.
- This alternative is compatible with local transportation system designations and would be located as near to the interchange designation in local land use plans as possible with recent city approved land use changes.

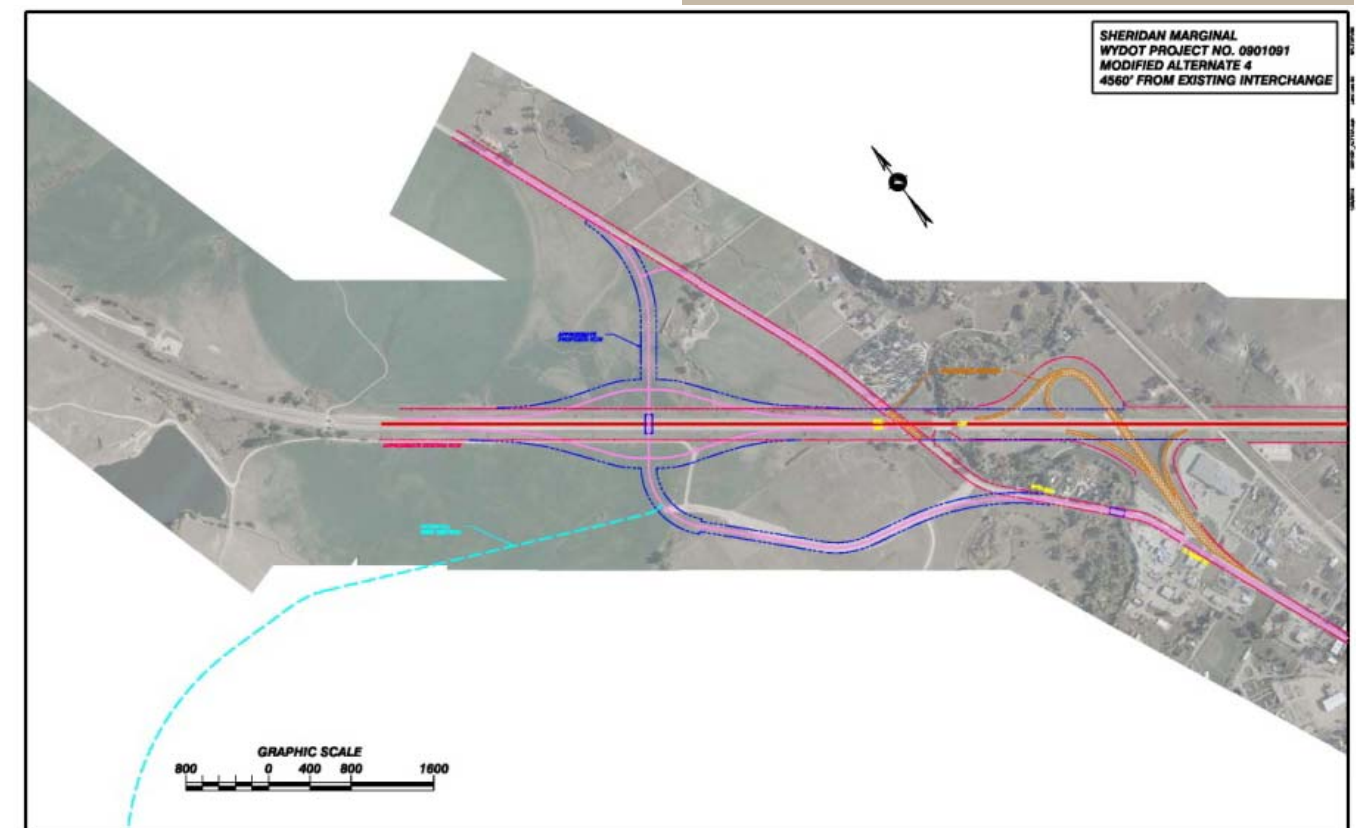
Cost Evaluation

Estimated 2012 total project cost is \$25.5 million.

Conclusion

This alternative meets purpose and need and is being carried forward for further evaluation in the environmental assessment. More detailed information regarding the impacts of this alternative can be found in Chapter 3, Environment, Impacts, and Mitigation.

Modified Alternative 4 Interchange Close to Decker Road



Conclusion: Carry it forward for evaluation in the environmental assessment.

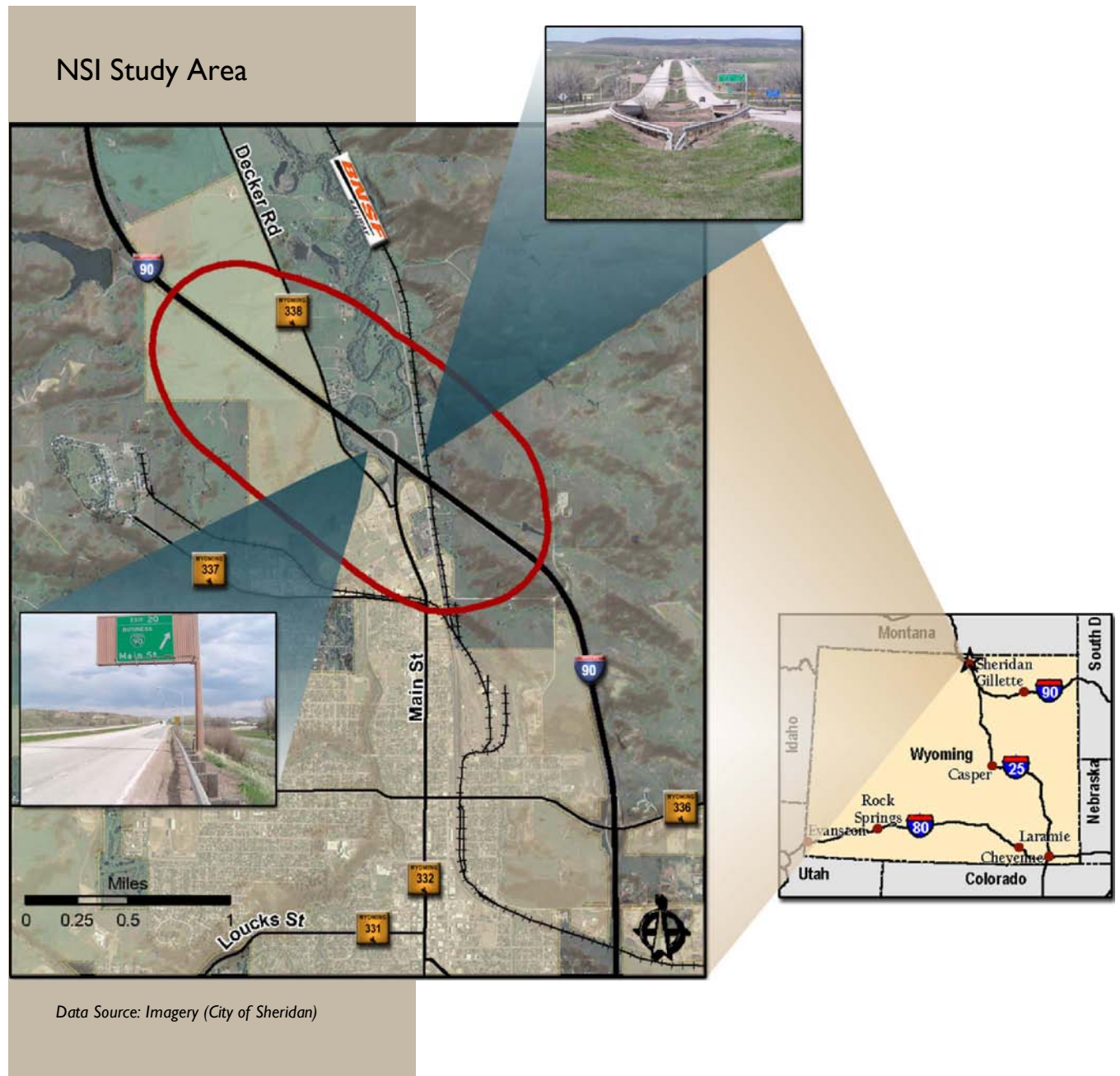
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CHAPTER 3

ENVIRONMENT, IMPACTS, AND MITIGATION

This chapter describes the existing environmental conditions within the study area, evaluates impacts to those resources that would be affected through implementation of the Build Alternatives (Alternative 2 and Modified Alternative 4) and the No-Build Alternative, and describes mitigation measures for minimizing impacts.

The study area for improving or relocating the North Sheridan Interchange extends from the center of the existing North Sheridan Interchange to approximately 1.5 miles west of the existing interchange. The width of this area is approximately 0.5 of a mile on each side of I-90. This study area includes the potential realignment



areas of Decker Road that are under consideration. The study area for improvements to the mainline of I-90 extend approximately 1.5 mile east of the existing North Sheridan Interchange and 2.0 miles west, within existing I-90 right-of-way. The study area for improvements along North Main Street includes the existing interchange south to Fort Road within existing WYDOT right-of-way.

The limits were selected to represent the areas that could be directly or indirectly affected by potential improvements. For some resources (e.g., transportation and traffic), a larger area was considered to provide a complete analysis of potential impacts.

A number of environmental resources and issues were evaluated in detail and are discussed in this chapter. In some cases, resources simply do not exist in the study area or are not likely to be directly or indirectly affected by the Build Alternatives. In accordance with National Environmental Policy Act requirements, all resources were evaluated to verify presence or absence, assess potential impacts and, as necessary, identify mitigation measures to minimize any impacts.

Chapter 3 presents detailed descriptions of the affected environment, impacts, and mitigation for only those resources affected by the Build Alternatives. Then, the resources not affected by the Build Alternatives are presented with descriptions that focus more on the existing conditions of these resources.

WHAT RESOURCES WILL BE AFFECTED BY THE PROJECT?

Resources that will be minimally affected by one or both of the Build Alternatives are:

- Surface water, floodplains, and wetlands
- Air quality
- Cultural resources
- Right-of-way
- Visual resources and aesthetics
- Transportation and traffic
- Land use and zoning
- Economics
- Noise

Two types of impacts may result from the Build Alternatives: direct impacts and/or indirect impacts. Direct impacts are those that occur at the same time and in the same place as the Build Alternatives; for example, acquiring right-of-way so that one of the Build Alternatives can be built. Indirect impacts occur later in time or are distant from the Build Alternatives, such as a new road that will attract development to vacant land.

Summary of Evaluation Results

Resources	Does this Resource Exist Within or Adjacent to the Study Area?	Would this Resource be Affected by Alternative 2?	Would this Resource be Affected by Modified Alternative 4?
Environmental			
Surface water, floodplains, and wetlands	Yes	Yes	Yes
Cultural	Yes*	No	No
Visual and aesthetics	Yes	Yes	Yes
Wildlife	Yes	No	No
Threatened/endangered species	No	No	No
Air quality	Yes	Yes	Yes
Climate change	Yes	No	No
Prime and unique farmlands	Yes	No	No
Noise	Yes	Yes	Yes
Economic			
Transportation and traffic	Yes	Yes	Yes
Land use and zoning	Yes	Yes	Yes
Economics	Yes	Yes	Yes
Right-of-way	Yes	Yes	Yes
Social			
Social conditions	Yes	No	No
Hazardous materials	Yes	No	No
Existing Parks and recreation	No	No	No
Section 4(f) properties	Yes	No	No

*Cultural resources are included because SHPO concurred that there is no adverse effect rather than no effect to historic properties in the study area.

SURFACE WATER, FLOODPLAINS, AND WETLANDS

Existing Conditions

Surface Water

Goose Creek is a tributary of the Tongue River, and it meanders through the study area; it is formed by the confluence of the Little and Big Goose creeks near North Main Street in Sheridan. Both the Little and Big Goose creeks have been altered over the years by development and United States Army Corps of Engineers flood-control structures and creek alignments (SSH 2006). In the study

Goose Creek



Photos by HDR Engineering and Vista West Engineering

area, Goose Creek maintains a meandering pattern and is less altered than Big Goose Creek or Little Goose Creek, but it has undergone concrete bank stabilization adjacent to the existing interchange.

Little and Big Goose creeks, as well as Goose Creek, are considered impaired and are included in the 305(b) report and on the 303(d) list required under the Clean Water Act. Goose Creek was first listed as impaired for exceedances of the fecal coliform standard in 2000 and impaired for cold-water fishery use due to sediment and poor habitat in 2006 (SWCA 2010 and DEQ 2010). Goose Creek is a Class 2AB stream and should support aquatic life, cold-water fisheries and recreation; however, it is currently not supporting these uses (DEQ 2001 and 2010).

The Sheridan County Conservation District and Wyoming Department of Environmental Quality data indicate that stormwater discharges are contributing excessive fine sediment that is causing physical degradation of Goose Creek within Sheridan and is keeping these reaches from supporting its aquatic life and fisheries uses (DEQ 2008). To help correct the impairment of Goose Creek, the Goose Creek Watershed Total Maximum Daily Load (TMDL) was published in September 2010 (SWCA 2010).

A total maximum daily load, or TMDL, is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards.

No drinking water sources for the City of Sheridan are located within the study area (City of Sheridan 2009c).

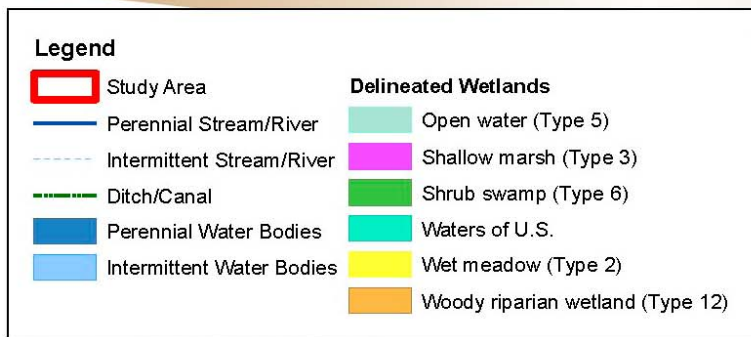
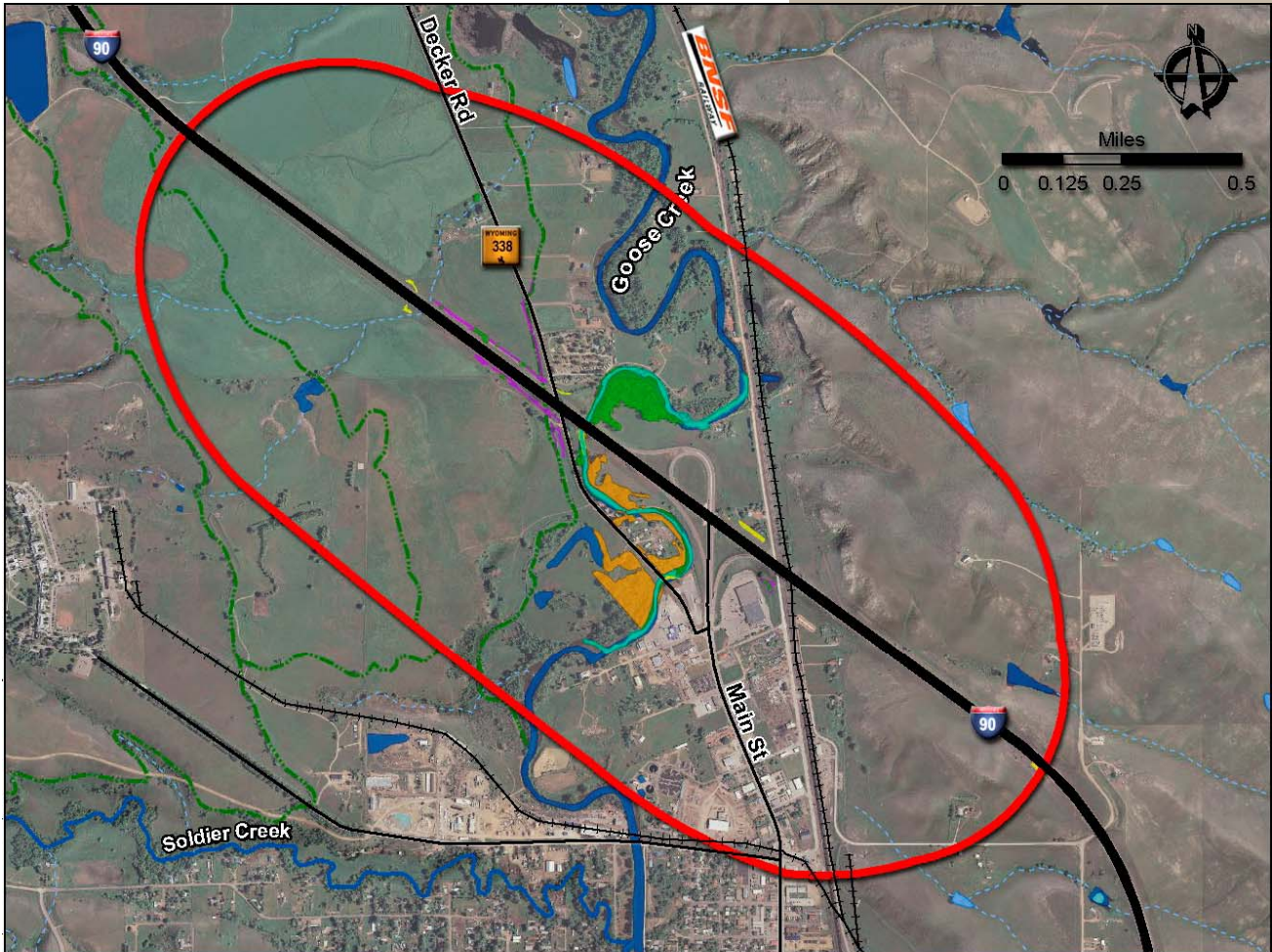
Groundwater

In the Sheridan area, most livestock and domestic wells are developed in the Tertiary Fort Union and Wasatch Formations. These wells are relatively shallow and do not produce large quantities of water. Quaternary deposits along the major streams, such as Goose Creek, provide good supplies of unconfined water (NRCS 1986).

Although the study area is mostly within the incorporated limits of Sheridan, the Project lies within an area that has been mapped as a Class 5 Groundwater Vulnerability Area, on a one to five scale. Groundwater vulnerability refers to

the relative speed that substances on the surface can reach and pollute the groundwater supply. The Class 5 Groundwater Vulnerability Area is designated to help manage potential groundwater contamination sources (including septic systems and stormwater runoff) and development density (City of Sheridan 2009a).

Surface Waters



Data Source: Imagery (City of Sheridan)

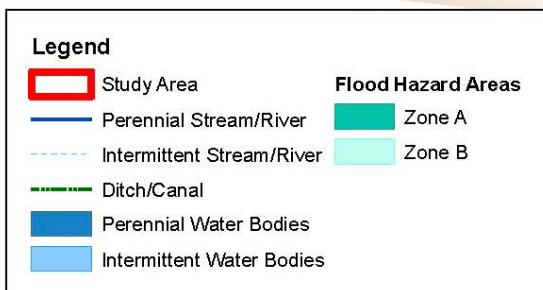
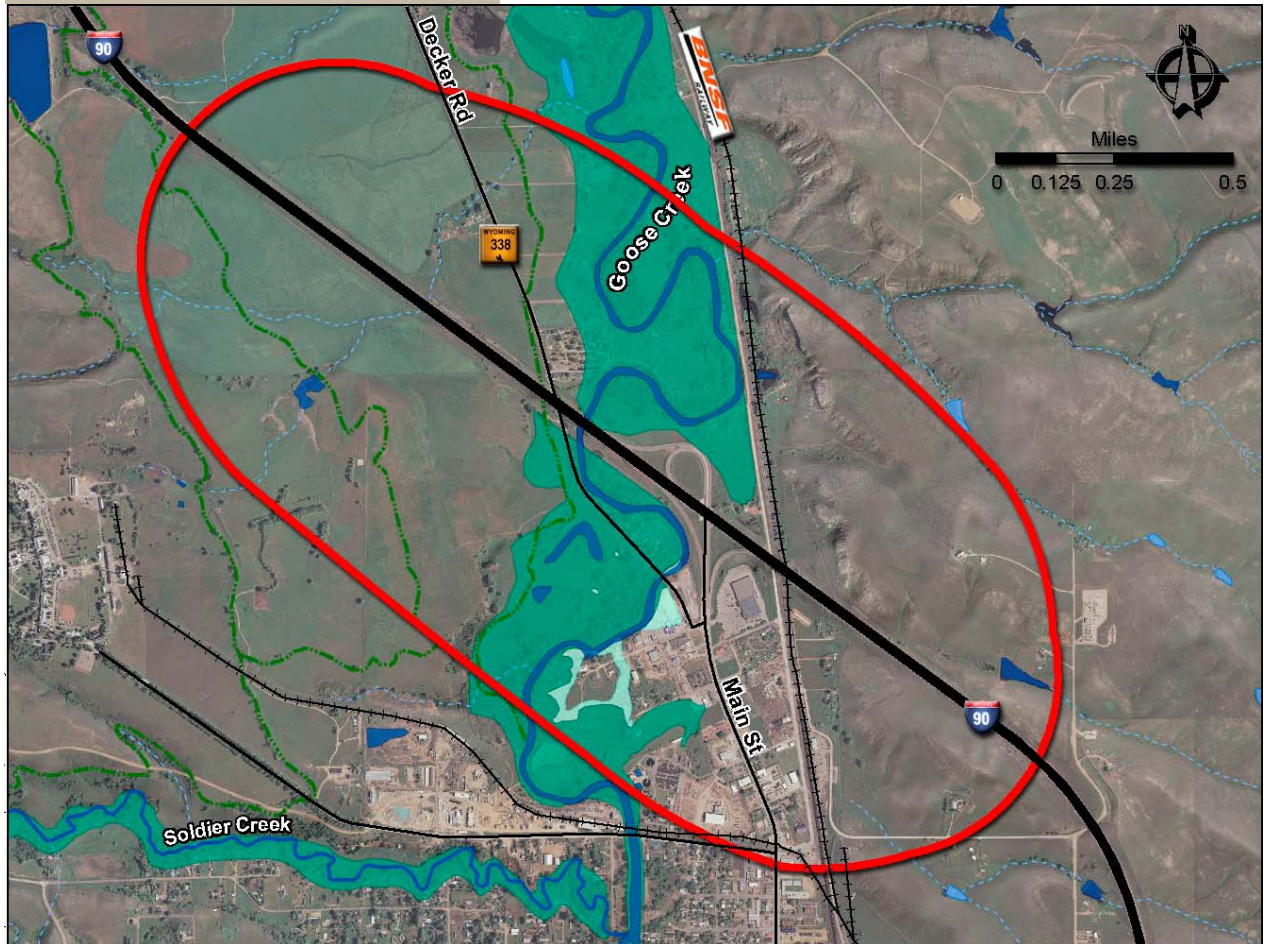
Floodplains

Executive Order 11988, Floodplain Management (May 24, 1977), established federal policy “to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of

floodplain development wherever there is a practicable alternative.”

The Federal Emergency Management Agency (FEMA) developed Flood Insurance Rate Map (FIRM) Community Panel Number 560047 0013 C (revised March 30, 1998) for the City of Sheridan to map flood hazards.

Floodplains



Data Sources: Imagery (City of Sheridan); National Hydrography Dataset (U.S. Geological Survey with U.S. EPA, USDA Forest Service)

The City of Sheridan is currently conducting floodplain map revisions, but for the purpose of this environmental assessment and in consultation with the City, the existing FIRM was used.

Wetlands

Wetland resources are protected by Section 404 of the Clean Water Act and by Executive Order 11990 (42 FR 26961).

Identification and mapping of wetlands in the study area were based on both a review of existing documentation and field delineation completed by HydroLogic, a water resources consultant, in 2010. Existing wetlands are associated with Goose Creek, irrigation ditches, and drainages within the study area. Of the 15 sites examined for their potential to be documented as wetlands, 10 sites have wetland characteristics. Two sites beyond the existing right-of-way fence appear to be riparian areas.

Impacts

No-Build Alternative

Under the No-Build Alternative there would be no new construction, such as new bridges, that would contribute sediment to Goose Creek or the surrounding floodplain. Current operation and maintenance activities would continue contributing sediment to Goose Creek in stormwater runoff. WYDOT and the City of Sheridan would need to continue to comply with the published TMDL for Goose Creek Watershed and implement best management practices. No fill would be placed in wetlands under the No-Build Alternative.

Alternative 2

Construction of Alternative 2 would require two new bridges over Goose Creek: one for North Main Street and one for the westbound on-ramp. It is anticipated that during final design the bridges could be designed to avoid

placing structures in Goose Creek, which is considered a water of the United States, and thus regulated under Section 404 of the Clean Water Act. The new structures would not impede surface water flows in the river channel after construction. After the bridges are constructed, some pollutants (e.g., oil and residue from vehicles and de-icing salts from snow removal) may enter surface waters during storms, which would be similar to existing conditions in the study area. However, this alternative needs to comply with the published TMDL for Goose Creek and would not further impair Goose Creek.

In addition to potential impacts along Goose Creek, up to 3 acres of waters of United States, including wetlands, could be affected by Alternative 2. Wetland impacts were calculated by overlaying right-of-way needed to construct Alternative 2 over the delineated wetlands. This approach was used because the level of design is conceptual. It was assumed that the structures could be built to avoid placing fill within the of the ordinary high water mark of Goose Creek.

The wetlands potentially affected by Alternative 2 are primarily associated with Goose Creek and the riparian floodplain along Goose Creek. Minor impacts could occur to wetlands associated with irrigation ditches and return flow ditches located along existing I-90.

It is anticipated that during final design, wetland impacts could be minimized by using structures or retaining walls, however, structures and retaining walls can add substantial cost to the Project. There may be temporary construction impacts to some of these wetlands. Temporary fill would be removed, and the wetlands returned to preconstruction conditions, including revegetation if necessary.

There is no practicable alternative to crossing the floodplain because I-90 and Decker Road are existing roadways that cross Goose Creek. Alternative 2 would cross the Goose Creek floodplain. Approximately 12 acres of floodplain would be affected. It is standard practice, however, for WYDOT to conduct a floodplain analysis during final design to ensure that new structures would not change the surface elevation of the water, and to ensure

Waters of the United States

Waters of the United States are wetlands, rivers, streams, and their tributaries that are regulated under the Clean Water Act. The Corps of Engineers has jurisdiction over these water bodies when they affect the chemical, physical, or biological integrity of a traditionally navigable river. A permit is required to place fill in these water bodies.

preservation of the 100-year floodplain. Because the City is currently revising its floodplain mapping, WYDOT would work with the City to ensure its hydraulic analysis is inconsistent with the revised floodplain mapping when it is complete.

Long-term effects to groundwater are not anticipated. Although the groundwater in the study area is shallow, the excavations associated with the Project would not affect the quality or quantity of groundwater.

Short-term negative impacts to Goose Creek and its floodplain could include a minor sediment increase during construction.

Wetland Impacts

Alternative	Wetland Impacts (acres)	New Floodplain Crossing (acres)
No-Build	0	0
Alternative 2	3	12
Modified Alternative 4	1.5	2

Modified Alternative 4

Construction of Modified Alternative 4 would require widening the existing bridge over Goose Creek along Decker Road. It is anticipated that this structure could be designed to avoid affecting Goose Creek which, as noted earlier, is considered a water of the United States.

It is anticipated that 1.5 acres of waters of the United States, including wetlands, could be impacted by Modified Alternative 4. Wetland impacts were calculated by overlaying right-of-way needed to construct Modified Alternative 4 over the delineated wetlands. This approach was used because the level of design is conceptual. It was assumed that the structures could be built to avoid placing fill within the ordinary high water mark of Goose Creek.

The wetlands potentially affected by Modified Alternative 4 are primarily associated with irrigation ditches and return flow ditches located along existing I-90.

It is anticipated that during final design, wetland impacts could be minimized by using retaining walls or adjusting roadside slopes to keep from permanently filling wetlands. There may be temporary construction impacts to some of these wetlands. Temporary fill would be removed and the wetlands returned to preconstruction conditions, including revegetation if necessary.

There is no practicable alternative to crossing the floodplain because I-90 and Decker Road are existing roadways that cross Goose Creek. Approximately 2 acres of floodplain would be affected. Similar to Alternative 2,

WYDOT would conduct a floodplain analysis during final design to ensure that new structures would not change the surface elevation of the water, and to ensure preservation of the 100-year floodplain.

Similar to Alternative 2, long-term effects to groundwater are not anticipated. Short-term negative impacts could include sediment increase during construction, which WYDOT would avoid, minimize, and mitigate. Similar to Alternative 2, this alternative need to comply with the published TMDL for Goose Creek and to not further impair Goose Creek.

Mitigation

Based upon the location of the improvements, no practicable Build Alternative will avoid all wetland or floodplain areas. During final construction, the Preferred Alternative that is selected will include all practicable measures to minimize harm to wetlands and floodplains. WYDOT would coordinate with the City and FEMA during the floodplain analysis and final design phase to obtain any required permits. Wetland mitigation is recommended to occur on Goose Creek because it is near the improvements and its perennial nature (Hydrologic February 2010). Wetland mitigation will be developed in coordination with the United States Army Corps of Engineers during the permitting phase of the Project.

Negative effects to surface water during construction will be minimized by implementing erosion-control measures to protect surface waters. A stormwater management plan using best management practices to minimize erosion and sediment entering Goose Creek will be prepared. Prior to construction, a stormwater construction permit in compliance with the Wyoming Pollutant Discharge Elimination System program will be obtained. WYDOT will comply with the published TMDL for Goose Creek.

Neither alternative will affect groundwater; therefore, no mitigation would be required.

AIR QUALITY

Under the federal Clean Air Act, the United States Environmental Protection Agency (EPA) is required to establish National Ambient Air Quality Standards (NAAQS) for the following pollutants: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5}), and lead. The State of Wyoming has adopted the NAAQS for these criteria pollutants. Geographic areas that exceed NAAQS for a particular pollutant are considered nonattainment areas for that pollutant.

In recent years, concern has increased over pollutants classified as mobile source air toxics (MSATs) on some large highway projects. MSATs of greatest concern from motor vehicles include benzene, toluene, and other organic compounds that are emitted from vehicle exhausts when there is incomplete combustion of all fuel components. FHWA has developed guidance for assessing MSAT impacts.

Existing Conditions

The North Sheridan Interchange Project is listed in the *Wyoming State Transportation Improvement Plan* (dated September 19, 2011), which is an approved program spanning fiscal years 2012 through 2017. Because this Project is listed within an approved State Transportation Improvement Plan, transportation conformity requirements regarding emissions budgeting are met for PM₁₀.

A portion of Sheridan County is designated by the EPA under 40 CFR 81 as an air quality nonattainment area for particles under 10 microns in diameter (PM₁₀). The nonattainment area is identified only as the “City of Sheridan” with no specific, physical, and unchanging geographical boundaries. For this analysis, it is assumed that some or all of the Project is within the designated nonattainment area. The entire study area is and always has been an attainment area for all pollutants other than PM₁₀.

EPA has issued guidance for quantitative PM₁₀ analysis. However, quantitative analyses are not required during a 2-year grace period ending in December 2012. Therefore, a qualitative PM₁₀ analysis was conducted in accordance with 40 CFR 93.123 (b)(2).

The following table provides a summary of air quality monitoring data in Sheridan County, taken from EPA’s Air Quality System database (EPA 2012). The data show that there have been two exceedances of the PM₁₀ 24 hour standard in the most recent five years of complete data. However, the EPA determines attainment for a region based on a three-year average of data.

Although the second-highest 24-hour concentration in 2007 is higher than the NAAQS, the standard allows for one exceedance per year, on average, over three years. The highest average of the second-high values over any three years of the five most recent years of available data (2006 to 2010) is approximately 111 µg/m³, which occurred in 2007 to 2009. Thus, the monitoring data indicate compliance with the NAAQS over the period. The area would officially remain designated as nonattainment, however, until the state submits to EPA a demonstration of attainment and a plan to continuously maintain compliance, and EPA approves the demonstration and plan.

In addition to PM₁₀, EPA’s AirData database was queried for available monitoring data for all other criteria pollutants (CO, NO₂, ozone, SO₂, PM_{2.5}, and lead) for the same years. The only other pollutant for which monitoring data are available is PM_{2.5}. The data show no exceedances of the 24-hour or annual PM_{2.5} NAAQS in the last five years of monitored data.

Because part of the Project’s purpose is to support local land use plans and minor impacts on traffic volume or vehicle mix could occur, a qualitative analysis for MSAT impacts was conducted for the alternatives.

Monitored Particulate Matter under 10 Microns in Diameter in Sheridan County

Year	Location	Number of Observations	24-Hour H2H Concentration ^a	24-Hour NAAQS
2006	45 West 12th Street	216	82	150
2007	45 West 12th Street	237	158	
2008	45 West 12th Street	363	83	
2009	45 West 12th Street	361	92	

^a High, Second High (H2H) value is shown. One exceedance of the 24-Hour NAAQS is allowed per year on average over three years. Concentrations shown are in micrograms per cubic meter (µg/m³).

Impacts

The most recent PM₁₀ monitoring data near the study area show that while the area monitors do reflect occasional high concentrations, the concentrations are within NAAQS. Although the Project is proposed, in part, to support local land use plans that could have minor impacts on traffic volume or vehicle mix, the improvement itself is not intended or expected to cause significant traffic increases.

No-Build Alternative

The primary contributor to the PM₁₀ problem in Sheridan is the resuspension of sand used on roadways during the winter.¹ Because the No-Build Alternative is at the northern city limits and northern extreme of the nonattainment area and has a lower number of possible sanded roadways around it than toward the middle of Sheridan, the PM₁₀ concentrations due to re-suspension of sand would be expected to be lower.

¹ An implementation plan for PM₁₀ control strategies for Sheridan, including the general study area, was approved by the EPA (Federal Register, 1994).

Alternative 2

As discussed in the Transportation section, most road segments show an increase in average daily traffic between the No-Build and Alternative 2, while other road segments show a decrease. With or without the West Corridor, higher maximum hot-spot PM₁₀ concentrations would occur under Alternative 2 because the highest individual average daily traffic counts by road segment occur under the Build Alternative. However, due to a more direct route to some locations under Alternative 2, the vehicle miles traveled for the No-Build Alternative would be higher than for Alternative 2. Therefore, emissions of PM₁₀, which are based on grams per mile emission factors, would be expected to be lower under Alternative 2 as compared to the No-Build.

Because Alternative 2 is at the northern limit of the nonattainment area and has a lower number of possible sanded roadways around it than toward the middle of Sheridan, PM₁₀ concentrations from resuspension of sand would be expected to be lower. Therefore, the highest PM₁₀ concentrations after Project completion are not expected to be measurably different than they are today. Based on the decrease in vehicle miles traveled, the project's location at the extreme northern end of the nonattainment area, and the expected mitigation of fugitive dust during construction, Alternative 2 is not expected to cause or contribute to violations of the NAAQS.

Under Alternative 2, it is possible that localized increases and decreases in MSAT emissions may occur along the new roadway sections that would be built along the realignments of North Main Street and Decker Road. The proposed travel lanes would move some traffic closer to nearby homes and would support the development of businesses, especially at the Sheridan High-Tech Business Park. However, the magnitude and the duration of these potential increases cannot be reliably quantified due to incomplete or unavailable information in forecasting Project-specific MSAT health impacts. Further, overall future MSAT emissions are expected to be substantially lower than today because of implementation of EPA's vehicle and fuel regulations.

Under Alternative 2, the Project would be in conformity with the current *State Implementation Plan* and the Clean Air Act as required in 40 CFR 93. The requirements are described in Section 2.2.1 of the *Air Quality Technical Memorandum* (HDR 2012c).

Short-term negative impacts would occur during construction. Construction creates the potential to generate windblown particulate matter called fugitive dust. Fugitive dust is generated during activities, such as grading, scraping, and operation of the heavy equipment. Fugitive

dust and construction equipment exhaust would contribute to localized PM₁₀ concentrations.

Modified Alternative 4

Modified Alternative 4 is expected to have a greater air quality impacts than those described for Alternative 2. It would cause an increase in vehicle miles traveled because of a more indirect route. Given that emission factors from mobile sources are on a gram per mile basis, higher total PM₁₀ emissions would occur under a Modified Alternative 4 build scenario as compared to an Alternative 2 build scenario.

Because Modified Alternative 4 is at the northern limit of the nonattainment area and has a lower number of possible sanded roadways around it than toward the middle of Sheridan, PM₁₀ concentrations from resuspension of sand would be expected to be lower. Therefore, the highest PM₁₀ concentrations after Project completion are not expected to be measurably different than they are today.

Air Monitoring



Highland Park Monitoring Station



Monitoring Location

Source: Wyoming Ambient Air Monitoring Annual Network Plan, 2011.

Based on an increase in vehicle miles traveled (compared to the No-Build or to Alternative 2), PM₁₀ emissions can be expected to be highest under Modified Alternative 4. However, based on the project's location at the extreme northern end of the nonattainment area and the expected mitigation of fugitive dust during construction, Modified Alternative 4 is not expected to cause or contribute to violations of the NAAQS. Even if development continues to increase buildings and new paved roadways, the area is unlikely to match the density and number of possible sanded roadways in the center of the City of Sheridan. Recent monitoring data (shown on page 3-8) indicate compliance with the PM₁₀ NAAQS at a monitor location close to the center of the City of Sheridan. Based on these monitoring data, it is likely that an area of less possible sanded roadways would also indicate compliance with the PM₁₀ NAAQS.

Under Modified Alternative 4, it is possible that localized increases and decreases in MSAT emissions may occur along the new roadway sections that would be built along the realignments of North Main Street and Decker Road. The proposed travel lanes would move some traffic closer to nearby homes and would support the development of businesses, especially at the Sheridan High-Tech Business Park. However, the magnitude and the duration of these potential increases cannot be reliably quantified due to incomplete or unavailable information in forecasting Project-specific MSAT health impacts. Further, overall future MSAT emissions are expected to be substantially lower than today due to implementation of EPA's vehicle and fuel regulations.

Under Modified Alternative 4, the Project would be in conformity with the current *State Implementation Plan* and the Clean Air Act as required in 40 CFR 93. The requirements are described in the *Air Quality Technical Memorandum* (HDR 2012c).

Short-term negative impacts would occur during construction. Construction creates the potential to generate windblown particulate matter called fugitive dust. Fugitive dust is generated during activities, such as grading, scraping, and operation of the heavy equipment. Fugitive dust and construction equipment exhaust would contribute to localized PM₁₀ concentrations.

Mitigation

According to the *Wyoming Air Quality Standards and Regulations*, steps must be taken to minimize fugitive dust during construction activities. During construction of Alternative 2 or Modified Alternative 4, frequent watering and/or chemical stabilization will be used to minimize fugitive dust (as recommended in Wyoming Air Quality Standards and Regulations, Chapter 3, Section 2f).

A hot mix asphalt plant may be needed during construction. WYDOT and/or its construction contractor will be responsible for obtaining the necessary permit. The temporary plant would need to conform to state regulations and would not substantially degrade air quality.

In addition to Section 106 of the NHPA, Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303 and 23 U.S.C. 138) prohibits FHWA from using land of national, state, or historical significance unless there is no prudent or feasible alternative. Section 4(f) is discussed in more detail at the end of this chapter.

CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA), requires that federal agencies take into consideration any effects the Build Alternatives may have on historic and cultural resources. This is accomplished through the Section 106 compliance process, which consists of the following steps:

- Identify consulting parties.
- Identify and evaluate historic properties located within the Area of Potential Effect established for an undertaking.
- Assess effects to properties listed in, or eligible for listing in, the National Register of Historic Places.
- Consult with the State Historic Preservation Officer (SHPO) and, as appropriate, the Advisory Council on Historic Preservation and other interested parties to resolve adverse effects.

A Class III pedestrian survey of cultural resources for archaeological resources was conducted for the North Sheridan Improvement Study in August 2000 by the Office of the State Archaeologist. A report of Historic Investigations was completed for the North Sheridan Interchange area in August 2010 by Rosenberg Historical Consultants to document historic structures in the study area. A Phase II report of Historic Investigations was completed in April 2011 for properties along Decker Road and North Main Street.

Existing Conditions

The cultural resource reports documented one property listed on the National Register of Historic Places, one property eligible for listing and seven properties that were not eligible for listing. SHPO concurred with these eligibility determinations as noted in Chapter 4, Comments and Coordination, and in the following table.

A brief description of the listed and eligible sites follows; additional information can be found in the cultural resource reports prepared for the Project, which are on file at WYDOT and SHPO.

Fort Mackenzie – 48SH124

Fort Mackenzie, which is now known as the Sheridan Veterans Administration Medical Center (VA Medical Center), has been listed on the National Register of Historic Places since June 18, 1981. Fort MacKenzie was created by President William McKinley in April 1900, and building construction began in 1902 with two-thirds of the red brick buildings being constructed in the first decade of the 20th century when the fort was an active military post. The post was abandoned by the military in 1918 and converted it to a hospital, which opened in 1922. The hospital reached its peak of 900 patients after World War II and became one of the county’s largest neuropsychiatric hospitals. Current capacity is approximately 200 beds, and 12,000 veterans annually are served.

Fort Mackenzie



Source: Fort Mackenzie hospital from National Register of Historic Places nomination form

Wrench Ranch



Source: E. Rosenberg, July 29, 2011

Historic Properties

Property		NRHP Eligibility	Effects by Alternative		
			No-Build Alternative	Alternative 2	Modified Alternative 4
48SH124	Fort Mackenzie	Listed	No Effect	No Effect	No Effect
48SH854	2291 North Main Street	Not Eligible	No Effect	No Effect	No Effect
48SH1755	Wrench Ranch	Eligible	No Effect	No Effect	No Adverse Effect
48SH1089	Grinnell Livestock Irrigation Ditch	Not Eligible	No Effect	No Effect	No Effect
48SH1767	Trail’s End Motel	Not Eligible	No Effect	No Effect	No Effect
48SH1768	Stage Stop Motel	Not Eligible	No Effect	No Effect	No Effect
48SH1769	Residence	Not Eligible	No Effect	No Effect	No Effect
48SH1770	Residential complex	Not Eligible	No Effect	No Effect	No Effect
48SH1771	Residential complex	Not Eligible	No Effect	No Effect	No Effect

Information from Rosenberg 2010, 2011, and Eckles 2000.

NRHP = National Register of Historic Places

Wrench Ranch – 48SH1755

The Wrench Ranch area has been identified as eligible for listing on the National Register of Historic Places due to its association with events that made significant contributions to our understanding of late 19th and early 20th centuries ranching in northern Wyoming as well its association with historically significant people. In addition, the Wrench Ranch area embodies distinctive characteristics of a type, period, or method of construction.

The site was first patented under the Desert Land Act of 1877 on February 1, 1888, by Cornelius H. Grinnell. Grinnell and a partner received the contract to build many of the brick buildings at Fort MacKenzie. Over time, additional parcels were added to the Grinnell holdings and eventually much of the land was owned by coal companies. In 1946, the Rice family purchased this land along with land owned by the coal companies and other adjacent government land for what is now known as the area ranch. The ranch was purchased by heirs to the Doubleday fortune in 1995.

Native American Consultation

All Native American tribes with an interest in the study area, including the Northern Arapaho Tribe, Northern Cheyenne Tribe, and Oglala Sioux Tribe, were notified of the proposed improvements on November 3, 2010, and requested to identify any areas of concern. A response was received from the Northern Arapaho, who identified no concerns. See Chapter 4, Comments and Coordination, for more information.

Impacts

No-Build Alternative

The No-Build Alternative would have no new effects on existing cultural resources within or adjacent to the study area.

Alternative 2

Neither the Wrench Ranch area nor the VA Medical Center would be directly impacted by Alternative 2. Short-term impacts would include construction equipment in the viewshed and temporary increases in noise.

No long-term or short-term indirect effects (visual or substantial noise) are expected to affect the eligibility or listing of these properties.

Modified Alternative 4

Construction of Modified Alternative 4 would not result in direct impacts to the VA Medical Center or the Wrench Ranch complex.

Noise modeling was completed for the Project to determine if noise would intrude upon the setting of either property. Noise is not expected to increase at either property as discussed in the Noise section. Noise would decrease at the ranch buildings.

Because of the proximity of Modified Alternative 4 to both the Wrench Ranch area and the VA Medical Center, specific visual analysis was completed to determine whether the alternative would intrude upon the viewshed of these specific properties.

Four views from the VA Medical Center toward the proposed interchange site were observed and photographed by historian Robert Rosenberg. Vista West Engineering, the design consultant, inspected the area and concluded that Modified Alternative 4 is not visible.

WYDOT determined that neither Alternative 2 nor Modified Alternative 4 would indirectly affect the VA Medical Center. SHPO concurred with these determinations on August 1, 2011, and March 7, 2012.

Visual simulations were completed for the Wrench Ranch area to determine the potential impacts associated with Modified Alternative 4. The interchange would be visible, including tower lighting; however, the interchange would not adversely affect the property. SHPO concurred with this determination on March 7, 2012.

Short-term effects would include construction activities and equipment in the viewshed of the Wrench Ranch area and the VA Medical Center. There would be a temporary increase in noise from construction equipment.

Mitigation

Mitigation, including interchange lighting, will be determined in consultation with SHPO after the Preferred Alternative is selected and during final design.

Visual Rendering for
Modified Alternative 4



Source: Vista West Engineering


Visual Rendering for
Modified Alternative 4

PROJECT NO.	0901091
DATE	8/4

WRENCH RANCH POINT OF VIEW
PRIOR TO PROPOSED INTERCHANGE



WRENCH RANCH POINT OF VIEW
AFTER PROPOSED INTERCHANGE



SHERIDAN MARGINAL
MODIFIED ALTERNATIVE 4
VISUAL SIMULATION

RIGHT-OF-WAY

Existing Conditions

Existing right-of-way for the mainline of I-90 is 150 feet on each side of the centerline.

Existing right-of-way for Decker Road is 80 feet, and the existing right-of-way for North Main Street is 80 feet.

Impacts

No-Build Alternative

Right-of-way under the No-Build Alternative would not change.

Alternative 2

Approximately 11 acres of new right-of-way would be needed to accommodate the new interchange and allow for bridge widening and the westbound exit ramp.

Alternative 2 would use some existing right-of-way from the existing North Sheridan Interchange. Approximately 12 acres of right-of-way that is currently owned by WYDOT for the maintenance and operation of the existing North Main Street Interchange would be potentially available for other uses. Construction of the Decker Road/North Main Street/Canfield Street intersection would not require new right-of-way.

Construction of Alternative 2 would require right-of-way to be acquired from three properties: two residential and one commercial. Two residential properties south of I-90 (up to seven parcels) include a combination of uses: the property-owner residence, rental units, and a home-based landscaping business. The potential property tax loss to Sheridan County is less than one-tenth of one percent of total property tax revenue (HDR 2012e). In addition, right-of-way for construction of Alternative 2 would include land north of I-90, including land from the KOA.

As design for the Project continues, WYDOT would work with property owners to determine how much of the property would be acquired and if the property acquisition would require that all uses on the property be relocated.

Modified Alternative 4

Approximately 35 acres of new right-of-way would be needed to accommodate the new interchange and realignment of North Main Street, including up to three parcels. The estimated loss in property tax revenue to Sheridan County is less than one-tenth of one percent of the total revenue (HDR 2012e).

None of the right-of-way from the existing North Sheridan Interchange can be used for this alternative. Approximately 25 acres of right-of-way that is currently owned by WYDOT for the maintenance and operation of the existing North Main Street Interchange would be available for non transportation use. Construction of the Decker Road/North Main Street/Canfield Street intersection would not require new right-of-way.

Construction of Modified Alternative 4 would not result in any existing residences or business being relocated; however, it would require strips of right-of-way to be acquired from multiple properties, including areas of future planned development in the Wrench Ranch area and the stormwater management facilities in the Sheridan High-Tech Business Park. The stormwater facilities would need to be reconfigured under this alternative. A minor impact (less than 1 acre) would also occur to the United States Forest Service administrative site (work area and storage location).

Mitigation

All private property, including businesses, needed for the construction of this Project, will be acquired in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (URAA), as amended, and under the terms of the Relocation Assistance Program, W.S. 9 17 101 et seq.

The acquisition of the property from the United States Forest Service has been coordinated with the Big Horn National Forest. The property will be appropriated and transferred in accordance with the Section 317 of U.S.C 23 and 23 CFR 710 right-of-way and real estate procedures. The Forest Service will issue a letter of consent that will include any construction and mitigation stipulations.

The URAA provides uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally funded projects. Right-of-way specialists provide advisory and financial assistance to displaced persons to find and obtain replacement housing units that are affordable, decent, safe, sanitary, and in areas at least as desirable as their current neighborhood. Assistance is provided to businesses in finding and moving to a new suitable location.

Fencing will be replaced along the right-of-way according to Forest Service specifications to minimize impact to the function of the pasture.

The stormwater facilities in the Sheridan High-Tech Business Park will be reconfigured to accommodate Modified Alternative 4 and the stormwater management needs of the Sheridan High-Tech Business Park. WYDOT will coordinate with the appropriate landowners during final design.

VISUAL AND AESTHETICS

The physical elements of a landscape form visual patterns that can strongly influence a person's response to that landscape. Physical elements include landform and vegetation, water and wildlife features, and other man-made modifications, such as residential and commercial development. Foreground landscape units are those immediately visible and which define the local character of the area. The foreground is defined as the area within 0 to 0.5 mile. The middleground is defined as views within 0.5 mile to 4 miles, and background views are 4 miles or greater.

Existing Conditions

The general landscape along I-90 near North Main Street consists of agricultural land and open space/riparian areas, with background views of the Big Horn Mountains.

Human elements within the view-plane include farm buildings, scattered residences, scattered commercial buildings, such as hilltop hotels, transportation facilities, such as rural roads, railroad tracks, aboveground transmission lines, post and wire fencing, and small businesses adjacent to and along I-90.

Viewsheds from and into the study area have been defined in City and County land use plans and are summarized below. Detailed descriptions can be found in the *Planning Document Review Technical Memorandum* (HDR 2012d).

North Main Area Master Plan Viewsheds

According to the *North Main Area Master Plan*, among the most striking features of the North Main area are its views and vistas. The following viewsheds were identified for conservation in the North Main area:

- Long-range views to the west (toward the VA Medical Center and the Big Horn Mountains)
- Close-in views of Goose Creek and other riparian areas

- Tree stands and other vegetated areas along gateway corridors
- Agricultural fields and open vistas

Viewsheds

A viewshed is the view from a particular vantage point, which has scenic qualities or aesthetic values. The City of Sheridan has defined viewsheds they believe should be protected, which are currently being described in a separate Viewshed Plan.



Wrench Ranch



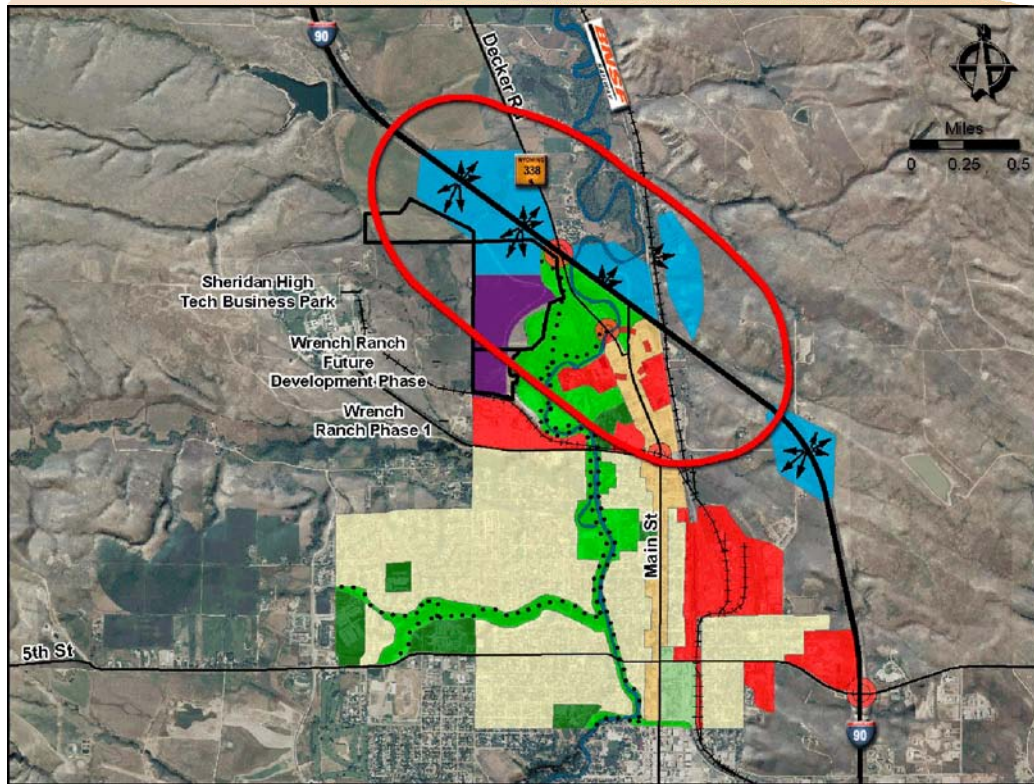
Photos by HDR Engineering

The key principles for protecting these resources, found in the *North Main Area Master Plan*, are the following:

- Limit development on sites that are highly visible from I-90 to maintain visual character.

- Limit building heights, prohibit ridgetop development, and maintain open views to the VA Medical Center and the Big Horn Mountains, to the west.
- Designate open space in viewsheds, cluster development, and limit development density.
- Retain natural vegetation character along gateway areas.
- Avoid removing stands of trees and other vegetation along major roadways and corridors.
- Maintain views to Goose Creek along I-90 and Decker Road, and enhance the riparian character through rehabilitation and revegetation.

Existing Land Use



Legend

Study Area	Interchange Area	Future Mixed Use	Trails
	Commercial Node	Railroad Historic District	ViewshedLine
North Main Enhancement Corridor	Portion of North Main Street where most of the development activity and enhancements are expected to take place.		
Open Space/Parks	Long-term network of open space, parks, and trails that connect all of the North Main area internally and to other areas of the city.		
Neighborhood Residential Area	Existing residential areas that are vital to preserve and enhance for the future of the North Main area.		
Service Commercial/Light Industrial	Areas that are appropriate for employment-oriented uses, such as light industrial or service commercial businesses.		
Viewshed	Views and vistas that should be protected as development is planned.		

Data Sources: Imagery (USDA and NRCS 2009 NAIP); Future Land Use (City of Sheridan, North Main Area Master Plan, Centennial Collaboration); Alternatives (HDR Engineering, Inc.)

Sheridan Joint Planning Area Land Use Plan

The Sheridan Joint Planning Area Land Use Plan mentions reducing the potential for visual impacts by heavy industrial uses by limiting the location of such uses “[a]way from developed communities and residential areas, such that noise, vibrations, and visual impacts will not disturb existing or future uses.”

Sheridan County Land Use Plan

According to the Sheridan County Land Use Plan (Issue 5: Agriculture), agriculture and ranching are primary sources of the highly valued visual quality of the county. To maintain that quality, the plan laid out several recommendations: including maintain traditional agricultural uses, protect wildlife habitat, protect the quality of night skies, protect the visual quality of hillsides and ridges, avoid intrusive development visible from public rights-of-way by use of design techniques, and improve community gateways and corridors.

Impacts

No-Build Alternative

The No-Build Alternative would have no effect on the identified viewsheds or existing visual resources and aesthetics within the study area.

Alternative 2

Construction of Alternative 2, located just north of the existing interchange, would result in removal of trees and riparian vegetation in areas that are more heavily vegetated from the foreground and middleground overlooking Goose Creek. This would allow for the building of a new North Main Street bridge over Goose Creek; the widening of the eastbound off-ramp over Goose Creek; the building of a new bridge over Goose Creek for the westbound on-ramp; the widening and/or building of a new bridge over Decker Road; and widening of North Main Street over Goose Creek as necessary.

Alternative 2 would be located in the foreground viewshed at the existing interchange defined in the *North Main Area Master Plan* for the bluff on the north side of I-90 and in an area designated as open space to protect the views associated with Goose Creek.

Current middle ground views from I-90 of agricultural lands west of Decker Road are expected to be maintained until this land, which is proposed for urban uses in the long-term, is developed. However, the views from I-90 associated with the riparian vegetation open space along

Goose Creek would be permanently and substantially changed with the introduction of a bridge over the creek and connecting roadways.

Views of the new interchange from west of Decker Road would be possible from I-90 and from adjacent residences on Decker Road, especially as riparian vegetation along Goose Creek is removed for construction. Views from the VA Medical Center are expected to remain unchanged. The new interchange would also be visible east of the existing interchange because of the loss of riparian vegetation, but no more visible than the current interchange. Because the land along Goose Creek is lower than the surrounding land, some of the visual effects would be lessened.

Additional visibility analysis was completed as part of the economic analysis for existing business. Visibility maps can be found in the Economics section of this chapter.

Current views of the Big Horn Mountains from I-90 and residences along Decker Road are expected to remain unchanged. The interchange is not expected to have any effects on this background view. The background views could be partially blocked by new buildings in the planned Wrench Ranch development area or Sheridan High-Tech Business Park; depending on the regulations put in place by the City as part of its viewshed planning efforts.

Short-term negative impacts would be expected, including storage of construction equipment in view of the highway and ground disturbance associated with demolition of the mainline bridges for the existing interchange and construction of the new interchange. As Project design continues, there is an opportunity for the site to be integrated into the City’s gateway vision and redevelopment efforts; these efforts could include design enhancements for the new bridge.

Modified Alternative 4

Construction of Modified Alternative 4 would result in the removal of minimal trees in fringe areas near Goose Creek to allow for widening of the eastbound on-ramp over Goose Creek, and widening of North Main Street over Goose Creek, as necessary. A large amount of earthwork

would be required on the south side of I-90 for construction of the Decker Road overpass.

Modified Alternative 4 would be located within the viewshed west of Decker Road defined to protect agricultural middle ground views and Big Horn Mountain background views from I-90. Sensitive viewers would be located at the VA Medical Center and the residences on Decker Road.

The new North Sheridan Interchange structure would be more visible in the middleground view from I-90 west of Decker Road because a new bridge spanning the mainline interstate would be needed. The height of the overpass would be approximately 30 feet from the existing ground surface. The permanent background views of the Big Horn Mountains would remain unchanged.

There is potential for views to and from I-90 to be partially blocked by new buildings at the Sheridan High-Tech Business Park and planned development in Phase 1 of the Wrench Ranch Master Plan area. The City has enacted zoning regulations that restrict the heights of buildings in these designated viewshed areas.

The residents along Decker Road may have restricted foreground and middleground views associated with the proposed Decker Road overpass. As noted in the Cultural Resources section, the view toward I-90 from the historic VA Medical Center and from the historic structures at the Wrench Ranch would be permanently changed, but not adversely affected by the interchange over the I-90 mainline as demonstrated in visual simulations completed for the Project.

Short-term negative impacts would be expected, including storage of construction equipment in view of the highway and ground disturbance associated with construction of the interchange. After the construction of the new interchange is complete, short-term impacts would also include demolition of the existing interchange and rehabilitation of that site, which has the potential to enhance North Main Street depending on how the site is developed. As Project design continues, there is an opportunity for the site to be integrated into the City's gateway vision and redevelopment efforts; these efforts could include design enhancements for the new bridge.

Mitigation

Incorporation of visually pleasing design features for the interchange may offset negative impacts associated with removal of riparian vegetation (Alternative 2) or the sight of the new interchange from local residences (Modified Alternative 4). WYDOT is committed to minimizing impacts to the natural landscape by blending the

Viewsheds

Photosimulation of Modified Alternative 4 from Historic Wrench Ranch farm buildings



appearance of an interchange structure with its surrounding landscape using concrete texturing and color.

Enhancement Opportunities

Beyond their commitment to minimize the visual impacts of interchange structures, WYDOT will work closely with Sheridan County and the City of Sheridan to identify opportunities to reclaim or redevelop the existing interchange area in a manner that is consistent and beneficial to the gateway vision of the *North Main Area Master Plan*.

TRANSPORTATION AND TRAFFIC

Existing Conditions

Transportation facilities within the study area include I-90, Decker Road (also Wyoming 338), North Main Street, Higby Road (County Road 123), Fort Road (State Highway 337), Canfield Street, and the Burlington Northern Santa Fe Railroad.

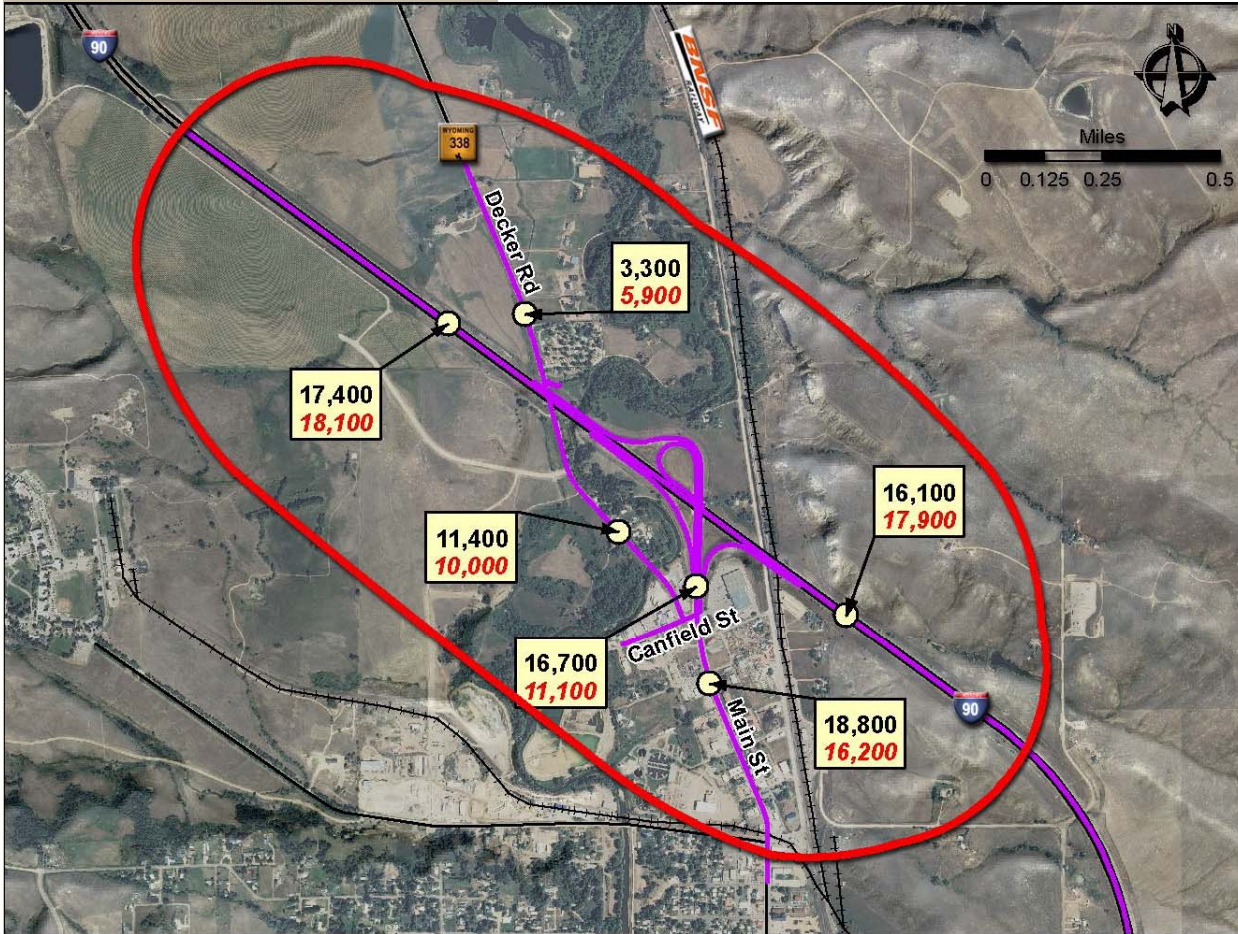
The existing North Sheridan Interchange provides the northernmost access to/from I-90 into Sheridan. North Main Street, which has direct access to I-90, is the major north-south corridor in the city. It serves the northern area of Sheridan, as well as the historic downtown, which has many active businesses. The land use in the immediate vicinity of the interchange is commercial.

Decker Road intersects North Main Street but does not have a direct north connection from I-90. Decker Road has been identified by the County as an important primary and secondary access route. It serves the agricultural and rural residences north of I-90, and provides access to the

Tongue River Reservoir, two coal mines, and coalbed methane operations in the area.

The existing average daily traffic counts for road segments in the study area are shown in the following table.

Average Daily Traffic



Legend

- Study Area
- Alternative 1 Alignment

16,100	2035 ADT Without West Corridor
17,900	2035 ADT With West Corridor



Data Sources: Imagery (USDA and NRCS 2009 NAIP); Alternatives and Traffic Projections (HDR Engineering, Inc.)

The West Corridor is a planned north-south transportation corridor through the western part of Sheridan. The West Corridor was proposed in a citywide traffic study conducted by the City in 2001. It is intended to provide city traffic roadway capacity independent of the proposed North Sheridan Interchange improvements but would provide access to I-90. To date, the specific I-90 tie-in for

the West Corridor has not been identified in adopted City plans, but the location for a transportation corridor south of 5th Street has been identified in City plans. The North Sheridan Interchange should be located so that it would not preclude an additional interchange for the West Corridor tie-in. Funding has not been identified for construction.

Future (2035) Average Daily Traffic Under the Build and No-Build Alternatives

Road Segment	Existing	No-Build		Alternative 2		Modified Alternative 4	
		With West Corridor	Without West Corridor	With West Corridor	Without West Corridor	With West Corridor	Without West Corridor
I-90 – North of NSI*	3,700	18,100	17,400	19,200	19,200	19,200	19,200
I-90 – South of NSI*	3,800	17,900	16,100	17,900	16,300	18,300	16,900
North Main Street/Decker Road – South of I-90	6,400	11,100	16,700	18,300	16,700	19,200	17,600
North Main Street – South of Canfield Street	8,000	16,200	18,800	14,900	18,900	15,800	17,200
Decker Road – North of Canfield	1,700	10,000	11,400	17,300	18,700	18,300	19,300
Decker Road – North of I-90 Bridge	1,700	5,900	3,300	3,700	3,700	3,700	3,700

NSI = North Sheridan Interchange

Traffic Analysis

Traffic analyses were performed to evaluate the capacity and safety conditions of the existing North Sheridan Interchange. Capacity analyses were performed for current traffic volumes and Projected future-year (2035) traffic volumes. More details on the capacity and safety analyses are available in the *Purpose and Need Technical Memorandum* (HDR 2012a).

During the Project scoping meeting, several comments were received requesting analysis of traffic patterns since the removal of the port-of-entry. In response to this request, the historic traffic volumes and truck percentages were evaluated to determine what effect relocating the port-of-entry may have had on traffic patterns in the study area. Average Daily Traffic Volume and Percentage of Trucks Along I-90 and North Main Street, from 1999 to 2008, shows the total

average daily traffic and percentage of trucks for I-90 and North Main Street.

The analysis shows that truck volumes and average daily traffic decreased along North Main Street from the North Sheridan Interchange to the Canfield Street intersection. Truck volumes dropped by nearly 75 percent between 2004 and 2007. Overall traffic volumes along this same stretch dropped in 2006 to pre-2003 levels, but there was a sustained spike in volume from 2003 to 2005, so the current average daily traffic for the study area is roughly the same as in 2003, even with the drop in number of trucks using the North Sheridan Interchange.

Average Daily Traffic Volume and Percentage of Trucks along I-90 and North Main Street from 1999 to 2008

Road Segment	1999		2001		2003		2005		2007		2008	
	Total ADT	Truck percent	Total ADT	Truck percent	Total ADT	Truck percent	Total ADT	Truck percent	Total ADT	Truck percent	Total ADT	Truck percent
I-90 – Sheridan North Urban Limits to NSI	3,040	20.1	3,115	18.9	3,160	19.0	3,360	20.2	3,410	20.2	3,700	17.6
I-90 – NSI to 5th Street	2,700	22.6	3,080	19.0	3,125	19.0	3,320	20.2	3,240	21.0	3,880	19.8
North Main Street – NSI to Wyoming 338	7,050	10.5	7,380	12.7	10,360	8.9	9,850	5.1	6,870	3.5	6,390	3.4
North Main Street – Wyoming 338 – Fort Road	8,500	3.8	8,040	3.7	8,360	3.5	7,880	3.3	8,650	3.5	8,040	3.5
North Main Street – Fort Road to Sheridan North Corp Limits	11,000	3.2	9,510	3.7	8,930	3.7	10,610	2.6	9,840	3.5	9,150	3.5

NSI = North Sheridan Interchange

ADT = average daily traffic

Future Traffic Analysis (2035)

Future average daily traffic (2035) is expected to increase from the existing conditions. The amount of increase on any road segment depends on whether the West Corridor is constructed. Traffic on Decker Road, for instance, would nearly triple under the scenario if the West Corridor is not constructed. The future traffic includes development associated with the Sheridan High-Tech Business Park and the Wrench Ranch development area as shown in the City-approved master plans for these developments.

Capacity Analyses

The capacity analyses performed for this Project focused on the local intersections because they constrict the capacity of the North Sheridan Interchange. Capacity analysis results are reported as levels of service, which are based on the amount of delay motorists experience at an intersection. A minimum acceptable peak-hour level of service would be level of service D, which indicates moderate congestion with moderate delay. Two intersections within the study area, North Main Street at Canfield Street and Canfield Street at Decker Road were analyzed to determine how well the existing intersections and new intersections accommodate travel demand. More

information about the capacity analysis is available in the *Purpose and Need Technical Memorandum* (HDR 2012a).

Under existing traffic volumes, each intersection operates at level of service B. Future-year traffic conditions were analyzed with and without the construction of the West Corridor and the results are shown in the following table.

As shown in the table, level of service would be unacceptable under the No-Build Alternative. Geometric improvements would be required at the North Main Street and Canfield Street intersection and the Decker Road and Canfield Street intersection would likely be signalized. Intersection operation would be acceptable under either Build Alternative if the ramp terminals are constructed with traffic signals. The intersections with stop signs would have excessive delay and result in level of service F.

Future-year traffic analyses for the North Sheridan Interchange improvements considered traffic with and without the West Corridor.

Level of Service Analysis under the 2035 Alternatives

Road Segment	No-Build		Alternative 2		Modified Alternative 4	
	With West Corridor	Without West Corridor	With West Corridor	Without West Corridor	With West Corridor	Without West Corridor
North Main and Canfield streets	C	E	–	–	–	–
Canfield Street and Decker Road	F	F	–	–	–	–
North Main Street/Decker Road and Canfield Street	–	–	B	B	B	B
Decker Road and Eastbound On- and Off-Ramps	–	–	F/B*	E/A*	F/B*	F/B*
Decker Road and Westbound On- and Off-Ramps	–	–	F/C*	F/B*	F/C*	F/B*

The ramp terminals would experience level of service E or F under stop control and levels of service A, B, or C under signal control.

The intent of the safety analysis was to identify significant patterns for the crashes that have occurred at the existing interchange. The period analyzed included 1999 through 2008. These data include the period before and after the port-of-entry was removed from the existing North Sheridan Interchange. See the following table, which includes crashes² along I-90 from mile post 16.24 to MP 23.25, along North Main Street and Decker Road (WYDOT 2009).

A review of the crash data reveals that five of the eleven years studied had an above-average crash rate. Further review of the crash patterns revealed that most of crashes at the interchange were single-vehicle crashes that resulted from drivers not properly negotiating the geometry of the ramps; the geometry of the interchange is substandard. Roughly half of the multi-vehicle crashes occurred at ramp merge points where substandard merging distance is provided. These crash patterns are a result of substandard geometry at the interchange. The 2005 relocation of the port-of-entry did not reduce crashes at the North Sheridan Interchange.

Crashes and Crash Rates for I-90 (Including the North Sheridan Interchange) Versus Statewide

Year	Total Number of Crashes	NSI Calculated Crash Rate	Statewide Average Crash Rate
1999	19	1.27	1.12
2000	19	1.28	1.16
2001	5	0.31	1.07
2002	20	0.96	1.17
2003	17	0.77	1.17
2004	20	0.91	1.00
2005	27	1.21	0.94
2006	27	1.25	1.21
2007	26	1.21	1.17
2008	12	0.55	1.12
2009	8*	0.55	1.12

Source: "Request for Interchange Modification" for North Sheridan Interchange, April 6, 2009. Page 3.

Note: Highlighted years experienced a crash rate above the statewide average.

Existing Plans Considering Sheridan Transportation

Plans that guide the development of local transportation facilities within the study area are the *Sheridan Transportation Policy Plan* (November 2009), the *Sheridan County Comprehensive Plan* (adopted 2008), the *North Main Area Master Plan* (July 2009), the *Sheridan Joint Planning Area Land Use Plan* (adopted May 2009), the *Sheridan Pathways Master Plan* (May 2007), and the *Sheridan Parks and Recreation Master Plan* (May 2009). Each plan contains goals, objectives, and/or statements that are relevant to this Project as noted in the following table. These elements can affect the development of the Project or the Project can affect local transportation efforts as defined in the plans. The detailed plan evaluations can be found in the *Planning Document Review Technical Memorandum* (HDR 2012d) prepared for the Project.

² The total numbers include the crashes that involved driver impairment, but those crashes were excluded when more detailed analyses were performed. The number of driver-impaired crashes was small enough that the quantitative analysis was not affected.

Transportation Goals

The Sheridan Transportation Policy Plan does not create a specific list of transportation projects, rather it creates a framework to guide and inform transportation decisions.

Local Planning Document	Goals Related to North Sheridan Interchange
Sheridan* Transportation Policy Plan (November 2009)	Goal D6: I-90 Interchanges will be located and designed to provide short, direct, and attractive access to existing commercial districts.
	Goal W1: The pedestrian network will connect neighborhoods to local and regional destinations.
	Goal B1: The bicycle will be a practical and safe transportation choice for residents and visitors.
	Goal B5: The bicycle network will connect neighborhoods to local and regional destinations.
North Main Area Master Plan (July 2009)**	Goal #4 Enhanced transportation network. The NMNA (North Main Neighborhood Association) believes that “if the interchange must be moved, it should be kept as close to North Main as possible.” The plan contains “one possible option for relocating the interchange north of its current location” that meets that criteria and their objective of providing “continuity and easy access to the North Main area.”
	Goal 3.2: The City will identify and preserve planned utility and transportation corridors. Goal 4.1: The transportation network will be well connected and coordinated with adjacent land uses.
Sheridan Joint Planning Area Land Use Plan (adopted May 2009)	Goal 4.2: Urban areas will have “complete streets” to accommodate motorized vehicles, public transit, bicycles, and pedestrians.
	Connect neighborhoods to parks, schools, natural areas, the downtown, and the region.
Sheridan Parks and Recreation Master Plan (May 2009)	Goal 5.1: The transportation network will be well connected and coordinated with adjacent land uses.
Sheridan County Comprehensive Plan (adopted 2008)	Goal 5.2: Urban areas will have “complete streets” to accommodate motorized vehicles, public transit, bicycles, and pedestrians.
	Goal 5.6: The County will support planning and extension of a regional non-motorized trails and pathways system.
	The Sheridan County Comprehensive Plan identifies Decker Road as both a heavy truck corridor and as an alternative cross-county route. Sheridan County designated Decker Road as a Heavy Truck Corridor, acknowledging Decker Road as the principal access to industrial land and energy production areas serviced by commercial trucks.
	The plan is a blueprint for Sheridan to implement a pathway system to serve the citizens of the City and the immediate area surrounding it.
Sheridan Pathways Master Plan (May 2007)	

The interchange option identified by the North Main Neighborhood Association is Alternative 3, which does not meet the Project Purpose and Need. There are 1,050 feet between Alternative 3 and Modified Alternative 4.

* The Sheridan City and County comprehensive plans define transportation to include cars, bicyclists, walkers, and public transit users, and this plan is based on that view of transportation.

** Transportation goals from previous Sheridan comprehensive plans were incorporated into this plan. The plans incorporated were the Sheridan County Comprehensive Plan, the Sheridan Joint Planning Area Comprehensive Plan, the Sheridan Pathways Master Plan, and the Sheridan Parks & Recreation Master Plan.

Impacts

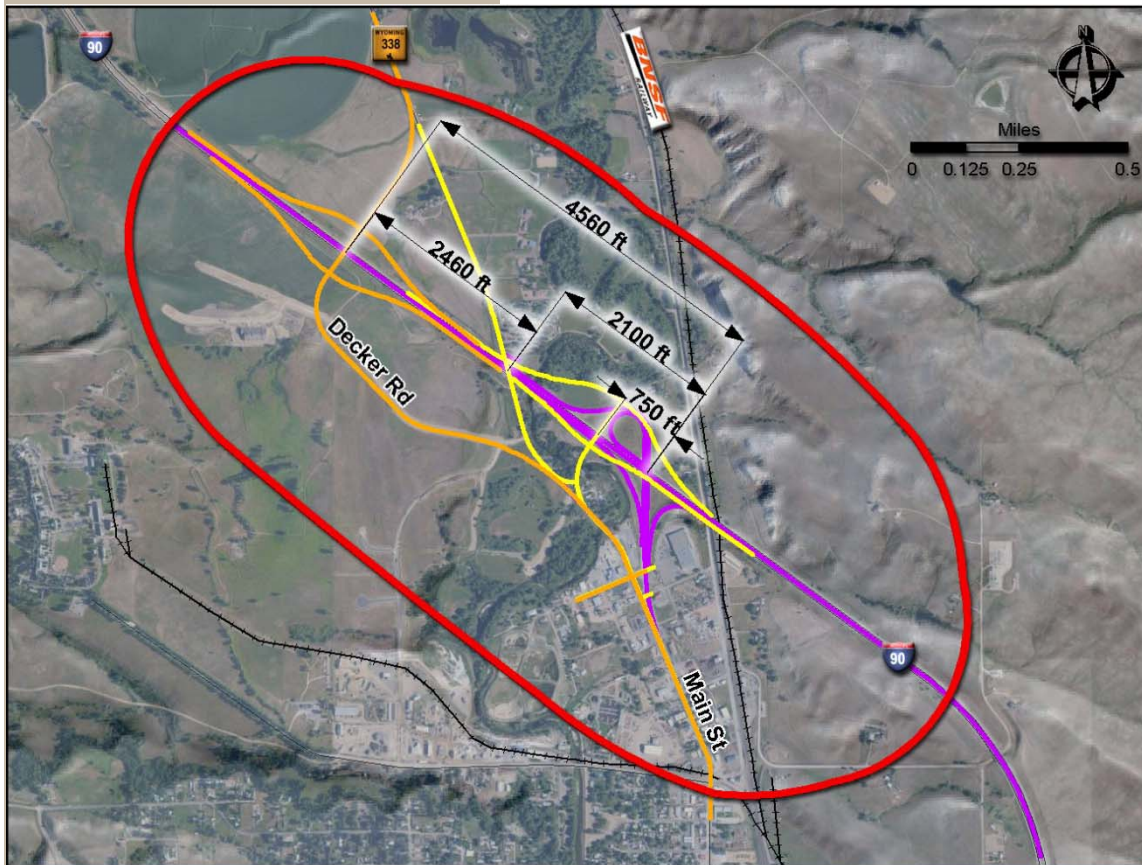
No-Build Alternative

The No-Build Alternative would not change the interchange location, so no new transportation impacts would occur. The existing conditions would continue to deteriorate as the future traffic volumes would be more than double the existing traffic volumes. These volumes would be reduced along North Main Street and Decker Road if the West Corridor is built.

The geometric problems of the existing interchange would not be corrected under this No-Build Alternative, therefore, the existing substandard interchange geometrics would remain in-place. Crashes are likely to continue at the existing interchange resulting from the interchange geometrics. By 2035, the intersections at Canfield Street would function at unacceptable levels of service (E and F).

As the interchange exists today, there would be no direct access from I-90 north to Decker Road. Traffic traveling to the north must continue to go out of their way to reach their intended destination.

Interchange Distances



Legend

- Alternative 1 Alignment
- Alternative 2 Alignment
- Modified Alternative 4 Alignment

Data Sources: Imagery (USDA and NRCS 2009 NAIP); alternatives and traffic projections (HDR Engineering, Inc.)



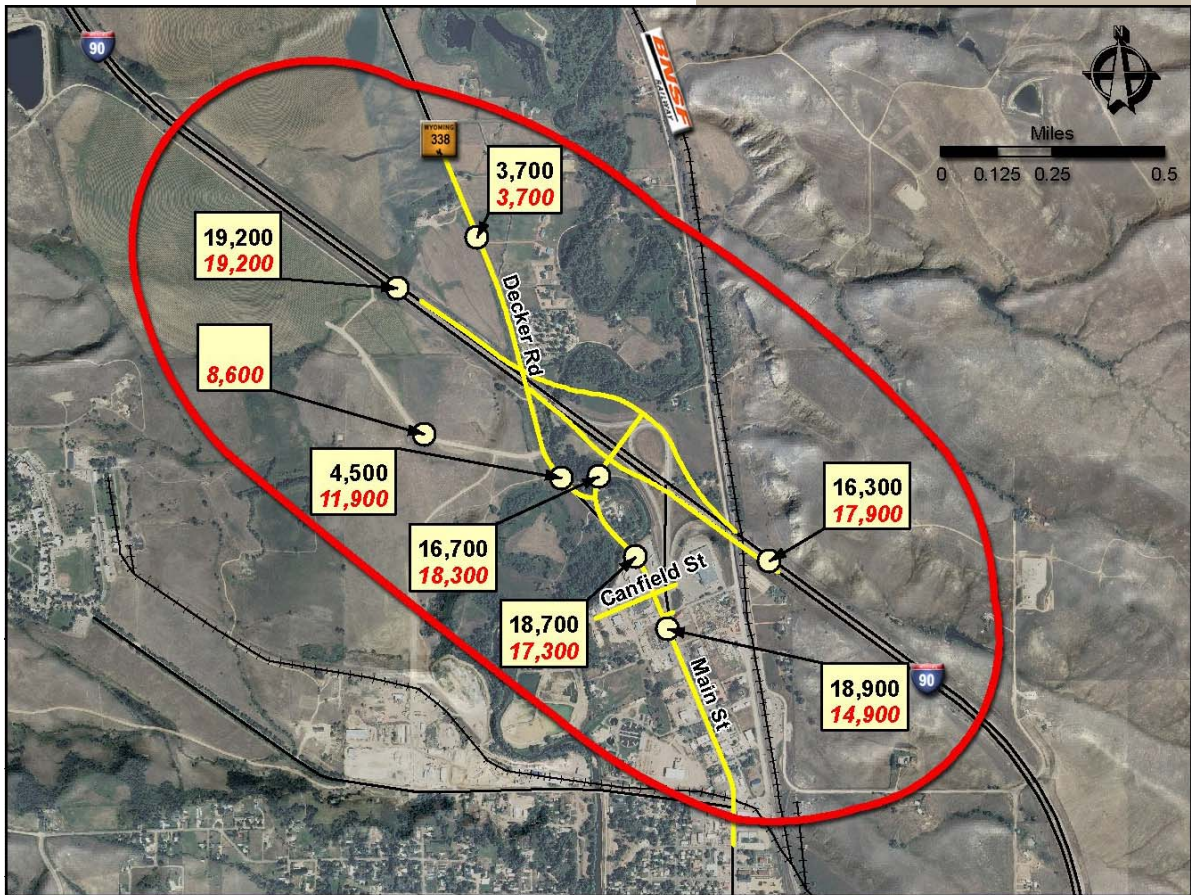
The No-Build Alternative does not meet the trail, pathway, or pedestrian connection goals stated in any of the plans. It provides short, direct access to existing adjacent commercial uses as noted in *North Main Area Master Plan*, the *Sheridan Transportation Policy Plan*, and the *Sheridan Joint Planning Area Land Use Plan*. The No-Build Alternative does not provide direct access to Decker Road, which enhances heavy truck or industrial access use identified in the *Sheridan County Comprehensive Plan*.

Because no construction is associated with this alternative, there would be no short-term impacts.

Alternative 2

The future traffic volumes under Alternative 2 differ slightly from the No-Build Alternative along North Main Street. The construction of West Corridor would reduce traffic volumes much more than the shift in interchange location. With the construction of the West Corridor, the traffic volumes would be reduced by 2,000 to 4,000 vehicles depending on location.

Alternative 2: Average Daily Traffic



Legend	
	Study Area
	Alternative 2 Alignment
16,100	2035 ADT Without West Corridor
17,900	2035 ADT With West Corridor



Data Sources: Imagery (USDA and NRCS 2009 NAIP); alternatives and traffic projections (HDR Engineering, Inc.)

Alternative 2 was developed to provide a new interchange as close as possible to the existing interchange location in response to feedback received at the first public meeting and as supported by the North Main Neighborhood Association.

Alternative 2 would meet the current design standards for both horizontal and vertical alignments, which would enhance safety and reduce crash potential at the interchange. Realigning North Main Street with Decker Road would create a normal four-way intersection with Canfield Street, which would operate at level of service B in 2035.

Alternative 2 would be relocated approximately 750 feet west of the existing interchange, which means shorter or longer travel distances to and from I-90 and destinations in the study area depending on direction of travel and intended travel location. For example, someone traveling from I-90 to the Wrench Ranch area would see a decrease in travel distance, whereas someone traveling from I-90 to north Main Street area would see an increase in travel distance. Annually, travelers would see a reduction in the overall vehicle miles traveled of 369,147 with Alternative 2 from the No-Build Alternative.

By improving the geometrics of the interchange and shifting its location slightly, there are some travel distance differences as compared to the existing interchange as noted above. However, these differences are minimal, equating to between one minute additional travel time and one minute of travel savings depending on the travel destination.

Interchange configuration and intersection spacing play a role in travel time as much as travel distance does. The standard/tight diamond interchange geometrics provide a simplified layout for safer acceleration and deceleration access to and from I-90. The existing I-90 westbound to southbound North Main loop ramp would be eliminated and the northbound North Main to eastbound I-90 sharp curve with steep grades would be eliminated. Alternative 2 would correct these existing geometric deficiencies improving traffic speed, travel times, and vehicle navigation over the No-Build Alternative.

Alternative 2 would have several closely spaced intersections from the Canfield intersection through the interchange. Introducing numerous turning movements can lower the level of service and decrease roadway safety (WYDOT 2005). Further, the intersections of the I-90 exit ramp with Decker Road, I-90 exit ramp with Main Street, and Decker Road with West Corridor introduce three points of conflict in a relatively constrained space. This configuration is likely to offset some of the speed, travel time, and vehicle navigation benefits of shifting the interchange location.

As development progresses south and west of Decker Road, any approved access to North Main Street/Decker Road would need to conform with the *WYDOT Access Manual* to help ensure that travel times are kept to a minimum.

Alternative 2 does not meet the trail, pathway, or pedestrian connection goals stated in any of the plans because no trails or paths are proposed as part of the Project. It provides short, direct access to existing adjacent commercial uses as recommended in the *North Main Master Plan*, the *Sheridan Transportation Policy Plan*, and the *Sheridan Joint Planning Area Land Use Plan*.

This alternative does not provide direct access to Decker Road, which was identified in the *Sheridan County Comprehensive Plan* as supporting heavy truck or industrial access use. Alternative 2 would continue to limit industrial uses through additional travel distance and limitations associated with the bridge under I-90. Vehicles exiting at Alternative 2 would have to travel under I-90 to access northbound Decker Road. Decker Road has a height restriction of 15 feet, 11 inches; any vehicle with a height greater than 14 feet is required to get a permit from the port-of-entry and is rerouted to get to Decker Road to avoid damaging the I-90 bridges. This restriction can affect delivery of equipment and material to coal mines and coalbed methane operations located north along Decker Road.

Short-term transportation impacts would include temporary traffic detours during construction of bridges along the I-90 mainline, for entrance and exit ramps, and to realign the North Main/Canfield intersection. During construction, access to and from I-90 using the North Sheridan Interchange would be maintained as much as possible.

Portions of the existing interchange would have to be closed or limited in operation to accommodate construction of Alternative 2 within a portion of the existing interchange footprint. Head to head traffic along I-90 and construction of temporary ramps to facilitate traffic getting on and off at the interchange would be needed during construction. The traffic disruptions at the existing interchange could last more than six months.

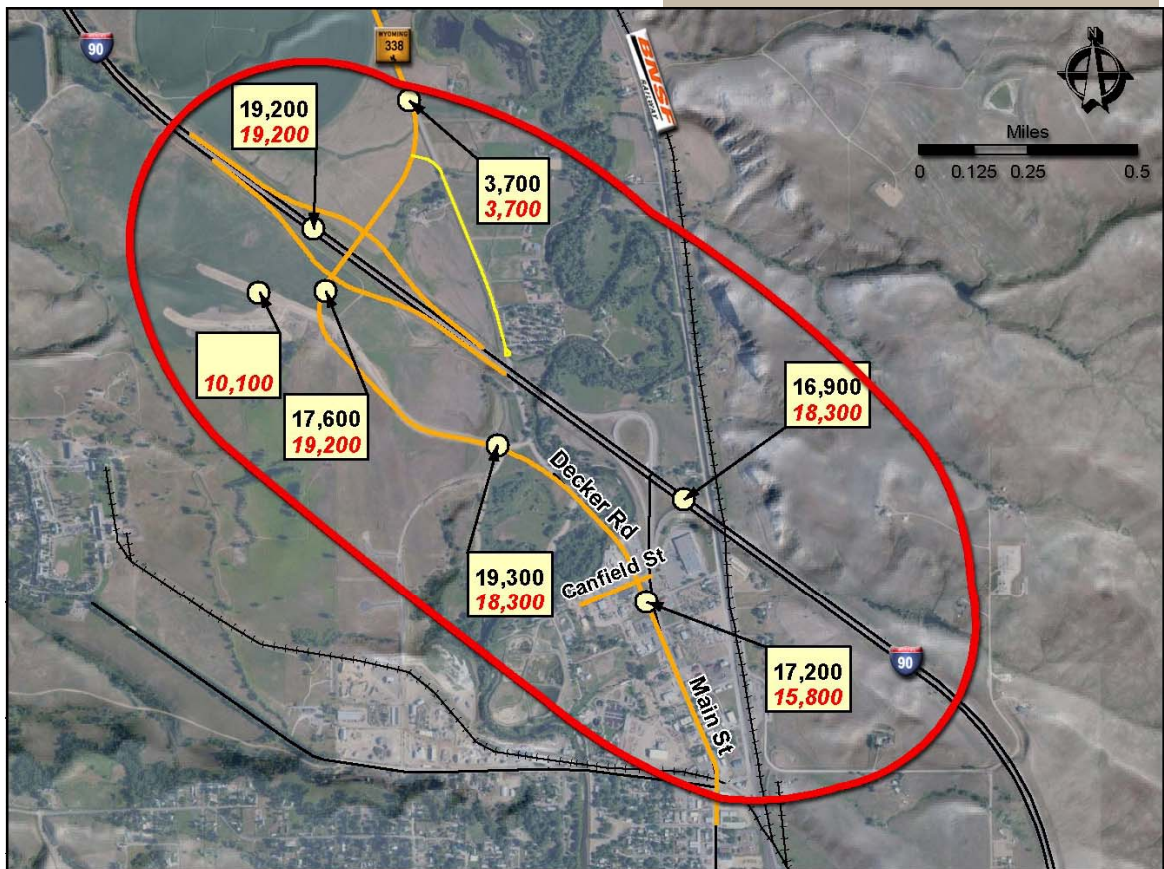
During this time, both local and nonlocal traffic may choose to use the interchanges at Fifth Street and Brundage Lane to access North Main Street, the VA Medical Center, and other properties north of Canfield Street.

In addition, construction of new or widened structures on North Main Street over Goose Creek and the realignment of North Main Street and Decker Road to create a normal intersection with Canfield Street could cause additional delays or detours.

Modified Alternative 4

The projected future traffic volumes for Modified Alternative 4 along North Main Street are slightly less than the No-Build Alternative along North Main Street but higher at the interchange with I-90. Like Alternative 2, the construction of the West Corridor would reduce traffic

Modified Alternative 4: Average Daily Traffic



Legend

- Study Area
- Modified Alternative 4 Alignment
- New Road (Old Decker Road)

16,100	2035 ADT Without West Corridor
17,900	2035 ADT With West Corridor



Data Sources: Imagery (USDA and Bing Online Map Service [© 2010 Microsoft Corporation]); alternatives and traffic projections (HDR Engineering, Inc.)

volumes along North Main Street more than shifting the interchange from its current location. With the construction of the West Corridor, the traffic volumes are reduced by 2,000 to 4,000 vehicles along North Main Street but are approximately 2,000 higher at the interchange with I-90.

Modified Alternative 4 would meet the current design standards for horizontal and vertical alignments, which would enhance safety and reduce crash potential. North Main Street would be realigned with Decker Road to create a normal four-way intersection with Canfield Street, which would operate at level of service B.

Unlike the No-Build Alternative and Alternative 2, Modified Alternative 4 would provide a direct north connection from I-90 to Decker Road, which was identified in the *Sheridan County Comprehensive Plan* as supporting heavy truck or industrial access use. Direct access would benefit equipment and material loads servicing the coal mines and coalbed methane operations.

The current alignment of Decker Road under I-90 would be eliminated. Decker Road traffic would flow through the new crossroad that would allow access to Decker Road to the north. A connection to the KOA would be provided from the new crossroad north of I-90.

Modified Alternative 4 provides short, direct access to existing adjacent commercial uses as noted in the *North Main Master Plan*, the *Sheridan Transportation Policy Plan*, or the *Sheridan Joint Planning Area Land Use Plan*. While farther from the existing commercial uses than Alternative 2, this alternative was developed to locate a new interchange as close as possible to Decker Road. The *North Main Master Plan* provided Decker Road as a possible interchange with I-90 that would provide continuity and ease of access to the North Main Street area while avoiding impacts to Doubleday Park.

Modified Alternative 4 would be relocated approximately 2,300 feet west of Decker Road, which means shorter or longer travel distances to and from I-90 and destinations in the study area depending on direction of travel and intended travel location. For example, vehicles traveling to destinations west of the existing interchange, such as the Wrench Ranch development area, would experience a shorter travel distance compared to existing conditions and Alternative 2. Vehicles traveling to the KOA would also travel a shorter distance than under the No-Build Alternative. Modified Alternative 4 also provides a continuous through movement from North Main to Decker Road compared to Alternative 2.

Because Modified Alternative 4 is farther from North Main Street travelers would see an annual increase in overall

vehicle miles traveled of 1,395,711 over the No-Build Alternative.

However, interchange configuration and intersection spacing play a role in travel time as much as travel distance does. The standard diamond interchange geometrics provide a simplified layout for safer acceleration and deceleration access to and from I-90. Similar to Alternative 2, the substandard geometrics of the existing I-90 interchange would be eliminated.

Head-to-Head Traffic



Westbound I-90 traffic traveling to the North Main area would experience some increased travel distance, but the sharp-curve, low-speed loop ramp for this movement would be eliminated. This condition would be similar for the reverse movement, with elimination of the sharp curve, steep grades and short entry ramp from North Main to eastbound I-90. The improved geometrics of this alternative (from shifting the interchange location), provide some travel distance differences as compared to the existing interchange, but this is minimal in terms of travel time, equating to between one and three minutes of additional travel time or one and four minutes travel savings depending on destination compared to the existing interchange.

The public noted in surveys completed for the Project that the grade and curves along this alternative would be easier for truck and large RV traffic to use than the current interchange or Alternative 2, offsetting the travel time differences from the No-Build and Alternative 2.

Modified Alternative 4 would have several intersections from the Canfield intersection through the interchange. Modified Alternative 4 allows increased distance between Canfield and the interchange, thus allowing increased intersection spacing which enhances travel flow over Alternative 2 and better satisfies access management guidelines.

As development progresses south and west of Decker Road, any approved access to North Main Street/Decker Road would need to conform with the *WYDOT's Access Manual* to help ensure travel times are kept to a minimum.

Modified Alternative 4 does not meet the trail, pathway, or pedestrian connection goals stated in any of the City planning documents as no trails or paths are proposed as part of the Project.

Although construction of Modified Alternative 4 could be done while the existing North Sheridan Interchange remains in operation, new structures along North Main Street over Goose Creek, which would require construction detours or delays. Additional delays or detours would occur during the realignment of North Main Street and Decker Road to create a normal intersection with Canfield Street, but local and nonlocal traffic would be able to enter the North Main Street area normally during most of the construction period.

Mitigation

Short-term traffic impacts will be mitigated through on-going public construction announcements and construction detour signs. Businesses and residents will be kept informed of construction activities and the local work schedule according to normal WYDOT practice. Signs will be used as necessary to direct travelers and customers to destinations in north Sheridan.

Long-term effects will be beneficial with improved, safer travel conditions. With either alternative, access to existing businesses will be maintained to the maximum extent possible.

LAND USE AND ZONING

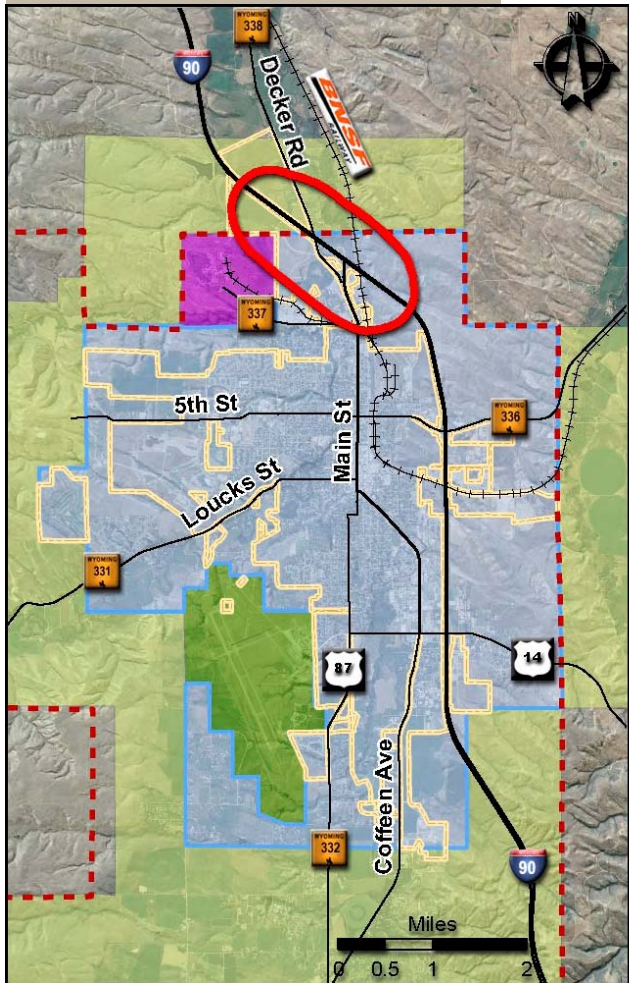
This discussion on existing land use is based on data gathered from the *Sheridan County Comprehensive Plan* (adopted 2008), the *Sheridan Joint Planning Area Land Use Plan* (adopted May 2009), the *North Main Area Master Plan* (July 2009), the *Sheridan Transportation Plan* (November 2009), and the City of Sheridan Municipal Code (Appendix A, Zoning).

Existing Land Use

The study area is located in the City of Sheridan and in unincorporated Sheridan County. The Project infrastructure would be constructed on land within city limits. Approximately 64 percent of the county is in private ownership and more than half of the land in private ownership is used for agricultural purposes. The majority of the developed land in the county is located in incorporated cities and towns, particularly in the City of Sheridan (Sheridan County 2008). The Sheridan area water supply boundary denotes the general extents of urban growth.

The existing North Sheridan Interchange provides the northernmost access to and from I-90 within Sheridan. The northern area of Sheridan adjacent to the interchange is mainly commercial and includes Kmart, Common Cents truck stop, McDonald's, Pizza Hut, multiple gas stations, and several hotels. Farther south along North Main Street are a rental business, repair businesses, a lumberyard, a tire shop, and other small businesses.

Growth Area



Data Sources: Imagery (USDA and NRCS 2009 NAIP); City Limits (City of Sheridan)

Several rural residences and active agricultural fields are located north and west of the existing North Sheridan Interchange. The City annexed much of this area, including 585 acres of Wrench Ranch, and it has been identified in the planning documents listed above as a future growth area for Sheridan. The Wrench Ranch annexation is being considered for a combination of commercial, light industrial, and residential developments. A 14-acre minor subdivision for Doubleday Park was approved in September 2011. The ballpark will be located in Phase 1 of the Wrench Ranch Master Plan adjacent to the south side of I-90. Adjacent to the Sheridan city limits, west and

south of the proposed Project are lands owned by the United States Forest Service and VA Medical Center.

Future Land Use

Sheridan County and the City of Sheridan have collaborated to develop comprehensive plans to help guide the development of the North Sheridan area: *Sheridan County Comprehensive Plan* (2008), *Sheridan Joint Planning Area Land Use Plan* (2009), and the *North Main Area Master Plan*, which was adopted as an amendment to the *Sheridan Joint Planning Area Land Use Plan*.

These documents contributed to more specific planning efforts for the *Wrench Ranch Phase 1 Master Plan* and the Sheridan High-Tech Business Park, which are described briefly below.

The review of these plans is documented in the *Planning Document Review Technical Memorandum* (HDR 2012d).

Sheridan County Comprehensive Plan **(December 2008)**

The *Sheridan County Comprehensive Plan* “outlines Sheridan County’s vision and goals for the future and provides guidance for staff and elected and appointed officials to determine directions and make choices about short- and long-range needs.” The intent is not to predetermine all specific land uses for individual parcels but to guide location and type of future development to provide a balanced mix of jobs, housing, and other community activities while allowing flexibility for a mix of uses.

One major emphasis of this plan is to provide long-range guidance to property owners, citizens, and decision makers on land use issues, such as where and how residential, commercial, and industrial development should occur in the future. It also includes policies to protect and conserve resources, such as riparian areas and agricultural lands. The plan also seeks to sustain natural and scenic resources and environmental quality.

The plan reinforces the historic distinction between city and county levels of service by guiding urban development to communities and their growth areas, which helps implement desired development patterns that are efficient and fiscally responsible.

Sheridan County recognizes that a number of planning issues, such as transportation, water planning, land management, and efficient service provision, must be addressed at a regional level.

The plan notes that the transportation network will be well-connected and coordinated with adjacent land uses (Goal 5.1, Sheridan County 2008).

Sheridan Joint Planning Area Land Use Plan **(May 2009)**

The *Sheridan Joint Planning Area Land Use Plan* is Chapter 11 of the *Sheridan County Comprehensive Plan*. It is intended to provide guidance for City and County staff and elected and appointed officials to determine directions and make choices about land uses in the joint planning area for the City of Sheridan and Sheridan County.

The goals and policies of the plan, in combination with the *Future Land Use Plan*, are intended to be used for “making decisions affecting growth, the use and development of land, conservation, and the provision of public facilities and services.” The plan is a tool for long-range guidance to property owners, citizens, and decision makers to help the City and County protect and conserve natural resources, groundwater quality, and agricultural lands outside the urban areas irrespective of jurisdiction (city or county).

The intent of the Sheridan joint planning area is to define a compact pattern of future growth for urban neighborhoods within an urban service area and provide for a “feathered” residential transition around Sheridan where clustered development and conservation areas at the edge of the city transition into agricultural areas.

According to this plan, the North Sheridan Interchange study area is within the Sheridan joint planning area, and the Sheridan urban service area.

Phase 1 of Wrench Ranch, a 186-acre, planned development in the study area, is shown as a special planning area on the west side of I-90, and a commercial area is shown north of the study area on the east side of I-90. This plan also shows a future commercial center straddling I-90 between the special planning area and the commercial area, which was removed with the *North Main Area Master Plan*.

The draft Sheridan Joint Planning Area Land Use Plan was certified and recommended for approval by the City of Sheridan Planning Commission at their January 26, 2009, meeting. Subsequently, the plan was amended with the adoption of the North Main Area Master Plan.

North Main Area Master Plan (July 2009)

For the purposes of this master plan, the North Main Street area extends to the city boundary on the north, to I-90 on the east, to 5th Street on the south, and to Highland Avenue on the west.

The purpose of this plan is to provide an overall coordinated concept for the North Main Street area, within which private and public investment decisions can be made over time. WYDOT’s plan to rebuild North Main Street

was the catalyst for developing the plan. Its intent is to revitalize North Main Street, create new housing, enhance existing neighborhoods, and create new job opportunities. The plan has five elements that contain the implementation strategies for the plan's goals: land use, open space, transportation, gateways, and viewsheds. The North Main Neighborhood Association is charged with implementing the master plan. The *North Main Area Master Plan* was adopted as an amendment to the *Joint Planning Area Land Use Plan* (discussed below).

The Land Use Framework Plan within this plan features the North Main Street enhancement corridor, open space/parks, neighborhood residential areas, service commercial/ light industrial areas, and viewshed areas.

Land Use Goal Areas



Photos by HDR Engineering and Vista West Engineering

The Land Use Framework Plan shows the area north and south of I-90 and west of Decker Road as Viewshed. A future mixed-use area is located south of this Viewshed area and west of Decker Road. The area north of the existing North Sheridan Interchange is also a designated Viewshed. Viewshed is defined as “important views that should be protected as development is planned.” The area along Goose Creek is labeled as Open Space/Parks. The subdivision for Doubleday Park is located in Open Space/Parks and Viewshed areas.

The existing North Sheridan Interchange is part of the Gateway Node. According to the plan, this is “an enhanced commercial Gateway Node, located along Main Street at the location of the current entry to Kmart (Canfield Street). The potential realignment of Main Street with Decker Road creates an opportunity to enhance access to commercial properties in this location, creating new opportunities for commercial development along North Main frontage. . . . This configuration will form a new, enhanced ‘gateway’ into the North Main commercial area, attracting visitors from the interstate and new investment with improved access and appearance.”

The plan discusses relocation of the existing interchange. “The NMNA (North Main Neighborhood Association) believes that if the interchange must be moved, it should be kept as close to North Main Street as possible.” The master plan shows a concept for relocating the interchange north of its current location with the intent to keep it as close to North Main as possible (no further north than Decker Road) and to provide an “entryway” to the North Main Street area. This concept includes realignment of North Main Street and Decker Road to provide access to the North Main Street area.

The plan notes that multimodal access to North Main Street from other parts of the community must be improved (e.g., auto/pedestrian/bicycle). Linkages between North Main Street, downtown, and the activity center are important for developing a mixed-use core.

Sheridan Transportation Policy Plan (November 2009)

The goals and objectives of the *Sheridan Transportation Policy Plan* relate to linking land use and transportation by coordinating the transportation network with adjacent land use, encouraging the development patterns in the *Sheridan County Comprehensive Plan* and the *Sheridan Joint Planning Area Land Use Plan*. The plan notes that transportation facilities should be compatible with the type and intensity of the land uses. When considering transportation facilities, economic development impacts, and environmental, scenic, aesthetic and historic values should be considered. The facilities should fit and reflect the character of the

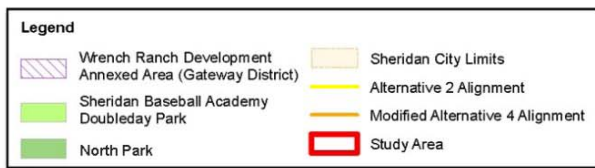
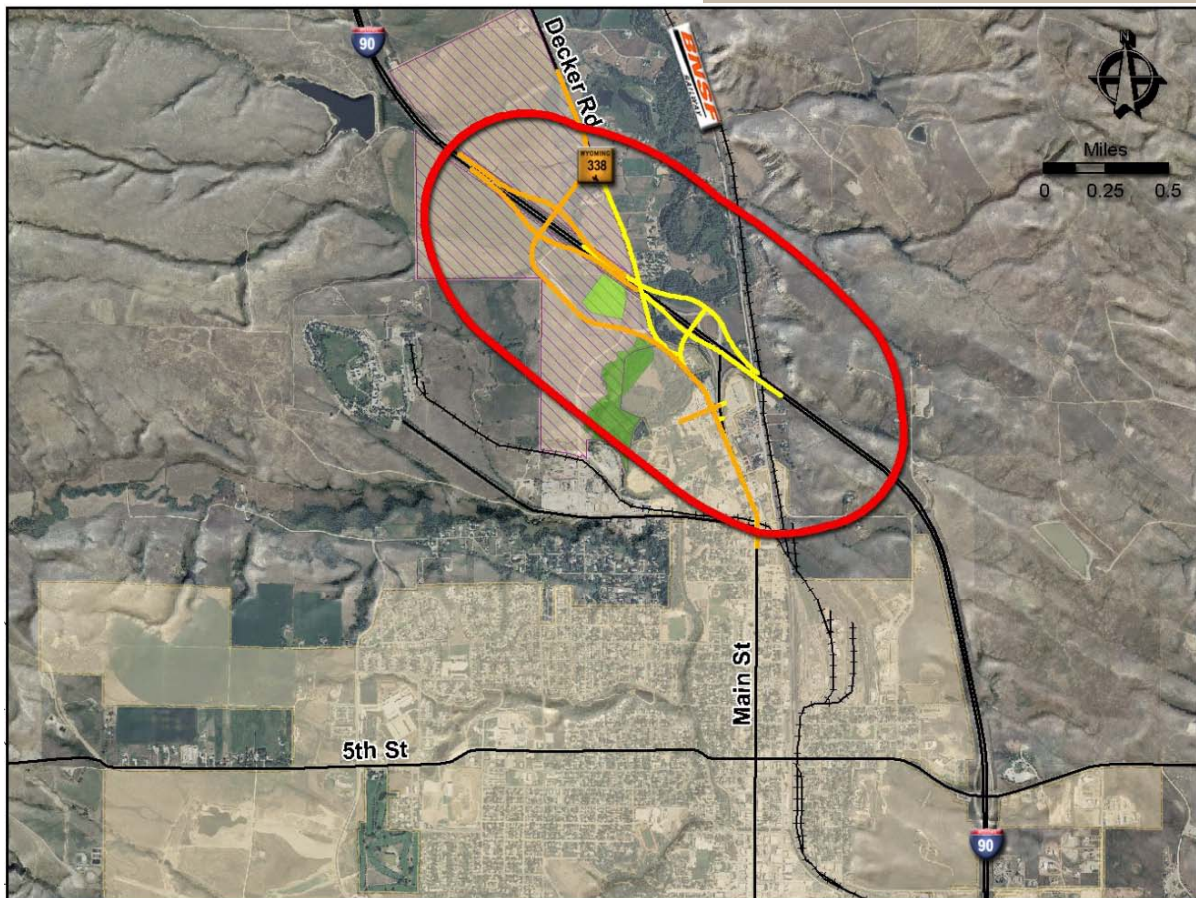
neighborhoods and districts through which they pass. Transportation corridors should be used to create attractive and welcoming impressions for visitors, including enhanced roadway design features and greenbelts and entry signage.

Wrench Ranch Master Plan – Phase 1 (November 2009)

As shown in the figure, Wrench Ranch is west of the existing interchange and Alternative 2. The ranch’s land is adjacent to Modified Alternative 4. Sheridan annexed 585 acres of Wrench Ranch land on both sides of I-90 in March 2009 (Ordinance #2065, ANX 7 08 1363) and

approved the Wrench Ranch Master Plan – Phase 1 (186 acres on the west side of I-90), which calls for the following uses: light industrial, mixed use, commercial, open space/parks/detention areas and future open space or right-of-way. The master plan states that “the Guidelines, Standards, and Regulations of the Master Plan were written with the intent of complying with the City of Sheridan Gateway District Ordinance (Ord. 2066) ... The Gateway District is the zoning designation for the Wrench Ranch Development; the Phase 1 Master Plan

Wrench Ranch



Data Sources: Imagery (USDA and NRCS 2009 NAIP); Zoning (City of Sheridan)

prescribes the locations of the uses allowed in the development under the zoning regulations.” The figure, Zoning, shows the extent of the Gateway District.

The complete subdivision in this master plan has not been approved pending development of a Viewshed plan (Thompson 2010). However, in September 2011, the City approved a minor subdivision for Doubleday Park, adjacent to Modified Alternative 4 in a highly visible location along I-90. In addition, Ptolemy Data Systems (PDS), a technology company based in Sheridan, Wyoming, announced in October 2011 that they intend to begin construction of a 6,000-square foot data center on a site in Wrench Ranch Phase 1.

Sheridan High-Tech Park Conceptual Plan (February 2010)

The City of Sheridan has opened the Sheridan High-Tech Business Park at a 38.5-acre site that is adjacent to the VA Medical Center; which is outside of the current city limits. The site was transferred to the City in a land swap with the Wrench Ranch developers.

The Sheridan High-Tech Business Park was subsequently sold to the Sheridan Economic and Education Development Authority (City of Sheridan 2010). A manufacturing company from Colorado, Vacutech, opened a new 40,000-square-foot facility on 5 acres of the park in December 2011 (Sheridan Press 2011). The Sheridan High-Tech Business Park is subject to Sheridan’s Gateway District zoning regulations and approval of a master plan was required.

Sheridan Pathways Master Plan and Sheridan Parks and Recreation Master Plan

Discussed in more detail in the Recreation section, these plans call for “pedestrian-friendly development” that would result from development of designs that encourage walking by providing site amenities for pedestrians, development of pedestrian-friendly environments to reduce automobile dependence, and connections among neighborhoods, parks, schools, natural areas, downtown, and the region.

Existing Zoning

Zoning in the study area is guided by the Sheridan Municipal Code (Appendix A Zoning), and the Rules and Regulations Governing Zoning in Sheridan County.

City Zoning around the No-Build Alternative and Alternative 2 and Modified Alternative 4

The study area southeast of I-90 and the existing North Sheridan Interchange’s structures include a portion of the City of Sheridan. This portion of Sheridan is within the B-1 zoning district.

The B-1 district allows residential uses that meet the requirements of the City’s R-3 and R-4 zoning districts, as well as retail businesses, public garages, offices, banks, restaurants, commercial schools, bakeries, and laundry/dry cleaning establishments.

The area northwest of the existing interchange (Wrench Ranch Annexation) is zoned GD-Gateway District. The Gateway District may be applied to any land located along or near a major entrance into Sheridan, primarily I-90, North Main Street, 5th Street, Brundage Lane, Big Horn, or Coffeen Avenue (Ord. No. 2066 § 1, 3 16 09).

The purpose of the Gateway District is “to create a mixed use district that constitutes a natural social and economic part of the community and encourages development that preserves community character, natural space, and scenic vistas of gateway areas by requiring adequate open space, context sensitive design, and appropriate land use.” This district requires the development and approval (by the City Council) of a master plan prior to subdivision or the issuance of any building permits, and review by the Design Review Board for architectural design, landscaping, and other standards.

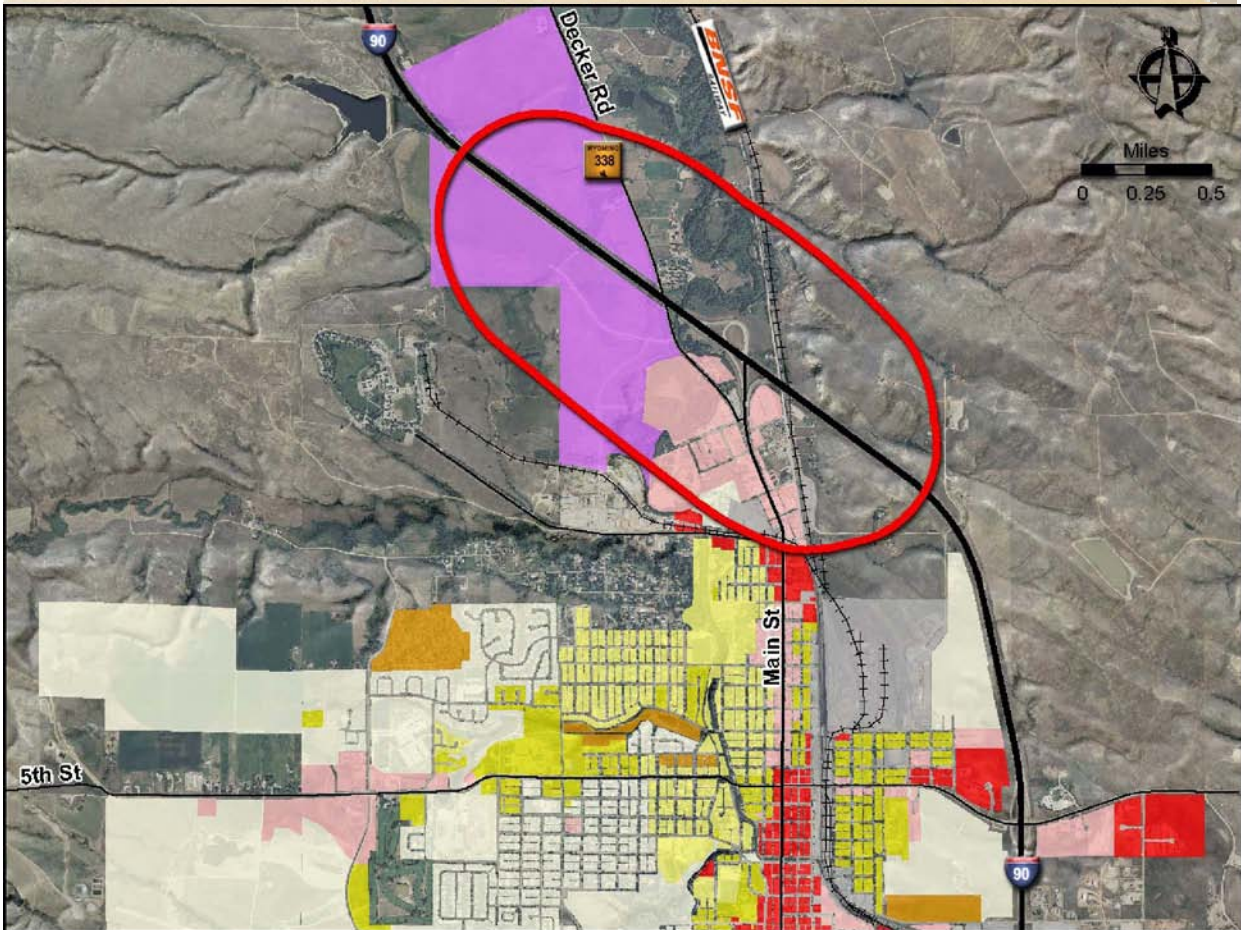
County Zoning around No-Build Alternative and Alternative 2 and Modified Alternative 4

Portions of study area northeast of the existing interchange and along I-90 are in unincorporated Sheridan County, and land use is subject to the regulations of two zoning districts, Commercial C-1 and Urban Residential UR.

The Commercial C-1 zoning district allows wholesale and retail commercial businesses, shipping depots, loading docks, animal hospitals and boarding facilities, woodworking and cabinet shops, service stations, auto repairs, warehousing, etc., and the activities allowed in the C-2 and C-3 Commercial zoning districts.

The Urban Residential UR zoning district allows dwellings designed or used exclusively for residential purposes, including mobile homes.

Zoning



Legend

Study Area

R1 Residence District	Range of uses characterized by single family dwellings and supporting uses such as public parks, libraries, churches, home occupations, agricultural, with lots larger than 6,000 sq. ft.
R-2 Residence District	Uses permitted in the R-1 Residence District plus two-family but no more than four-family dwellings plus private clubs. One-family lots > 4,500 sq. ft.; 2-family lots > 3,000 sq. ft./family; 3&4-family lots > 2,500 sq. ft./family.
R-3 Residence District	Uses permitted in the R-2 Residence District plus multi-family dwell. and apts, hospitals, educational instit. and associated bldgs. 1-family lots > 4,000 sq. ft; 2-family lots > 2,000 sq. ft./family; multi-family lots > 800 sq. ft./ family.
R-4 Residence District	Mobile and manufactured home parks, and associated structures incidental to these uses.
B-1 Business District	Any use permitted in the R-3 and R-4 Residence Districts plus any retail business, public garage, offices, banks, theaters, personal services, dry cleaners and associated structures incidental to these uses.
B-2 Business District	Any use except those uses listed in the Sheridan Municipal code. The disallowed uses are largely manufacturing and related uses that produce potentially noxious and dangerous outputs.
GD Gateway District	Mixed use area with a master plan that encourages development that preserves community character, natural space and scenic vista gateways.
9A Higher Education District	Districts set aside for colleges, universities, and post secondary trade and other education institutions. Rezoning requests will require a master plan.
M-1 Industrial District	Any use not in conflict with any City of Sheridan ordinance. Location of certain manufacturing uses to be approved by the board of adjustments. Residential lot sizes follow the requirements of the R-3 Residence District.

Data Sources: Imagery (USDA and NRCS 2009 NAIP); Zoning (City of Sheridan)

Impacts

No-Build Alternative

The No-Build Alternative would result in no direct changes to land use in the area. This alternative would not adversely affect implementation of future land use plans for the region or preclude private or public development proposals. Under this alternative, areas that would be vacated for the construction of Alternative 2 or after the construction of Modified Alternative 4 would not be available for development of open space or for city gateway amenities.

Alternative 2

Alternative 2 would convert some undeveloped open land and some residential land to transportation right-of-way. As discussed below, it would not preclude and may support some of the recommendations or directives for future development outlined in the *Sheridan County Comprehensive Plan*, the *North Main Area Master Plan*, the *Sheridan Transportation Plan*, or the *Sheridan Joint Planning Area Land Use Plan*.

Sheridan County Comprehensive Plan/Sheridan Joint Planning Area Land Use Plan

Alternative 2 would not preclude any of this plan's "big ideas" or the land uses shown in the Future Land Use Plan map from being implemented by the City or County, and would be in the same general location as the existing North Sheridan Interchange. It could reinforce the historic distinction between city and county levels of service by guiding urban development in communities and their growth areas, which are explained and reinforced in Chapter 3 of the plan. It could support the intent of the Sheridan joint planning area to define a compact pattern of future growth with urban neighborhoods within an urban service area and a feathered residential transition around the City of Sheridan.

The *Sheridan Joint Planning Area Land Use Plan* includes specific goals, actions to implement the community's values, and contemporary planning strategies. It also includes identification and planning for "industrial districts for future jobs and industry."

According to these plans, a commercial area is shown north of the study area on the east side of I-90, and a future commercial center straddles I-90 between the special planning area (Wrench Ranch) and the commercial area. A commercial center would "ideally develop with a mix of commercial and other compatible uses according to the plan." However, the *North Main Area Master Plan* was

Alternatives 2 and Modified Alternative 4 would be constructed on land within Sheridan's city limits; however, the study area extends into land within Sheridan County.

adopted during the study of this Project, as discussed below, and it redirects this commercial center to the existing North Main Street area.

Alternative 2 could support in-fill development, but it would not provide strong transportation/land use linkages to the Sheridan High-Tech Business Park. This alternative, however, would likely support the Doubleday Park development. Alternative 2 would continue to serve regional land uses north of I-90 along Decker Road with an improved but not direct northward connection from I-90.

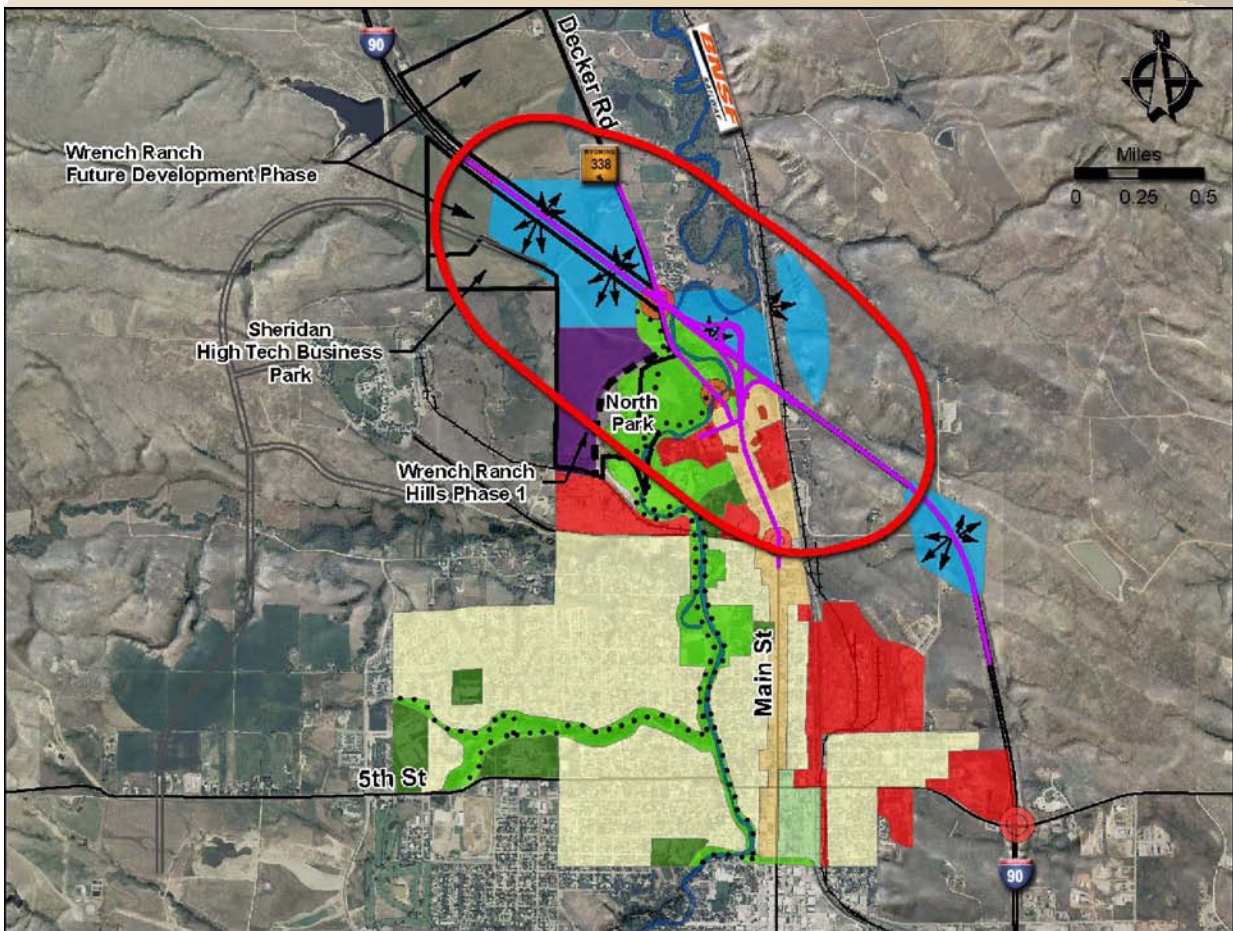
North Main Area Master Plan

This alternative relocates the existing North Sheridan Interchange to a location as close to the existing interchange as possible. It is not, however, in the location illustrated for a relocated interchange (Gateway Node) in this plan, which was intended to support the enhanced commercial gateway envisioned.

Alternative 2 would be constructed in areas designated as Open Space and identified Viewsheds in this plan. These designations were intended to support the riparian areas along Goose Creek, serving both as part of the community gateway envisioned, and as part of the network of parks and open spaces.

Although the *North Main Area Master Plan* advocates high-tech development north of the North Main Street commercial area, Alternative 2 would be located more than a mile from the development area of the new Sheridan High-Tech Business Park and would not serve that area as efficiently as Modified Alternative 4.

Land Use: No-Build Alternative



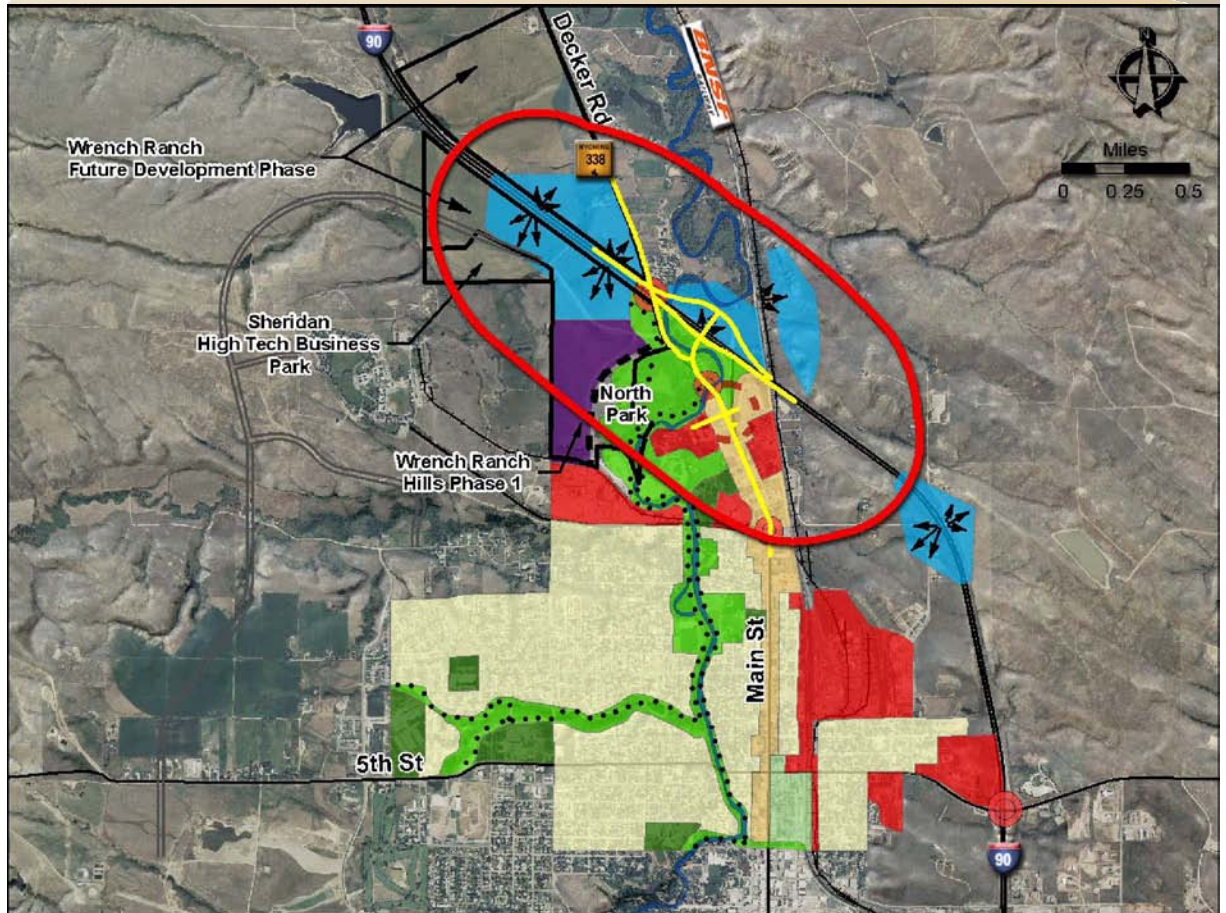
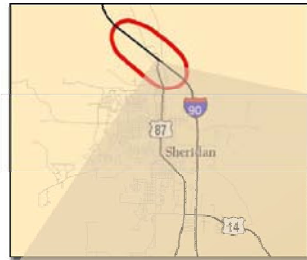
Legend

- Study Area
- Interchange Area
- Future Mixed Use
- Trails
- Alternative 1 Alignment
- Commercial Node
- Railroad Historic District
- ▶ ViewshedLine

North Main Enhancement Corridor	Portion of North Main Street where most of the development activity and enhancements are expected to take place.
Open Space/Parks	Long-term network of open space, parks, and trails that connect all of the NorthMain area internally and to other areas of the city.
Neighborhood Residential Area	Existing residential areas that are vital to preserve and enhance for the future of the North Main area.
Service Commercial/Light Industrial	Areas that are appropriate for employment-oriented uses, such as light industrial or service commercial businesses.
Viewshed	Views and vistas that should be protected as development is planned.

Sources: Imagery (USDA and NRCS 2009 NAIP); Future Land Use (City of Sheridan, North Main Area Master Plan, Centennial Collaboration); Alternatives (HDR Engineering, Inc.)

Land Use: Alternative 2



Legend

- Study Area
- Alternative 2 Alignment
- Interchange Area
- Commercial Node
- Future Mixed Use
- Railroad Historic District
- Trails
- ViewshedLine

North Main Enhancement Corridor	Portion of North Main Street where most of the development activity and enhancements are expected to take place.
Open Space/Parks	Long-term network of open space, parks, and trails that connect all of the NorthMain area internally and to other areas of the city.
Neighborhood Residential Area	Existing residential areas that are vital to preserve and enhance for the future of the North Main area.
Service Commercial/Light Industrial	Areas that are appropriate for employment-oriented uses, such as light industrial or service commercial businesses.
Viewshed	Views and vistas that should be protected as development is planned.

Sources: Imagery (USDA and NRCS 2009 NAIP); Future Land Use (City of Sheridan, North Main Area Master Plan, Centennial Collaboration); Alternatives (HDR Engineering, Inc.)

Sheridan Transportation Policy Plan

Alternative 2 supports the *Sheridan Transportation Policy Plan* because it is physically closer to the North Main Street area, which is designated in the *North Main Area Master Plan* as a commercial node. It would maintain the coordinated transportation network with adjacent land uses and support the land use in the *North Main Area Master Plan*; in particular, it would be located and designed to provide short, direct, and attractive access to the existing commercial district.

Modified Alternative 4

Modified Alternative 4 would convert mostly undeveloped open land to transportation right-of-way. As discussed below, it would support some of the recommendations or directives for future development of the *Sheridan County Comprehensive Plan*, the *North Main Area Master Plan*, the *Sheridan Transportation Policy Plan*, or the *Sheridan Joint Planning Area Land Use Plan*.

Sheridan County Comprehensive Plan/Sheridan Joint Planning Area Land Use Plan

Modified Alternative 4 would not preclude any of this plan's "big ideas" or the land uses shown in the Future Land Use Plan map from being implemented by developers in the city and county and it is close to future development areas such as the Sheridan High-Tech Business Park and the 585 acres of the Wrench Ranch annexation.

Modified Alternative 4 could reinforce the historic distinction between city and county levels of service if urban development is guided toward their growth areas.

According to this plan, a commercial center (or node) is shown north of the study area on the east side of I-90, and a future commercial center straddles I-90 between the special planning area (Wrench Ranch) and the commercial area. A commercial center would ideally develop with a mix of commercial and other compatible uses. The *North Main Area Master Plan* amends this plan and redirects the commercial node to the existing North Main Street area.

Modified Alternative 4 would not preclude the City from developing commercial uses in designated existing commercial areas and centers, but it would support the plan's direction for development in future growth areas as shown in the Future Land Use Plan map for land that was annexed in 2009.

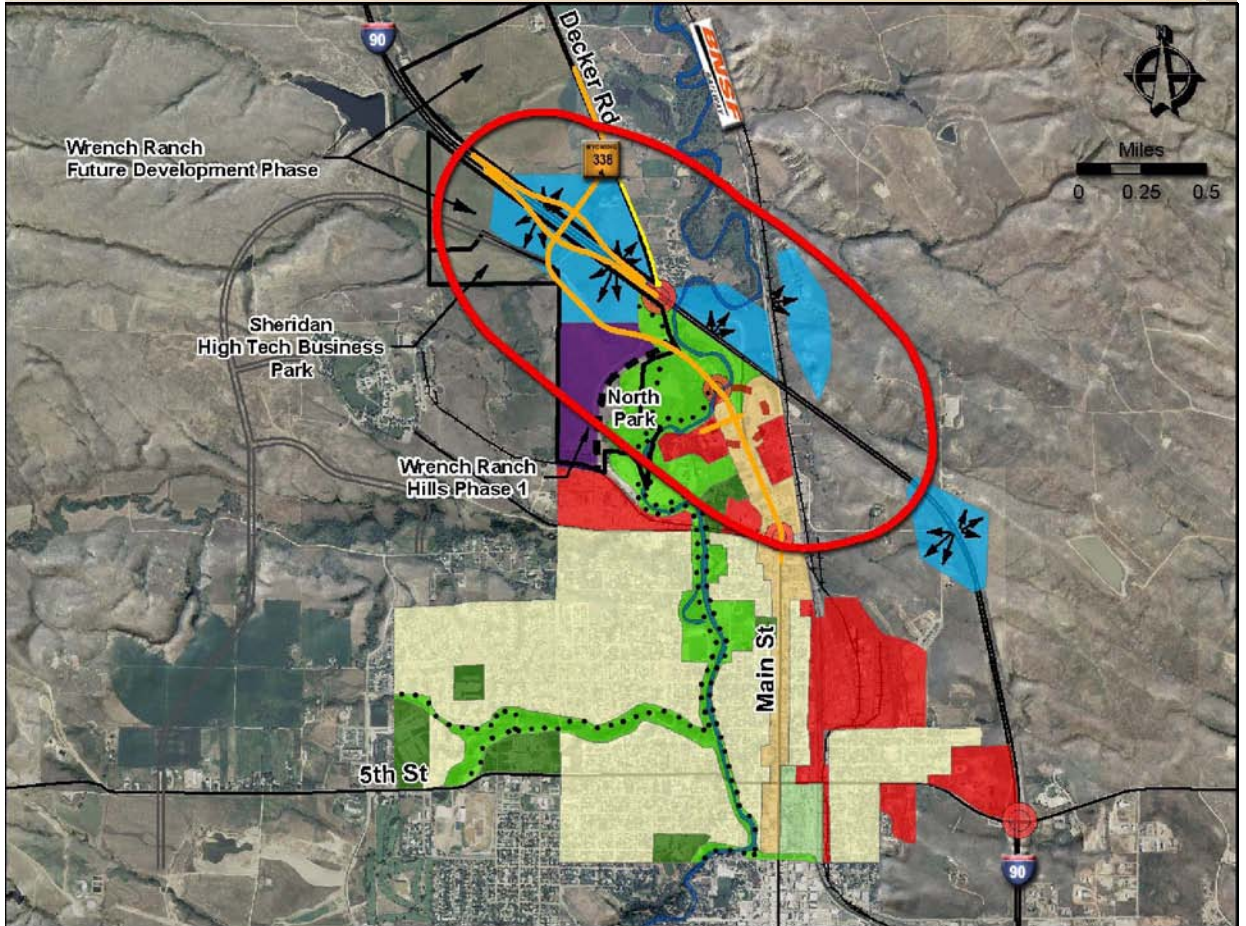
Modified Alternative 4 is close to the growth that is occurring in the area annexed by the City as part of the *Wrench Ranch Phase 1 Master Plan* and to the Sheridan

High-Tech Business Park, located north and west of the annexed area.

The City of Sheridan provided maps to WYDOT showing which areas could be developed under what uses according to the Gateway District zoning regulations. These maps are provided below and discussed under the *North Main Area Master Plan* below.

Direct access from the state highway to potentially developable areas is controlled by WYDOT access requirements. For more information on access, refer to WYDOT Access Manual 2005.

Land Use: Modified Alternative 4

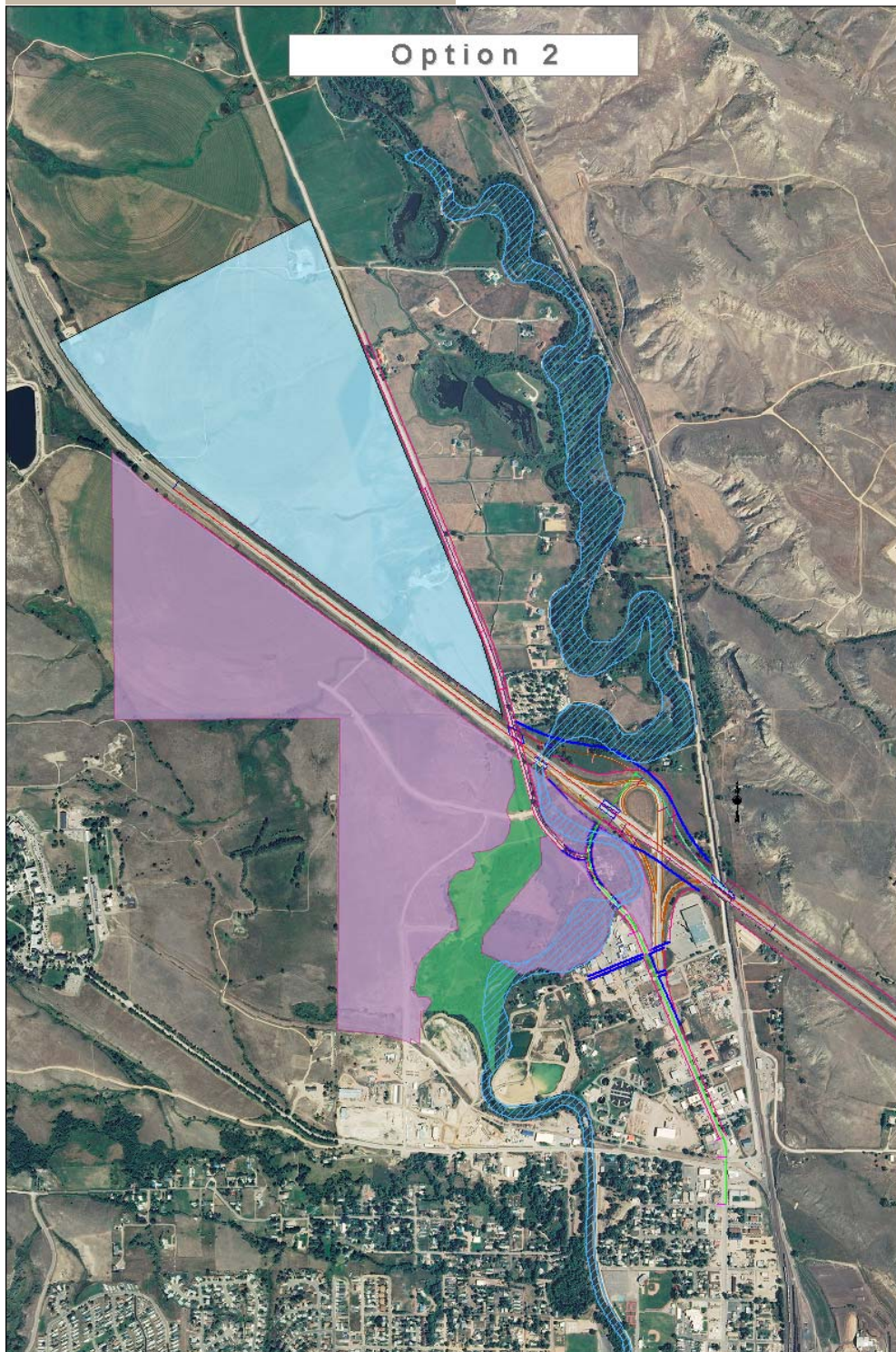


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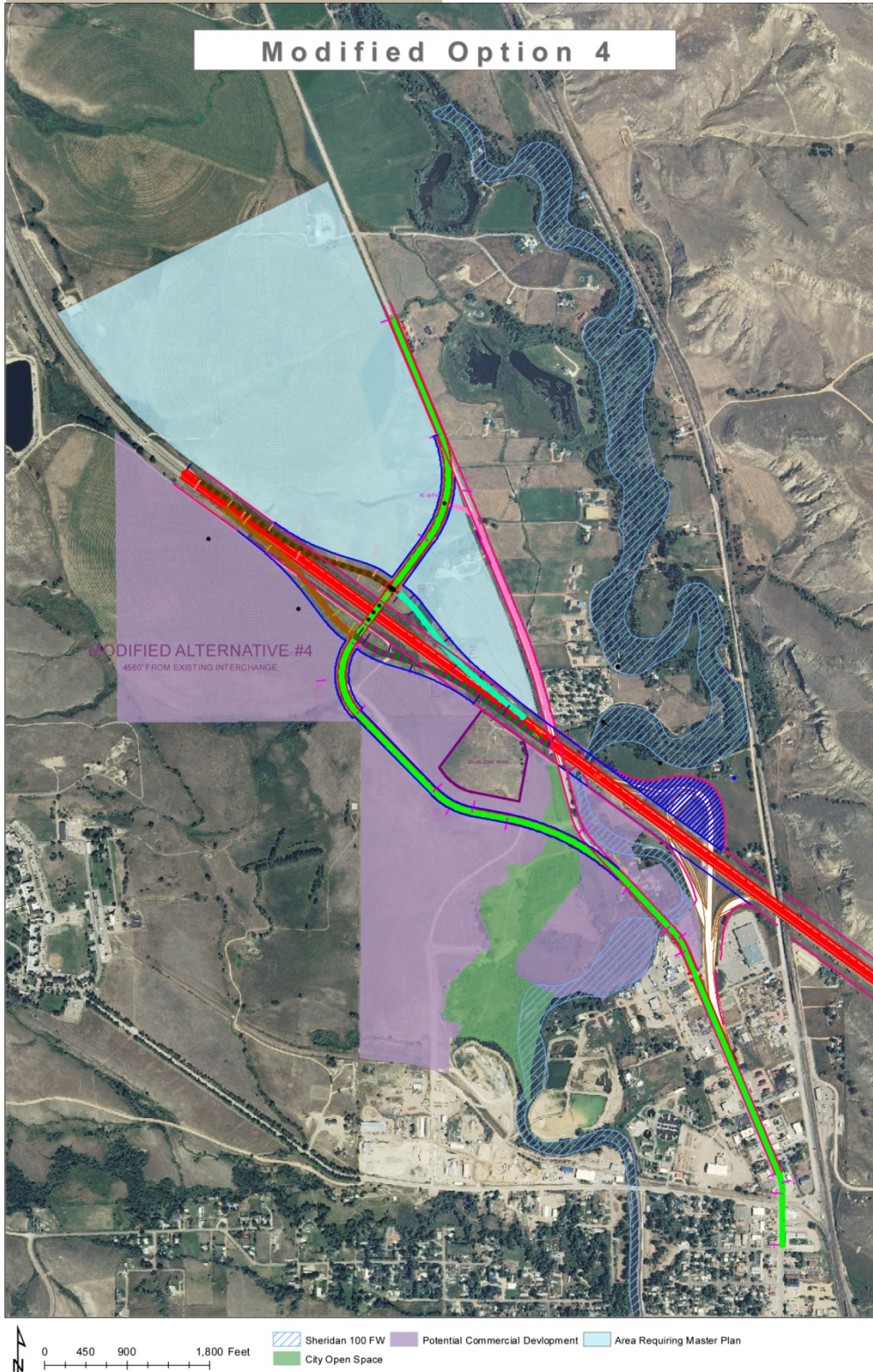
Study Area	Interchange Area	Future Mixed Use	Trails
Modified Alternative 4 Alignment	Commercial Node	Railroad Historic District	ViewshedLine
New Local Road (Old Decker Road)			
North Main Enhancement Corridor	Portion of North Main Street where most of the development activity and enhancements are expected to take place.		
Open Space/Parks	Long-term network of open space, parks, and trails that connect all of the NorthMain area internally and to other areas of the city.		
Neighborhood Residential Area	Existing residential areas that are vital to preserve and enhance for the future of the North Main area.		
Service Commercial/Light Industrial	Areas that are appropriate for employment-oriented uses, such as light industrial or service commercial businesses.		
Viewshed	Views and vistas that should be protected as development is planned.		

Data Sources: Imagery (USDA and NRCS 2009 NAIP); Future Land Use (City of Sheridan, North Main Area Master Plan, Centennial Collaboration); Alternatives (HDR Engineering, Inc.)

Developable Land: Alternative 2



Developable Land:
Modified Alternative 4



North Main Area Master Plan

Modified Alternative 4 would not maintain the existing location of the North Sheridan Interchange and would not be located as shown in the illustration for a relocated interchange (Decker Road) in this plan. Modified Alternative 4 was designed to be as close to Decker Road as possible while still meeting design and safety standards, approximately 2,300 feet west of Decker Road.

Modified Alternative 4 would be located in an area that has been designated as Viewshed by the *North Main Area Master Plan*, but which is also under the Gateway District zoning designation allowing development if design guidelines are incorporated into the development. The first phase of the Wrench Ranch Master Plan is south of Modified Alternative 4 and future phases are located close to this alternative north and west of Phase 1 and to the north of I-90

Modified Alternative 4 would be located close to the new Sheridan High-Tech Business Park. Modified Alternative 4 would also be located west of the open space areas along Goose Creek and the area envisioned as the gateway entry to the city by the *North Main Area Master Plan*. If Modified Alternative 4 were constructed, the land under the existing North Sheridan Interchange would be available for a potential gateway area, which would connect to the open space area along Goose Creek.

Modified Alternative 4 would not be located in an area designated as open space. It would not preclude ongoing development efforts associated with current and future Wrench Ranch phases such as the recently approved subdivision for Doubleday Park, development in the City's Sheridan High-Tech Business Park, or those proposed for the North Main area by the *North Main Area Master Plan*. The alternative would require a minor amount of land from the stormwater facilities of the Sheridan High-Tech Business Park, which would need to be reconfigured.

The zoning regulations enacted by the City control how the land use designated on the *North Main Area Master Plan* map is developed. The City provided maps that show which areas could develop in the Gateway District and B-1 Business Districts; these figures are provided for reference.

Sheridan Transportation Policy Plan

Modified Alternative 4 would be located and designed to provide short, direct, and attractive access to existing commercial districts where possible. Visitors and residents of Sheridan would be able to gain access to North Main Street and the existing commercial node from I-90. Signage would be provided to ensure that motorists unfamiliar with Sheridan are aware of services at the interchange.

Mitigation

Neither of the build alternatives will preclude 'big idea' planning concepts, but will be located in areas not specifically designated for transportation. Alternative 2 will be located in an area designated as Open Space. Design elements could be incorporated into the Project to complement the entryway into Sheridan that is being planned. Appropriate signs will be provided to direct visitors to services at the existing interchange, to North Main Street businesses, and to downtown Sheridan. Specific design details will be coordinated with the City of Sheridan and WYDOT as design for the Project continues.

Modified Alternative 4 will be located in an area designated as Viewshed and in an area farther from the existing interchange. Design elements could be incorporated to complement the Gateway District design guidelines and the viewshed. The land under the existing interchange that will be vacated when the existing interchange is removed could be incorporated into the city's gateway and viewshed planning efforts. Appropriate signs will be provided to direct visitors to the services near the interchange, to North Main Street businesses, and to downtown Sheridan.

ECONOMICS

This section of the environmental assessment presents an evaluation of whether the proposed North Sheridan Interchange alternatives would create adverse impacts on local businesses that would not be offset by the positive benefits of a safer, full-access interchange. More information on economic conditions and analyses can be found in the *Socioeconomic Technical Memorandum* (HDR 2012e).

Currently, motorists exit I-90 into north Sheridan using the existing interchange and are able to visit retail and service sector businesses in the vicinity. There is local concern that moving the interchange could result in adverse impacts to individual businesses resulting in loss of business revenue, layoffs, or business closures.

Existing Conditions

The analysis of adverse impacts drew upon survey methodologies used in the *Carrington Group Study* (2001), which was completed as part of the earlier North Sheridan Interchange studies. Potential economic impacts were reassessed because conditions within North Sheridan have changed since the completion of the report in 2001; such as moving of the port-of-entry several miles north of Sheridan.

Overall, the health of the Sheridan economy is good. There are opportunities for entrepreneurial activities. Private, nonfarm business income continues to grow. There is a limited need for employees to take a second job to maintain household expenses and steady growth in employment have been maintained during the recessionary period.

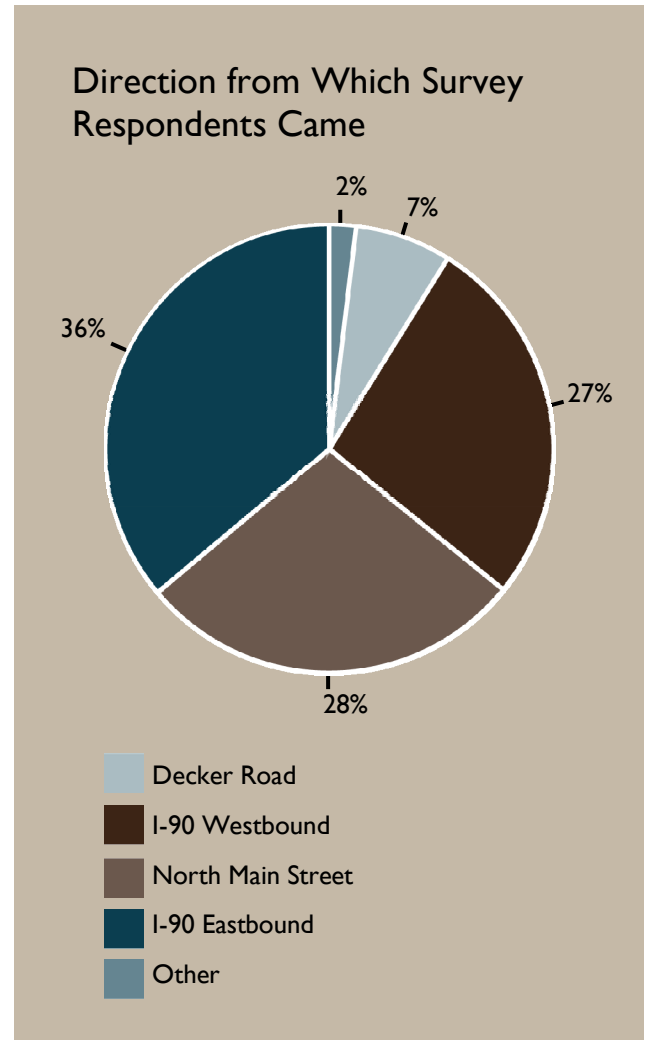
The *Carrington Group Study* indicated that the following businesses are expected to be affected by changes to the North Sheridan Interchange:

- Common Cents truck stop (Gas Station and Country Kitchen Restaurant)
- McDonald's
- Kmart
- Pizza Hut
- Super 8 Motel

To reexamine the impacts to these businesses, a customer survey was administered in August 2010 to collect information regarding customers' spending and trip patterns and how the proposed alternatives would have affected those decisions. A total of 300 surveys were completed.

The adjacent figure shows that of the approximately 300 survey respondents, more than 60 percent came from I-90. In addition to I-90 tourist travelers, some of respondents were local Sheridan residents using I-90 to access North Main Street; others were from outlying areas

The Transportation and Traffic section provides more information about the projected 2035 traffic volumes for Alternatives 2 and 4 with and without the West Corridor.



such as Big Horn, Ranchester, and Buffalo. The remaining respondents came from within Sheridan in the direction of Decker Road or North Main Street. The analysis focused on motorists accessing the North Main Street area using I-90. The long-term and short-term impacts were calculated using the percentage of annual business revenues from I-90 travelers.

Review of the survey results indicates that 10 percent of the sampled customers who came from I-90 were truck drivers. This is important because truck drivers (particularly those who use I-90 as a routine haul route) are more likely to make more than one stop at the North Sheridan Interchange during a year.

Short-term revenue impacts from construction closures and detours were calculated by multiplying the length of potential construction closure or disruption of the existing interchange by the percentage of I-90 revenue.

Estimated Percentage of Business Revenues from I-90 Travelers

Establishment	Percentage of Revenue from I-90 Travelers
McDonald's	70
Pizza Hut ^a	70
Fuel	75
Country Kitchen	86
Kmart	34
Lodging	85

^a Pizza Hut was not surveyed. Impacts are assumed to be similar to McDonald's.

To estimate potential impacts, survey respondents were asked to indicate the likelihood that they would stop to use North Main Street businesses for each North Sheridan Interchange alternative.³ Respondents were asked about spending and the number of businesses used in the North Main Street area. The survey results were tabulated and used to estimate the long-term percentage of revenue impacts from potential changes in motorist stops at North Main Street businesses for each alternative.

The changes to business revenue were then used to estimate any impacts to employment and sales tax collections. Impacts to the property tax base were evaluated using property valuations and County mil levies. The total assessed property valuations for parcels that could be acquired for right-of-way were combined with the Sheridan County mil levy to arrive at total property tax impact.

Impacts to economic welfare through changes in travel time were estimated using a benefits analysis described in the methodology section of the *Socioeconomic Technical Memorandum* (HDR 2012e).

Estimated Short-Term and Long-Term Impacts to Business Revenues for Alternative 2 from Reductions in I-90 Traveler Stops

Business	Percent Impact to Business Revenue During Construction	Long-Term Percent Impact to Business Revenue
McDonald's	17	6
Pizza Hut ^a	17	6
Fuel	19	6
Country Kitchen	21	Less than 1
Kmart	8	4
Lodging	21	Less than 1

^a Pizza Hut was not surveyed. Impacts are assumed to be similar to McDonald's.

Impacts

No-Build Alternative

It is anticipated that socioeconomic conditions under the No-Build Alternative would be similar to the existing conditions. Because the ramp location would be maintained, it is assumed that there would be no change in current vehicular exits from I-90 and thus no impacts to businesses. However, depending on what businesses develop within the Wrench Ranch development area or Sheridan High-Tech Business Park, existing business could see an increase or decrease in customers frequenting a particular business.

Alternative 2

Under Alternative 2, 94 percent of drivers said they were likely to exit I-90. Alternative 2 could impact business revenues in both the long term and short term from closures during construction. The largest long-term impacts from the North Sheridan Interchange relocation would be to McDonald's, Pizza Hut, and gas stations. The survey results indicate that motorists from I-90 spent the largest percentage of their money at these locations. The smallest impact would be to lodging or the Country Kitchen. Up to two jobs are projected to be lost in the accommodation and services sector of the local economy. The loss in sales tax revenue would be about \$6,300, which is a 0.05 percent decrease of the overall sales tax revenue for Sheridan and Sheridan County. As the estimated impacts are a maximum value, it is reasonable to infer that the impacts from Alternative 2 could be less than stated and less than the operational fluctuation of most

³ The Carrington Group report conducted 368 surveys for business customers and a separate survey of trucks at the port of entry. The number of customer surveys administered in this study is comparable to the Carrington Group survey business survey numbers.

businesses.⁴ Further, as discussed under Modified Alternative 4, the gateway that the City is planning could help mitigate negative impacts.

Implementation of the interchange improvements from Alternative 2 would increase travelers' (autos and trucks) time in accessing various routes around the interchange. These discounted life-cycle transportation costs are estimated to total an additional \$1.1 million (7 percent discounting) over 20 years of operation.

While there are potentially adverse effects to the local businesses, the improved safety of Alternative 2 would have societal benefits through reduction in the number and cost of accidents at the existing interchange. As indicated by the United States Department of Transportation's report *The Economic Impact of Motor Vehicle Crashes* (2000) reductions in loss of life, injury costs, and property damage could have economic significance. The magnitude of these benefits from a societal perspective could offset a portion of the adverse impacts.⁵

Modified Alternative 4

Under Modified Alternative 4, 78 percent of drivers indicated they were likely to exit I-90. Modified Alternative 4 could impact business revenues in the long term but short-term (construction) impacts would minimal because Modified Alternative 4 could be reconstructed without closing portions of the existing interchange during construction.

The largest long-term impacts from relocating the interchange would be on the McDonald's, Pizza Hut, Country Kitchen, and the gas stations. The survey results indicate that motorists from I-90 spent the largest percentage of their money at these locations. The smallest impact would be to Kmart.

While the general percentage of variable and fixed costs that affect the operations of the specific North Main Street businesses is unknown, a decline in revenue of 20 to 40 percent is generally within the operational fluctuation of most businesses. As discussed for Alternative 2, the estimated impacts are a maximum value.

⁴ *The Carrington Group, North Sheridan Economic Analysis: Impact on Businesses Due to Port of Entry and I-90 Interchange Relocations, January 2001, Page 19.*

⁵ *Blincoe 2002. U.S. Average injury-related costs for accidents ranged between \$433 and \$40,056 per accident depending on accident severity. Noninjury-related costs from travel delays and property damage ranged between \$5,000 and \$40,868 depending on accident severity.*

The estimated impacts are the maximum value because surveys were completed during the peak travel season and the impacts were based on existing average daily traffic. The estimates do not account for the increase in future traffic at the intersection, which is expected to more than double by 2035. In addition, the estimates do not include any trips that would be generated by development of the Wrench Ranch or Sheridan High-Tech Business Park.

Up to 12 jobs may be lost under Modified Alternative 4, including five jobs in the retail sector and seven jobs in the accommodation and services sector of the local economy. There would be an estimated \$26,500 loss in local and County sales tax revenue, which represents about 0.19 percent of the total sales tax revenue for Sheridan and Sheridan County.

Estimated Long-Term Impacts to Business Revenues for Modified Alternative 4 from Reductions in I-90 Traveler Stops

Establishment	Long-Term Percent Impact to Business Revenue
McDonald's	20
Pizza Hut ^a	20
Fuel	22
Country Kitchen	22
Kmart	9
Lodging	13

^a *Pizza Hut was not surveyed. Impacts are assumed to be similar to McDonald's.*

Although Modified Alternative 4 would relocate the interchange farther north than the existing interchange, comments from survey respondents indicate that it is likely that motorists would still frequent north Sheridan establishments. In some cases, Modified Alternative 4 may improve the economic conditions for the local tax base and employment depending on the future development west of Decker Road. Survey respondents indicated an

increased likelihood to stop if more services were provided at the interchange.

As discussed with Alternative 2, implementation of the interchange improvements from Modified Alternative 4 would increase travelers' (autos and trucks) time in accessing various routes around the interchange. These travel time increases are largest for Modified Alternative 4. The discounted life-cycle transportation costs are estimated to total an additional \$18.5 million (7 percent discounting) over 20 years of operations.

Modified Alternative 4 would be located north of the current interchange location in an area currently zoned Gateway Development. The City has flexibility in guiding future land use in this zone to meet the vision of its *North Area Master Plan*. Doing so could mitigate the adverse impacts of the Project by offering new development to attract motorists.

As Sheridan seeks to develop a gateway to the northern area of the city, it is likely that additional tourists could be attracted to use the Modified Alternative 4 interchange. In addition, the City of Sheridan is currently developing the Sheridan High-Tech Business Park west of the existing interchange and has approved a master plan for development south of I-90 and west of the existing interchange. In support of these ongoing efforts by the City, the current businesses could expand services offered at their locations that could attract additional customers such as increased offerings for truck drivers.

These developments, once complete, could mitigate any reduction in present revenue of the North Main Street businesses by generating additional vehicle trips and stops for motorists that would pass by the existing businesses. This is possible for both Alternative 2 and Modified Alternative 4.

As discussed in the Land Use section and shown on the maps provided by the City, the areas near both Alternative 2 and Modified Alternative 4 would be available for a variety of developments as allowed under the Gateway District. What developments are approved is under the jurisdiction of the City and it would be speculative to predict which businesses are likely or not likely to develop.

Regardless of which businesses may develop west of the existing interchange, survey respondents indicated they are more likely to visit other businesses once they have exited the interstate. The resulting new business revenues, employment, and sales and property tax revenues would mitigate the minor adverse affects to the local and county tax base and employment.

Finally, as discussed with Alternative 2, safety improvements of Modified Alternative 4 would result in

As discussed in the North Main Area Master Plan, business owners expressed concerns that moving the interchange could have negative impacts on existing businesses or hinder their chances to bring new business to the North Main area. The slight change in interchange location is unique to research studies that are available. However, a relocated interchange would be a less substantial change than a bypass, whose economic impacts are fairly well-studied. Leong and Weisbrod summarize the research in their 2000 publication. They found that bypasses have little effect on community economic conditions, positive or negative. Maine Department of Transportation found in 2007 that local land use planning and zoning ordinances can help mitigate negative impacts.

societal benefits by reducing the annual cost of accidents at the existing interchange. Reduction in loss of life, injury costs, and property damage would likely have economic significance.

Visibility

The City, North Main Neighborhood Association, local businesses, and residents questioned the visibility of existing businesses from I-90 with each alternative, but in particular with Modified Alternative 4. To examine the visibility of existing businesses, a visibility analysis was completed using GIS software to identify high-elevation areas where businesses and/or business signs were visible for each alternative. As shown in the photos, the visibility of the 30-foot-tall signs is similar among the alternatives.

The blue signs advising drivers of the businesses located near the North Main Street interchange start at roughly 2 miles before the interchange in the eastbound direction.

- *2 miles before NSI: Camping – KOA*
- *1.5 miles before NSI: Lodging – Super 8, Trails End, Super Saver*
- *1.25 miles before NSI: Food – Country Kitchen, McDonald's, Pizza Hut*
- *0.8 miles before NSI: Gas – Exxon, Shell*

Photos were taken at 2 miles, 1.25 miles, 1 mile, 0.5 miles, and 0.25 miles, from the existing interchange to determine what is visible from the current interchange. In some cases, such as at 2 miles from the existing interchange traveling eastbound, the existing interchange was not visible.

As seen in the photos on the following page, where visibility is limited the driver on I-90 traveling either eastbound or westbound must rely on interstate signs and the high-elevation business signs rather than visual clues at the interchange to make a decision whether to exit at the existing interchange. This would be the same under Alternative 2 or Modified Alternative 4. However, as the Sheridan High-Tech Business Park and the Wrench Ranch area continue to develop, motorists traveling eastbound may have a better sense that they are approaching a community and an exit where there are likely to be services.

Mitigation

A potential mitigation measure will be for businesses to increase their visibility from the interstate with better signage, at the existing interchange location, and approaches along the interstate. FHWA and WYDOT have specific rules regarding signs located in interstate right-of-way. Businesses should seek promotion of their businesses in travel guides or navigation systems. Surveyed travelers noted that they sought out McDonald's for Wi-Fi or because they wanted McDonald's coffee. One truck driver noted stopping at the Common Cents because of the Cat Scales, which was noted in their travel book. The Chamber of Commerce, the Downtown Sheridan Association, and the North Main Neighborhood Association could help promote the North Main Street area in travel guides or other publications.

The City's efforts to revitalize the North Main Street area and create a gateway entry should be continued because the gateway will help to attract motorists to stop at the interchange and support local businesses. In addition, any resulting new business revenues, employment, and sales and property tax revenues from the City's revitalization efforts and associated with the Sheridan High-Tech Business Park would mitigate the minor adverse affects to the local and county tax bases and employment associated with the alternatives.

While the potential for additional blue signs along I-90 is limited, there may be a possibility for an attraction sign or trailblazer sign. For more information, refer to WYDOT's Specific Services Signing Rules.

Eastbound



2 miles from interchange.



1 mile from interchange.



0.5 miles from interchange.



0.25 miles from interchange.

Westbound



1.25 miles from interchange.



1 mile from interchange.



0.5 miles from interchange.



0.25 miles from interchange.

NOISE

The Federal Noise Control Act of 1972 (Public Law 92-574) requires that all federal agencies administer their programs in a manner that promotes an environment free from noises that could jeopardize public health or welfare; 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise are the regulations by which the FHWA and WYDOT implement this public law.

WYDOT has adopted criteria for evaluating noise impacts associated with federally funded highway projects and for determining whether such impacts are sufficient to justify funding noise-abatement measures. Traffic noise levels were determined by computer modeling using the FHWA-required Traffic Noise Model (TNM), Version 2.5. Where appropriate, the effects of local shielding from existing structures, vegetation, terrain, and other adjustment factors were included in the model to provide a higher level of detail and accuracy.

Noise levels were modeled to reflect the expected traffic conditions in 2035 after the Project is completed. Traffic volumes in 2035 reflect worst-case conditions (that is, when the most vehicles would be using the facility, generating the most traffic-related noise). Noise levels were then compared against the noise abatement criteria set by the FHWA and WYDOT guidance. Noise levels exceeding these criteria would be an impact and mitigation should be considered. Hourly noise levels greater than 66 decibels (dBA) would be considered an impact. More information related to these criteria can be found in the *Noise Technical Memorandum* (HDR 2012f).

Existing Conditions

Land uses around the North Sheridan Interchange are a mix of low-density residential, recreational (e.g., KOA), and commercial land uses. There is also a substantial amount of undeveloped land on both sides of I-90. The VA Medical Center is about 0.75 mile west of the North Sheridan Interchange (south of I-90).

Existing noise levels in the study area were determined by taking 10-minute sound-level measurements at eight locations. Noise-measurement locations were selected to represent existing residential developments, recreation areas, or other areas where people could be exposed to traffic noise for extended periods of time. The next two figures illustrate these locations.

Measured noise levels were typical of suburban environments and ranged from about 48 dBA to 66 dBA. As expected, higher noise levels were recorded at locations closer to I-90 and other high-traffic local roads (for

example, 66 dBA at ML-2 adjacent to Decker Road on the south side of I-90).

Impacts

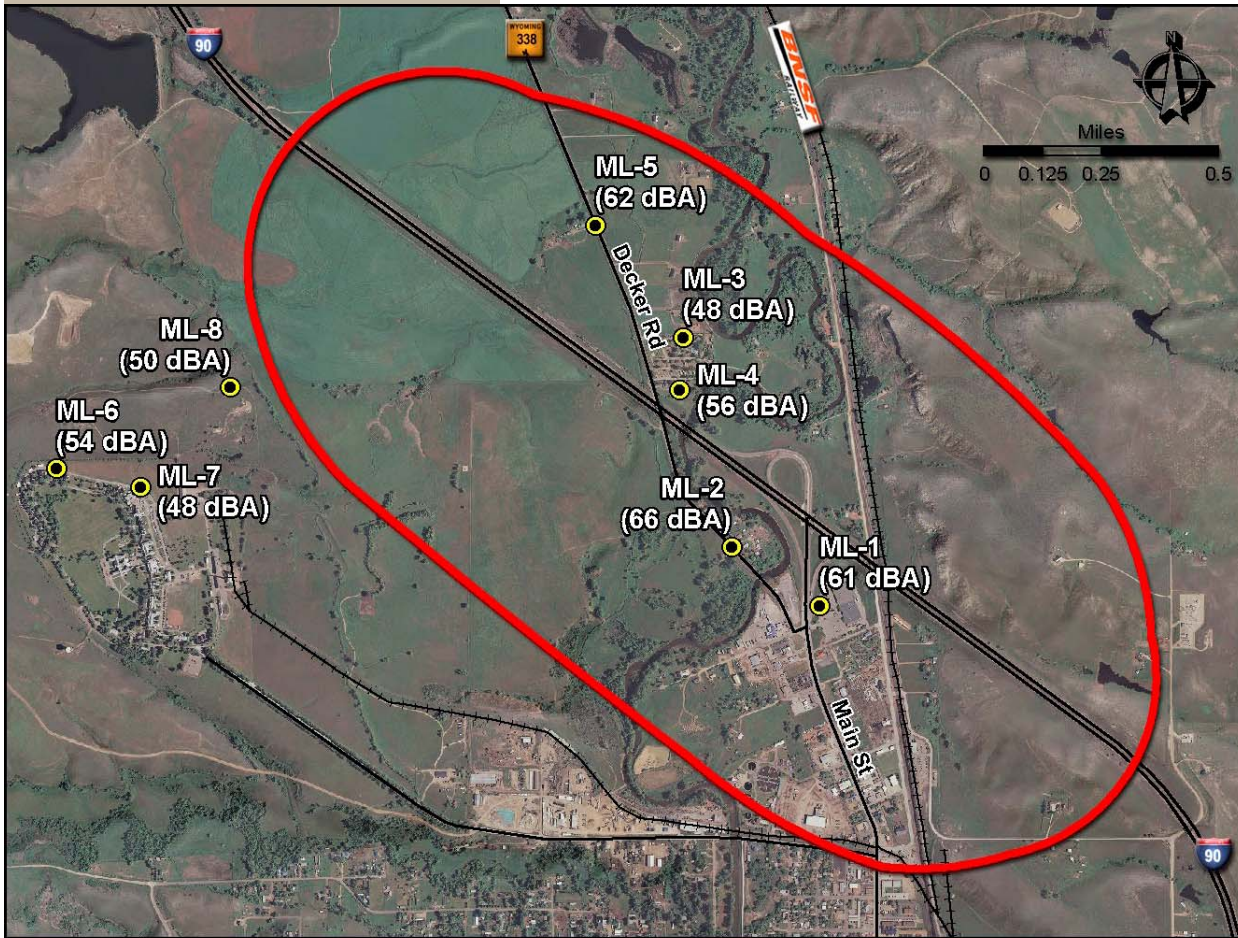
No-Build Alternative

Under the No-Build Alternative the North Sheridan Interchange Project would not be built, so no noise impacts would occur as a result of the Project. One residential receptor located at the entrance of the KOA property approaches the noise abatement criteria with a modeled 2035 noise level of 66 dBA.

Alternative 2

Under Alternative 2, the interchange ramps and cross streets would be moved closer to existing residences along Decker Road than the No-Build Alternative. One residential receptor R-8 located at the entrance to the KOA property would exceed the noise abatement criteria of 66 dBA with a modeled year 2035 noise level of 68 dBA; this property approaches the noise abatement criteria (66 dBA) even if the Project is not built.

Noise Monitoring Locations

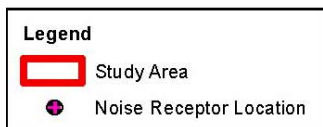
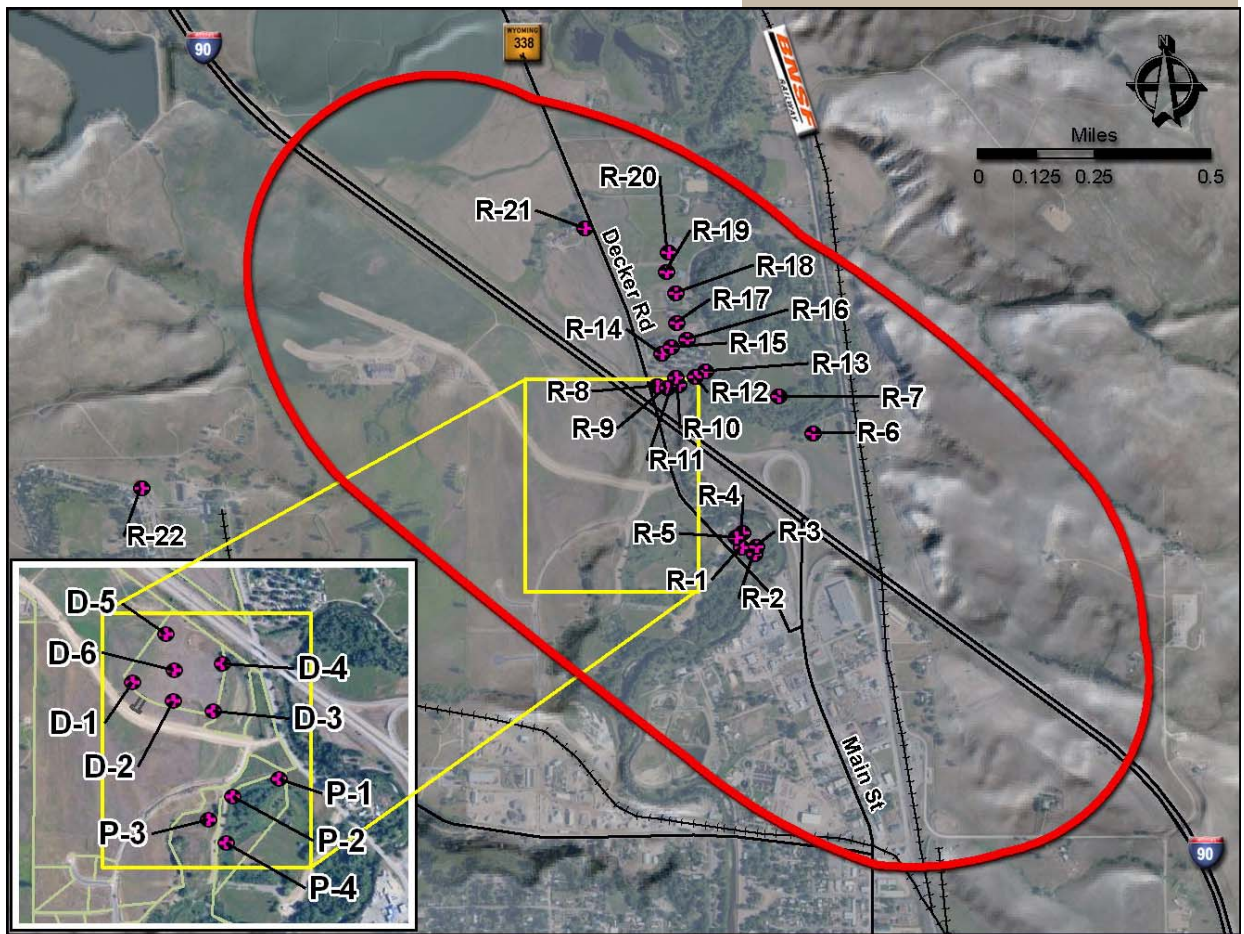


Legend

- Study Area
- Noise Monitoring Locations

Data Sources: Imagery (City of Sheridan);
Noise Monitoring (HDR Engineering, Inc.)

Noise Monitoring Locations



Data Sources: Imagery (City of Sheridan);
Noise Monitoring (HDR Engineering, Inc.)

Modified Alternative 4 – Diamond Interchange Close to Decker Road

This alternative would move the interchange farther from the existing interchange, existing residences along Decker Road, and the existing KOA. It would move the interchange closer to the Wrench Ranch farmstead.

Under the Modified Alternative 4, project-related noise levels at most receptors would range from about 48 dBA to 65 dBA. The highest modeled noise levels would be associated with receptors in the vicinity of the proposed parks along the realigned Main Street. Under Modified Alternative 4, the residential noise abatement criteria (66 dBA) would not be approached or exceeded.

Mitigation

Under the WYDOT noise policy, noise abatement measures will be considered where they are both reasonable and feasible. Feasibility deals primarily with engineering considerations (for example, can a barrier be constructed given the terrain, can a substantial noise reduction be achieved by the barrier, etc.). Reasonableness is a more subjective criterion than feasibility and implies that common sense and good judgment have been applied in reaching a determination to build a barrier.

Reasonableness criteria include (among other factors):

- Amount of noise reduction provided by the barrier
- Number of residences benefitting from a barrier
- Cost of the barrier
- Future noise levels resulting from the Project alternatives
- Timing and consideration of development along the transportation facility

As discussed above, under Alternative 2 there will be very few noise impacts in 2035 due to the Project; one residential noise impact (68 dBA) would occur on the east side of I-90 near the KOA campground entrance

While noise barriers would be technically feasible, that is, there would be no obvious engineering constraints to their construction, they would not be reasonable under WYDOT’s noise policy. According to WYDOT’s reasonableness criteria (summarized above), noise barriers that benefit very few residences are not feasible because the cost of the barrier would easily exceed WYDOT’s allowable cost of \$23,000 per residence. As a result, noise barriers are not considered reasonable for the North

Sheridan Interchange Project (Alternative 2) under WYDOT’s noise policy.

Modeled Noise Levels (dBA) Year 2035

Receptor	No-Build	Alternative 2	Impact Due to Project	Modified Alternative 4	Impact Due to Project
1	62	–	–	65	3
2	61	65	4	63	2
3	60	63	3	61	1
4	60	65	5	62	2
5	60	–	–	64	4
6	56	57	1	56	0
7	52	54	2	53	1
8	66	68	2	65	-1
9	65	65	0	65	0
10	63	62	-1	62	-1
11	62	62	0	62	0
12	61	60	-1	61	0
13	57	58	1	58	1
14	59	60	1	60	1
15	58	58	0	59	1
16	55	56	1	57	2
17	54	55	1	56	2
18	53	54	1	55	2
19	51	52	1	53	2
20	50	51	1	52	2
21	59	64	5	51	-8
22	50	51	1	52	2
D-1	53	53	0	58	5
D-2	54	54	0	59	5
D-3	58	58	0	60	2
D-4	65	65	0	65	0
D-5	61	61	0	61	0
D-6	58	58	0	59	1
P-1	57	58	1	63	6
P-2	54	55	1	58	4
P-3	52	52	0	55	3
P-4	52	52	0	54	2
D-1	53	53	0	58	5

Notes: Noise levels in bold approach or exceed residential noise abatement criteria.

Under Alternative 2, residences represented by R1 and R5 would be relocated.

D- : Doubleday Park receptors

P- : Proposed Park receptors

RESOURCES NOT AFFECTED BY THE BUILD ALTERNATIVES

This section describes those resources that would not be affected by either of the Build Alternatives to an appreciable degree. They are:

Environmental Resources

- Wildlife
- Vegetation
- Threatened and endangered species
- Geology and soils
- Prime and unique farmlands
- Climate change

Social Resources

- Social conditions
- Community facilities
- Hazardous materials
- Existing parks and recreation facilities
- Section 4(f) properties

Because there would be no impacts or very minor impacts to these resources, descriptions of these resources focus on existing conditions. Where appropriate, brief explanations of why there would be no impacts or minor impacts and descriptions of precautionary mitigation measures are presented.

WILDLIFE AND VEGETATION INCLUDING THREATENED, ENDANGERED, AND SPECIES OF CONCERN

The wildlife and threatened, endangered, and species of concern study area included any area that could be disturbed during construction and covered both plants and animals. A biological report was prepared by Vern Stelter Consulting that included a literature review and results of site surveys that were completed in the summer of 2009.

Habitat within the existing right-of-way includes dry upland, riparian areas, limited wetlands, and aquatic habitats. Outside of the right-of-way, there is no native vegetation because the land is used for irrigated alfalfa

fields. Goose Creek crosses the study area and provides dense grass, shrub, and tree habitats. Some of this vegetation cover could be removed for construction of either alternative but in an area that has been annexed by the City as a future growth.

Database searches indicate no record of threatened, endangered, or sensitive species in the study area. One bald eagle nest is recorded within line of sight, approximately 0.9 mile from the I-90 right-of-way. The nest is near residential development and the eagles appear to be acclimated to noise because they continue to use the nesting site. The Wyoming Game and Fish Department already monitors the site, so no additional work is necessary at this time. Impacts to the existing area are not expected during construction of either alternative or after the improvements are complete. Prior to construction, WYDOT would conduct a survey to identify active raptor⁶ nests adjacent to the corridor or other off-site construction facilities. If active nests are found, WYDOT would coordinate with the Wyoming Game and Fish Department and the United States Fish and Wildlife Service to develop appropriate mitigation measures.

The study area is within the range of Ute-ladies'-tresses orchid, but there are no documented occurrences and site visits indicate that the conditions are not suitable.

This project is not included in the 2010–2014 Programmatic Biological Assessment and resulting Programmatic Biological Opinion from the U. S. Fish and Wildlife Service for FHWA and WYDOT, but will be included in the 2015–2019 Programmatic Biological Assessment.⁷

GEOLOGY AND SOILS

The Project would be constructed in a combination of undeveloped land and developed land in an urban setting, where the some of the native soil has been overtopped by roads and structures associated with development along North Main Street. The undeveloped area near the existing interchange north of I-90 is Zigweld-Kishona-Cambira, moist, 0 to 3 percent slopes. In the undeveloped areas along Goose Creek, the underlying predominant soil types consist of Haverdad loam, moist, 0 to 3 percent slopes and Haverdad-Draknab complex, moist, 0 to 3 percent slopes. Platsher clay loam, 0 to 3 percent slopes, Ulm clay loam, 0

⁶ These species are protected under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Acts.

⁷ Personal communication. E-mail from Thomas Hart (WYDOT) to Laura Lutz-Zimmerman (HDR), February 6, 2012.

to 3 percent slopes, and Wyarno clay loam, 0 to 3 percent slopes make up the lands in the primarily agricultural areas; Platsher clay loam soils dominate. These soils are well-drained and no constraints are known to be associated with the soils that would preclude the construction of either alternative (USDA 1995 and NRCS 1986).

There are several areas in the county where abandoned underground coal mines exist that can create subsidence areas (NRCS 1986). Based on work done for the relocation of the port-of-entry, no subsidence areas are near the proposed alternatives (Maxim Technologies Inc. 2001).

No impacts to soils and geology would result from the proposed improvements.

PRIME AND UNIQUE FARMLANDS

Map units 195 and 196, the Nancho clay loam units are classified as Prime Farmland Soils when irrigated (NRCS 2009). These soils are located outside of the area of impact of Alternative 2, but Modified Alternative 4 crosses these soils. The area crossed has irrigation infrastructure that is not used and is part of the land slated for future residential development and a public school by Wrench Ranch developers (Jellis 2012). Because the land crossed by Modified Alternative 4 is no longer irrigated and is planned for urban development, no impact to prime farmland is anticipated.

CLIMATE CHANGE

A qualitative evaluation of the impact of the proposed project on climate change was completed as documented in the *Climate Technical Memorandum* (HDR 2012g). The evaluation used the Council on Environmental Quality Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions (February 18, 2010).

The Project's potential contribution to global climate change would be through the emissions of greenhouse gases, primarily carbon dioxide. A reduction in the number of vehicle miles traveled for Alternative 2 would be expected to decrease compared to the No-Build Alternative reducing the fuel usage and resulting greenhouse gas emissions; therefore, lessening the impact to global climate change to the degree that greenhouse gas emissions would have any impact on global climate. The vehicle miles traveled are expected to increase for Modified Alternative 4 compared to the No-Build Alternative, increasing fuel consumption and greenhouse gases emissions, affecting global climate to the degree that greenhouse gas emissions can affect global climate change.

However, based on recently finalized and proposed fuel economy standards for on-road motor vehicles, the increase in vehicle-miles traveled under Modified Alternative 4 (13 percent over the No-Build Alternative) and resulting greenhouse gas emissions would be offset by improvements in fuel economy of the motor vehicle fleet.

Based on the demographic and income data, environmental justice populations are not an issue in the study area.

SOCIAL CONDITIONS

The study area includes the City of Sheridan and unincorporated Sheridan County with emphasis on the area where the Project would be constructed. The Project infrastructure would be constructed on land within city limits. Alternative 2 and Modified Alternative 4 would not change these conditions.

Community Demographics

Sheridan County has the seventh-highest population of Wyoming counties. According to the 2010 United States Census, the population of Sheridan County was 29,116 including 17,144 in Sheridan (United States Census Bureau 2010).

Sheridan's composition is predominantly white (94.9 percent) with a small population of black/African-American, Native Hawaiian/Pacific Islander, American Indian/Alaskan native, and Asian persons. The Hispanic population is the largest nonwhite demographic at 4.3 percent (United States Census Bureau 2010). The composition of the census tracts in the study area indicate a higher percentage of white non-Hispanic populations compared to the City of Sheridan (United States Census Bureau 2000).⁸

Housing

According to the *Sheridan County Housing Needs Assessment* of 2006 (Community Strategies Institute 2006), 7,000 housing units are in the City of Sheridan. Sixty-three percent of households are owner-occupied. The

⁸ 2010 Census tract data is not yet available.

homeownership rate is slightly lower than the county average (69 percent).

The average household size in Sheridan is 2.2 persons, and the majority of households in Sheridan are family households. The percent of family households without children at home (31 percent) is larger than those with children at home (28 percent). “People living alone” is the largest household type (36 percent) and almost half of these are elderly households.

Income

According to the 2000 Census, the median household income for the City of Sheridan was \$31,000, slightly below the median income for the county (\$34,000).⁹ The median household income for the census tracts in the study area is higher than for the city or county at \$40,702 and \$43,430 (United States Census Bureau 2000). Only 9 percent of the households in Sheridan are below the 2000 poverty level. The *Sheridan County Housing Needs Assessment* of 2006 reports that while Sheridan County’s wages are low, Sheridan County has significant income from sources other than wages. Other sources noted in the report are per capita transfer receipts, retirement income and dividends, and interest and rental income. The influx of these types of funds is higher in Sheridan than in the rest of Wyoming (EAD 2009).

Employment

From 1990 to 2000, Sheridan experienced a 2.9 percent increase in total employment. Private employment grew at the fastest rate, with construction and services gaining the most jobs. The largest employers, including the Sheridan County School District 2, the VA Medical Center, and Memorial Hospital, are all public sector. Wal-Mart is the largest private-sector employer, and the Spring Creek Mine in Montana is the largest energy-related employer. As described in the Land Use section, a new manufacturing facility employing 35 people opened in the Sheridan High-Tech Business Park in 2011.

Neighborhoods and Community Facilities

The existing interchange is in a commercial area with little residential development; most residential development is south of Fort Road (the southern Project terminus). There is a pocket of housing between Decker Road and Goose Creek. As noted in the Right-of-Way section, some of

these houses would be relocated under Alternative 2. The Wrench Ranch rural housing subdivision is located along Decker Road north of I-90. Houses in this subdivision would not be relocated by either alternative, access would be maintained, and noise would not exceed noise abatement criteria. However, Modified Alternative 4 would be visible. The cohesion of this subdivision would not be affected under either alternative.

No community facilities are located near to either alternative. Parks are described in the Parks and Recreation Section.

HAZARDOUS MATERIALS

To determine the possible presence of hazardous substances within the corridor, a database search and windshield survey of the study area were performed. Environmental Data Resources (EDR) performed the environmental database search for sites of potential environmental concern within and around the study area boundaries, and prepared a report in March 2009. Typically, these databases are updated every 90 days.

None of the sites identified are within 0.5 miles of the areas of disturbance for either alternative. If an unknown leaking or underground storage tank is identified during construction, the Wyoming Department of Environmental Quality would pay for the removal of contaminated soils. If WYDOT finds an unknown tank during construction, they would register it with the Department of Environmental Quality and undertake removal of contaminated soils.

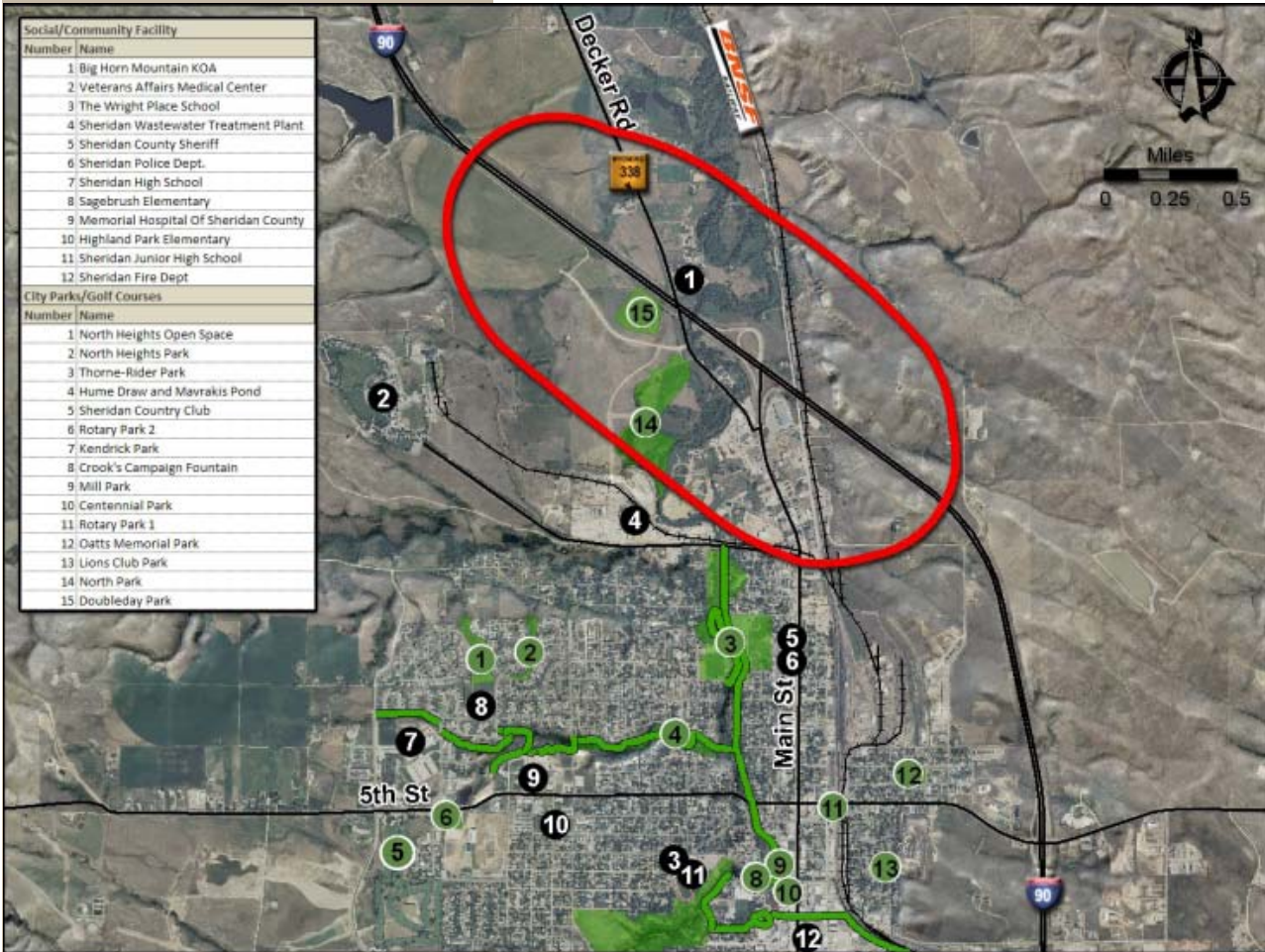
PARKS AND RECREATION

One public park is in the study area. North Park, located adjacent to the Wrench Ranch development area, is being preserved as open space (riparian habitat and wetlands) and will not be developed with playgrounds or sports fields. The focus of the park is habitat and education. A loop trail is being developed to link to other trails and parks in Sheridan. Future enhancements could include parking area and small picnic shelter (Carbert 2012) This Park would be avoided by Alternative 2 and Modified Alternative 4.

No other formal public recreational facilities are present in the study area. The Big Horn Mountains KOA, a private campground, is located just east of Decker Road, along Goose Creek. Alternative 2 would take a small amount of right-of-way from the KOA, but would not reduce the camping capacity. Access to the facility with Modified Alternative 4 would be provided from a terminated

⁹ 2010 Census tract data is not yet available.

Location of Community Facilities and Schools



Data Sources: Imagery (USDA and NRCS 2009 NAIP); Parks and Pathways (City of Sheridan); Social/Community Facilities (HAZUS Database – USGS/FEMA)

segment of the existing Decker Road; the straight through movement on Decker Road would be removed with Modified Alternative 4. Access would not change with Alternative 2.

In September 2011, the City of Sheridan approved a minor subdivision plat within the Wrench Ranch subdivision for a new baseball complex (Doubleday Park). The land has been deeded to the Sheridan Baseball Academy, which is a private non-profit association. This site has not yet been developed, but the Sheridan Baseball Academy is raising funds for the complex. The area proposed for this baseball complex would not be affected by Modified Alternative 4.

As noted, in the City recreation documents, there is community support for future connectivity of the local trail system with a trail connection planned along Goose Creek (Sheridan County 2008). As noted, the City of Sheridan is developing this trail to connect into North Park. See the Transportation and Traffic section for a brief description of the *Sheridan Pathways Master Plan* and the *Sheridan Parks and Recreation Master Plan*.

SECTION 4(F) PROPERTIES

Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303 and 23 U.S.C. 138) allows the FHWA to approve a transportation program or project requiring the use of publicly owned land of a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or historic significance (as determined by the federal, state, or local officials having jurisdiction over the park area, refuge or site) only if the following requirements are met:

- There is no prudent or feasible alternative to using that land.
- The program or project includes all possible planning to minimize harm to the park, recreational area, wildlife and waterfowl refuge, or historic site resulting from the use.

As noted in the Parks and Recreation section and Cultural Resources section, three section 4(f) properties are located in the study area. None of the properties would be used by construction of the Project. There are no wildlife refuges in the study area. No Section 4(f) evaluation is needed.

Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303 and 23 U.S.C. 138) prohibits FHWA from using land from publicly owned, open to the public parks and recreation facilities of national, state, or local significance unless there is no prudent or feasible alternative.

CONSTRUCTION EFFECTS

In addition to construction impacts to various natural and human resources, discussed by resource in the environmental assessment, impacts may occur in the form of detours and delays. Proper positioning of detours and advance notice of lane closures would minimize disruption to the traveling public. Construction would not directly affect hospitals, fire stations, or police stations, although service routes may be affected by detours during construction. During construction, the potential exists for leaks during fueling operations for equipment. The contractor would be required to provide containment to prevent soil and water contamination from accidental spills. Short-term degradation in air quality may be caused by construction vehicles and traffic congestion due to lane closures or detours. Best management practices are recommended, as necessary, to control fugitive dust; their implementation would mitigate any construction impacts. No long-term construction impacts associated with either alternative are anticipated; therefore, no additional mitigation is required.

INDIRECT/CUMULATIVE EFFECTS AND MITIGATION MEASURES

Indirect effects are those that occur later in time, are outside the Project's area of impact, and are typically unintended results of the Project. Cumulative effects involve additive direct and indirect effects of multiple projects to the same resources. Potential cumulative effects to the environment that would be associated with implementing either of the alternatives were analyzed in conjunction with past, present, or reasonably foreseeable future actions. The analysis was prepared according to the requirements of the National Environmental Policy Act and guidance from the Council on Environmental Quality,

Considering Cumulative Effects under the National Environmental Policy Act (CEQ 1997).

Sheridan was settled in 1888. Since that time, it has maintained a strong downtown core. The City and County have actively developed planning documents to guide the direction of growth for the area, and in particular the North Main Street area. Alternative 2 and Modified Alternative 4 would improve transportation movements and support elements of the land use development occurring in the area. Neither Alternative 2 nor Modified Alternative 4 would preclude any planned land use such as in-fill development near the existing interchange.

As discussed in the land use and economic impact sections, it is possible (and likely) that the land west of the existing interchange, including areas outside of the city limits would be developed under any alternative because master plans for the Wrench Ranch and Sheridan High-Tech Business Park describe the potential build out of this area.

The amount of new growth depends on the following several factors (NRCHP 2002) which are, in part, under the jurisdiction of city and county:

- Available land
- Available urban services (see Sheridan Area Water Service boundary)
- Economic demand
- Approval under zoning regulations
- Maturity of the transportation system

It is not possible to determine what specific developments may occur in the area that was annexed for the Wrench Ranch development area. Maps provided by the City show possible types of development that would be allowed under the Gateway District. However, construction is already occurring in this area and it is likely to continue as prescribed in the master planning documents, which are independent of the Project. As a result, the Project is not likely to induce more development than what is shown in these plans but would be a part the incremental cumulative changes that are occurring.

The *North Main Area Master Plan* provides direction for growth, in particular in-fill growth in the vicinity of the existing interchange. The City implements the direction of this plan through the Gateway District and approval of subdivision plats. The construction of Alternative 2 or Modified Alternative 4 would not affect the City's implementation of in-fill policies in the North Main area because WYDOT is not building a new interchange but

replacing an existing interchange to improve safety and correct design deficiencies at the existing interchange.

As the vision of the North Main Neighborhood Association and the gateway concept are realized, trips may be increased to more than one business according to the economic surveys completed. Therefore, none of the Project effects would contribute to any substantial negative economic cumulative effects when combined with the other projects and development activities described above. The local economy is likely to benefit in local sales tax and property tax revenue as well as employment from new development.

As discussed in previous sections, resource impacts associated with the Project are expected to be minor. Under the land use scenario described in the environmental assessment, it is possible that future developments would have a cumulative impact on resources most affected by construction such as water quality and air quality.

All the proposed developments must follow federal, state, and local laws. These laws require an analysis of potential impacts and mitigation for these impacts, such as no net loss of wetlands and no rise in the 100-year floodplain levels. Best management practices would likely be implemented to reduce sedimentation and impacts to water quality. Implementation of these mitigation and best management practices would limit the negative cumulative effects to these resources.

The future developments also have the potential to increase particulate matter during construction. Best management practices similar to those described for Project would likely be implemented during construction of future development to minimize the contributions of particulate matter to the nonattainment status of the area.

The future developments have the potential to increase the impact to climate change to the degree that green house gas emissions have an impact on global climate as more vehicle trips are generated to and from the new developments in the Wrench Ranch development area and the Sheridan High-Tech Business Park.

Because the contributions of the Project to any cumulative impacts are expected to be minor, no mitigation would be required for indirect or cumulative effects beyond those described for the Project.

SUMMARY OF IMPACTS AND MITIGATION MEASURES

The following table provides a summary comparison of environmental impacts between Alternative 2 and Modified Alternative 4 presented by the topical sections of Chapter 3. Mitigation measures have been included in the table. The details of each measure have been provided in the preceding sections, as applicable.

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Summary of Impacts and Evaluation Measures – Alternative 2 and Modified Alternative 4

Resources	Will this Resource be Affected by Alternative 2?	Will this Resource be Affected by Modified Alternative 4?	Mitigation
Surface water, floodplains, and wetlands	<ul style="list-style-type: none"> • Would result in 3 acres of wetland impacts. • Two new bridge crossings of Goose Creek would be needed; existing bridge over Goose Creek would be widened. • Would cross 12 acres of the Goose Creek floodplain, but no rise in flood levels would occur. 	<ul style="list-style-type: none"> • Would result in 1.5 acres of wetland impacts. • Existing bridge over Goose Creek would be widened; no additional bridge structures needed. • Would cross 2 acres of Goose Creek floodplain, but no rise in flood levels would occur. 	<ul style="list-style-type: none"> • Erosion-control measures and best management practices would be implemented during construction. Further avoidance and minimization of impacts during final design, and compensatory mitigation of the remaining impact. WYDOT will comply with conditions of Section 404 permit. • WYDOT would reexamine flood insurance rate maps (FIRMs) during final design to ensure no impact would occur.
Air quality	<ul style="list-style-type: none"> • Potential temporary impacts from fugitive dust and emissions from construction vehicles. • Local increases in mobile source air toxics (MSATs) possible, especially along areas of new construction. • Not expected to cause or contribute to violation of PM₁₀ National Ambient Air Quality Standards (NAAQS). 	<ul style="list-style-type: none"> • Potential temporary impacts from fugitive dust and emissions from construction vehicles. • Local increases in MSATs possible, especially along areas of new construction. • Not expected to cause or contribute to violation of PM₁₀ NAAQS. 	<ul style="list-style-type: none"> • Dust-control best management practices would be implemented during construction. • Future MSAT emissions are expected to be substantially lower than today because of the implementation of EPA's vehicle and fuel regulations.
Cultural	<ul style="list-style-type: none"> • Would not be located adjacent to historic properties or within the viewshed of the historic properties. 	<ul style="list-style-type: none"> • Would be located adjacent to Wrench Ranch farmstead and would be located within the viewsheds of the Wrench Ranch farmstead and Fort Mackenzie. • No adverse effect to these properties. 	<ul style="list-style-type: none"> • If cultural materials are discovered during construction, work in the area shall halt immediately, the federal agency and State Historic Preservation Officer (SHPO) staff contacted, and the materials be evaluated by an archaeologist or historian meeting the Secretary of the Interior's Professional Qualification Standards (48 FR 22716, September 1983). • Interchange lighting will be painted with non-reflective paint and natural vegetation planted on interchange ramp slopes. Final details will be coordinated with SHPO.
Right-of-way	<ul style="list-style-type: none"> • Approximately 11 acres of new right-of-way would be needed to accommodate the new interchange; almost 12 acres could be used for other public purposes after the existing interchange is removed. • Between three and five residential relocations. • Right-of-way may be needed from the KOA to accommodate the bridge widening and the westbound entrance ramp. • Potential relocation of one commercial business. 	<ul style="list-style-type: none"> • Approximately 35 acres of new right-of-way would be needed to accommodate the new interchange; almost 25 acres could be used for other public purposes after the existing interchange is removed. • No residential relocations necessary. • Right-of-way may be needed from near the stormwater management facilities in the Sheridan High-Tech Business Park. • Right-of-way may be needed from the United States Forest Service work area and storage location. • No commercial relocations. 	<ul style="list-style-type: none"> • WYDOT will provide compensation to landowners under the Federal Uniform Relocation Assistance and Real Property Acquisition Act (URAA) and WYDOT policies. • WYDOT will coordinate with the Forest Service under the existing Memorandum of Agreement between FHWA, WYDOT, and USFS.
Visual and aesthetics	<ul style="list-style-type: none"> • Trees would be removed from existing viewshed overlooking Goose Creek. • Current agricultural views west of Decker Road are expected to continue in the short-term. New interchange would be partially visible in this viewshed. 	<ul style="list-style-type: none"> • No trees would be removed from the viewshed overlooking Goose Creek. • New North Sheridan Interchange would be visible in the agricultural viewshed west of Decker Road; however, the current agricultural area has been proposed for long-term urban development. 	<ul style="list-style-type: none"> • Incorporation of visually pleasing design features. • Reclaim land under existing interchange to support City's planned community gateway.

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Resources	Will this Resource be Affected by Alternative 2?	Will this Resource be Affected by Modified Alternative 4?	Mitigation
Transportation and traffic	<ul style="list-style-type: none"> Alternative would be located 750 feet west of the existing North Main Street interchange. Access to the north would be improved compared to existing conditions. Overall travel time would be less for Alternative 2 compared to the No-Build Alternative. However, travel time varies between one additional minute of travel time and one minute of travel savings depending on the location of travel to/from I-90. Travel distance varies depending on the location of travel to/from I-90. Annually, travelers would see a reduction in the overall vehicle miles traveled of 369,147 when compared to the No-Build Alternative. New intersections would eventually need traffic control signals. Closely spaced intersections reducing travel efficiency. Supports the <i>Sheridan Transportation Policy Plan</i> because it would likely encourage development closer to the North Main Street area instead of the Wrench Ranch area. 	<ul style="list-style-type: none"> Alternative would be located 4,560 feet west of the existing Main Street interchange. Access to areas north of I-90 and Wrench Ranch development area would be improved compared to existing conditions. Overall travel time would be greater for Modified Alternative 4 compared to the No-Build Alternative. Travel time varies between one and three minutes of additional travel time and one to four minutes of travel savings depending location of travel to/from I-90. Travel distance varies depending on location of travel to/from I-90. Annually travelers would see an increase of 1,395,711 (or 13 percent) in overall vehicle miles traveled when compared to the No-Build Alternative. New intersections would eventually need traffic control signals. Greater separation between intersections improving travel efficiency. Addresses the <i>Sheridan Joint Area Land Use Plan</i> because its location would support new and proposed land use (the Sheridan High-Tech Business Park proposal and Wrench Ranch development area proposal). 	<ul style="list-style-type: none"> Signs will be installed similar to those at the existing interchange to notify travelers of businesses accessible at the new interchange.
Land use and zoning	<ul style="list-style-type: none"> Farther from the development area of the <i>Sheridan High-Tech Park Conceptual Plan</i>. Farther from the development area of the <i>Wrench Ranch Properties Master Plan – Phase 1</i>. Meets the location illustrated in the <i>North Area Master Plan: Gateway Node</i>. The Framework Plan identifies an enhanced commercial Gateway Node, located along North Main Street at the location of the current entry to Kmart (Canfield Street). No new opportunities to create open space; existing open space removed. Would not preclude land use decisions that are under the jurisdiction of the City of Sheridan. 	<ul style="list-style-type: none"> Closer to the development area of the <i>Sheridan High-Tech Park Conceptual Plan</i>. Closer to the development area of the <i>Wrench Ranch Phase 1 Master Plan</i>. Former North Sheridan Interchange would be removed and would provide additional open space.* Modified Alternative 4 is farther from the Gateway Node outlined/illustrated in the <i>North Area Master Plan</i>. Would not preclude land use decisions that are under the jurisdiction of the City of Sheridan. 	<ul style="list-style-type: none"> Design elements could be incorporated into the Project to complement the entryway into Sheridan that is being planned. Under either alternative, land would be available for development of the Gateway Node.
Economics	<ul style="list-style-type: none"> During construction, the existing interchange would need to be demolished in order to build the new interchange, creating traffic control and access issues during construction. Based on the survey conducted for this environmental assessment, 94 percent of drivers on I-90 would continue to exit and visit businesses in north Sheridan. The decrease in patrons could decrease sales, but the amount of decreased business is within normal operating fluctuations. Moreover, as the planned Wrench Ranch development is built out, the existing business could see an increase in patrons enhancing these businesses. Visibility of existing businesses is limited at existing interchange. This condition is not expected to change under Alternative 2. 	<ul style="list-style-type: none"> The entire proposed interchange could be constructed while leaving the existing interchange in place, resulting in fewer traffic control and access issues during construction. Based on the survey conducted for this environmental assessment, 78 percent of drivers on I-90 would continue to exit and visit businesses in north Sheridan. The decrease in patrons could decrease sales but the amount of decreased business is within normal operating fluctuations. Moreover, as the planned Wrench Ranch development is built out, the existing business could see an increase in patrons enhancing these businesses. Visibility of existing businesses is limited at existing interchange. This condition is not expected to change under Modified Alternative 4. 	<ul style="list-style-type: none"> During construction, directional signs would be used to guide traffic to local businesses during detours and ramp closures. Development of the gateway and Wrench Ranch area could attract additional vehicle stops and enhance local businesses. Signs will be installed similar to those at the existing interchange to notify travelers of businesses accessible at the new interchange.
Noise	<ul style="list-style-type: none"> The WYDOT noise threshold would be exceeded at one structure on the KOA property; this impact would not be eligible for noise mitigation measures based on WYDOT criteria. 	<ul style="list-style-type: none"> The WYDOT noise threshold would not be exceeded. 	<ul style="list-style-type: none"> No mitigation is recommended.

* Following removal of the interchange, WYDOT has made no determinations for how this land might be used.

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WHAT IS THE PREFERRED ALTERNATIVE?

Following a detailed environmental impact analysis of Alternative 1 (No-Build), Alternative 2, and Modified Alternative 4, and opportunities for public and agency input completed as part of the Environmental Assessment, WYDOT and FHWA identified Modified Alternative 4 as the Preferred Alternative. Alternative 2 and Modified Alternative 4 would not have significant adverse impacts to the natural, cultural, or social environments, but WYDOT and FHWA believe that Modified Alternative 4 provides the best transportation solution with the least impacts to the natural, cultural, and social environments thereby best serving the greater public good.

It serves the needs of local, regional, and interstate traffic for the reasonably foreseeable future, would operate more efficiently than Alternative 2 and cost less to construct. Modified Alternative 4 would support the City of Sheridan's planned future growth areas – Wrench Ranch and the Sheridan High-Tech Business Park – but would not preclude land use decisions by the City. Modified Alternative 4 would conform to FHWA's interstate access policy and allow adequate spacing for a new interchange (for the planned West Corridor) farther northwest, if warranted by future travel demand or growth areas.

Residential and commercial relocations would not be necessary under Modified Alternative 4 and WYDOT is working with the United States Forest Service regarding the land transfer at their work area for this alternative. Modified Alternative 4 avoids impacts to Doubleday Park. Modified Alternative 4 would have fewer impacts and less disruption to the traveling public and business during construction. Long-term economic impacts to existing business projected for Modified Alternative 4 are within normal operating fluctuations. Modified Alternative 4 provides the opportunity for the City of Sheridan to enhance its gateway vision through lands freed up by removal of the existing interchange.

Modified Alternative 4 would have fewer acres of wetland and other waters of the United States impacts, and would be the Least Environmentally Damaging Practicable Alternative (LEPDA) under Section 404(b)(1) of the Clean Water Act. Because there are impacts to waters of the United States, a permit to construct the project from the United States Army Corps of Engineers would be required. Under the provisions of the Clean Water Act, the Corps can only issue a permit for the Least Environmentally Damaging Practicable Alternative.

Modified Alternative 4 would cost \$5.2 million dollars less to construct than Alternative 2. This is a substantial cost savings and an important consideration for the use of public funds.

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CHAPTER 4

COMMENTS AND COORDINATION

Summaries of the public meetings, including announcements, displays, and comments are in Public Information Meeting Summaries.

As part of this environmental assessment, WYDOT reached out to stakeholders and the public through open house-style meetings, individual meetings with landowners, and presentations to community groups.

Agency scoping letters were sent to agencies with regulatory authority and jurisdiction. Public and agency comments were taken throughout the Project development. Public involvement will continue after the National Environmental Policy Act phase of the Project to acquaint the community with final design, right-of-way, and construction details.

WHAT DOES THE PUBLIC HAVE TO SAY ABOUT THE PROJECT?

WYDOT hosted two public open house meetings. At the first scoping meeting, WYDOT presented general information about the need for the Project and preliminary alternatives. Attendees were asked to comment on the project purpose and need, preliminary alternatives, and issues of concern that should be evaluated in the environmental assessment. At the second public meeting, WYDOT presented the alternatives that were refined based on public comments received at the scoping meeting, the alternative evaluation criteria, and the alternatives carried forward for detailed analysis in the environmental assessment.

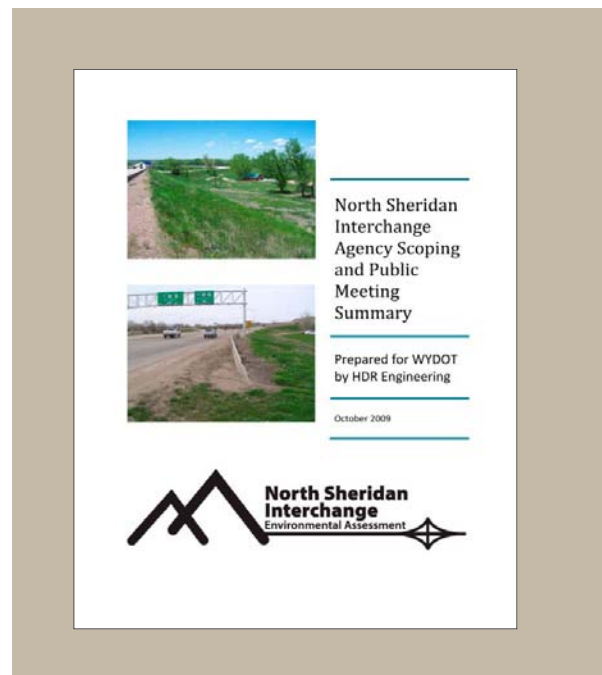
PUBLIC SCOPING MEETING #1

A public scoping meeting was held from 5 to 7 p.m. on August 12, 2009, at the Best Western Sheridan Center, in

Sheridan, Wyoming. Sixty-seven comments were received during the scoping period for the Project. The majority of the comments related to identifying a preferred alternative or Project direction.

Nearly 75 percent of the respondents commented that if the interchange were going to be rebuilt, it should be rebuilt at the existing location (Alternative 2). The No-Build Alternative (Alternative 1) was also identified by several respondents as preferred. Some respondents said that with minor safety improvements, the safety issues at the existing interchange could be addressed without building a new interchange. However, most indicated that if the interchange must be rebuilt that Alternative 2 was the only alternative that should be considered. Little support was raised for Alternatives 4, 5, and 6. Others noted that variations of a reconstruction alternative could be considered at the existing location, including a split interchange or different ramp configurations.

In addition to the identification of support for a particular alternative, respondents noted a variety of concerns and/or issues they felt should be addressed in this environmental assessment.



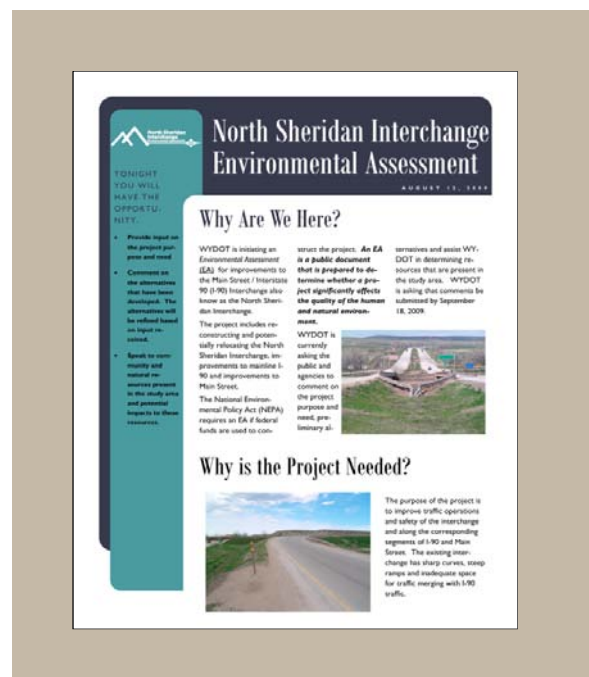
Summary of Public Scoping Meeting Comments

- Support for the North Main Initiative and the efforts of the North Main Neighborhood Association, including the North Main Area Master Plan
- Desire to maintain traffic flow on North Main Street for all businesses
- Need to study economic impact to the North Main Street businesses and property values, including visibility
- Desire to maintain the interchange as close as possible to the existing location and maintain visibility of the existing businesses
- Request to study visual, light, and noise impacts
- Desire/concern for commercial area north of the existing interchange with road improvements
- Request to consider to North Main Street area entryway
- Concern regarding the cost of build solutions
- Request to consider low-cost safety options rather than reconstruction
- Request that additional traffic analysis be completed
- Concern related to disruption of developable land with Alternatives 3, 4, and 5

PUBLIC INFORMATION MEETING #2

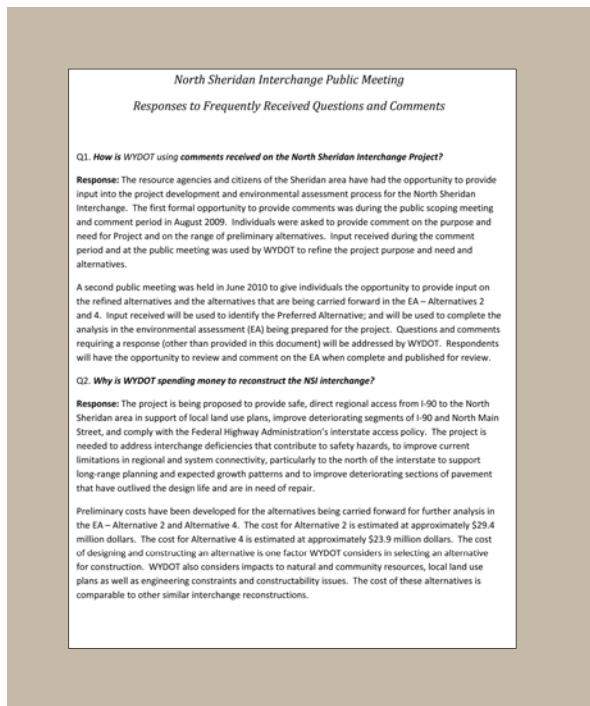
A second public information meeting was held from 5 to 7 p.m. on June 24, 2010, at the Sheridan Inn, in Sheridan, Wyoming. The purpose of the second meeting was to solicit input on the refined Alternatives. Alternatives 2 and 4 were refined based on input received at the first public meeting. Attendees were given the opportunity to review and comment on the evaluation criteria that were used to screen the refined Alternatives and the Alternatives being carried forward for detailed analysis in the environmental assessment. Alternatives 3 and 5 were not carried forward for further evaluation because they do not meet the project purpose and need.

A total of 67 comments were received between June 24, 2010 and September 24, 2010. The majority of the comments were in favor of refined Alternative 4. The next highest level of support was for refined Alternative 2, but an almost equal number of respondents were in favor of Alternative 1 (No-Build).



Respondents again stated the importance of a connection between the interchange and businesses along North Main Street, favored safety improvements to the existing interchange, or were in favor of moving the interchange farther north of Decker Road. Other people requested additional information, asked questions about the Project improvements or inquired about WYDOT's alternative selection process. There were concerns related to: safety, impacts to existing homes, economic impacts, lighting impacts, and a request for consideration of additional alternatives.

Public comments received were provided to the design team for use in alternative refinement and ultimately led to the identification of a Preferred Alternative.



Attendees provided comments directly to project staff, on comment forms, or via the WYDOT public comment email address.

OTHER MEETING/INFORMATION OPPORTUNITIES

WYDOT representatives met with potentially affected landowners/renters on June 24, 2010. Initial responses were mostly positive, but one landowner letter received subsequent to the meeting was contrary to earlier meeting responses.

In addition to the open house, WYDOT project representatives met with Downtown Sheridan Association and Chamber of Commerce representatives twice, September 13, 2010, and September 16, 2010, to answer questions about the Project.

In January 2011, WYDOT prepared a frequently-asked-questions handout that was posted on its website to answer the common questions about the Project and development process. WYDOT also mailed postcards to meeting attendees who provided mailing addresses.

On March 24, 2011, WYDOT met with representatives of the North Main Neighborhood Association to answer questions about the Project and project development process.

Between September and October 2011, WYDOT met with the Sheridan Baseball Academy, adjacent landowner, and City of Sheridan to discuss the planned Sheridan Baseball Academy Doubleday Park. Subsequent meetings were held to discuss minimizing impacts to this facility. Based on input received at these meetings, WYDOT modified Alternative 4 to avoid impacts to Doubleday Park, while also minimizing impacts to other resources.

WHAT DO THE AGENCIES HAVE TO SAY ABOUT THE PROJECT?

The following agencies with jurisdiction, special expertise with resources present, and land holdings in or near the project area were contacted in May 2009:

- United States Army Corps of Engineers (USACE)
- United States Fish and Wildlife Service (USFWS)
- Natural Resource Conservation Service (NRCS)
- United States Forest Service (USFS)
- Wyoming State Historic Preservation Office (SHPO)
- Wyoming Game and Fish Department (WGFD)
- Wyoming Department of Environmental Quality (DEQ)
- Office of State Lands and Investments
- Wyoming State Geological Survey
- Sheridan County
- City of Sheridan
- Native American Tribes

Responses were received from several of the agencies. United States Army Corps of Engineers responded informally that a full delineation of potential wetlands and other waters of the United States needs be completed. They requested that as alternatives are developed and evaluated, impacts to waters of the United States be evaluated and quantified for each alternative. They noted if an upland alternative could be identified during project development that the Section 404 review and permitting would be more easily facilitated.

United States Fish and Wildlife Service responded that there is potential for black-footed ferrets and Ute ladies'-tresses near the study area. United States Fish and Wildlife Service also responded with concerns regarding greater sage grouse, migratory birds, and potential loss or degradation of wetland/riparian habitat. They requested notification when the project decision is made for tracking purposes.

Natural Resource Conservation Service provided a soils map with units that are considered prime farmland when irrigated. These soils are present at the northwest portion of the study area. Natural Resource Conservation Service requested that conversion of these areas be carefully considered and avoided when possible during project development.

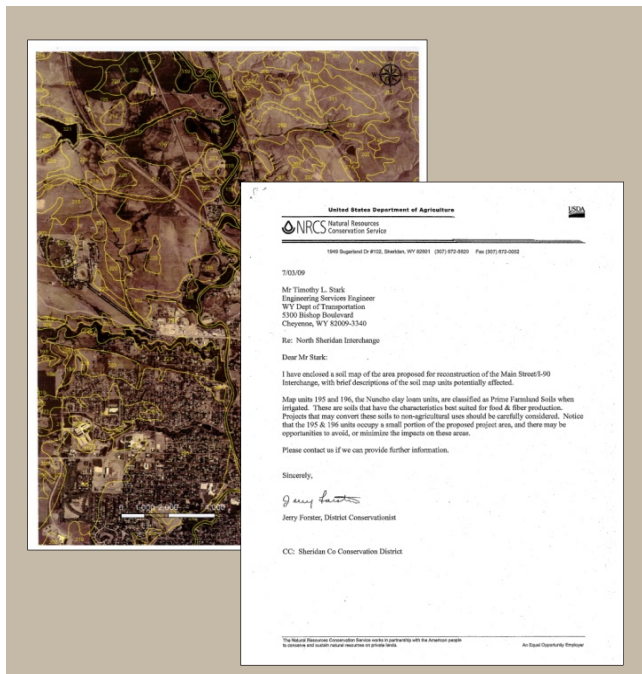
Wyoming Game and Fish Department responded that they do not have terrestrial wildlife concerns regarding the Project nor the biological surveys that WYDOT will conduct in conjunction with the Project. They requested to see detailed project plans, especially plans for bridge replacement or bank work so that they may comment on aquatic-specific impacts at that time.

The Sheridan County commissioners responded with information regarding several resources including: riparian areas, floodplains, trails, and recreation. The letter also noted the efforts of the North Main Neighborhood Association and requested that the planning efforts be considered in developing the environmental assessment.

The Northern Arapahoe Tribe responded that there were no comments on the historical archeological report prepared for the Project, but that the No-Build Alternative and Alternative 2 seemed to have the least impact on historic resources and the viewshed.

SHPO concurred with the findings in the cultural resource assessments and reports prepared for the Project and concurred with that there would be no adverse effect to historic properties with either Alternative 2 or Modified Alternative 4.

The United States Forest Service requested that pasture fencing be replaced following a minor conversion of its property.



No response was received from Wyoming Department of Environmental Quality, Wyoming State Geological Survey, or the Office of State Lands and Investments.

HOW HAS WYDOT WORKED WITH THE CITY OF SHERIDAN?

WYDOT met with the City of Sheridan prior to the first public scoping meeting on May 26, 2009, to discuss the Project and project development process. A core group was developed consisting of WYDOT, FHWA, and City representatives. The Core Group met on December 20, 2010, to discuss the project purpose and need and alternatives; on September 21, 2011, to discuss the environmental impacts analysis results; and on March 23, 2012, to discuss the Preferred Alternative. The City provided comments on materials discussed at these meetings. Responses to the City comments were provided following each of the meetings.

Beyond face-to-face meetings, the City submitted multiple letters regarding project issues and concerns. WYDOT addressed the comments through follow up written responses or telephone conversations, core group meetings, and additional analyses in the environmental assessment.

On June 29, 2009, the City provided input on the Project purpose and need, specifically including language about supporting local land use planning initiatives, identifying the efforts of the North Main Revitalization Initiative, addressing the need to look at and wanting to be involved in economic impact assessment of North Main businesses, and requesting that aesthetics of the interchange be considered during project development.

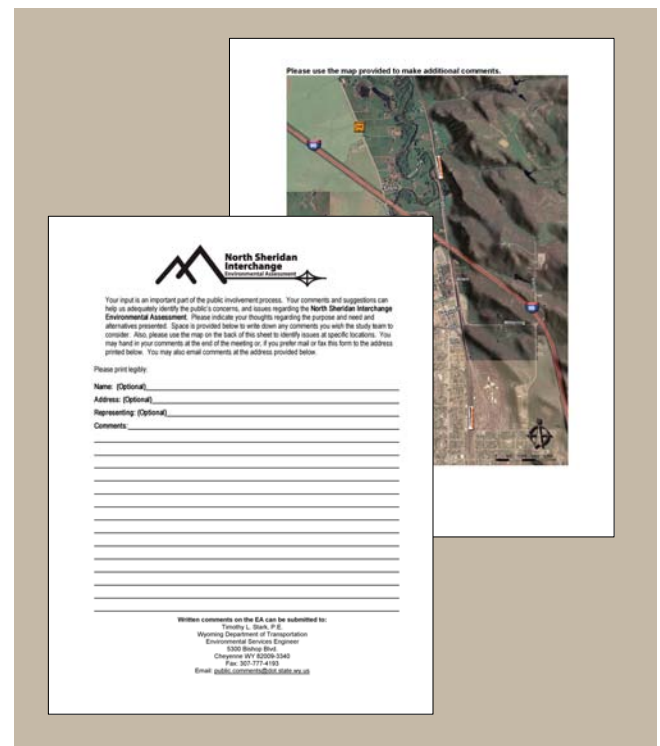
On May 29, 2010, the City requested a formal agreement from WYDOT on cooperating or participating in development of the Project and evaluating impacts. WYDOT responded by developing a formal Core Group.

On July 28, 2010, the City provided input on the public meeting materials and on the draft purpose and need technical memorandum. The City affirmed its cooperative role in assisting WYDOT with reviewing project development analysis and documents.

On November 15, 2010, the City provided a detailed planning analysis to supplement the analysis being completed by WYDOT. WYDOT responded with follow-up phone calls and discussions at the Core Group meeting.

ARE THERE ANY MORE OPPORTUNITIES FOR PUBLIC INPUT?

WYDOT will publish this environmental assessment for public and agency review. The announcement will be made through notice of availability, newspaper advertisements, and e-mails to those on the project contact list. A public meeting will also be announced and held for interested stakeholders to review, discuss, and comment on the environmental impacts, mitigation, and alternatives carried forward for study. After review of any comments received during the comment period, notice of availability, and as long as the comments do not identify substantial concerns with the Preferred Alternative, WYDOT expects to recommend to FHWA that the Preferred Alternative be selected. Because this environmental assessment has not identified significant impacts associated with the Preferred Alternative, WYDOT will complete a Finding of No Significant Impact (FONSI) for FHWA to sign, which will serve as the legal decision document selecting the Preferred Alternative to be advanced into design and construction.



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APPENDIX A

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