



US 2 Havre to Fort Belknap

Final Environmental Impact Statement and Section 4(f) Evaluation

US 2, Havre to Fort Belknap

September 2004

**PLH-TCSP 1-6(44)384
CN 4951**

Volume 1 of 2: Summary and Report



Montana Dept. of Transportation



U.S. Department of Transportation
Federal Highway Administration

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US 2, Havre to Fort Belknap, Hill and Blaine Counties, Montana**Project Number: PLH-TCSP 1-6(44)384****Control Number 4951****FINAL ENVIRONMENTAL IMPACT STATEMENT
AND SECTION 4(F) EVALUATION**

Submitted Pursuant to 42 USC 4332 (2), 23 USC 128 (a), 49 USC 303, Section 2-3-104 MCA, Section 75-1-101 MCA, and Executive Orders 11990, 11988, 12898, and 13112 by the

U.S. Department of Transportation, Federal Highway Administration

Montana Department of Transportation

And the following Cooperating Agencies

Montana Department of Environmental Quality

Montana Department of Natural Resources and Conservation

U.S. Fish and Wildlife Service

U.S. Army Corps of Engineers

U.S. Department of the Interior – Bureau of Indian Affairs

Fort Belknap Indian Community Council

09/30/04

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ABSTRACT: The proposed action is the reconstruction of a 72.2 km (44.9 mi) segment of US 2 from the end of the curb and gutter section east of Havre (RP 383.66) in Hill County to its junction with MT Highway 66 at the Fort Belknap Indian Reservation (RP 428.52) in Blaine County. The improvements are proposed to provide an efficient, safe highway that is attractive to the needs of local communities, agriculture, industry, commerce, and tourism. The facility will meet current design standards in order to reduce roadway deficiencies, increase safety, and improve traffic operations on the facility. The project will provide a wider shoulder, correct deficiencies in the clear zone and horizontal and vertical curves, add sidewalks/bike paths and turn lanes where applicable, and increase the offset between the railroad and highway in prioritized locations to improve safety. The project will also include up to 30 bridge replacements. Improved Two-lane, Improved Two-Lane with Passing Lanes (Preferred Alternative), Four-Lane Undivided, and Four-Lane Divided cross section alternatives were assessed, as well as a No-Build alternative. The Final Environmental Impact Statement (EIS) also addresses comments received on the Draft EIS and identifies mitigation for unavoidable impacts.

Comments on this final environmental impact statement are due by November 15, 2004 and should be sent to Mr. Karl Helvik at the address shown above or submitted at the following website: www.mdt.state.mt.us/environmental/eis-ea/.

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Final EIS

US 2 Havre to Fort Belknap EIS

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CONVERSION FACTORS

Conversion Factors	
Metric	English
1 meter	3.281 feet
1 meter ²	10.764 feet ² or 1.195 yard ²
1 kilometer	0.622 miles
1 hectare	2.471 acres
1 hectare = 10,000 meters ²	
1 kilogram	2.205 pounds
Metric	English
1 foot	0.305 meters
1 foot ²	0.092 meter ²
1 mile	1.609 kilometers
1 acre	0.45 hectares
1 acre = 43,560 feet ²	
1 pound	0.45 kg

LIST OF ACRONYMS AND ABBREVIATIONS

AADT	average annual daily traffic
AAP	average annual precipitation
AASHTO	American Association of State Highway and Transportation Officials
ac	acre
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
APE	Area of Potential Effects
AST	aboveground storage tank
BLM	US Bureau of Land Management
BMP	best management practice
BNSF	Burlington Northern Santa Fe
BR	bridge replacement
BRR	Biological Resources Report
C	candidate
CAC	Citizens Advisory Committee
CBC	concrete box culvert

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CEI	cost effectiveness index
CECRA	Comprehensive Environmental Cleanup and Responsibility Act
CFR	Code of Federal Regulations
CO	carbon monoxide
COE	US Army Corps of Engineers
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EO	Executive Order
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FAC	facultative species
FACU	facultative upland species
FACW	facultative wetlands species
FE	federally endangered
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	flood insurance rate maps
ft	foot
FT	federally threatened
G	Global
GDP	Gross Domestic Product
GIS	geographic information systems
GWIC	Ground Water Information Center
ha	hectare
HERS	Highway Economic Requirement System
HU	hydrologic unit
HUC	hydrologic unit code

ID	identification
ISA	initial site assessment
Km/h	kilometer per hour
Leq(h)	dBA equivalent noise level
LMU	land management units
LOMR	letter of map revision
LOS	level of service
LU	land use
LUST	leaking underground storage tank
m	meter
m ²	square meters
MBMG	Montana Bureau of Mines and Geology
MBTA	Migratory Bird Treaty Act
MDEQ	Montana Department of Environmental Quality
MDT	Montana Department of Transportation
MEPA	Montana Environmental Policy Act
MFWP	Montana Fish, Wildlife and Parks
mi	miles
MPDES	Montana Pollutant Discharge Elimination System
mph	miles per hour
MPO	metropolitan planning organization
MT	Montana
MTNHP	Montana Natural Heritage Program
MWQA	Montana Water Quality Act
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NHS	National Highway System
NI	no indicator

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NRCS	U.S Department of Agriculture – Natural Resources Conservation Service
NRHP	National Register of Historic Places
OBL	obligate species
PA	Programmatic Agreement
PL	Public Law
PT	proposed threatened
PWS	public water supply
RP	reference post
RR	railroad
RV	recreational vehicle
S	State (for State-listed Threatened and Endangered Species)
SEIP	Statewide Engineering Improvement Program
SPA	Stream Protection Act
STIP	Statewide Transportation Improvement Program
SWPPP	Stormwater Pollution Prevention Plan
TDM	Transportation Demand Management
TESC	temporary erosion and stormwater control
TMDL	total maximum daily load
TNM	Traffic Noise Model
TSM	transportation system management
UPI	Upland plants
USC	US Code
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
UST	underground storage tank
VMT	vehicle miles traveled

Summary

Introduction

The Montana Department of Transportation (MDT), in cooperation with the Federal Highway Administration (FHWA), has prepared this Final Environmental Impact Statement (EIS) to assess the environmental impacts related to undertaking transportation improvements for a segment of the US Highway 2 corridor between Havre and Fort Belknap in Montana. This EIS has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), the Montana Environmental Policy Act (MEPA), the Council on Environmental Quality NEPA implementing regulations (40 CFR 1500-1508), and FHWA NEPA implementing regulations (23 CFR 771).

This EIS is intended to provide the public and decision-making agencies with relevant information needed to determine the impacts of the proposed alternatives. This Final EIS is reviewed by state and federal agencies, elected officials, and the general public. After review of comments on the Final EIS, FHWA will issue a Record of Decision (ROD) documenting the final action to be taken for proposed improvements. The project will then be eligible for future federal and state funding and construction.

The Final EIS is organized into two volumes. Volume 1 contains the Summary, Chapters 1 through 10, which make up the body of the report, and the Index. Volume 2 is made up of Appendices A through K, including the Section 4(f) Evaluation and comments on the Draft EIS. The Project Purpose and Need, which includes a description of the need for and purpose of the proposed project, is presented in Chapter 1. Chapter 2 describes proposed alternatives, including the No-Build Alternative, for addressing the purpose of and need for the project. Chapter 3 details the Affected Environment, and Chapter 4 describes the Environmental Consequences associated with the project alternatives. Chapter 5 identifies the Permits required for project implementation. Chapters 6 through 10 present the List of Preparers, Distribution List, Comments and Coordination, List of Sources/Documents, and Glossary, respectively.

Description of Proposed Project

The project limits on US 2 extend from the eastern curb and gutter limits of Havre at reference post (RP) 383.66 to the junction of US 2 with Montana (MT) Highway 66 at RP 428.52 for a total distance of 72.2 km (44.9 mi). The project is referred to as US 2, Havre to Fort Belknap, PLH-TCSP 1-6(44)384, CN 4951.

The project is located in Hill and Blaine Counties, in the Milk River valley in north central Montana. US 2 is the northernmost U.S. highway across the continental United States, paralleling the Burlington Northern Santa Fe (BNSF) Railway Hi-Line route for much of its

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alignment; the rail and highway corridor is thus commonly referred to as the “Hi-Line.” The existing highway is located immediately south of the Railway for the majority of the project length, from Havre to Harlem.

MDT and FHWA initiated this EIS to evaluate a proposed action responding to a bill passed by the Montana State Legislature in 2001. Montana 2001 Senate Bill 3, sponsored by District 48 Senator Sam Kitzenberg, calls for the state to construct a four-lane highway from border to border in Montana, “generally along the present route of U.S. Highway 2... in order to increase tourism and bring economic development to Montana.” The bill directs that (1) MDT seek additional federal funding for the project without the requirement of a state funding match and (2) no funds be expended for the project that would jeopardize future highway projects. Please refer to Section 3.2.1, Montana 2001 Senate Bill 3 and State Plans, for additional information about the bill. This EIS evaluates four-lane alternatives and other alternatives to address the need for transportation improvements on US 2 between Havre and Fort Belknap.

Purpose and Need

The purpose of the proposed US 2 improvement project from Havre to Fort Belknap is to replace the aging US 2 facility with an efficient and safe highway that would be attractive to the needs of local communities, agriculture, industry, commerce and tourism. The project would fit the physical setting of the area in order to preserve and enhance the area’s scenic, cultural, historic, environmental, and commercial resources.

This project will provide highway improvements to US 2 to address the following needs:

- Provide an efficient highway to support economic vitality;
- Reduce roadway deficiencies;
- Improve safety; and
- Improve traffic operations.

Proposed improvements will improve the highway to current MDT design standards and will support the economic viability of the project area. This existing segment of US 2 has substandard shoulders, inadequate clear zone, steep side slopes, and inadequate distances between the highway and railroad crossings. The standard shoulder width for a Non-Interstate National Highway System (NHS) highway is typically 2.4 m (8 ft) with an adequate area for recovery should a vehicle leave the roadway. The existing roadway has a substandard shoulder width of 0.6 m (2 ft) for 89 percent of the eastbound and 88 percent of the westbound travel lanes. Steep side slopes exacerbate this deficiency, as there are few safe places for vehicles to pull over. The clear zone, discussed in more detail in Section 1.5.2, does not meet American Association of State and Highway Transportation Officials (AASHTO) design guidelines along 33 percent of the eastbound and 29 percent of the westbound travel lanes. A wider shoulder, in combination with an improved clear zone and

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recovery area, can improve safety for errant vehicles, emergency vehicles, wide loads and agricultural equipment, delivery vehicles, buses, and highway patrol cars stopping vehicles. US 2 is also a popular bicycle-touring route in the summer, and the shoulders are too narrow to comfortably accommodate bicyclists and passing vehicles.

The distance between the highway and the BNSF Railway tracks is inadequate at some intersecting roads for large trucks to stop between US 2 and the tracks. The desirable distance for this offset is 46 m (150 ft) from the shoulder of the highway to the nearest railroad track. The average offset for this segment of US 2 is 37 m (123 ft), with approximately 18 m (60 ft) as the minimum.

In addition to these safety issues, there are a number of vertical and horizontal curves that are substandard as well as 29 bridges that are narrow (less than 12 m (40 ft) in width). Transportation improvements in the corridor would address these safety issues.

Existing operational conditions along with roadway deficiencies and safety conditions can result in inefficient traffic operations. US 2 is the only continuous east-west roadway in the area, and therefore, it carries a high percentage of local traffic as well as regional traffic, and conflicts occur among the users traveling at different speeds. In addition, there are no auxiliary lanes for turning or acceleration/deceleration at intersections in the corridor, with the exception of Fort Belknap. Improving the roadway to MDT standards and adding turning or auxiliary lanes would improve traffic operations.

Alternatives

A range of alternatives for highway improvements was developed through public input, coordination with various agencies, and environmental and engineering analysis. These initial alternatives were then evaluated against criteria relating to the purpose and need for the project. The alternatives that best meet the project purpose and need were carried forward for detailed evaluation and are presented here. These alternatives include an Improved Two-Lane Alternative, an Improved Two-Lane with Passing Lanes Alternative, a Four-Lane Undivided Alternative, and a Four-Lane Divided Alternative. In addition to these build alternatives, the No-Build Alternative was carried forward for comparison as required by NEPA, even though it does not meet the project purpose and need.

The four build alternatives would fulfill the purpose of and need for the project and would follow the same alignment through the project area. The build alternatives would shift the roadway alignment to the south by up to 25 m (80 ft) in prioritized locations to provide a safer distance between the railroad and US 2 at railroad crossings with higher levels of safety and operational issues. The highway would remain close to its existing alignment in other locations to minimize impacts.

Context-sensitive design concepts would be incorporated into the final design of the preferred alternative. Common design treatments for elements such as landscape and entry

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features in communities, pedestrian crossings, and signage along US 2 would enhance corridor identity through consistency and would simplify information interpretation for highway users. Bicycle or multi-use paths would be provided east of Havre, west of Chinook, and between Harlem and Fort Belknap for all of the build alternatives.

Preferred Alternative

The preferred alternative is the Improved Two-Lane with Passing Lanes Alternative. In rural segments of the project corridor, this preferred alternative would provide an improved two-lane highway with 2.4 m (8 ft) shoulders and intermittent passing lanes. Within communities, the preferred alternative is refined to address specific localized needs such as turn lanes or acceleration/deceleration lanes. In Chinook, this includes a center turn lane to accommodate the turning movements onto and off of the highway at the multiple cross streets. (See below for a detailed description of the alternative.) This alternative provides efficiency for the traveling public that is comparable to the four-lane alternatives. It will also provide a new, greatly improved and safer highway facility to serve the local communities, agriculture, industry, commerce and tourism, while incurring fewer environmental impacts than the four-lane alternatives. Funding for the Improved Two-Lane with Passing Lanes Alternative could be obtained through MDT's regular funding prioritization process. Therefore, there is reasonable certainty that funding for this alternative will be available. In addition, the Improved Two-Lane with Passing Lanes Alternative complies with MCA 60-2-133 (Montana 2001 Senate Bill 3) if the required funding is not available for implementation of a four-lane. However, the selection of the Improved Two-Lane with Passing Lanes Alternative as the preferred alternative would be justified based on other factors analyzed in the development of the EIS regardless of the funding issues.

In the Draft EIS (June 2004), FHWA's preferred alternative was identified as the Improved Two-Lane with Passing Lanes based on the reasons described above. MDT's preferred alternative in the Draft EIS (June 2004) was identified as either the Four-Lane Divided Alternative or the Four-Lane Undivided Alternative because a four-lane facility on US 2 was directed by Montana 2001 Senate Bill 3 which has been codified in the Montana Code Annotated (MCA) 60-2-133. (Refer to Section 3.2.1, Montana 2001 Senate Bill 3 and State Plans, for the full text of MCA 60-2-133.)

MDT and FHWA reviewed all public and agency comments received on the Draft EIS. (Refer to Appendix K for a copy of all comments.) Several agencies with permitting or regulatory approval for the project, including U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, and the Montana State Historic Preservation Office, indicated their preference of a two-lane alternative over a four-lane alternative because a two-lane alternative minimizes impacts. After reviewing all public and agency comments and the impact evaluation of the alternatives, MDT and FHWA selected the Improved Two-Lane with Passing Lanes as the preferred alternative for the Final EIS because this alternative provides efficiency for the traveling public that is comparable to the four-lane alternatives. It will also provide a new, greatly improved and safer highway

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facility to serve the local communities, agriculture, industry, commerce and tourism, while incurring fewer environmental impacts than the four-lane alternatives.

A general description of the no-build and build alternatives, including the preferred alternative, follows.

No-Build Alternative

This alternative would provide no improvements to US 2 from Havre to Fort Belknap. Projects that were previously planned for this corridor, which included reconstruction and resurfacing of the existing two-lane highway, have been designated as inactive pending the outcome of this EIS and would not be included in the No-Build Alternative. This alternative does not meet the purpose of and need for the project. It does not meet MDT design standards and would therefore not reduce roadway deficiencies. It would not improve safety for roadway users, and it would not improve traffic operations in the corridor. This alternative is fully evaluated in the EIS as required by NEPA and is used as a baseline for comparison with the build alternatives, presented below.

Improved Two-Lane Alternative

This alternative would provide an improved two-lane highway in rural segments of the project corridor. Shoulders would be widened from the existing condition, and the clear zone to each side of the highway would be wider and flatter to improve safety and meet current design standards. The typical section would consist of MDT's standard minimum width for a rural Non-Interstate NHS highway: 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders for a total paved roadway width of 12 m (40 ft). Left-turn lanes would be added at some intersections in the corridor, as warranted by traffic volumes or railroad crossing conditions, and would increase the typical section to 15.6 m (52 ft) at these locations.

The typical roadway section would differ within the communities to accommodate local traffic operations and minimize environmental and social impacts. For example, east of Havre, a center two-way left-turn lane or series of left-turn lanes would extend approximately 2.4 km (1.5 mi) east from the western project limits to provide turn lanes for the multiple accesses in this area. In Chinook, the highway would remain within the existing curb lines and would accommodate two travel lanes, two shoulder/parking lanes in designated areas, and would provide improvements, including turn lanes, at the intersection with Indiana Street. Through Harlem, this alternative would provide left and right-turn lanes for the multiple roads and business accesses in the area. In Fort Belknap, the highway would remain similar to the existing condition, with two travel lanes and acceleration and deceleration lanes. Additional auxiliary lanes would be added through Fort Belknap to provide better traffic operations at the multiple intersections in the area.

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Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

In rural segments of the project corridor, this alternative would provide an improved two-lane highway with the same typical section described above for the Improved Two-Lane Alternative. This alternative would also provide a system of intermittent 3.6 m (12 ft) passing lanes in rural portions of the project corridor, increasing the typical section to 15.6 m (52 ft) in these locations. This system of passing lanes would provide an additional margin of safety and operational efficiency over the Improved Two-Lane Alternative. The intermittent passing lanes, spaced 8 to 13 km (5 to 8 mi) apart, would clear traffic around slower vehicles upon exiting communities and in dispersed locations in the corridor. The passing opportunities provided by this alternative would be safer and more consistent than those in the Improved Two-Lane Alternative because there would be a full passing lane for the maneuver without the risk of encountering opposing traffic. Left-turn lanes would be added in some locations in the corridor.

In the communities of Havre, Harlem, and Fort Belknap, the typical roadway section would be similar to that described in the Improved Two-Lane Alternative. In Chinook, the highway would remain within the existing curb lines, but would provide a center two-way left-turn lane through the community and one shoulder/parking lane in designated areas.

Four-Lane Undivided Alternative

In rural portions of the corridor, this alternative would provide an undivided four-lane highway. The typical section proposed for this alternative would consist of four 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders for a total paved width of 19.2 m (64 ft). There would be no median dividing opposing travel lanes. Left-turn lanes would be added at some intersections in the corridor, as warranted by traffic volumes or railroad crossing conditions, and would increase the typical section to 22.8 m (76 ft) at these locations.

East of Havre, a four-lane highway with a center two-way left-turn lane or series of left-turn lanes would extend approximately 2.4 km (1.5 mi) east from the western project limits. In Chinook, the highway would be widened from its existing footprint and would consist of four travel lanes and two shoulder/parking lanes in designated areas. Through Harlem, this alternative would provide left and right-turn lanes for the multiple roads and business accesses in the area, in addition to the four travel lanes proposed along US 2. In Fort Belknap, the highway section would transition from the improved four-lane to the existing two-lane section east of MT Highway 66 by converting travel lanes into auxiliary or turn lanes.

Four-Lane Divided Alternative

This alternative would provide a divided four-lane highway in rural portions of the project corridor. The typical section would consist of four 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders, divided by an 8.4 m (28 ft) landscaped median with 1.2 m (4 ft) inside shoulders, for a total paved width of 30.2 m (100 ft). This highway section would provide improved

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safety in comparison to the four-lane undivided section, but would create greater physical impacts because of its wider typical section.

In Havre, the typical roadway section would be similar to that described in the Four-Lane Undivided Alternative. In Chinook, the highway would be widened from its existing footprint and would consist of four travel lanes, a center two-way left-turn lane, and two shoulder/parking lanes in designated areas. In addition, the entire roadway would be shifted south through Chinook by approximately 23 m (75 ft) to provide increased distance from the railroad at the Indiana Street intersection. In Harlem, the highway section would consist of four travel lanes and a center two-way left-turn lane or series of left-turn lanes. In Fort Belknap, the highway section would transition from the improved four-lane to the existing two-lane section east of MT Highway 66 by converting travel lanes into auxiliary or turn lanes.

Major Environmental Impacts

Major beneficial or adverse impacts resulting from the project alternatives generally relate to safety and traffic operations, community impacts, right-of-way requirements, costs and funding, benefit-cost analysis, cultural resources, wetlands, floodplains, and hazardous materials sites. These impacts are detailed on the following pages for the build alternatives. The No-Build Alternative for these topic areas, except where noted, would have no impact. Impacts to other resources would be negligible and similar among the build alternatives. Table S-1 presents a matrix of impacts by alternative for every transportation, social, economic, and environmental resource area analyzed in this EIS. All impacts are based on the current conceptual level of design. The identification of these impacts provides a basis for comparison among alternatives and may be refined during final design.

Safety and Traffic Operations

Each of the build alternatives would improve traffic operations and safety in comparison to the No-Build Alternative. The Four-Lane Divided Alternative would provide slightly greater safety benefits compared to the other build alternatives because of the lateral separation between vehicles traveling in opposite directions and the second travel lane in each direction, which would increase safety during passing maneuvers.

Each of the build alternatives would improve safety with wider shoulders and improved clear zone. The wider shoulder would also increase safety for long-distance bicyclists traveling through the corridor. Each build alternative would provide increased distance between the railroad and the highway to improve safety at prioritized railroad crossings. The Four-Lane Divided Alternative would also provide increased distance between the railroad and highway at the high priority railroad crossing at Indiana Street in Chinook. The other build alternatives would not provide an increased offset at that location but would provide turn lanes at that intersection, thus improving safety somewhat by providing storage space for vehicles turning from US 2. However, the substandard storage distance for vehicles crossing the railroad and

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turning onto US 2 at Indiana Street would not be improved because the westbound travel lane would remain in its existing location.

At the overall corridor level, all alternatives would operate at an acceptable level of service (LOS A or B). To improve safety and traffic operations at specific locations, some driveway access consolidation and relocation could occur in all build alternatives. In addition, in the Four-Lane Divided Alternative, the median would limit access breaks to 0.8 km (0.5 mi) in rural areas, which may cause some out-of-direction travel.

Community Impacts

The study area encompasses two counties: Hill and Blaine Counties. The four largest communities within the study area are, from west to east, Havre (population 9,261), Chinook (population 1,386), Harlem (population 848), and the Fort Belknap Agency (population 1,262); two smaller communities, Lohman and Zurich, are also within the study area. Outside of these communities, the study area population resides in scattered farmhouses throughout the corridor. Although physically separated by many miles, many residents of the area view the project area as one collective community. US 2 serves as the only link between Havre, Lohman, Chinook, Zurich, Harlem, and Fort Belknap, and the highway supports the daily movement of study area residents to do shopping, reach services, or commute to jobs.

The communities of Fort Belknap and Harlem have a substantially higher percentage of minorities (Native Americans) than the state. In addition, the entire project area is low-income in relation to the rest of the state of Montana. Within the corridor, Fort Belknap and Harlem have higher percentages of people living in poverty. One neighborhood east of Havre has been identified as low-income.

Impacts Common to All Communities. All of the corridor communities would experience some positive effects from implementation of any of the build alternatives through improved community transitions, improved accesses to businesses, strengthened connections between communities, improved community identity through entry features and improved signage, improved pedestrian and bicycle movements within communities, and improved awareness for passing motorists of cultural attractions in these areas. Wider shoulders and an improved clear zone would improve traffic operations and safety for residents, travelers, police, fire protection, and emergency ambulance services.

An economic study conducted for this project (ICF Consulting, 2003b) concluded that capacity improvements to US 2 are unlikely to induce development. The study also concluded that safety and operational improvements could help sustain the region's economy and ensure the potential for future growth. None of the project alternatives are likely to create substantial growth in the major sectors of the corridor economy since growth is dependent on a variety of factors other than the current condition of US 2. These factors include distance to markets, lack of capital and market demand constraints.

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Havre. In addition to the general benefits described for all communities, under all build alternatives a pedestrian/bicycle path would be constructed between Havre and the residential areas just east of Havre, extending from the Havre city limits east to 38th Avenue. This path would create the opportunity for non-motorized travel along this segment of the corridor and would connect the eastern residential areas, which have been identified as low-income, to downtown Havre.

The roadway section would not change dramatically immediately east of Havre as multiple lanes already exist in this area. All of the alternatives, both two- and four-lane, would provide better transitions from the existing four-lane highway in Havre to the rural highway to the east. Businesses and residences in the developed area east of Havre could benefit from better access. Property impacts from roadway improvements would be minimal for all alternatives, and no residential or business structures would be within the proposed construction limits in this area.

Chinook. As a community, Chinook is low-income in comparison with the state and nation but average within the corridor. Chinook would experience the positive impacts common to all communities. There would be no residential relocations under any build alternative. However, because of constraints of the roadway and railroad through town, construction would impact more businesses in and near Chinook than in other communities in the corridor. Additionally, the visual landscape and land uses in Chinook would be changed under both four-lane alternatives.

The two-lane alternatives (including the preferred alternative) would generally remain within the existing roadway within the Chinook urban limits. Both two-lane alternatives would remove on-street parking on the north side of US 2 between Indiana and Illinois Streets, as a result of the westbound right-turn lane onto Indiana Street. The Improved Two-Lane with Passing Lanes Alternative (preferred alternative) would also remove on-street parking on the north side of US 2 west of Indiana Street and east of Illinois Street, in order to accommodate the center turn lane through town. No businesses would be adversely impacted by construction under either alternative; therefore, no property tax revenue would be lost in Chinook from business displacement. However, three businesses near Chinook would be within the construction limits. These businesses depend on proximity to US 2 for their viability, and because there are limited sites within and near Chinook for relocation along US 2, these businesses may have difficulty relocating in this area. Additionally, widespread contamination in properties along US 2 in Chinook decreases property values and would be encountered by any business trying to relocate to another property on US 2 in Chinook. If these three businesses did not relocate, 10 jobs and three businesses serving the local community would be lost.

Under the Four-Lane Undivided Alternative, the highway would expand beyond the existing south curb line to accommodate the extra lanes with some parking. The loss of structures in Chinook (described below) would change the built environment, resulting in the loss of community streetscape and community visual identity. These negative impacts may be offset by some positive visual impacts resulting from pedestrian improvements and landscape

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treatments along the highway west of Montana Street and east of Illinois Street to identify the urban limits of town.

Eight operating businesses in Chinook employing over 45 persons would be within the construction limits for the Four-Lane Undivided Alternative. Nearly all of the impacted businesses depend on proximity to the highway for their viability, including two vehicle repair and service businesses, two vehicle sales and service businesses, two vehicle retailers, and two businesses selling fuel. These displaced businesses would need to relocate to a site adjacent to the highway to maintain viability. Four of the impacted businesses may be able to relocate on their current parcels. The remaining four businesses may need to relocate to another parcel. This would be difficult due to the limited frontage along US 2 in Chinook and the widespread contamination discussed above. Some business owners have indicated that they may elect to cease operation if faced with the prospect of relocation.

In total, 17 jobs would be lost if these four businesses did not relocate. A number of auto sales and repair services would be eliminated in Chinook, placing additional demand on other sales and repair services in town. If the remaining services were not adequate for the demand, residents of Chinook and nearby communities would need to travel farther to obtain these services in Havre or Harlem. This alternative would cause a loss in property tax revenues for Chinook of approximately \$10,000 annually, or 1.5 percent of the city's total property tax revenue, if businesses were unable or chose not to relocate. If displaced businesses were able to relocate to currently vacant or underutilized parcels, the resulting property tax revenue would partially offset these losses.

Under the Four-Lane Divided Alternative, existing community streetscape and visual identity would be virtually lost through town as most of the defining structures would be removed to accommodate the wider roadway and the railroad offset. A landscaped area with trees and lawn on both sides of the highway in Chinook would replace the existing built environment. These landscape treatments would provide a buffer between the highway and the new land use to the south and would visually minimize the impacts of the loss of acquired or relocated businesses immediately south of the highway.

For the Four-Lane Divided Alternative, the impacts in Chinook would be extensive with regard to jobs, availability of services, and land use/community cohesion if the businesses in Chinook did not or could not relocate. Under this alternative, 14 operating businesses employing nearly 115 persons would be impacted by the proposed construction limits. Two-thirds of these businesses, including two vehicle repair and service businesses, two vehicle sales and repair businesses, two vehicle retailers, three fuel stations, and one hotel, rely on proximity to US 2 and would need to relocate to a site adjacent to the highway to maintain viability. Two of these businesses may be able to relocate on their current parcels. The remaining twelve businesses may need to relocate to another parcel. This would be difficult for those businesses that are highway-dependent, due to the limited frontage along US 2 in Chinook and the widespread contamination discussed above. Some business owners have indicated that they may elect to cease operation if faced with the prospect of relocation.

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In total, 97 jobs would be lost if these 12 businesses did not relocate. Nearly all vehicle repair shops and fuel stations in town could be lost, and business owners report that the auto repair services are already overloaded. While Havre could likely absorb the additional demand, residents of Chinook and nearby communities would have to commute much longer distances for these services. The loss of jobs and increased distance to services and employment may be of greater concern for low-income residents in Chinook. This alternative would cause a loss in property tax revenues for Chinook of approximately \$25,000 annually if businesses were unable or chose not to relocate. If displaced businesses were able to relocate to currently vacant or underutilized parcels, the resulting property tax revenue would partially offset these losses.

Harlem. Harlem has a substantially higher percentage of minorities (Native Americans) than the state. The entire project area is low-income in relation to the rest of the state; in relation to the project corridor, Harlem has a higher percentage of people living in poverty. In addition to the general benefits described for all communities, under all build alternatives a pedestrian/bicycle path would be constructed between Harlem and Fort Belknap, extending from Main Street in Havre to First Street in Fort Belknap. This path would create the opportunity for non-motorized travel along this segment of the corridor and would improve connections between Harlem and Fort Belknap.

Turn lanes and acceleration/deceleration lanes would be improved, creating the potential for better access to the highway and to businesses adjacent to US 2. No businesses would likely be relocated or acquired as a result of the proposed improvements in Harlem. Harlem residents working in or patronizing businesses in Chinook could be affected by the loss of jobs and services in Chinook, however, and may need to drive farther to obtain those services or to commute to jobs.

Fort Belknap. Fort Belknap has a substantially higher percentage of minorities (Native Americans) than the state. The entire project area is low-income in relation to the rest of the state; in relation to the project corridor, Fort Belknap has a higher percentage of people living in poverty. In addition to the general benefits described for all communities, under all build alternatives a pedestrian/bicycle path would be constructed on an easement adjacent to US 2 between Harlem and Fort Belknap, extending from Main Street in Havre to First Street in Fort Belknap. This path would create the opportunity for non-motorized travel along this segment of the corridor and would improve connections between Harlem and Fort Belknap.

Turn lanes and acceleration/deceleration lanes would be improved, creating the potential for better access to the highway and to businesses adjacent to US 2. There would be no right-of-way acquisition on tribal land and no residential or business relocations. Fort Belknap residents working in or patronizing businesses in Chinook could be affected by the loss of jobs and services in Chinook, however, and may need to drive farther to obtain those services or to commute to jobs.

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None of the natural or cultural resources on the Reservation would be affected by the implementation of any of the build alternatives. Easier highway access and improved signage could benefit public exposure to tribal cultural resources.

Other Areas. The highway would shift to the south through Lohman under all build alternatives to provide increased distance between the railroad and the highway at the railroad crossing in Lohman. No occupied residences or operating businesses would be impacted by construction in Lohman under either of the two-lane alternatives or the Four-Lane Undivided Alternative. Under the Four-Lane Divided Alternative, one occupied residence would fall within the construction limits; no operating businesses would be within the proposed construction limits.

The community of Zurich lies north of the railroad. Any impacts from the build alternatives would be minor and would be limited to those residents immediately adjacent to US 2, south of the community itself.

Residential relocations are dispersed throughout the corridor in rural areas under all alternatives. Under both two-lane alternatives (including the preferred alternative), no occupied residences would likely be impacted by the project construction limits. Under the Four-Lane Undivided Alternative, one occupied residence would fall within the construction limits and would need to be relocated. Under the Four-Lane Divided Alternative, four occupied residences would be impacted by construction and would need to be relocated. There is available housing stock within the corridor to accommodate residential relocations, and relocations would be implemented in compliance with equity requirements of federal and state relocation procedures.

Right-of-Way

Land that would be required for right-of-way acquisition does not vary substantially among either of the two-lane or the Four-Lane Undivided alternatives. While the total paved surface varies among these three alternatives (between 12 m (40 ft) and 19.2 m (64 ft)), the majority of additional right-of-way needed is for improved clear zones. Additional right-of-way requirements vary from 104 ha (258 ac) to 136 ha (337 ac) among these three alternatives. The Four-Lane Divided Alternative would require substantially greater additional right-of-way than the other alternatives: 179 ha (443 ac).

MCA 60-2-133 (Montana 2001 Senate Bill 3)

MCA 60-2-133 directs MDT to construct a four-lane facility along US 2. The two-lane alternatives (including the preferred alternative) comply with this law if MDT is unable to obtain additional federal funding for a four-lane alternative that does not require a state funding match. Both four-lane alternatives comply with the law if MDT is successful in obtaining additional federal funding that does not require a state funding match needed for the additional costs to build the added two lanes and the effort does not jeopardize other highway projects.

Costs and Funding

At this time there are no committed funds for projects within the limits of the Havre to Fort Belknap project. Funding for any two-lane alternatives (including the preferred alternative) would be scheduled through MDT's standard allocation process and could come from a variety of sources, including state and federal funds. The extent of available funding for construction in years 2008 and beyond will not be known until November 2004 when the MDT prepares its Tentative Construction Program (TCP) for the timeframe of 2005 through 2009. Per the requirements of MCA 60-2-133 (Montana 2001 Senate Bill 3), funding for the four-lane alternatives must be federal funds that do not require matching state funds. Additionally, no funds are to be expended on a four-lane alternative that would jeopardize funding of future highway projects.

Because most federal highway funding requires a state match, typically 87 percent federal funding with about 13 percent state funding in Montana, a special appropriation from Congress (that would require no state match) would be needed to fund a four-lane project on US 2. Funding with no requirement for state match, that would not jeopardize funding for other state highway projects, would require Congressional action or a non-highway program funding source. In addition, the specific timing of availability for this type of funding is highly uncertain.

The estimated cost for the Improved Two-Lane Alternative, including design, right-of-way, construction, and other costs, is \$69.7 million. Since the 12 m (40 ft) Improved Two-Lane Alternative is MDT's design standard for this type of highway facility, funding for this alternative could be obtained through MDT's regular funding prioritization process. The overall corridor project would be built in phases (i.e. several smaller projects), with funding priorities for these projects established through consideration of the National Highway System needs within the Great Falls District. There is reasonable certainty that funding for this alternative would become available to complete all phases of the project at the two-lane standard.

The estimated cost for the Improved Two-Lane with Passing Lanes Alternative (preferred alternative) is \$73.4 million, or 5 percent more than the Improved Two-Lane Alternative. As described under the Improved Two-Lane Alternative, the additional funding could come from a variety of sources, and the project could be built in phases if additional funds are not received immediately.

The estimated cost for the Four-Lane Undivided Alternative, including design, right-of-way, construction, and other costs is \$94.5 million, or 35 percent more than the Improved Two-Lane Alternative. Because this alternative proposes four travel lanes along US 2, the additional funding needed to construct the four-lane, or \$24.8 million, would be limited to 100 percent federal funding only, as stipulated in MCA 60-2-133. Acquisition of additional funding for the Four-Lane Undivided Alternative is uncertain, and an overall four-lane standard for the project could not be built without reasonable confidence that the unique type of funding needed to complete the overall project would be secured for all final phases.

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Design and construction of this alternative would not occur until all funding for the project is acquired. Therefore, this alternative has a greater possibility of being delayed than either of the two-lane alternatives.

The estimated cost for the Four-Lane Divided Alternative is \$106.8 million or 52 percent more than the Improved Two-Lane Alternative. Similar to the Four-Lane Undivided Alternative, the additional funding of \$37.1 million would have to be federal funding that does not require state matching funds, and the additional funding cannot jeopardize funding of other highway projects in the state. Because acquisition of additional funding is uncertain, and the alternative could not be built without reasonable confidence of securing this funding, this alternative has a greater possibility of being delayed than either of the two-lane alternatives.

Benefit-Cost Analysis

A benefit-cost analysis was conducted for each alternative. The analysis estimated a dollar value for benefits to users of US 2 under each alternative and compared this value to the project cost for each alternative. The benefit-cost ratio for the No-Build Alternative is zero. The build alternatives each have negative net benefits, with the project costs exceeding the user benefits for each alternative.

Because the build alternatives all have negative net benefits, the No-Build at zero would have the highest net benefit of all alternatives. The Improved Two-Lane Alternative has the least negative net benefit of the build alternatives, with costs exceeding benefits by a ratio of approximately 1.9 to 1. Costs would exceed benefits by a ratio of approximately 2.0 to 1 for the Improved Two-Lane with Passing Lanes (preferred alternative) and approximately 2.9 to 1 for the Four-Lane Undivided. The Four-Lane Divided Alternative has the worst benefit-cost ratio of the build alternatives, with costs exceeding benefits by a ratio of approximately 3.1 to 1.

Cultural Resources

There are 16 sites in the project corridor identified as eligible for the National Register of Historic Places (NRHP) and one historic site not formally evaluated but covered under a Programmatic Agreement. Generally, the two-lane alternatives (including the preferred alternative) would adversely affect 3 historic properties, the Four-Lane Undivided Alternative would adversely affect 5 historic properties, and the Four-Lane Divided Alternative would adversely affect 6 historic properties. Under each alternative, two of the affected sites are historic bridges that are narrow and do not meet MDT standards and would require replacement under any of the build alternatives. Other affected properties include a farmstead and three commercial business sites (in Chinook), which would be impacted by one or more of the project alternatives.

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Wetlands and Floodplains

There are 32.0 ha (79.5 ac) of Class III and Class IV jurisdictional wetlands in the project corridor. There are no Class I or II wetlands in the project area. Overall, the build alternatives impact 2.7 to 3.9 ha (5.9 to 9.7 ac)¹ of jurisdictional wetlands. Classification of jurisdictional wetlands is subject to U.S. Army – Corps of Engineers review.

Prior to the recent court decision, Headwaters, Inc. v. Talent Irrigation District, 243 F.3d 526 (9th Cir. 2001) (Talent Decision), based on COE guidance, the COE did not, except in exceptional cases, consider ditches excavated on dry land as jurisdictional waters of the U.S. Since the Talent Decision, the COE has taken greater jurisdiction over surface water channels, natural or man-made, that drain into a water of the U.S. These wetlands are referred to as potential “Talent waters” jurisdictional wetland areas, ditches, and canals. There are 10.3 ha (25.3 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals in the project corridor; these wetlands are Class III and Class IV wetlands. Overall, the build alternatives impact 0.6 to 2.1 ha (1.5 to 5.0 ac)² of potential “Talent waters” jurisdictional wetland areas, ditches, and canals.

The Improved Two-Lane Alternative impacts 2.7 ha (5.9 ac) of jurisdictional wetlands, which represents 8.4 percent of the total jurisdictional wetlands in the corridor. The Improved Two-Lane with Passing Lanes Alternative (preferred alternative) impacts 2.8 ha (6.4 ac) or 8.8 percent of the jurisdictional wetlands in the corridor. The Four-Lane Undivided Alternative impacts 3.3 ha (7.9 ac) or 10.3 percent of the total jurisdictional wetlands in the corridor. The Four-Lane Divided Alternative impacts 3.9 ha (9.7 ac) or 12.2 percent of the jurisdictional wetlands in the corridor.^{3,4}

The Improved Two-Lane Alternative impacts 0.6 ha (1.5 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals, which represents 6.2 percent of these wetlands in the corridor. The Improved Two-Lane with Passing Lanes Alternative (preferred alternative) impacts 0.7 ha (1.8 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals, which represents 7.2 percent of these wetlands in the corridor. The Four-Lane Undivided Alternative impacts 1.1 ha (2.7 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals, which represents 10.9 percent of these wetlands in the corridor. The Four-Lane Divided Alternative impacts 2.1 ha (5.0 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals, which represents 20.7 percent of these wetlands in the corridor.⁵

Floodplain impacts would be similar for both of the two-lane alternatives. The Improved Two-Lane Alternative would result in an additional 8.9 km (5.6 mi) of longitudinal

¹ The conversion from hectares to acres is not exact due to upward rounding for wetlands with small impact areas. For further detail on wetland impacts and rounding, please see the Biological Resources Report (DEA, December 2003).

² *ibid.*

³ *ibid.*

⁴ Total area impacts differ from the *Biological Resources Report* due to changes in wetland impacts at Wetland Qx as a result of the Milk River Bridge replacement project. Due to rounding, this difference is apparent in the two-lane alternative totals but not in the four-lane alternative totals.

⁵ The conversion from hectares to acres is not exact due to upward rounding for wetlands with small impact areas.

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encroachment into the Milk River floodplain, beyond the 20.0 km (12.4 mi) of existing encroachment. The additional longitudinal impacts would extend up to 26 m (85 ft) in width beyond the existing edge of pavement, due to the wider roadway section and southerly shift in the roadway alignment in some locations. The Improved Two-Lane with Passing Lanes Alternative (preferred alternative) would result in an additional 9.9 km (6.2 mi) of longitudinal encroachment beyond the existing conditions. These additional encroachments would range up to 30 m (98 ft) in width beyond the existing edge of pavement. The Four-Lane Undivided Alternative would impact 11.2 km (7.0 mi) of floodplain beyond the existing conditions, and the additional encroachments would extend up to 30 m (98 ft) in width beyond the existing edge of pavement. The Four-Lane Divided Alternative would cause the greatest impacts, with 17.9 km (11.1 mi) of additional longitudinal encroachment into the Milk River floodplain, ranging up to 32 m (105 ft) in width beyond the existing edge of pavement. The overall encroachment into the floodplain would be minimal compared to the size of the floodplain. In compliance with Montana statutes, structures would be designed to ensure that the increase in water surface elevation from the base flood elevation is less than 0.15 m (0.5 ft).

Hazardous Materials

There are 17 underground storage tanks (USTs) or leaking USTs (LUSTs) in the corridor and one Montana Comprehensive Environmental Cleanup and Responsibility Act (CECRA) site at the abandoned Diamond Asphalt Refinery site east of Chinook. In addition, some bridges may have lead-based paint or were constructed with treated timbers. These potential sites would be impacted by all alternatives. The four-lane alternatives could potentially have more extensive impacts due to wider roadway sections creating greater ground disturbance activities at the Diamond Asphalt Refinery site and in Chinook, where the majority of the UST/LUST sites are located.

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Table S-1. Summary of Impacts by Alternative

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Transportation					
Access	Not consistent with MDT Access Control Guidelines.	Consistent with MDT Access Control Guidelines. Some out-of-direction travel may result from driveway consolidation and/or realignment. This increase may be offset by improved corridor travel time.	Same as Improved Two-Lane Alternative. Additional left-turn lane restrictions would occur in passing lane segments.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative; however the median would limit full access breaks to 0.8 km (0.5 mi) in rural areas. Median may cause additional out-of-direction travel.
Safety					
Accident Rate	Existing accident rate of 1.51 accidents per million vehicle miles traveled (VMT) exceeds statewide average of 1.36 for similar highways.	Predicted accident rate of 1.36 accidents per million VMT.	Predicted accident rate of 1.26 accidents per million VMT.	Predicted accident rate of 1.22 accidents per million VMT.	Predicted accident rate of 1.13 accidents per million VMT.
Shoulders and Clear Zone	No improvement to narrow shoulders, inadequate clear zone.	Improved safety due to wider shoulders and improved clear zone. Increased sight distance and recovery area may help drivers avoid wildlife and decrease animal related accidents.	Same benefit as Improved Two-Lane Alternative.	Same benefit as Improved Two-Lane Alternative.	Same benefit as Improved Two-Lane Alternative.
Turn Lanes	No new turn lanes would be provided.	Improved sight distance and auxiliary lanes at intersections would improve safety.	Same benefit as Improved Two-Lane Alternative.	Improved sight distance and auxiliary lanes at intersections would improve safety. Vehicles turning left on and off the highway would have an additional lane to cross; left turning vehicles from US 2 slowing or waiting in inside lane of the four-lane highway may result in high speed rear-end collision accidents.	Improved sight distance and auxiliary lanes at intersections would improve safety. Center median would restrict access to designated median openings with turn lanes and provide lateral separation between opposing vehicles.
Railroad Crossing Safety	No improvement at railroad crossings.	Improved offset between railroad and highway would increase safety at prioritized railroad crossings and intersecting roads. Turn lanes at railroad crossing at Indiana Street in Chinook would improve safety.	Same benefit as Improved Two-Lane Alternative.	Same benefit as Improved Two-Lane Alternative.	Same benefit as Improved Two-Lane Alternative. In addition, improved offset between railroad and highway at Indiana Street in Chinook would further improve safety.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Transportation (continued)					
Safety (continued)					
Safe Passing	Increase in traffic volume through 2027 would produce more traffic platoons and fewer gaps in opposing traffic, resulting in longer queues, increased driver impatience and more uncertainty in passing maneuvers.	Wider shoulders, improved clear zone, and improved horizontal and vertical alignment would create safer passing opportunities.	Segments with passing lanes would provide for safer passing maneuvers and may diminish head-on and sideswipe accidents caused by improper passing.	Additional travel lane would diminish accidents caused by improper passing throughout the entire corridor. Lane changing accidents may increase.	Same impacts as Four-Lane Undivided Alternative. Added benefit provided by lateral separation between opposing vehicles.
Pedestrians and Bicyclists	Narrow shoulder does not accommodate bicyclists. No improvement to existing sidewalk and crosswalk conditions. No new or improved pedestrian/bicycle connections.	2 m (6.5 ft) of the 2.4 m (8 ft) shoulder would be usable for bicyclists. Improved crossing of US 2 at Indiana Street. Pedestrian/bicycle path provided between east Havre residential areas and Havre. Improved pedestrian/bicycle connection between Chinook and Sweet Memorial Nursing Home. Pedestrian/bicycle path provided from Main Street in Harlem to First Street in Fort Belknap.	Same impacts as Improved Two-Lane Alternative.	Same impacts as Improved Two-Lane Alternative.	Same impacts as Improved Two-Lane Alternative.
School Buses	No shoulder at school bus stops.	Wider shoulder would improve safety at school bus stops.	Same as Improved Two-Lane Alternative.	School bus stops would be relocated off US 2.	Same as Four-Lane Undivided Alternative.
Traffic Operations					
2027 Level of Service (LOS)	Overall corridor acceptable level of service (LOS B); may drop to LOS C in Chinook urban segment.	Overall corridor acceptable level of service (LOS B).	Same as Improved Two-Lane Alternative.	Overall corridor acceptable level of service (LOS A).	Same as Four-Lane Undivided Alternative.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Transportation (continued)					
Traffic Operations (continued)					
Auxiliary Lanes	No impact.	Improved sight distance and auxiliary lanes at intersections would improve intersection turning operations.	Same benefits as Improved Two-Lane Alternative.	Same benefits as Improved Two-Lane Alternative.	Same benefits as Improved Two-Lane Alternative.
Passing Opportunities	No impact.	Improved horizontal and vertical alignment would create additional passing opportunities.	Although overall mileage of passing zones would be reduced, passing opportunities would be improved by the alternating passing lanes.	Additional through lane would increase passing opportunities along the entire corridor. The lack of median turn lanes would require left turns from through travel lane, potentially impeding traffic flow in passing lane.	Additional through lane would increase passing opportunities along the entire corridor. In addition, turn lanes within the median area would facilitate passing maneuvers through intersections.
Socioeconomics					
Montana Code Annotated (MCA) and State Plans					
MCA 60-2-133 (Montana 2001 Senate Bill 3)	Complies with MCA 60-2-133 if MDT is unable to obtain federal funding for a four-lane alternative not requiring a state match.	Same as the No-Build Alternative.	Same as the No-Build Alternative.	Complies with MCA 60-2-133 if MDT is able to obtain federal funding not requiring a state match for the additional cost of four lanes.	Same as the Four-Lane Undivided Alternative.
Statewide Transportation Improvement Program (STIP)	Not consistent with STIP.	Two-lane projects in the corridor were identified in the STIP.	Two-lane projects in the corridor were identified in the STIP.	Four-lane projects in the corridor were not identified in the STIP.	Four-lane projects in the corridor were not identified in the STIP.
Land Use					
Consistency with Local Plans	Consistent with Havre Comprehensive Plan and Fort Belknap Agency Zoning Ordinance.	Same as No-Build Alternative.	Same as No-Build Alternative.	Same as No-Build Alternative.	Same as No-Build Alternative.
Land Use/Growth Rate	No changes in land use. 25-year growth rate is 1.3% for Hill County and 4% for Blaine County.	No changes in land use. No change in predicted growth rates.	Same as Improved Two-Lane Alternative.	Land uses along US 2 in Chinook would change due to relocation of businesses. No change in predicted growth rates.	Land uses along US 2 in Chinook would change due to relocation (greatest number) of businesses. No change in predicted growth rates.
Farmlands					
Statewide Importance	0	11.5 ha (28.5 ac)	12.1 ha (29.9 ac)	12.4 ha (30.7 ac)	18.3 ha (45.3 ac)
Prime if Irrigated	0	23.2 ha (57.3 ac)	24.1 ha (59.8 ac)	26.3 ha (65.0 ac)	33.5 ha (82.9 ac)
Total Impacted	0	34.7 ha (85.8 ac)	36.2 ha (89.6 ac)	38.7 ha (95.6 ac)	51.9 ha (128.1 ac)

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Socioeconomics (continued)					
Irrigation	No Impact.	Lateral and longitudinal impacts to irrigation ditches in the Fort Belknap, Alfalfa Valley, Zurich, and Harlem Irrigation Districts. Ownership and acreage of irrigated land only affected in areas of proposed new roadway alignment and embankments.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Social Conditions					
Community Cohesion	No Impact.	Positive impacts due to implementation of corridor design theme, improved community connections and traffic safety.	Same as Improved Two-Lane Alternative. In addition, slightly greater traffic safety and travel time savings.	Positive impacts due to implementation of corridor design theme, and improved corridor connections. Slightly greater traffic safety and travel time savings than Improved Two-Lane and Improved Two-Lane with Passing Lanes Alternatives. Adverse impacts include creating greater separation of North Chinook from main town area.	Positive impacts due to implementation of corridor design theme, improved corridor connections and greatest traffic safety and travel time savings of any of the build alternatives. Adverse impacts include creating greatest separation of North Chinook from main town area.
Travel Patterns and Accessibility	No Impact.	Improved vehicular access to businesses adjacent to US 2. Improved pedestrian/bicyclist connections. Improved signage.	Same as Improved Two-Lane Alternative. In addition, center left-turn lane in Chinook would improve access.	Improved vehicular access to businesses adjacent to US 2. Improved pedestrian/bicyclist connections. Improved signage. Additional lanes of traffic would need to be crossed by pedestrians.	Same as Four-Lane Undivided Alternative.
School Districts, Recreation Areas, Rest Areas, Churches, Police and Fire Protection	No Impact.	No impact on school districts, recreation areas, rest areas, or churches. Improved operations and safety for police, fire protection, ambulance services.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Socioeconomics (continued)					
Economic Conditions					
Growth in Tourism Sector	No Impact.	Small, direct economic benefits from improved signage.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Growth in Agricultural Sector	No Impact.	No substantial impact to projected growth.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Growth in Manufacturing Sector	No Impact.	No substantial impact to projected growth.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Growth in Energy Sector	No Impact.	No substantial impact to projected growth.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Growth in Government Sector	No Impact.	No substantial impact to projected growth.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Growth in Retail and Services Sector	No Impact.	Small direct contributions to retail sales and business growth from improved accessibility. Unlikely to impact regional economic growth.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Socioeconomics (continued)					
Economic Conditions (continued)					
Business Displacements	No Impact.	<p>Three operating businesses near Chinook would be impacted by construction and may need to relocate to another property. If these businesses did not or could not relocate, 10 jobs would be lost.</p> <p>Cost of relocations in corridor would be approximately \$900,000. There would be loss of property tax revenue due to conversion of private land to public right-of-way and if businesses were unable to relocate in Hill and Blaine counties. No tax revenue would be lost in Chinook because there would be no business acquisitions in the incorporated city limits.</p>	<p>Same as Improved Two-Lane Alternative.</p>	<p>Eight operating businesses in and near Chinook would be impacted by construction. Four businesses may be able to relocate on their current parcels; four businesses would need to relocate to another property. If these four businesses did not or could not relocate, 17 jobs would be lost. Loss of businesses in Chinook would require patrons to travel to other communities to obtain these services; impacts would reduce options for auto repair and sales services in Chinook if businesses did not relocate.</p> <p>Cost of relocations in corridor would be approximately \$1.8 million. There would be loss of property tax revenue due to conversion of private land to public right-of-way and if corridor businesses were unable to relocate in Hill and Blaine Counties.</p> <p>Approximately \$10,000/year of tax revenue would be lost in Chinook if businesses were unable to relocate.</p>	<p>Fourteen operating businesses in and near Chinook would be impacted by construction. Two businesses may be able to relocate on their current parcels; the remaining twelve businesses would need to relocate to another property. Nearly all of these businesses are highway-dependent. If these businesses did not or could not relocate, 97 jobs would be lost. Loss of businesses in Chinook would require patrons to travel to other communities to obtain these services; impacts would greatly reduce options for auto repair, sales, and fuel services in Chinook if businesses did not relocate.</p> <p>Outside of the Chinook area, one business east of Havre would be impacted by construction and may need to relocate to another property.</p> <p>Cost of relocations in corridor would be approximately \$2.7 million. There would be loss of property tax revenue due to conversion of private land to public right-of-way and if corridor businesses were unable to relocate in Hill and Blaine Counties.</p> <p>Approximately \$25,000/year of tax revenue would be lost in Chinook if businesses were unable to relocate.</p>

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Socioeconomics (continued)					
Environmental Justice					
Minority and Low-Income Populations	No Impact.	No disproportionately high and adverse effect to minority populations in Harlem and Fort Belknap. No disproportionately high and adverse effect to low-income populations. Some positive effects from improved community identity, signage, accesses to businesses.	Same as Improved Two-Lane Alternative.	Availability of auto sales and repair services could be reduced in Chinook if impacted businesses did not relocate. As a result, residents in the corridor, including minority and low-income residents, may need to travel farther to obtain these services. Some positive effects from improved community identity, signage, and accesses to businesses.	Availability of auto sales, repair, and fuel services could be greatly reduced in Chinook if impacted businesses did not relocate. As a result, residents in the corridor, including minority and low-income residents, may need to travel farther to obtain these services. Some positive effects from improved community identity, signage, and accesses to businesses.
Right-of-Way (ROW) and Relocation of Utilities					
New ROW Acquisition					
Public Land	0	1.9 ha (4.8 ac)	1.9 ha (4.8 ac)	2.5 ha (6.2 ac)	4.0 ha (9.9 ac)
Private Land	0	102.0 ha (252.1 ac)	121.5 ha (300.3 ac)	133.3 ha (329.5 ac)	174.9 ha (432.1 ac)
Tribal Land	0	0 ha (0 ac)	0 ha (0 ac)	0 ha (0 ac)	0 ha (0 ac)
Utilities	0	0.3 ha (0.8 ac)	0.3 ha (0.8 ac)	0.4 ha (1.0 ac)	0.4 ha (1.0 ac)
Total	0	104.3 ha (257.6 ac)	123.8 ha (305.9 ac)	136.3 ha (336.7 ac)	179.3 ha (443.1 ac)
BNSF Railway Easement Requirements					
Relocations in ROW (inside construction limits)⁶					
Residential	0	6 (0)	6 (0)	6 (1)	8 (4)
Residential Outbuilding	0	8 (3)	8 (3)	9 (4)	9 (8)
Commercial	0	12 (4)	12 (5)	19 (11)	30 (23)
Commercial Outbuilding	0	3 (1)	3 (1)	5 (3)	9 (7)
Utility	0	3 (3)	3 (3)	3 (3)	3 (3)
Total	0	32 (11)	32 (12)	42 (22)	59 (45)

⁶ Numbers shown reflect total number of structures that would be within proposed right-of-way limits. Numbers in parentheses reflect those structures that would be within the construction limits.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Socioeconomics (continued)					
Project Cost (in millions of dollars) ⁷	0	69.7	73.4	94.5	106.8
Benefit-Cost Analysis					
Benefit (in millions of 2003 dollars)	0	37.6	40.5	41.7	43.3
Cost (in millions of 2003 dollars) ⁸	0	70.8	78.8	118.2	136.0
Net Benefit – Benefits less costs (in millions of dollars)	0	-33.2	-38.3	-76.5	-92.7
Benefit/cost ratio	0	0.53. Cost exceeds benefits by approximately 1.9 to 1.	0.51. Cost exceeds benefits by approximately 2.0 to 1.	0.35. Cost exceeds benefits by approximately 2.9 to 1.	0.32. Cost exceeds benefits by approximately 3.1 to 1.
Funding					
	No funding required.	At this time, there are no committed funds for this project. Funding would be scheduled through MDT's regular funding prioritization process. There is reasonable certainty that funding would become available for this alternative.	Same as Improved Two-Lane Alternative.	At this time, there are no committed funds for this project. The additional funding needed to construct this alternative, beyond that required for the Improved Two-Lane Alternative, would be limited to federal funding only, as stipulated in MCA 60-2-133. Acquisition of this additional funding is uncertain, and design and construction would not occur until all funding is acquired.	Same as Four-Lane Undivided Alternative.
Environmental					
Cultural and Historic Resources	No Impact.	Adversely impacts three NRHP-eligible sites: two bridges (24BL981/1050, 24BL1731), one farmstead (24BL1541).	Same as Improved Two-Lane Alternative.	Adversely impacts five NRHP-eligible sites: all resources identified in the Improved Two-Lane Alternative plus two commercial buildings (24BL1251 and 24BL1254).	Adversely impacts six NRHP-eligible sites: all resources identified in Four-Lane Undivided Alternative plus one historic feature associated with a commercial building (24BL1248).

⁷ Project costs include right-of-way acquisition, final design, and construction costs.⁸ Costs include estimated project cost and ongoing costs, such as maintenance, discounted to present value.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Environmental (continued)					
Air Quality	No Impact.	Same as No-Build Alternative.	Same as No-Build Alternative.	Same as No-Build Alternative.	Same as No-Build Alternative.
Noise - Impacted Receptors	1 Receptor.	2 Receptors.	2 Receptors.	4 Receptors.	3 Receptors.
Water Resources and Water Quality	No Impact.	Impervious surface would increase 45% over existing conditions but is negligible compared to the overall basin area. Bridges would be replaced over five creeks and the Milk River near Fort Belknap; replacements are not likely to permanently affect water quality. Avoidance of public water supplies and private ground water wells will be coordinated in final design.	Impervious surface would increase 57% over existing conditions but is negligible compared to the overall basin area. Impacts from bridge replacements and impacts to public water supplies and private ground water wells would be similar to the Improved Two-Lane Alternative.	Impervious surface would increase 117% over existing conditions but is negligible compared to the overall basin area. Bridges would be replaced over five creeks and the Milk River near Fort Belknap; in addition, new bridges would be built over a sixth creek and over the Milk River east of Lohman to accommodate two additional travel lanes. Impacts from bridge replacements and impacts to public water supplies and private ground water wells would be similar to the Improved Two-Lane Alternative.	Impervious surface would increase 142% over existing conditions but is negligible compared to the overall basin area. Bridges would be replaced over five creeks and the Milk River near Fort Belknap; in addition, new bridges would be built over a sixth creek and over the Milk River east of Lohman to accommodate two additional travel lanes. Impacts from bridge replacements and impacts to public water supplies and private ground water wells would be similar to the Improved Two-Lane Alternative.
Wetlands⁹					
Jurisdictional (Class III/IV)	0	2.7 ha (5.9 ac)	2.8 ha (6.4 ac)	3.3 ha (7.9 ac)	3.9 ha (9.7 ac)
Jurisdictional - Potential "Talent Waters" Wetland Areas, Ditches, and Canals (Class IV)	0	0.6 ha (1.5 ac)	0.7 ha (1.8 ac)	1.1 ha (2.7 ac)	2.1 ha (5.0 ac)
Non-Jurisdictional Wetland Areas, Ditches, and Canals (Class III/IV)	0	2.7 ha (7.0 ac)	2.7 ha (7.0 ac)	3.1 ha (7.9 ac)	4.3 ha (10.6 ac)
Vegetation	No Impact.	Impacts to vegetation would occur in location of new roadway footprint.	Greater impact to vegetation than Improved Two-Lane Alternative in areas with additional passing lanes.	Greater impact to vegetation than two-lane alternatives due to wider roadway section.	Greatest impact to vegetation due to widest roadway section.

⁹ The conversion from hectares to acres is not exact due to rounding for wetlands with small impact areas. For further detail on wetland impacts and rounding, please see the Biological Resources Report (DEA, December 2003).

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Environmental (continued)					
Wildlife and Aquatic Species					
Species of Special Concern	No Impact.	Swift Fox - no impact; Sage Grouse - no impact; Northern Leopard Frog - 0.5 ha (1.2 ac) ¹⁰ of habitat type impacted.	Same as Improved Two-Lane Alternative.	Swift Fox - no impact; Sage Grouse - no impact; Northern Leopard Frog - 0.7 ha (1.8 ac) ¹¹ of habitat type impacted.	Swift Fox - no impact; Sage Grouse - no impact; Northern Leopard Frog - 0.9 ha (2.4 ac) ¹² of habitat type impacted.
Terrestrial Wildlife	No Impact.	May affect individuals or habitat for terrestrial species if present but is not likely to contribute to a trend toward Federal listing or loss of viability of any species. An additional 48 m (16 ft) of highway to be crossed by wildlife beyond existing conditions. If active cliff swallow (migratory birds) nests were present at the time of bridge reconstruction, they would be impacted.	Same as Improved Two-Lane Alternative, except greater habitat area impact than Improved Two-Lane Alternative. An additional 8.4 m (22 ft) of highway to be crossed by wildlife beyond existing conditions.	Same as Improved Two-Lane Alternative, except greater habitat impact than the Improved Two-Lane and Improved Two-Lane with Passing Lanes Alternatives. An additional 12 m (40 ft) of highway to be crossed by wildlife beyond existing conditions.	Same as Improved Two-Lane Alternative, except greatest amount of habitat impact. An additional 22 m (76 ft) of highway to be crossed by wildlife beyond existing conditions.
Aquatic Species	No Impact.	Minimal impact to riparian habitat; may impact individuals if present, but is not likely to contribute to a trend toward Federal listing or loss of viability of any species.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative, except slightly more riparian habitat loss.	Same as Improved Two-Lane Alternative, except more riparian habitat loss.
Threatened and Endangered Species					
Bald Eagle	No Effect.	May affect, but not likely to adversely affect.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Black-footed Ferrets	No Effect.	No Effect.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Black-tailed Prairie Dogs	No Effect.	No Effect.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.

¹⁰ *ibid.*¹¹ *ibid.*¹² *ibid.*

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Environmental (continued)					
Floodplains					
Additional Longitudinal Encroachment (Milk River)	0	8.9 km (5.6 mi)	9.9 km (6.2 mi)	11.2 km (7.0 mi)	17.9 km (11.1 mi)
Additional Transverse Encroachments	0	0	0	0	0
Wild and Scenic Rivers	None in corridor.	No impact.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Water Body Modifications	No Impact.	Most of the existing bridges would be replaced and could result in impoundment and channel alterations from realignment, deepening, or erosion.	Same as Improved Two-Lane Alternative	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Hazardous Materials	No Impact.	Could potentially impact abandoned underground storage tank (UST) or leaking UST (LUST) sites: two in Lohman, eleven in Chinook, two east of Chinook at Diamond Asphalt Refinery site, and two in Harlem. Potential soil disturbance and pollution of groundwater at abandoned Diamond Asphalt Refinery at CECRA site east of Chinook. Potential impacts from removal of bridges that may be painted with lead-containing paints or constructed with treated timbers.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative except potential for more extensive impacts due to wider roadway section through Chinook and at Diamond Asphalt Refinery.	Same as Four-Lane Undivided Alternative except potential for greatest impacts due to widest roadway section through Chinook and Diamond Asphalt Refinery.
Visual Resources	No Impact.	No negative visual impacts in rural areas. Minor negative impacts to rolling terrain east of Havre due to cut and fill slopes. Positive impacts in communities from landscaping, entry treatments, and signage.	Same as Improved Two-Lane Alternative.	Similar impacts as Improved Two-Lane Alternative with additional negative impacts in Chinook due to relocation of many buildings adjacent to the highway.	Similar impacts as Improved Two-Lane Alternative in rural areas with additional negative visual impacts in Chinook due to relocation of nearly all structures immediately south of US 2. These impacts may be partially offset by the positive impacts of additional landscape features through Chinook.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Environmental (continued)					
Section 4(f) and 6(f) Resources	No Impact.	Impacts result in Section 4(f) use of five historic sites, potentially two historic bridges, and potentially one historic site.	Same as Improved Two-Lane Alternative.	Impacts result in Section 4(f) use of seven historic sites, potentially two historic bridges, and potentially one historic site.	Impacts result in Section 4(f) use of eight historic sites, potentially two historic bridges, and potentially one historic site.
Construction					
Access	No Impact.	May temporarily impact some accesses, including some business accesses and parking.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Traffic Operations	No Impact.	Short-term impacts to traffic operations such as delays and lane closures.	Same as Improved Two-Lane Alternative.	Fewer short-term impacts to traffic operations because two lanes could be constructed outside of existing pavement area without requiring major traffic diversion.	Same as Four-Lane Undivided Alternative.
Pedestrians and Bicyclists	No Impact.	Short-term impacts to pedestrians and bicyclists due to sidewalk and pedestrian crossing construction and degradation of roadway.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Land Use, Right-of-Way, and Utilities	No Impact.	Temporary restriction on use of private property by owners in construction areas. Temporary service disruptions to local utilities.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Farmlands	No Impact.	Temporary modification to some farmlands. Farmlands would be returned to preconstruction conditions after construction and would not be permanently converted to another use.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Farm Operations	No Impact.	Temporary impacts to operations including disruption to field accesses, conflicts between construction and farm equipment, land use disruption due to construction easement, and disruption to irrigation systems.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Construction (continued)					
Irrigation	No Impact.	Irrigation facilities may be temporarily impacted.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Economic Conditions	No Impact.	Temporary creation of jobs and income for construction workers and related industries.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Cultural Resources	No Impact.	Temporary impacts to access to historic properties; visual impacts due to construction equipment, noise, and dust; possible discovery of previously unidentified archaeological resources.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Air Quality	No Impact.	Short-term increases in fugitive dust and mobile source emissions.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Noise	No Impact.	Short-term construction noise impacts.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Water Resources and Water Quality	No Impact.	Short-term impacts from increased stormwater runoff, erosion, and spilled fuels or other hazardous materials.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Wetlands	No Impact.	Potential temporary physical disturbance to wetlands due to construction activities.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Vegetation	No Impact.	Short-term impacts including habitat and vegetation loss from soil compaction and other construction activities. Increased susceptibility to noxious weed invasion on impacted lands.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Wildlife and Aquatic Species	No Impact.	Potential temporary displacement of wildlife due to construction noise and activities. Cliff swallows could be impacted by bridge removals. Short-term impacts to aquatic species due to in-stream work.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.

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Table S-1. Summary of Impacts by Alternative (continued)

Area of Impact	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Construction (continued)					
Threatened and Endangered Species	No Impact.	Foraging bald eagles, if they are present, may avoid the area during construction.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Floodplains	No Impact.	Temporary disturbance or modification to functions of floodplain.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Water Body Modifications	No Impact.	Temporary disturbance of water bodies during bridge construction.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Hazardous Materials	No Impact.	Potential impact to contaminated soils from construction staging activities.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Visual Resources	No Impact.	Temporary visual impacts due to construction equipment, activities, and dust.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.
Cumulative					
Past, Present, and Reasonably Foreseeable Actions	No impact.	Cumulative impacts are not significant.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.	Same as Improved Two-Lane Alternative.

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Other Major Federal Actions

Several other ongoing or pending federal projects exist within the area or relate to the US 2 corridor. Within the US 2 project limits, MDT has been upgrading all blunt end guardrails as part of a district-wide safety project.

Another safety project, the Milk River Bridge Replacement, was recently completed. On November 18, 2003, the Milk River bridge, on US 2 east of Lohman, was damaged in an accident. A temporary replacement bridge was opened to traffic on December 4, 2003, and the permanent bridge was constructed and opened to traffic in June 2004. The location and horizontal alignment of the bridge was coordinated with the alternatives proposed in the US 2, Havre to Fort Belknap EIS. The new bridge is two lanes and was designed on an alignment consistent with all alternatives. Therefore, the design of the Milk River replacement bridge was not a predetermining factor in the selection of a preferred alternative for the US 2, Havre to Fort Belknap project.

Other federal projects adjacent to the project corridor include the US 2 – Havre project and a secondary roadway safety improvement.

MDT plans to reconstruct US 2 through Havre from RP 381.40 on the west side of Havre to RP 383.66 at the eastern curb and gutter limits of town and at the western terminus of the US 2, Havre to Fort Belknap project. The project is an urban project intended to improve safety and driving convenience and to reduce maintenance costs through improvements to pavement structure, storm drainage, and traffic signing, striping, and signalization. The majority of proposed improvements will be constructed within the existing right-of-way.

MDT proposes to reconstruct Elloam Road (MT Secondary 325) from its junction with US 2 north 19.75 km (12.4 mi), and to create a safer connection to US 2. Alternatives proposed for the reconstruction include four alignments. The current MDT recommended alternative would relocate the US 2/Elloam Road intersection approximately 2 km (1.25 mi) east and close the existing intersection of US 2 and Elloam Road.

Mitigation

Mitigation measures to minimize or reduce adverse social, economic and environmental impacts resulting from the Preferred Alternative, Improved Two-Lane with Passing Lanes Alternative, are summarized in Table S-2.

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Table S-2. Mitigation

Resource Area	Type of Impact	Mitigation
Transportation Conditions		
Access	The Access Management Plan developed during final design may require some driveways to be consolidated with other driveways or realigned to intersect with other nearby public roadways.	Any access impacts will be addressed in conjunction with the Access Management Plan developed during final design and approved by the Transportation Commission.
Safety	Impacts are positive and do not require mitigation.	No mitigation.
Traffic Operations	Impacts are positive and do not require mitigation.	No mitigation.
Pedestrian and Bicycle Considerations	Impacts are positive and do not require mitigation.	No mitigation.
Socioeconomic Conditions		
MCA and State Plans	Impacts do not require mitigation.	No mitigation.
Land Use	Impacts do not require mitigation.	No mitigation.
Farmlands	Right-of-way requirements would impact 36.2 ha (89.6 ac) of important farmlands.	When no feasible alternative to taking important farmland for right-of-way exists, the roadway alignment will be designed to take a narrow, linear strip and avoid fragmenting the farmland parcels as much as possible. Access to all properties will be maintained. Mitigation will include the use of Best Management Practices (BMPs) to limit disturbance and control erosion.
Irrigation	Lateral and longitudinal impacts to irrigation ditches in the Fort Belknap, Alfalfa Valley, Zurich, and Harlem Irrigation Districts.	To mitigate lateral impacts, MDT will reconstruct existing culverts to maintain existing size and flow requirements. Operators of irrigation districts will be contacted for flow requirements on their ditches during final design. To mitigate longitudinal impacts, MDT will make every reasonable effort to relocate the facilities along the new roadway embankment and maintain capacity of original ditch. Impacted irrigation canals and ditches will be relocated in consultation with ditch owners to minimize impacts to farming operations.
Social Conditions	Impacts do not require mitigation.	No mitigation.

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Socioeconomic Conditions (continued)		
Economic Conditions	6 operating businesses would fall within proposed right-of-way limits; however, 3 of these businesses would be outside of the construction limits.	<p>In some locations, right-of-way may be reduced to minimize impacts, if safety is not compromised. In particular, right-of-way minimization will be assessed at those businesses outside the construction limits (identified in Table 4.5 in Chapter 4 of this document). Additional mitigation measures that will be considered include reconfiguring the access, steepening the side slopes adjacent to the roadway, constructing a retaining wall, or shifting the alignment.</p> <p>The right-of-way acquisition process will follow the <i>Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970</i>, as amended (Uniform Relocation Act) for fair and equitable treatment of owners and tenants whose properties would be acquired.</p>
Environmental Justice	No disproportionately high and adverse effect to minority or low-income populations.	No mitigation.
Right-of-Way and Relocation of Utilities		
New Right-of-Way Acquisition	Approximately 123.8 ha (305.9 ac) of additional right-of-way would be required from private and public landowners.	<p>In some locations, right-of-way may be reduced to minimize impacts, if safety is not compromised. The right-of-way acquisition process will follow the <i>Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970</i>, as amended (Uniform Relocation Act) for fair and equitable treatment of owners and tenants whose properties would be acquired.</p>
BNSF Easement	Approximately 3.9 ha (9.7 ac) of easement required.	Consultations for easement within railroad right-of-way will be undertaken with BNSF.
Relocations/Acquisitions	Right-of-way requirements would impact residential, commercial, and utility structures throughout the corridor.	<p>In order to avoid relocations/acquisitions or minimize impacts, right-of-way may be reduced if safety is not compromised. Right-of-way minimization will be considered during final design particularly at those residential and commercial structures outside the construction limits (identified in Table 4.9 in Chapter 4 of this document). Other mitigation measures to be assessed during final design include reconfiguring the access to a property, steepening the side slopes adjacent to the roadway or constructing a retaining wall, or shifting the alignment.</p> <p>Impacted fences, including livestock pens, will be relocated in consultation with the property owner. Property owners with impacted stockpasses will be consulted during final design to continue to accommodate this use as needed. Utility relocations will be coordinated with the utility companies.</p>

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Socioeconomic Conditions (continued)		
Project Cost	Impacts do not require mitigation.	No mitigation.
Benefit-Cost Analysis	Impacts do not require mitigation.	No mitigation.
Funding	Impacts do not require mitigation.	No mitigation.
Environmental Conditions		
Cultural and Historic Resources	Adverse impacts to 3 NRHP-eligible resources: two bridges (24BL981/1050, 24BL1731), and one farmstead (24BL1541).	<p>MDT will use its Adopt a Bridge program to try to identify new owners for historic bridges. If new owners cannot be identified, MDT will remove the bridges to avoid safety and liability concerns.</p> <p>Under Section 106 of the National Historic Preservation Act (NHPA), to mitigate adverse effects to historic resources, MDT and FHWA developed a Memorandum of Agreement (MOA) with the SHPO for the effects on 24BL1541, the Vincent Pefaur Homestead. MDT and FHWA will carry out the stipulations of the MOA, which includes Historic American Building Survey (HABS)-level documentation of the Vincent Pefaur Homestead and the installation of an historical marker describing the history and significance of agriculture to Blaine County.</p>
Air Quality	Impacts do not require mitigation.	No mitigation.
Noise	Noise impacts to two receptors outside of proposed right-of-way limits; an additional five receptors within the proposed right-of-way limits could be impacted if they are not relocated or acquired.	Mitigation measures such as shifting the alignment without impacting safety may be possible at two impacted receptors. These mitigation measures will be investigated during final design.

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Environmental Conditions (continued)		
Water Resources and Water Quality	Impervious surfaces would increase. Bridges would be replaced over five creeks and the Milk River near Fort Belknap.	<p>Improvements will be constructed in compliance with conditions of water quality permits and BMPs. MDT will follow BMPs for winter maintenance operations to reduce the potential for water quality impacts resulting from maintenance activities. BMPs include increased use of chemical deicers and decreased use of sand, and post-winter sand removal from the roadway with mechanized pick-up brooms. Coordination with MDEQ regarding TMDL development for impaired water bodies will be conducted during final design. In addition, the applicability of sediment traps and vegetative filters near streams and wetlands will be considered during final design.</p> <p>MDT will continue consultation with MFWP on issues including riparian habitat enhancement and wetland development and river modifications at bridge crossings. MDT will also coordinate with MFWP to obtain a SPA 124 permit under the Montana Stream Protection Act for projects that may affect the bed or banks of any stream in Montana. This consultation will include consideration for revegetation of stream banks during final design.</p> <p>If private ground water wells and public water supplies are within the final right-of-way, they will be relocated.</p>
Wetlands	2.8 ha (6.4 ac) ¹³ of Class III/IV jurisdictional wetlands and an additional 0.7 ha (1.8 ac) ¹⁴ of Class IV potential "Talent waters" jurisdictional wetland areas, ditches, and canals would be impacted.	<p>MDT will prepare a Storm Water Pollution Prevention Plan (SWPPP) including the identification of BMPs. MDT will comply with the conditions of the required COE 404 permit. Temporary impacts to wetlands will be restored in accordance with MDT standard specifications or permit conditions.</p> <p>Unavoidable wetland losses will be mitigated with replacement wetlands. The goal of wetland mitigation is to replace the functions and values of lost wetlands in areas adjacent to or as close as possible to the area of wetlands loss. A wetland mitigation plan will be developed for the COE 404 Permit prior to construction. At that time, coordination and consultation will be conducted with the Montana Interagency Wetlands Group and other appropriate agencies. This would include consultation with MFWP on issues including riparian habitat enhancement and wetland development at bridge crossings, as required to obtain a SPA 124 permit under the Montana Stream Protection Act, for projects that may affect the bed or banks of any stream in Montana.</p> <p>During final design, additional design measures to reduce impacts to jurisdictional wetlands P, Q, V, Y, Z, and Ax will be investigated.</p>

¹³ The conversion from hectares to acres is not exact due to rounding for wetlands with small impact areas. For further detail on wetland impacts and rounding, please see the Biological Resources Report (DEA, December 2003).

¹⁴ *ibid.*

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Environmental Conditions (continued)		
Vegetation	Impacts to vegetation would occur in construction area.	Clearing and grubbing of vegetation outside the construction area will be limited to that needed to construct the project. All disturbed areas will be revegetated with desirable species as soon as practical. MDT will be responsible for maintaining the ROW in the project area. Mitigation for noxious weeds generally includes spraying, which usually occurs in the summer months before the plants have gone to seed and involves using a chemical weed killer to eradicate the weeds.
Wildlife and Aquatic Species	<p>Cliff swallows could be impacted by bridge removals if active nests are present.</p> <p>Minimal impact to habitats; not likely to contribute to a trend toward Federal listing or loss of viability of species.</p> <p>Impacts to aquatic species due to in-stream work.</p>	<p>Bridges will be rechecked for cliff swallow nesting activity closer to the start of construction. If bridges are to be removed during the cliff swallow nesting period, cliff swallow nests will be removed prior to the nesting period and efforts will be undertaken to ensure that new nests are not established prior to removal of the old structure. Closer to the start of construction, further consultation and, if necessary, migratory bird permit approval will be coordinated with USFWS.</p> <p>The opportunity to reduce wild animal crashes by facilitating wildlife movement at major bridge locations will be investigated during final design. MDT will also continue to consult with MFWP on this issue during final design.</p> <p>A Montana Stream Protection Act Permit (SPA 124) will be required for the project. Contractors will follow the SPA 124 permit requirements for the project. Coordination with MFWP for the SPA 124 permit will address requirements for in-stream work to address potential aquatic species impacts.</p> <p>Clear Creek Bridge will be replaced with a structure capable of fish passage. The structure will be sized appropriately based on hydraulic design.</p> <p>Fish passage will be provided at Red Rock Creek (Coulee).</p>
Threatened and Endangered Species	The only Threatened and Endangered Species in corridor are wintering bald eagles. The project may affect but is not likely to adversely affect bald eagles or their critical habitat.	See construction mitigation.

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Environmental Conditions (continued)		
Floodplains	9.9 km (6.2 mi) of additional longitudinal encroachments into the 100-year floodplain.	<p>Floodplain Development Permits administered by Hill and Blaine Counties will be required for floodplain encroachment throughout the corridor prior to construction.</p> <p>To minimize impacts, design of the preferred alternative will be in compliance with Federal-Aid Highway Program Manual (FHPM) 6-7-3-2 "Location and Hydraulic Design of Encroachments on Flood Plains" (23 CFR 650A) and Executive Order 11988 Floodplain Management.</p>
Wild and Scenic Rivers (none in corridor)	No impacts.	No mitigation.
Water Body Modifications	Specific impacts will be determined during final design.	<p>All work will be performed in accordance with state and federal guidelines regarding water quality and permit conditions. These include the applicable regulations under the Federal Clean Water Act of 1972, as amended (i.e. 404 Permit) and specific permit requirements from the Montana SPA 124 Permit; Floodplain and Roadway Management Act, Section 402/MPDES permit; and the utilization of the current BMPs.</p> <p>MDT will continue consultation with MFWP on issues including riparian habitat enhancement and wetland development and river modifications at bridge crossings, as required to obtain a SPA 124 permit under the Montana Stream Protection Act, for projects that may affect the bed or banks of any stream in Montana. Structures will be designed to minimize disruption of stream hydrology or permanent alterations of stream banks. Revegetation of stream banks will be considered during final bridge design.</p> <p>Bridge spans will be designed following FHWA, MDT, and 23 CFR 650A guidelines and requirements. Bridge openings will be designed to span active channels and minimize floodplain impacts. Further, bridge openings will be designed to minimize scour and avoid sediment deposition above stream crossings. Culverts will be designed to accommodate fish passage at all crossings with known fisheries species as documented by MFWP.</p>

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Environmental Conditions (continued)		
Hazardous Materials		
Underground Storage Tanks (USTs)	Potential impacts to abandoned underground storage tanks in Lohman, Chinook, and Harlem.	Impacted storage tanks will be moved to locations away from the right-of-way. Inactive petroleum storage tanks will be closed according to applicable regulations. Leaking USTs will be monitored for presence of contaminants. Soils contaminated with petroleum/oils will be mitigated by direct disposal or an on-site application (land farming). Disposal of contaminated soils will be in compliance with applicable federal, state and local regulations. Tank removal permits will be obtained from MDEQ, and all work will be undertaken in accordance with permit conditions.
Soil/ Groundwater Contamination	Potential disturbance of contaminated soil and pollution of groundwater.	If excavation occurs north of the existing ROW, additional soil testing/investigation will occur to identify potential contamination associated with railroad loading facilities. Additional investigation will be needed if the preferred alternative includes removal or excavation on existing or abandoned farmsteads. Impacted electrical substations and transformers will be surveyed for releases of PCB-contaminates. Disposal of contaminated soils will be in compliance with applicable regulations. Potential impacts to ground water sources will be minimized through investigations determining extent of any contamination before construction begins. Soils or groundwater at bridge sites featuring potential lead-containing paints or treated timbers should not be impacted if disposal of these materials is in accordance with regulations.
Asbestos	Potential asbestos present in impacted structures in corridor.	Industrial sites (e.g. abandoned Diamond Asphalt Refinery) containing hazardous materials will undergo additional soil testing. A remediation/reclamation plan, if needed, will be developed in consultation with MDEQ and the counties. Prior to the demolition of buildings, an asbestos survey will be undertaken. All structures slated for relocation or demolition will be inspected for asbestos by a state-licensed inspector. A National Emissions Standards for Hazardous Air Pollutants (NESHAP) Demolition/Renovation Notification form will be filed with MDEQ for all relocated or demolished structures.
Visual Resources	Minor negative impacts in rolling terrain east of Havre due to cut and fill slopes. Visual intrusion of bridge structures.	Existing vegetation will be retained wherever possible. Road cuts and fill slopes will be graded and revegetated as necessary to blend with surroundings. Bridges will be low to the water and horizontal in design line as possible, and will meet hydraulic design requirements.

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Environmental Conditions (continued)		
Section 4(f) and 6(f) Resources	Impacts due to use of Section 4(f) resources.	For the preferred alternative, mitigation for the adverse effect on one NRHP-eligible site was developed in consultation with the SHPO. MDT and FHWA developed a Memorandum of Agreement (MOA) with the SHPO for the effects on 24BL1541, the Vincent Pefaur Homestead. MDT and FHWA will carry out the stipulations of the MOA, which includes Historic American Building Survey (HABS)-level documentation of the Vincent Pefaur Homestead and the installation of an historical marker near the site. See Appendix I, Section 4(f) Evaluation, for a detailed analysis and mitigation.
Construction		
Access	May temporarily impact some accesses, including some business accesses and parking.	Property owners will be notified early of construction activities in order to address potential construction impacts to property access and business operations.
Traffic Operations	Short-term impacts to traffic operations such as delays and lane closures.	Construction will be phased to maintain two lanes of traffic and uninterrupted side road access to the greatest extent possible. MDT will coordinate with emergency service providers and schools to solicit input into the construction traffic management plan and to provide ongoing information during construction.
Pedestrians and Bicyclists	Short-term impacts to pedestrians and bicyclists due to sidewalk and pedestrian crossing construction and degradation of roadway.	Mitigation will include maintenance of sidewalks and pavement to the extent possible and additional pedestrian signage during construction.
Land Use, Right-of-Way, and Utilities	Temporary restriction on use of private property by owners in construction areas. Temporary service disruptions to local utilities.	Mitigation for construction impacts will include early notification of property owners of construction activities to address potential construction impacts. Easements will be obtained according to 49 CFR, Part 24, <i>Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970</i> , as amended, to provide just compensation for and rehabilitation of temporary construction easements. Right-of-way for utility lines will be obtained prior to construction and may include additional buffers within utility right-of-way to allow for the placement of utilities at the top of slopes. Temporary disruptions to utility services will be minimized through coordination with local utility providers.
Farmlands	Temporary modification to farmlands.	No mitigation required.

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Construction (continued)		
Farm Operations	Temporary impacts including disruption to accesses, land use, and irrigation systems and conflicts between construction and farm equipment.	Mitigation will include early coordination with farmers to address potential impacts during roadway reconstruction and scheduling of construction, where feasible, to minimize disruption to farming activities.
Irrigation	Irrigation facilities may be temporarily impacted during construction.	Mitigation will include early coordination with irrigation districts and ditch companies to address potential impacts to facilities during construction and irrigation ditch relocations. Reasonable measures will be taken to avoid disruption of irrigation activities, such as scheduling interruptions to a facility when it is not being used.
Economic Conditions	Impacts are beneficial and do not require mitigation.	No mitigation.
Cultural Resources	Possible discovery of previously unidentified archaeological resources.	If cultural material is unexpectedly encountered during ground-disturbing activities in the corridor, construction will cease immediately, and the Montana SHPO and a qualified archaeologist will be consulted to evaluate the significance of the cultural artifacts.
Air Quality	Short-term increase in fugitive dust and mobile source emissions.	Mitigation will include compliance with the Montana Administrative Rule to control emission of airborne particulate matter, implementation of measures identified by MDEQ permit, and the use of BMPs (e.g. the frequent use of water or other wetting agent to keep particulate matter down).
Noise	Short-term construction noise impacts.	At or near major settlements, construction hours could be limited to daylight hours to avoid noise impacts at night. Contractors will adhere to local ordinances to minimize noise impacts during construction. Advance notice of construction will be provided to area businesses and residences to minimize impact on community activities.
Water Resources and Water Quality	Short-term impacts from increased stormwater runoff, erosion, construction staging activities, spilled fuels, or other hazardous materials.	MDT will prepare a SWPPP, including the identification of BMPs, to control erosion and stormwater runoff. There will be no unnecessary operation of equipment within the channels of any creeks or rivers in the project area.
Wetlands	Potential temporary physical disturbance to wetlands due to construction activities.	A COE 404 Permit will be required. MDT will incorporate a SWPPP and BMPs into construction projects. Temporary impacts to wetlands will be restored in accordance with MDT standard specification or permit conditions.

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Construction (continued)		
Vegetation	Short-term impacts would include habitat and vegetation loss from soil compaction and other construction activities. Increased susceptibility to noxious weed invasion on impacted lands.	MDT will re-establish a permanent desirable vegetation community over all landform surface areas disturbed by construction within the right-of-way or within the project construction limits, as defined during final design. To reduce the spread of noxious weeds during construction, the Contractor should clean equipment and trucks of contaminated soil or noxious weed seeds before moving from noxious weed infested areas to areas free of noxious weeds. The Contractor will revegetate disturbed areas using desirable vegetation. The contractor will also be responsible for re-establishing vegetation in staging areas outside the construction limits.
Wildlife and Aquatic Species	Potential temporary displacement of wildlife due to construction noise and activities. Cliff swallows could be impacted by bridge removals. Short-term impacts to aquatic species due to in-stream work.	<p>Bridges will be rechecked for cliff swallow nesting activity closer to the start of construction. If bridges are to be removed during the cliff swallow nesting period, cliff swallow nests will be removed prior to the nesting period, and efforts will be undertaken to ensure that new nests are not established prior to the removal of the old structure. Closer to the start of construction, further consultation and, if necessary, migratory bird permit approval will be coordinated with USFWS.</p> <p>A COE 404 permit and SPA 124 permit will be required. MDT will incorporate a SWPPP and BMPs into construction projects.</p> <p>Clearing and grubbing of vegetation outside the construction area will be limited to that needed to complete the project. All disturbed construction easements will be revegetated as soon as practicable.</p> <p>See mitigation for Air Quality construction impacts for information on dust control.</p> <p>Storage and use of fuel, petroleum products or deleterious materials will be done according to MDT standard specifications or as otherwise permitted.</p> <p>Alteration or disturbance of the bank and bank vegetation at Clear Creek, Red Rock Creek (Coulee), and the Milk River will be limited to that necessary to construct the project. All disturbed areas will be protected from erosion using BMPs. Banks will be revegetated with desirable species.</p>

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Table S-2. Mitigation (continued)

Resource Area	Type of Impact	Mitigation
Construction (continued)		
Threatened and Endangered Species	Foraging bald eagles, if they are present, may avoid this area during construction.	If power lines are constructed or modified during construction they will be raptor-proofed in accordance with MDT policies. Location of active bald eagle nesting trees, if any, will be verified by a biologist close to the start of construction, and, if needed, appropriate measures will be coordinated with USFWS.
Floodplains	Encroachments may temporarily disturb or modify functions of the floodplain.	Floodplain Development Permits administered by Hill and Blaine Counties will be required for the floodplain encroachment throughout the corridor prior to construction.
Water Body Modifications	May temporarily disturb water bodies during bridge construction.	Disturbed stream banks will be revegetated to reduce erosion. Contractor will be required to follow all state and federal guidelines regarding water quality. These include applicable regulations under the Federal Clean Water Act of 1977 (e.g. 404 Permit) and specific requirements of the Montana SPA 124 Permit. Other requirements may include the Floodplain and Roadway Management Act, Section 402/MPDES permit, a SWPPP, and any other laws or regulations that may apply to the project. Contractor will utilize current BMPs.
Hazardous Materials	Potential impact to contaminated soils from construction staging activities.	The construction contractor will be required to comply with permit requirements for storage of fuel, petroleum products or deleterious materials and for management of unintended hazardous materials releases.
Visual Resources	Temporary visual impacts due to construction equipment, activities, and dust.	MDT will reestablish a permanent desirable vegetation community as soon as practical over all landform surface areas disturbed by construction.
Cumulative		
Past, Present, and Reasonably Foreseeable Actions	Impacts are not significant.	No mitigation.

Areas of Controversy

MCA 60-2-133 directs MDT to construct a four-lane facility, if funding is available, even though the existing and future (2027) traffic volumes do not warrant a four-lane facility.

Unresolved Issues with Other Agencies

There are no unresolved issues with other agencies.

Permits Required

The permits and approvals listed below will be required for the preferred alternative and must be obtained prior to any construction:

- Section 402/Montana Pollutant Discharge Elimination System (MPDES) authorization from MDEQ Permitting and Compliance Division. The MPDES permit requires a storm water pollution prevention plan that includes a temporary erosion and sediment control plan. The erosion and sediment control plan identifies BMPs, as well as site-specific measures to minimize erosion and prevent eroded sediment from leaving the work zone.
- CWA Section 404 permit from the U.S. Army Corps of Engineers for any activities that may result in the discharge or placement of dredged or fill materials in waters of the U.S., including wetlands.
- SPA 124 Permit from the MFWP-Fisheries Division. The SPA permit is required for projects that may affect the bed or banks of any stream in Montana or its tributaries.
- Short-Term Water Quality Standard for Turbidity related to construction activity (318 Authorization) from the MDEQ-Water Quality Bureau for any activities that may cause unavoidable violations of state surface water quality standards for turbidity, total dissolved solids or temperature.
- Underground Storage Tank/Piping Removal from the MDEQ, including prior local Fire Official approval from the relevant jurisdiction.
- MBTA (Depredation Permit) from the U.S. Fish and Wildlife Service (if the project will result in the taking of active migratory bird nests or migratory birds).
- Montana Floodplain and Floodway Management Act (Floodplain Development Permit) from Hill and Blaine Counties.

In addition to these permits, MDT and FHWA will comply with the stipulations in the Memorandum of Agreement between the FHWA, MDT, and SHPO for the impacted historic site.

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Other Federal Actions Required

No other federal actions are required for implementation of this project.

Conclusion

All four build alternatives would meet the project purpose and need. The proposed improvements would provide an efficient, safe highway that is attractive to the needs of local communities, agriculture, industry, commerce, and tourism. All alternatives would improve traffic operations and meet MDT current design standards, which would provide a wider shoulder, improve the clear zone, improve horizontal and vertical curves, and increase the offset between railroad crossings and the highway in prioritized locations to improve safety. The two-lane alternatives, including the preferred alternative, would have fewer adverse environmental impacts than the four-lane alternatives. Several agencies with permitting or regulatory approval for the project, including the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and the Montana State Historic Preservation Office, indicated their preference of a two-lane alternative over a four-lane alternative because a two-lane alternative minimizes impacts. Funding for the two-lane alternatives could be obtained through MDT's regular funding prioritization process, whereas additional funding for the four-lane alternatives is limited to 100 percent federal funding.

The preferred alternative is the Improved Two-Lane with Passing Lanes Alternative because it provides efficiency for the traveling public that is comparable to the four-lane alternatives. It would also provide a new, greatly improved and safer highway facility to serve the local communities, agriculture, industry, commerce and tourism, while incurring fewer environmental impacts than the four-lane alternatives. Funding for the Improved Two-Lane with Passing Lanes Alternative could be obtained through MDT's regular funding prioritization process. Therefore, there is reasonable certainty that funding for this alternative would be available and therefore implemented.

1.0 Project Purpose and Need

1.1 Purpose of the Proposed Project

The purpose of the US Highway 2 (US 2), Havre to Fort Belknap project is to replace the aging US 2 facility with an efficient and safe highway that will meet the needs of local communities, agriculture, industry, commerce and tourism. The project will fit the physical setting of the area in order to preserve and enhance the area's scenic, cultural, historic, environmental and commercial resources.

In addition to providing a safe and efficient highway, the project will provide the traveler an opportunity to experience the beauty and culture of the area and its communities. The highway corridor design will provide the opportunity to enhance tourism while providing efficient access to agricultural and commercial enterprises.

1.2 Summary of Need for the Proposed Project

In the United States, a sound transportation system is an integral part of the infrastructure needed to maintain economic viability. In northern Montana, communities are almost solely dependent on the highway system to meet their transportation needs and to facilitate the economic health of the communities.

This project will provide highway improvements to US 2 that meet the following needs:

- Provide an efficient highway to support economic vitality
- Reduce roadway deficiencies
- Improve safety
- Improve traffic operations

Proposed improvements will improve the highway to current Montana Department of Transportation (MDT) design standards and will support the economic viability of the project area. Improvements to roadway deficiencies will correspondingly improve traffic operations and safety on US 2.

1.3 Project Description

MDT, in cooperation with the Federal Highway Administration (FHWA) has prepared this Final Environmental Impact Statement (EIS) for a segment of the US Highway 2 corridor between Havre and Fort Belknap in Montana to identify needed improvements to the highway. This portion of US 2 has some of the highest traffic volumes and is one of the

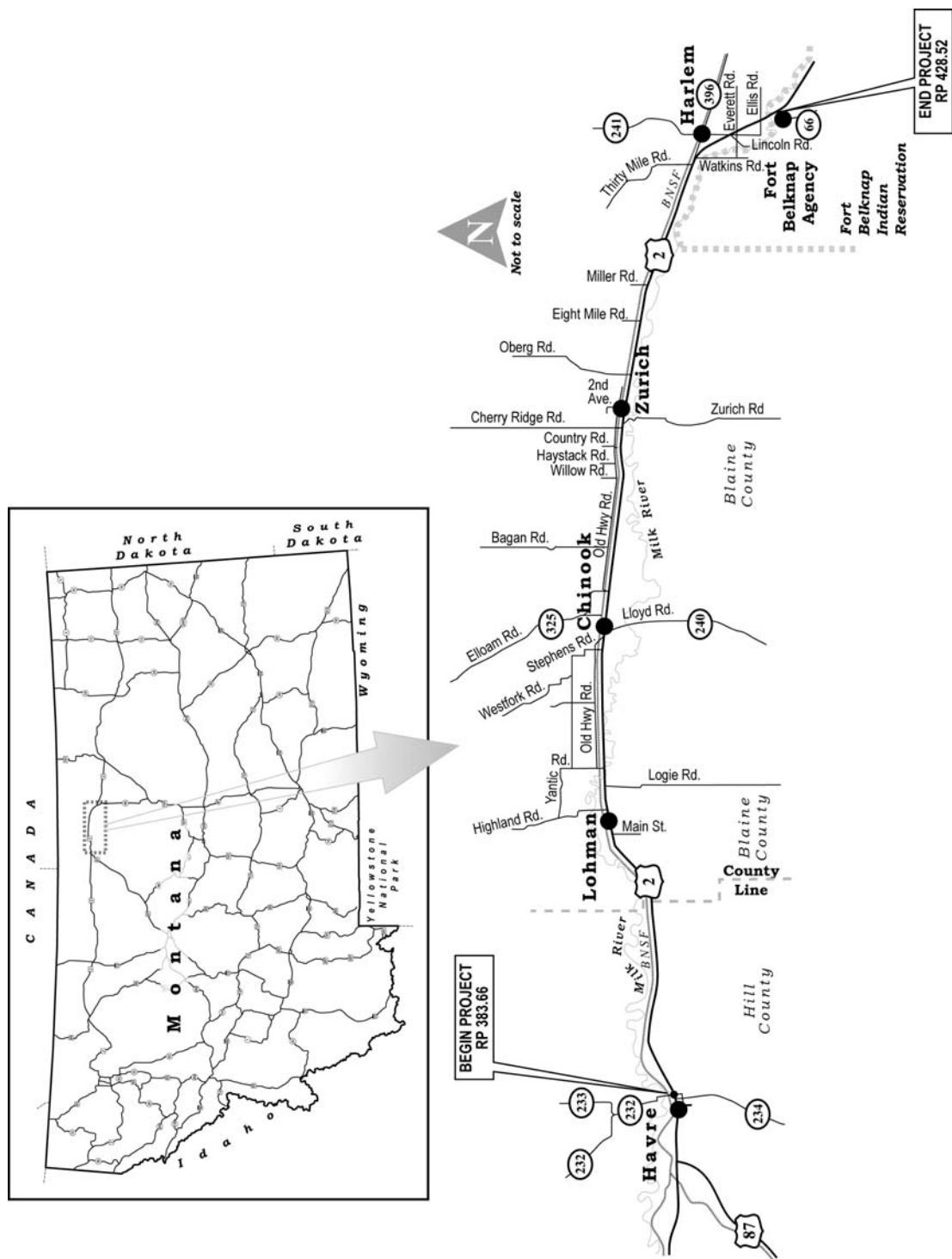
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narrowest sections along US 2 in Montana. It is the only continuous east-west roadway in the study area, and very few intersecting roads with any regional continuity exist in this area. The project limits extend from the east side of Havre, reference post (RP) 383.66, to the junction of US 2 with Montana (MT) Highway 66, RP 428.52, for a total distance of 72.2 km (44.9 mi). The project is referred to as US 2, Havre to Fort Belknap, PLH-TCSP 1-6(44)384, CN 4951.

The project is located in Hill and Blaine Counties, in the Milk River Valley in north central Montana. It is the northernmost U.S. highway across the continental United States, and it parallels the Burlington Northern Santa Fe (BNSF) Railway Hi-Line route for much of its alignment; the rail and highway corridor are thus commonly referred to as the “Hi-Line.” The existing highway is located immediately south of the railroad for the majority of the project length.

Figure 1.1 on the following page shows the project study area and project limits.

Figure 1.1 Project Study Area



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The project area is characterized by hilly terrain at the western end of the corridor, in Hill County; the remainder of the highway runs through more level plains. The Bears Paw Mountains to the south extend several thousand feet above the surrounding plains. The region is primarily rural and agricultural, with four main communities in the study area – Havre, Chinook, Harlem, and Fort Belknap – and two smaller communities, Lohman and Zurich.

US 2 is within 2 km (1.2 mi) of the Milk River throughout most of the corridor and crosses the river twice. The highway is south of the river at the western limits of the project and crosses at the Milk River east of Lohman. The highway is north of the river for most of the remainder of the project, and crosses the river once again just north of Fort Belknap. Much of the project corridor is within the Milk River 100-year floodplain (see Figure 1.2).

Figure 1.2 Milk River as seen from US 2 east of Havre



Havre, at the western limits of the study area in Hill County, is one of the largest cities on the Hi-Line in Montana. It is the primary economic center for the study area and has 9,261 residents per the U.S. 2000 Census. Chinook is the county seat and the largest city in Blaine County, with 1,386 residents. It primarily serves the surrounding agricultural community. Harlem, with 848 residents, is the location of one of the region's largest and busiest grain elevators. Fort Belknap is located at the eastern terminus of the proposed improvement area and is the largest community in the Fort Belknap Indian Reservation, with 1,262 residents, or approximately half of the reservation's population.

This segment of US 2 serves as the primary connection between the communities in the region. The average daily traffic volumes along this segment range from 2,400 to 3,800 vehicles; the highest volumes are located in the Harlem to Fort Belknap segment.

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The average projected annual traffic growth rate between 2007 and 2027¹ is 1.0 percent per year west of Chinook and 2.0 percent east of Chinook (Table 1.1). These growth rates result in the following traffic volume projections for the project study area.

Table 1.1 Average Annual Daily Traffic

Section of Corridor	2002	2007	2027
West of Chinook	2,890	3,040	3,700
East of Chinook	2,330	2,570	3,820

Source: MDT

The relationship between the volume of traffic and the capacity of the highway is called level of service (LOS). The measure is a qualitative scale and ranges from LOS A, at which motorists are able to drive at their desired speed and passing demand is well below passing capacity, to LOS F, at which traffic demand exceeds capacity and no passing opportunities are available. All segments of the project corridor currently operate at LOS B or higher during both peak and off-peak times of day.

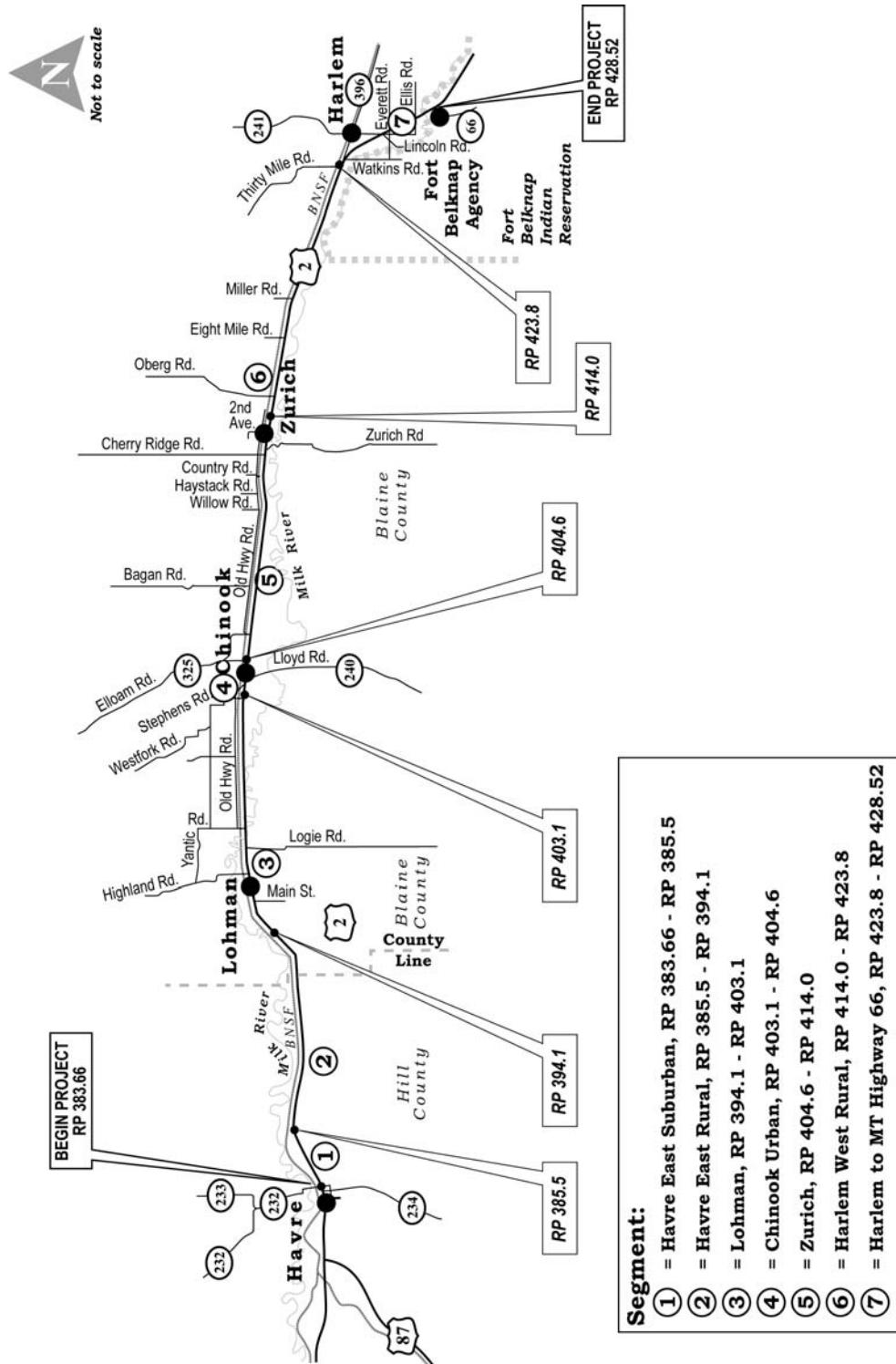
The majority of the existing roadway is a two-lane rural highway with a posted speed limit of 110 km/h (70 mph) during the day and 105 km/h (65 mph) at night. Trucks are limited to a posted speed of 100 km/h (60 mph) during the day and 90 km/h (55 mph) at night. Urban and transitional area speeds are posted in several locations in the corridor: east of Havre, where the speed limit is 90 km/h (55 mph) for a short distance; and within the Chinook town limits, where the speed limit is reduced to 80 km/h (50 mph) and then 60 km/h (40 mph) on the eastern and western approaches to town, and 40 km/h (30 mph) between Missouri Street and Illinois Street.

For the purposes of describing the location of impacts, the highway corridor has been divided into seven segments based on previously planned MDT project limits, changes in roadway character from rural to urban at the communities in the corridor, and changes from hilly to level terrain. These segments are shown in Figure 1.3 on the following page.

¹ Roadway design for reconstruction projects is typically based on a 20-year projection of traffic volume. This ensures that there will be adequate capacity to accommodate increasing traffic volumes through the life of the facility under reasonable maintenance. As the letting date for this project is 2007, the 20-year volume projection is for 2027.

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Figure 1.3 Project segments



1.4 Project Background

MDT and FHWA initiated this EIS to evaluate the proposed action in response to a bill passed by the Montana State Legislature in 2001. Senate Bill 3, sponsored by District 48 Senator Sam Kitzenberg, called for the state to construct a four-lane highway from border to border in Montana, "generally along the present route of U.S. Highway 2... in order to increase tourism and bring economic development to Montana." The bill, as codified in the Montana Code Annotated (MCA) 60-2-133, directs that (1) MDT seek additional federal funding for the project without the requirement of a state funding match, and (2) no funds be expended for the project that would jeopardize future highway projects. Please see Section 3.2.1, Montana 2001 Senate Bill 3 and State Plans, for the full text of the bill.

Numerous projects for improvements to US 2 had already been slated to receive state and federal funding through the Statewide Transportation Improvement Program (STIP) prior to the passage of 2001 Senate Bill 3. The majority of these projects included overlays, reconstruction, or bridge improvements that would maintain MDT's National Highway System (NHS) standards for the corresponding level of traffic. Due to the relatively low volume of traffic on US 2, most of these improvements corresponded to a 12 m (40 ft) typical section with two 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders.

Four previously planned projects along the US 2 study corridor have been put on hold pending the outcome of this EIS (see Table 1.2). The Havre – East project was identified in the 2002-2004 and 2004-2006 STIP (NH 1-6(24)384). The Lohman – East and West project (NH 1-7(11)394), identified in the 2002-2004 STIP, included 15.6 km (9.7 mi) of reconstruction, including the replacement of the Milk River bridge between Lohman and Chinook.² The Chinook-Urban project (F 1-7(NP)404) included an overlay and improvements in the urban curb-and-gutter section to be compliant with the Americans with Disabilities Act (ADA). The Zurich – Harlem project (NH 1-7(19)414), identified in the 2002-2004 and 2004-2006 STIP, included 11.8 km (7.3 mi) of highway reconstruction and rehabilitation between the towns of Zurich and Harlem.

² The Milk River bridge was damaged beyond repair in November 2003. A replacement bridge was constructed by MDT in 2004.

Table 1.2 Previously Planned Projects along US 2 Proposed Improvement Corridor

Project Name	MDT Project No.	Project Limits	Type of Project
Havre - East (includes Suburban & Rural Sections)	NH 1-6(24)384, CN 4049	RP 383.655 to RP 393.855, 16.4 km (10.2 mi)	Reconstruction with shoulder widening and turn lanes.
Lohman - East & West	NH 1-7(11)394, CN 1314	RP 393.855 to RP 403.595, 15.6 km (9.7 mi)	Reconstruction with shoulder widening and Milk River bridge replacement. ³
Chinook - Urban	F 1-7(NP)404	RP 403.505, to RP 404.090, 0.94 km (0.58 mi)	Overlay and ADA improvements; railroad spur closure.
Zurich - Harlem	NH 1-7(19)414, CN 2142	RP 414.0, to RP 421.3, 11.8 km (7.3 mi)	Resurfacing with shoulder widening.

Source: Montana Department of Transportation, 2004-2006 STIP, 2003-2005 STIP, 2002-2004 STIP, 2001-2003 STIP.

Projects with federal funds must follow the National Environmental Policy Act (NEPA) process, which is a decision-making process that evaluates the social, environmental, and economic impacts associated with the project. Projects with the potential to result in significant impacts are evaluated in an environmental impact statement (EIS). Federal regulations require that actions evaluated in such a study (1) connect logical termini and be of sufficient length to address social, economic, and environmental issues on a broad scope, (2) have independent utility and be a reasonable expenditure even if no additional transportation improvements in the area are made, and (3) not restrict consideration of other reasonably foreseeable transportation improvements (23 CFR 771.111(f)). Transportation projects require that the project limits be of sufficient length to allow the full impacts of the proposed actions to be studied to ensure a meaningful evaluation of alternatives.

MDT is currently designing the US 2 – Havre project, which will improve US 2 through the City of Havre. The project begins at approximately RP 381.4 on the west side of Havre and ends at RP 383.66 at the eastern curb and gutter limits of town. The project is an urban project intended to improve safety and driving convenience and to reduce maintenance costs through improvements to pavement structure, storm drainage, and traffic signing, striping, and signalization. The majority of proposed improvements will be constructed within the existing right-of-way. Minor amounts of additional right-of-way or easements may be acquired to improve storm drain outfalls or approaches to US 2, however, these needs will be minimal. The eastern terminus of this project provides a rational starting point for evaluating improvements to US 2 to the east. This terminus allows for the transition between the four-lane Havre urban section and the rural highway to the east to be studied, as well as improvements to the primarily rural highway between Havre and Fort Belknap.

³ The Milk River bridge was damaged beyond repair in November 2003. A replacement bridge was constructed by MDT in 2004.

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The US 2, Havre to Fort Belknap EIS starts at this terminus and extends to MT Highway 66 in Fort Belknap. The Fort Belknap-East project was completed in 1994 and entailed reconstruction of 26.4 km (16.4 mi) of US 2, beginning 0.8 km (0.5 mi) east of the intersection with MT Highway 66. MT Highway 66 is therefore a rational terminus as well. Since improvements to US 2 in Havre and east of Fort Belknap have been either implemented or scheduled for implementation, it is logical to evaluate the entire segment between these improved locations to identify where future improvements, if any, are needed. In addition, MT Highway 66 in Fort Belknap is a major intersecting highway on US 2. Since Havre is the nearest commercial center for Chinook, Harlem and Fort Belknap, the traffic moves between these towns and Havre. Therefore, the city limits of Havre and MT Highway 66 in Fort Belknap are also rational endpoints for assessing travel patterns and traffic impacts.

With the Montana 2001 Senate Bill 3 directive to construct a four-lane highway on US 2, this 72.2 km (44.9 mi) section (Havre to Fort Belknap) is of sufficient length to fully evaluate, on a broad scope, traffic, environmental, economic, and social impacts associated with such proposed improvements. Transportation improvements to this segment of US 2 are not dependent on any other transportation projects; they therefore have independent utility and would not preclude other improvements in the corridor such as pavement preservation. Future projects in the study area will be programmed or considered pending the approval of a preferred alternative in the Record of Decision for the EIS.

1.5 Need for the Proposed Project

As a result of traffic and design analysis as well as public and agency input, the following major needs are identified for the proposed highway improvements:

- Provide an efficient highway to support economic vitality
- Reduce roadway deficiencies
- Improve safety
- Improve traffic operations

1.5.1 Need to Provide an Efficient Highway to Support Economic Vitality

A sound transportation system is an integral part of the infrastructure that maintains economic sustainability of communities, especially rural communities. As with any community infrastructure, as transportation infrastructure ages, it requires replacement to meet improved standards and sustain the economic health and vitality of the community.

US 2 is the thread that binds the local communities to one another and to northern Montana and beyond. US 2 needs to effectively and efficiently provide for the conveyance of goods, services, and people to connect and support these communities.

Local and regional mobility

The communities along US 2 are interdependent and rely upon one another for their economic vitality. Citizens work, live, socialize and patronize businesses in every town along the highway. Citizens may live in Harlem, work in Chinook, see a doctor in Fort Belknap, and shop in Havre. Because of the interconnected nature of these towns, they function as one large dispersed community along the Hi-Line. Evidence of local use of US 2 is indicated by a license plate survey of traffic traveling on US 2 conducted on a Wednesday in July 2002 in Chinook for percentages of local, regional and long distance traffic.

Table 1.3 License Plate Survey on US 2

License Plate	Percent of Traffic Counted
Local (Hill & Blaine Counties)	59%
Regional (adjacent counties)	9%
US 2 Corridor (outside study area)	5%
Long distance (other Montana counties & out-of-state)	27%

Source: Traffic Count by David Evans and Associates, Inc., 2002.

As shown in Table 1.3, more than half of the traffic traveling on US 2 is local traffic. Local communities are almost solely dependent on US 2 to meet their transportation needs because there is not another roadway connecting these communities. US 2 is important to the mobility of the community and provides the:

- Main route for emergency vehicles between the communities on the Hi-Line and the medical/health care facilities in Havre and Fort Belknap;
- Most efficient access among the Hi-Line communities for medical, shopping, educational, and work purposes; and
- Most efficient route for the movement of goods and services between the Hi-Line communities.

US 2, named the 163rd Infantry Regimental Highway in honor of the Montana National Guard soldiers who fought in World War II and the citizens who have served in the regiment over the past 135 years, is the main east-west highway in northern Montana. It traverses the entire state at a distance of 40 to 100 km (24.9 to 62.2 mi) south of the Canadian Border and connects Troy to Bainville within Montana. The nearest east-west interstate is I-90, approximately 240 km to 320 km (149.3 mi to 199 mi) south of the Havre to Fort Belknap segment of US 2. In addition, this segment of US 2 is part of a nationwide continuous route from Everett, Washington to St. Ignace, Michigan.

Within the study corridor, US 2 provides access to Secondary Highways connecting to the Canadian ports of entry at Wild Horse and Willow Creek north of Havre, and at Turner north

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of Fort Belknap. Since September 11, 2001, the U.S. Border Patrol has enhanced security and increased staffing by 80 employees at the regional headquarters in Havre and throughout northern Montana. This unit depends on US 2 to access the ports of entry and to conduct surveillance activities. The Border Patrol has stated that the narrow two-lane highway and lack of passing sometimes hampers emergency response (ICF Consulting, 2003b).

Local and regional economic vitality

The local economy relies heavily on agriculture, particularly wheat and cattle, as a source of employment and income. Approximately 14 percent of the area employment is in agriculture or agricultural services (nearly 25 percent of all employment in Blaine County is agricultural). Farmers in the area truck their grain to grain elevators along the BNSF rail line in Havre and Harlem. From there, the grain is shipped via rail to ports in the Pacific Northwest. BNSF has consolidated grain elevators along the Hi-Line during the past several years. This has resulted in the gradual closing of facilities in Chinook, and has increased truck traffic shipping grain to Havre and Harlem. Improvements to safety and traffic operations on US 2 would benefit the local agricultural community by improving the transport of agricultural goods to rail.

The tourism industry also relies on good transportation infrastructure. Tourism has been growing in the study area over the last decade. Hill and Blaine Counties and the Fort Belknap Indian Reservation are home to a number of historical, cultural, and natural resource attractions. These include the Bear Paw Battleground, part of the Nez Perce National Historic Park; Beaver Creek Park, the largest county park in the U.S.; Snake Butte, a Native American cultural site and home to wild buffalo; Fort Assinniboine, a military post of the old west; Wahkpa Chu'gn, the best-preserved buffalo jump archaeological site in the northern Great Plains; Havre Beneath the Streets, Havre's historic underground mall from 100 years ago; and numerous other museums and attractions. Glacier National Park, a major tourist destination, is located on US 2, 275 km (171 mi) west of the study area. Local economic development officials and Chambers of Commerce are focusing on tourism initiatives to further increase earnings from the tourism industry. Better signage and highway safety improvements on US 2 are anticipated to support tourism activity in the area. (Refer to *US 2, Havre to Fort Belknap EIS, Existing Economic Conditions Report*, ICF Consulting, Inc., July 2003.)

Improvements to US 2 are expected to build a stronger connection among the Hi-Line communities between Havre and Fort Belknap as well as a stronger connection from these communities to the rest of Montana and beyond. US 2 plays a vital role in sustaining the region's economy because much of the business activity in the area relies on US 2 to carry goods and people. As such, highway improvements would contribute to sustaining the region's economy.

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1.5.2 Need to Reduce Roadway Deficiencies

The existing highway between Havre and Fort Belknap does not meet current MDT standards for a two-lane rural highway. Roadway geometry deficiencies include lack of adequate shoulder width; steep side slopes in the clear zone; and inadequate separation of highway and railroad at intersections. Most bridges are of substandard width. Poor grading alongside the highway and undersized or clogged culverts result in drainage problems along some locations in the corridor.

Roadway width

The roadway is classified as a rural Non-Interstate National Highway System (NHS) highway. Current standards for this type of highway recommend a design speed of 110 km/h (70 mph) for level terrain and a 12-m (40-ft) minimum surface width, allowing for a minimum of two 3.6-m (12-ft) travel lanes and 2.4-m (8-ft) shoulders. The existing section, along the majority of the corridor, consists of two 3.6-m (12-ft) travel lanes and 0.6-m (2-ft) shoulders.

Shoulder width and recovery area

The standard shoulder width for a Non-Interstate NHS highway is typically 2.4 m (8 ft), with an adequate area for recovery should a vehicle leave the roadway. The existing roadway has a substandard shoulder width of 0.6 m (2 ft) for 89 percent of the eastbound and 88 percent of the westbound travel lanes. Steep side slopes exacerbate this deficiency, as there are few safe places for vehicles to pull over. A wider shoulder, in combination with an improved recovery area, can improve safety for errant vehicles, emergency vehicles, wide loads and agricultural equipment, delivery vehicles, buses, and highway patrol cars stopping vehicles. US 2 is also a popular bicycle-touring route in the summer, and the shoulders are too narrow to comfortably accommodate bicyclists and passing vehicles. Sufficient shoulder width occurs only in short portions of the urban and suburban segments along the corridor: Havre East – Suburban; Chinook – Urban; and Harlem to MT Highway 66. Figure 1.4 shows an example of the deficient shoulder along the highway, and Table 1.4 shows shoulder width by highway segment.

Figure 1.4 Typical narrow shoulder condition



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Table 1.4 Summary of Roadway Characteristics and Deficiencies

Project Segment	Approx. Length km (mi)	Deficient Clear Zone		Substandard Vertical Curve	Substandard Horizontal Curve	Shoulders			
		Eastbound	Westbound			East & West	East & West	Shoulder Width m (ft)	Eastbound
Havre East Suburban	2.3 km (1.4 mi)	41% 2 Locations	58% 3 Locations	35% 1 Location	0% 0 Locations	0.6 m (2 ft)	100%	86%	0% 14%
Havre East Rural	14.5 km (9.0 mi)	44% 20 Locations	40% 18 Locations	10% 4 Locations	3% 1 Location	0.6 m (2 ft)	100%	100%	
Lohman	14.5 km (9.0 mi)	25% 14 Locations	32% 15 Locations	0% 0 Locations	1% 1 Location	0.6 m (2 ft)	100%	100%	
Chinook Urban	3.2 km (2.0 mi)	53% 5 Locations	21% 4 Locations	9% 1 Location	0% 0 Locations	0.6 m (2 ft)	73%	72%	27% 28%
						3.0-3.6 m (10-12 ft) ¹			
Zurich	14.5 km (9.0 mi)	52% 17 Locations	29% 13 Locations	1% 1 Location	3% 2 Locations	0.6 m (2 ft)	100%	100%	
Harlem West Rural	14.5 km (9.0 mi)	14% 15 Locations	29% 12 Locations	0% 0 Locations	0% 0 Locations	0.6 m (2 ft)	100%	100%	
Harlem to MT Highway 66	8.9 km (5.5 mi)	18% 12 Locations	5% 6 Locations	2% 1 Location	5% 1 Location	0.6 m (2 ft)	16%	16%	84% 84%
						2.4 m (8 ft)			
TOTALS	72.3 km (44.9 mi)	33%	29%	4%	2%	0.6 m (2 ft)	89%	88%	1% 1%
						2.4 m (8 ft)	10%	11%	
						3.0-3.6 m (10-12 ft) ¹	1%	1%	

¹Shoulder area used for parking

Source: David Evans and Associates, Inc., December 20, 2002. U.S. 2 Havre to Fort Belknap Preliminary Traffic Engineering and Geometrics Report.

Clear zone

Clear zone is the area adjacent to the roadway that provides recovery area for errant vehicles. The clear zone guideline for a two-lane rural highway such as US 2 with a 110 km/h (70 mph) speed and average daily traffic volumes of 1,500-6,000 is approximately 8.4 m (28 ft) with a 6:1 or flatter fill slope (AASHTO, 1996). The clear zone does not meet these guidelines along 33 percent of the eastbound and 29 percent of the westbound travel lanes within the study area. This is a result of obstacles in the clear zone, steep side slopes, or inadequate width. Table 1.4 shows insufficient clear zone by highway segment. Clear zone deficiencies create dangerous conditions for vehicles pulling off of the highway and for errant vehicles moving into the clear zone. (See Figures 1.5 and 1.6)

Figure 1.5 Power poles in clear zone



Figure 1.6 Steep side slope in clear zone



Railroad offset

The distance between the highway and the BNSF Railway tracks (also called the 'offset') is inadequate at some intersecting roads for large trucks to stop between US 2 and the tracks.

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The legal length of a truck is 27 m (90 ft), but the length of a truck that can obtain an over-length permit is 34 m (110 ft). Therefore, general guidance is to offset the highway from the railroad so that the edge of the travelway is no closer than 46 m (150 ft) from the nearest rail of the nearest track. The average offset for both public and private crossings within the project study area is 37 m (123 ft), with approximately 18 m (60 ft) as the minimum and 71 m (234 ft) as the maximum offset distance.

Inadequate distance between the railroad and the highway causes two primary problems. Trucks turning onto US 2 have inadequate storage distance between the railroad and the travel lane and must stop on the railroad tracks while waiting to turn onto the highway. Also, vehicles turning off of US 2 must wait in the through travel lane on US 2 while trains are passing, as there is insufficient distance between the roadway and railroad. In some areas, such as the crossing at Indiana Street in Chinook, inadequate sight distance compounds this problem. (See Figures 1.7, 1.8 and 1.9)

Figure 1.7 Proximity of railroad to highway



Figure 1.8 Distance between railroad and highway in Chinook



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Figure 1.9 Intersection of US 2 and Indiana Street



Vertical and horizontal curves

Typically, the vertical and horizontal curves of a highway are designed based on the speed of traffic on that highway. Horizontal curves have smaller radii on highways with low traffic speeds, and larger radii on highways with higher traffic speeds. Vertical curves are the hills and valleys in rolling terrain; grade changes can be steeper for lower traffic speeds, and must be more gradual for higher traffic speeds. Currently, a number of the vertical and horizontal curves on US 2 are inadequate for the design speed. There are eight substandard vertical curves along the highway; half of these are located in the hilly terrain of Segment 2, Havre East – Rural. There are five substandard horizontal curves dispersed throughout the corridor. Table 1.4 shows substandard curves by highway segment.

Bridges

There are 32 bridges within the project corridor. Of these, only three meet the current standard of 12 m (40 ft) or greater width: Battle Creek bridge (replaced in 1999), 5 km (3 mi) west of Zurich; the structure crossing the main irrigation canal in Harlem; and the new Milk River bridge constructed in 2004. The Milk River bridge was replaced after an accident in November 2003 damaged the bridge beyond repair (see Figure 1.10). The replacement bridge opened to traffic in June 2004 and meets current MDT design standards. None of the bridges in the study area is structurally deficient. Because of their narrow width, however, all but the new Milk River bridge and the Battle Creek bridge are recommended for full replacement or widening. (See Figure 1.11.) Although the Harlem Canal crossing meets the current standard of 12 m (40 ft) width, it may need to be replaced to accommodate additional irrigation flow.

Figure 1.10 Milk River Bridge Collapse



Figure 1.11 Typical bridge with narrow shoulders



Drainage

There are isolated drainage concerns along the corridor, particularly on the eastern end near Harlem. Citizens have stated that irrigation water excess often fills side ditches with water, softening the subgrade of the roadbed and creating side slope problems. Some of the existing irrigation and cross culverts under the highway are undersized and deteriorating.

1.5.3 Need to Improve Safety

Improvements in the highway corridor can improve safety. The roadway deficiencies discussed above contribute to the existing safety conditions on the highway. Other measures, such as access management and auxiliary or turn lanes at intersections, can also improve safety. Even though these conditions are not specifically identified as deviations from MDT design standards, they should be addressed appropriately to reduce accidents along the highway.

Crash history

A five-year crash data study, conducted by MDT for the years 1997 through 2001, shows that the accident rate for the project area of US 2 is 1.51 as compared to a 1.36 statewide average for this highway classification. The severity index and rate for this section of US 2, however, are below state averages for all vehicles and for trucks; and the truck accident rate is below statewide average as well. The accident and severity rates are summarized in Table 1.5. A large percentage (43 percent) of all crashes reported during the five-year study period occurred with a wild animal, confirming public statements that deer are a primary cause of accidents along the highway.

Table 1.5 Accident and Severity Rates, 1997 - 2001

	Statewide Average for Rural Non-Interstate NHS	US 2 Study Corridor
All Vehicles Accident Rate ¹	1.36	1.51
All Vehicles Severity Index ²	2.35	1.91
All Vehicles Severity Rate ³	3.20	2.88
Truck Accident Rate ^{1,4}	1.15	0.91
Truck Severity Index ^{2,4}	2.33	2.19
Truck Severity Rate ^{3,4}	2.68	1.99

¹ Accident rates are defined as the number of accidents per million vehicle-miles traveled (VMT).

² Severity index is defined as the ratio of the sum of fatal and incapacitating injury accidents times 8, plus the number of other injury accidents times 3, plus the number of property damage accidents compared to the total number of accidents.

³ Severity rate is defined as the accident rate multiplied by the severity index.

⁴ Statewide average truck accident rate, truck severity index, and truck severity rate are for the years 1995 through 1999.

Source: David Evans and Associates, Inc., December 20, 2002. U.S. 2 Havre to Fort Belknap Preliminary Traffic Engineering and Geometrics Report.

The MDT Statewide Engineering Improvement Program (SEIP) has performed several crash analyses on this corridor in the past decade and identified eighteen specific areas of concern within the study corridor. Five of these areas have not yet received improvements and should be addressed in this project. The accident clusters are located at the eastern limits of Segment 1, Havre East – suburban; the Red Rock Creek (Coulee) bridge just west of Chinook; two clusters just east of Chinook; and at the southern edge of Zurich. Table 1.6 shows a summary of these five remaining accident cluster locations identified by the SEIP, and lists recommendations for safety improvements at these locations.

Table 1.6 Accident Cluster Locations

US 2 Reference Post	Safety Engineering Improvement Program Year	Recommendation/Improvement
RP 384.3 - 384.9	1996, 1997	Two-way left turn lane, benefit/cost ratio <1, not implemented
RP 402.1 - 402.8	1996	Suggest slope flattening on next construction project
RP 405.2 - 406.3	1997, 1999	No feasible countermeasures to address a specific accident trend were identified
RP 406.8 - 407.2	1995, 1999	Include wider shoulders with rumble strips in next construction project
RP 412.3 - 413.5	1994, 1995, 1998, 2001	No feasible countermeasures to address a specific accident trend were identified

Source: David Evans and Associates, Inc., December 20, 2002. U.S. 2 Havre to Fort Belknap Preliminary Traffic Engineering and Geometrics Report.

Bicycle facilities

US 2 is a popular bicycle touring route during the summer months, and is listed as one of 11 selected adventure bicycling routes in the U.S. by the Adventure Cycling Association. Currently, 89 percent of the project study area has 0.6-m (2-ft) shoulders; this width is too narrow to comfortably accommodate bicyclists and passing vehicles. According to MDT guidance, a widened shoulder would be a practical method of providing a bicycle facility where the bicycle traffic volume is not high enough to warrant separate bicycle lanes. A standard 2.4-m (8-ft) shoulder would create safer conditions for bicyclists and through traffic.

Pedestrian accommodation

There is little pedestrian traffic along the highway because of the rural character of the area, and therefore sidewalks are generally not needed along US 2. However, pedestrians walk along and across the highway between Fort Belknap and Harlem, in Chinook and at school bus stops east of Havre. In Chinook, pedestrian traffic exists in several primary locations: along the highway in town; along the highway between town and the Sweet Memorial Nursing Home to the west; and crossing the highway at the intersection of US 2 with Indiana Street. Indiana Street connects the residential area north of the railroad and US 2 to central Chinook; the intersection receives pedestrian traffic, particularly children walking to and from school.

There is currently a paved sidewalk on the south side of US 2 in Chinook. A gravel bicycle path on the south side of US 2 extends from the western edge of Chinook west toward the nursing home. There is no sidewalk on the north side of the highway in town. Additionally, there is no pedestrian crossing marked at the intersection of US 2 and Indiana Street. (See Figures 1.12 and 1.13) Citizens in Chinook have asked for a sidewalk on the north side of the highway and an extension of the south sidewalk to the nursing home. Citizens have also

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identified the need to improve the safety of the pedestrian crossing at the intersection with Indiana Street.

Figure 1.12 Intersection of US 2 and Indiana Street in Chinook



Figure 1.13 Bicycle path west of Chinook



Wildlife and Vehicular Accidents

As mentioned previously, 43 percent of all crashes in the five-year crash study period occurred with a wild animal, typically deer. In the Harlem West Rural segment, 73 percent of all crashes occurred with a wild animal. Although attracted to the many drainages, the deer are scattered throughout the corridor. There are no specific migration corridors in the study area. Numerous comments at public meetings asked for improvements to address vehicle/wild animal crashes. Some of these suggestions included wildlife underpasses and improved clear zones.

Lighting

There is currently a lack of consistently spaced street lighting in the Havre East - Suburban and Harlem to MT Highway 66 segments of the highway, where a high number of accesses and intersections exist. Installation of streetlights at regular intervals may help to minimize accidents at the driveway and public road intersections along these segments. Street lighting has also been identified in public meetings as a desired improvement to help identify town limits along the highway. Drivers would then be more aware that they are approaching a community and may lower their speed. However, in general the study corridor does not have a high proportion of accidents under dark (not lighted) conditions; 87 percent of accidents reported on the highway occurred under clear or cloudy weather conditions.

1.5.4 Need to Improve Traffic Operations

Existing operational conditions in the study corridor, along with the roadway deficiencies and safety conditions mentioned previously can result in inefficient traffic operations. This segment of US 2 is the only continuous east-west roadway in the area, and therefore serves as the primary connection among the communities in the area, and as a regional highway. As a result, US 2 carries a high percentage of local traffic on a day-to-day basis, in addition to regional through traffic. It serves a wide variety of users, including vehicular traffic, agricultural equipment, trucks, and bicyclists. Conflicts inevitably occur among the various users traveling at different speeds and between through traffic and local traffic. Improvement areas have been identified to help increase operational efficiency on the highway.

Passing provisions

Passing provisions, based on roadway striping, are provided along 81 percent of eastbound and westbound travel lanes. However, the actual passing supply depends upon the availability of passing sight distance and gaps in the opposing traffic stream. With variable traffic speeds, traffic platoons develop and grow as faster vehicles catch up with slower ones and are unable to pass. As the percentage of traffic following in the platoons increases, passing opportunities are reduced. The compounding effects of high speeds over 110 km/h (70 mph) during passing maneuvers, the magnitude and density of private and public accesses, high volume of trucks, and narrow shoulders along the majority of the corridor may result in greater than normal uncertainty in passing opportunities. Such uncertainty may cause longer platoons of traffic, driver impatience, and more dangerous passing maneuvers. Thus, although roadway striping indicates that passing opportunities exist along 81 percent of the corridor, in reality, passing opportunities are less due to traffic characteristics.

Access

US 2 currently operates under the least restrictive form of access control described in the *MDT Road Design Manual*. Access is regulated through revocable permits for the construction and maintenance of approaches, and access points must satisfy specific spacing

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and design requirements. The high number of existing public roads and private accesses, and the lack of turn, acceleration, and deceleration lanes at intersections create a situation where slow-moving vehicles enter and exit the highway on a frequent basis, disrupting high-speed through traffic and creating safety concerns. The number of access points between Harlem and Fort Belknap in particular is cited as a major concern by the public.

Turning and acceleration lanes

There are currently no auxiliary lanes for turning or acceleration/deceleration at intersections on this segment of US 2. Left and right turn lanes are desirable to allow for deceleration and provide a refuge for turning vehicles. Improvements of this type have the potential to decrease delays to through traffic and reduce accidents, as the turning traffic will be separated from the high-speed through traffic. Accident experience and/or sight distance restrictions warrant consideration of left and right turn lanes at approximately half of the public intersections along the highway.

Acceleration lanes for turning vehicles also have the potential to reduce accidents and increase travel efficiency for through traffic, as the traffic turning onto the highway will have time and distance to accelerate to meet the speeds of through traffic. Acceleration lanes are recommended for consideration at several intersections on the eastern end of the corridor, based on high turning and truck volumes and the intersection-related accident history.

There are five intersections identified as special concerns because of their higher traffic volumes and proximity to accident clusters. These are the intersections of US 2 with: Indiana Street in Chinook; Watkins Lane/Central Avenue, Main Street, and MT Secondary 241 in Harlem; and MT Highway 66 in Fort Belknap. None of these intersections warrants a traffic signal now or within the next 20 years. However, auxiliary lanes would decrease disruption to high-speed through traffic and improve safety for traffic turning onto and off of the highway. (See Figures 1.14 and 1.15)

Figure 1.14 Intersection of MT Highway 66 with US 2 (taken from MT Highway 66)



Figure 1.15 Intersection of MT Secondary 241 with US 2 east of Harlem



School bus operations

School buses currently stop along the highway during morning and afternoon school commute periods east of Havre and between Zurich and Harlem. There are several stops within the Havre East Suburban segment of the corridor, between 32nd Avenue and 38th Avenue. An off-highway bus turnaround for the Havre School District buses is located in the vicinity of 38th Avenue. There is currently one school bus stop between Harlem and Fort Belknap, at a private residence on US 2.

Buses stop along the highway within the travel lanes during passenger pick-up and drop-off because there are no bus pullouts. Stopping in the travel lane disrupts the flow of through traffic. Vehicles traveling in both directions on a two-lane highway must legally stop before reaching a stopped school bus with red signal lights flashing. Traffic may not proceed until the children have entered the bus or deboarded and reached the side of the highway, and the school bus ceases operation of its flashing red signal lights (MCA 61-8-351). In addition, due to the lack of shoulders, students getting on or off the bus stand either in the roadside ditch or near the travelway, which is a safety concern.

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2.0 Alternatives

Through the scoping process, input was gathered from agencies and the public to assist in the development of alternatives that address the purpose of and need for the project, as well as to establish the criteria to be used for evaluation of the alternatives.

This chapter presents the Montana Department of Transportation (MDT) design standards and describes the process for analyzing the preliminary alternatives and for developing the final alternatives. A range of alternatives that could potentially satisfy the purpose of and need for the project were fully developed to include design details such as potential alignments, right-of-way limits, and construction costs. This chapter also documents those alternatives that were considered but were eliminated from further consideration.

MDT's and FHWA's preferred alternative is the Improved Two-Lane with Passing Lanes Alternative (see Section 2.5 for a detailed description). This alternative provides travel efficiency for the traveling public that is comparable to the four-lane alternatives. It would also provide a new, greatly improved and safer highway facility to serve the local communities, agriculture, industry, commerce and tourism, while incurring fewer environmental impacts than the four-lane alternatives. Funding for the Improved Two-Lane with Passing Lanes Alternative could be obtained through MDT's regular funding prioritization process. Therefore, there is reasonable certainty that funding for this alternative would be available. In addition, the Improved Two-Lane with Passing Lanes Alternative complies with the Montana Code Annotated (MCA) 60-2-133 (Montana 2001 Senate Bill 3) if the required special funding is not available for implementation of a four-lane. However, the selection of the Improved Two-Lane with Passing Lanes Alternative as the preferred alternative would be justified based on other factors analyzed in the development of the EIS regardless of the funding issues.

In the Draft EIS (June 2004), FHWA's preferred alternative was identified as the Improved Two-Lane with Passing Lanes based on the reasons described above. MDT's preferred alternative in the Draft EIS (June 2004) was identified as either the Four-Lane Divided Alternative or the Four-Lane Undivided Alternative because a four-lane facility on US 2 was directed by Montana 2001 Senate Bill 3 which has been codified in the Montana Code Annotated (MCA) 60-2-133. (Refer to Section 3.2.1, Montana 2001 Senate Bill 3 and State Plans, for the full text of MCA 60-2-133.)

MDT and FHWA reviewed all public and agency comments received on the Draft EIS. (Refer to Appendix K for a copy of all comments.) Several agencies with permitting or regulatory approval for the project, including U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, and the Montana State Historic Preservation Office, indicated their preference of a two-lane alternative over a four-lane alternative because a two-lane alternative minimizes impacts. After reviewing all public and agency comments and the impact evaluation of the alternatives, MDT and FHWA

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selected the Improved Two-Lane with Passing Lanes as the preferred alternative for the Final EIS because this alternative provides efficiency for the traveling public that is comparable to the four-lane alternatives. It would also provide a new, greatly improved and safer highway facility to serve the local communities, agriculture, industry, commerce and tourism, while incurring fewer environmental impacts than the four-lane alternatives.

2.1 Development of Range of Alternatives

2.1.1 MDT Design Standards

Highways on the state system are classified in two categories: the National Highway System (NHS) and the Surface Transportation Program. The Surface Transportation Program is the funding source for improvements to the primary, secondary and urban highway systems. The National Highway System was designated by Congress. Both Interstate and Non-Interstate facilities are included in the NHS. US 2 is classified as a rural Non-Interstate NHS highway.

MDT adopted geometric design standards for the Non-Interstate NHS highways in February 1994. The following table shows the applicable standards for US 2.

Table 2.1 MDT Design Standards for Non-Interstate NHS Highways

	Rural Segments	Urban Segments
Minimum Design Speed	110 km/h (70 mph)	70 km/h (45 mph)
Minimum Radius of Curvature	500 m (1,640 ft)	45 m (148 ft)
Minimum Stopping Sight Distance	Absolute – 180 m (591 ft)	Absolute – 50 m (164 ft)
	Desirable – 250 m (820 ft)	Desirable – 50 m (164 ft)
Minimum Passing Sight Distance	750 m (2,461 ft)	Not applicable
Maximum Gradient	3%	7%

Sources: Montana Department of Transportation, November 2000. *MDT Traffic Engineering Manual*, and Montana Department of Transportation, November 2000. *MDT Road Design Manual*.

The MDT standards for rural Non-Interstate NHS highways recommend a design speed of 110 km/h (70 mph) for level terrain, and a 70 km/h (45 mph) design speed for urban segments. The posted speed would be 50 km/h (30 mph) for the urban section passing through Chinook in all alternatives in order to maintain the existing posted speed limit.

The *MDT Traffic Engineering Manual* recommends that all roadways should intersect as close to 90 degrees as possible. Any intersections with a skew greater than 30 degrees from perpendicular will be evaluated for realignment during the design process.

All alternatives were developed based on MDT design standards.

2.1.2 Access Management Concepts

Access management is the process of managing the points of access to highway facilities through the use of access control or a permitting system. The purpose of access management is to maintain the flow of traffic and the functional integrity of the highway, enhance public safety, preserve the public's investment in the highway, reduce future maintenance costs, and permit highway expansion on existing locations.

US 2 currently operates under the least restrictive form of access control, Regulated Access. The proposed reconstruction offers the opportunity to consolidate existing access and manage future access. However, there are no specific access management goals associated with this project. Access management will be applied as appropriate to the build alternatives. There are several guiding principles of good access management that will be employed during the design process, as summarized below:

- Provide reasonable access to property;
- Maintain any existing necessary accesses that facilitate local farming operations;
- Consolidate existing access points where possible; and
- Limit number of conflict points and separate conflict areas to improve traffic operations and safety.

Although no specific access management concepts have been identified for this project, there are general principles of good access management that will be employed during the design process for each type of access. These guiding principles are summarized below by access type. These principles would be refined and applied to the future access control planning for the corridor.

New Accesses

- To the extent possible, all new direct access to US 2 should be limited to other State highways, County roads or City Streets.
- New direct private access to US 2 generally would not be granted unless no other reasonable alternative access (e.g. rerouting, consolidation with another access, etc.) to the public road system is available.
- If reasonable alternative access is unavailable or if it can be shown to be beneficial to the safe operation of US 2, one direct access per parcel may be allowed. Additional access may be allowed if a traffic engineering study documents significant benefits to the safe operation of US 2.
- Whenever possible, new access should be shared with an adjacent property.
- If the ultimate improvement of US 2 results in a divided roadway, new accesses would be limited to right-in/right-out movements unless the location meets spacing requirements and magnitude of use warrants a median opening.

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Existing Access

- Existing access should be eliminated if reasonable alternative access to the public road system can be provided.
- Whenever feasible, existing multiple accesses to a single parcel should be combined.
- Adjacent property owners should be encouraged to share accesses.
- Existing non-standard accesses should be brought into compliance with current MDT design standards.
- If the improvements to US 2 result in a divided roadway, existing accesses would be limited to right-in/right-out movements unless the location meets spacing requirements and magnitude of use warrants a median opening.

Land Use Changes

- A change in approach volumes of 20 percent or greater from the original access permit's stated volume or a new generator which produces 150 or more vehicle trips per day would be considered a change in use of that approach and will require a new approach permit. The determinations of new approach volume shall be based on the criteria and methodology contained in the current edition of the Institute of Transportation Engineers (ITE) *Trip Generation* manual, or shall be taken from an approved traffic study.
- Any land use changes would require that a new approach permit be submitted to MDT and that the access be re-evaluated for safety, location and size. Based on this evaluation, mitigation measures may be required by MDT to maintain a safe and efficient highway.
- Re-evaluation may result in relocation or elimination of the approach, if alternate reasonable access is appropriate and available at the time of application.
- Agricultural changes in land use would not qualify as a land use change for the purpose of this discussion.

Field Accesses

- New field accesses should be discouraged.
- Every reasonable attempt should be made to eliminate existing field accesses by providing alternative access to the local road system.
- Only one access is recommended for each individual parcel/property that has no other access available.
- Consolidation of field access should be encouraged among adjoining property owners.

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- If the improvements to US 2 result in a divided roadway, field access would be limited to right-in/right-out movements. Special consideration may be given to those farmers or ranchers having access to land on both sides of the highway.

2.1.3 Alternatives Development Process

A range of typical section and alignment alternatives was developed based on public comments, Citizens Advisory Committee input, the project purpose and need and resulting goals, data analysis, MDT design standards, agency input, and regulatory requirements.

The range of alternatives included various corridor alignments, transportation system management and travel demand strategies, several highway cross sections, and elements specific to localized areas of the project corridor. Overall corridor alignments included a new alignment approximately 7 km (4 to 5 mi) south of the existing corridor, an alignment offset to the south of the existing highway but still within the existing corridor, an alignment that would generally follow the existing highway alignment, and a split alignment with travel lanes on both north and south sides of the railroad.

Typical cross-sections considered included two lanes, two lanes with intermittent passing lanes, and four lanes with and without a dividing median. Localized elements under consideration included parking lanes, center turn lanes, various combinations of left-turn lanes and right-turn acceleration and deceleration lanes, pedestrian and bicycle paths, one-way couplets through Chinook and Harlem, bypasses of individual communities, relocating a portion of the railroad, improvements to local highway facilities other than US 2, and landscape and entry treatments within communities.

These initial alternatives were evaluated against criteria relating to the purpose and need for the project. The alternatives carried forward for detailed evaluation met the criteria shown in Table 2.2. MDT, FHWA, local communities, and the public provided input on the screening process.

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Table 2.2 Initial Alternatives Screening Criteria

Project Need	Screening Criteria
Provide an efficient highway to support economic vitality	<ul style="list-style-type: none"> • Alternative must provide an efficient highway to support economic vitality • Alternative must provide the opportunity to enhance tourism through highway-related amenities while providing efficient access to agriculture and business • Alternative must have a feasible construction cost
Reduce Roadway Deficiencies	<ul style="list-style-type: none"> • Alternative must meet MDT design standards
Improve Safety	<ul style="list-style-type: none"> • Alternative must improve railroad/highway interface • Alternative must improve vehicular safety • Alternative must improve bicycle safety • Alternative must improve pedestrian safety
Improve Traffic Operations	<ul style="list-style-type: none"> • Alternative must accommodate speed differentials of various highway users

Through this evaluation process, numerous alternatives were eliminated from further consideration; these alternatives are described in Section 2.9, Alternatives Considered but Eliminated.

2.2 Alternatives Carried Forward

Typical Sections

The following five alternative typical sections were carried forward into detailed evaluation: No-Build, Improved Two-Lane, Improved Two-Lane with Passing Lanes, Four-Lane Undivided, and Four-Lane Divided alternatives. The build alternatives would satisfy the purpose and need for the project by addressing concerns about traffic operations, safety and roadway deficiencies while providing an efficient highway that is sensitive to the context of the corridor and the economic vitality of the area.

Alignment

An alignment was developed for these alternatives that would improve safety while minimizing impacts. This proposed alignment lies on or near the existing alignment in order to minimize physical impacts while still improving safety at railroad crossings in the corridor. Due to safety conditions of the current alignment and physical constraints posed by the Milk River and BNSF Railway, there are no other alignments that are reasonable alternatives. Following the existing alignment exactly would perpetuate existing safety conditions at railroad crossings. Physical constraints limit the placement of alternative alignments. The Milk River closely parallels the highway to the north (west of Lohman) and to the south (east of Lohman). The BNSF Railway lies immediately north of the highway for

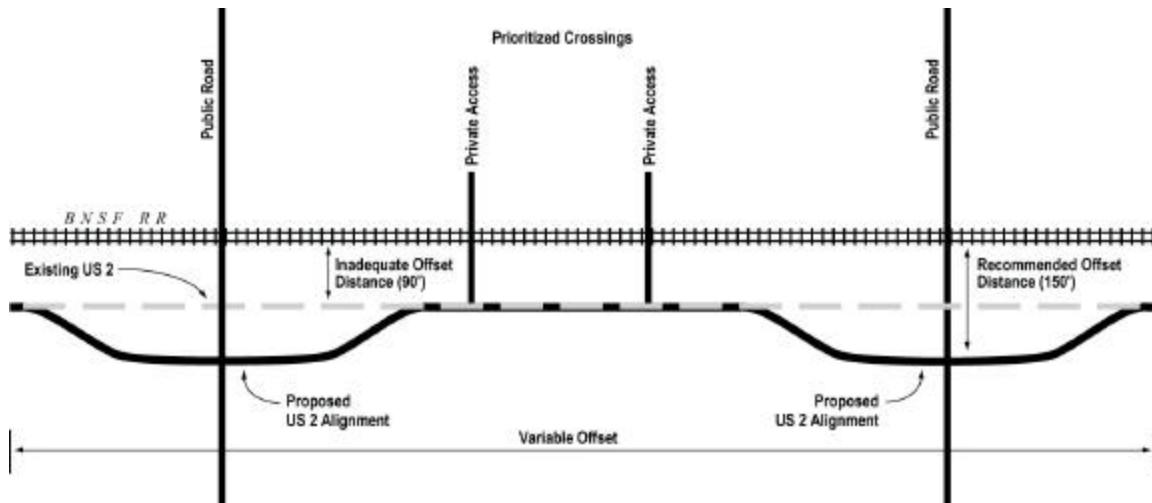
the majority of the project corridor. Moving the alignment farther south, or north of the railroad, would cause far greater physical impacts and would not address the safety issues on this existing segment of US 2. These additional alignments that were considered and eliminated, include the Southern Corridor Bypass, an Offset Alignment for the entire corridor, and a Split Alignment. These alternatives are described in Section 2.9.1, Corridor Alternatives Eliminated.

The proposed alignment would maintain an improved offset of approximately 46 m (150 ft) from the railroad at prioritized railroad crossings as shown in Figure 2.1. At other crossings, the distance between the railroad tracks and the highway would be no closer than the existing condition.

To identify the priority crossings, railroad crossings were ranked according to safety and magnitude of traffic volume. For example, crossings with a higher number of accidents were given a higher ranking than those with fewer or no accidents. Crossings with substandard distance between the railroad and the highway, crossings with steep grade changes on each side of the railroad, and crossings with high usage were given higher rankings. By combining the safety and operational rankings, crossings were given a high, medium, or low priority for improvement. Based on this methodology, the general alignment was developed that balanced safety with additional right-of-way needs and environmental impacts.

In general, the centerline of each proposed build alternative is identical, except within Chinook. Two alignment alternatives are evaluated in Chinook. For the Four-Lane Divided Alternative, the alignment is shifted south at the high priority railroad crossing at the US 2 and Indiana Street intersection. For the other build alternatives, the alignment remains in its present location to minimize impacts.

Figure 2.1 On-Alignment with Railroad Offset at Prioritized Crossings.



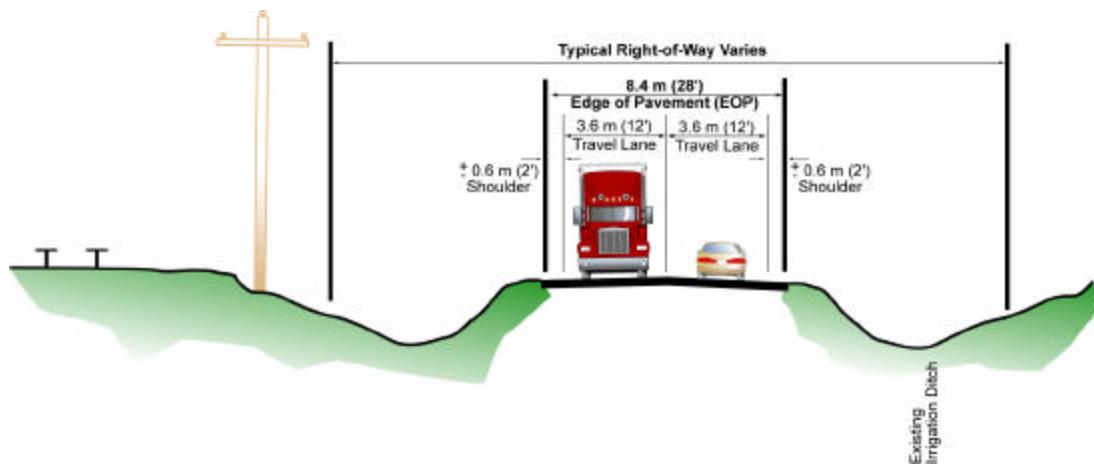
2.3 No-Build Alternative

The No-Build Alternative would provide no improvements to US 2 from Havre to Fort Belknap (see Figure 2.2). Projects that were previously planned for this corridor, which included reconstruction with shoulder widening and resurfacing of the existing two-lane highway, have been designated as inactive, pending the outcome of this EIS and would not be included in the No-Build Alternative. It is assumed that maintenance of the facility would continue under this alternative.

As noted in Section 2.1.2, US 2 currently operates under the least restrictive form of access control, known as Regulated Access in the *MDT Road Design Manual*. Access is regulated through revocable permits for the construction and maintenance of approaches. The access points must satisfy spacing and design requirements, allow vehicles to enter and exit with minimum interference to through traffic and be located such that they best suit the traffic and land use characteristics of the highway. Under the No-Build Alternative, the corridor would remain under Regulated Access control.

The No-Build Alternative does not have any construction costs and would not require any additional funding above that currently allocated for routine maintenance of the facility.

Figure 2.2 Existing Typical Section



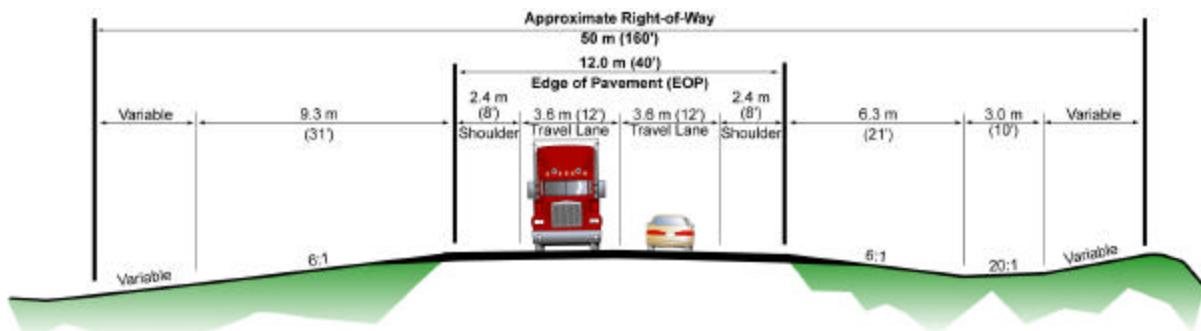
This alternative does not meet the purpose of and need for this project, as shown by comparison to the screening criteria in Table 2.2. It would not reduce roadway deficiencies because it does not currently meet MDT design standards. The existing deficiencies, including substandard shoulders, insufficient clear zone, and steep side slopes, would continue to exist. In addition, there would be no improvement in the offset of the highway from railroad crossings. This alternative would not improve safety for vehicles, bicycles, or pedestrians. There would be no improvement to traffic operations with this alternative. It would provide no highway-related amenities such as identifying or interpretive signage to enhance tourism. This alternative is used as a baseline for comparison of the build alternatives.

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2.4 Improved Two-Lane Alternative

In rural segments of the project corridor, this alternative would provide an improved two-lane highway. Shoulders would be widened from the existing condition and rumble strips would be added in the shoulder. The clear zone to each side of the highway would be wider and flatter to improve safety and meet current MDT design standards. This typical section would consist of MDT's standard minimum width for a rural Non-Interstate NHS highway: two 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders for a total paved roadway width of 12 m (40 ft) (see Figure 2.3).

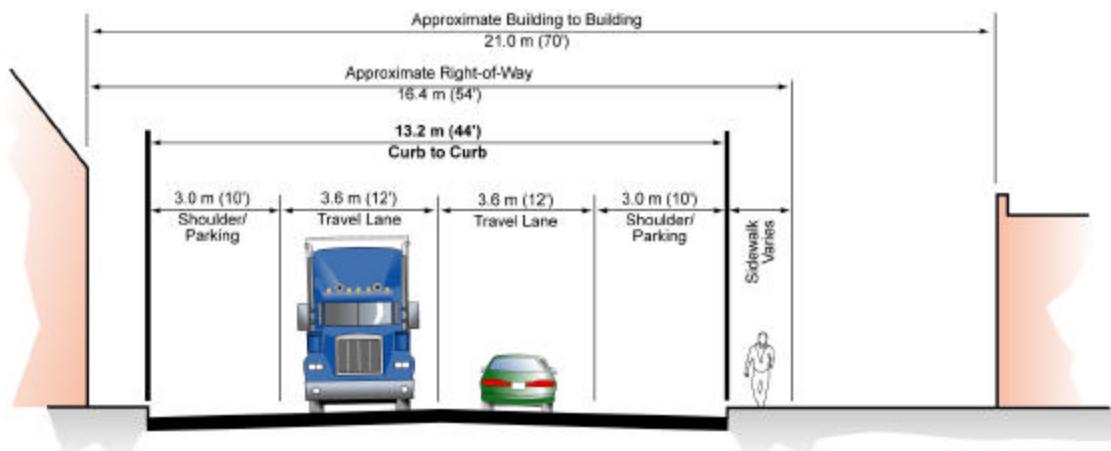
Figure 2.3 Improved Two-Lane Rural Typical Section



The typical section would differ in communities. The following descriptions provide examples of roadway widths and lane configurations in the communities. The Havre East Suburban segment, from RP 383.66 to RP 383.9, would consist of four 3.6 m (12 ft) travel lanes and a 4.8 m (16 ft) center two-way left-turn lane or series of left-turn lanes. From RP 383.9 to RP 385.2, the section would consist of two travel lanes and a center two-way left-turn lane or series of left-turn lanes. The portion of the highway from RP 383.66 to RP 384.7 at 38th Avenue Northeast would incorporate curb and gutter. These sections would serve as a transition area between the existing urban four-lane section in Havre and the improved rural two-lane section to the east, and would provide a turn lane for the multiple accesses in this area. Please see Figure 2.5 for a plan view of the alternative.

Through Chinook from RP 403.4 to RP 404.0 the highway section would remain within the existing curb lines and would accommodate two travel lanes and two shoulder/parking lanes with limited parking in designated areas (see Figure 2.4). Improvements, including turn lanes, would be made at the intersection of Indiana Street and US 2 to improve turning movements across the railroad tracks to the north. Right-turn lanes may be added if warranted, and sidewalks would be improved along US 2. The speed through this area would remain as currently posted, 50 km/h (30 mph).

Figure 2.4 Urban Two-Lane Typical Section, Chinook



Through Harlem, from Thirty Mile Road (RP 423.7) to MT Secondary 241 (Lincoln Road) (RP 425.6), the highway section would consist of two travel lanes, a center two-way left-turn lane or series of left-turn lanes, and westbound right-turn acceleration and deceleration lanes. This cross-section would provide left and right-turn lanes into the four major roads accessing Harlem and a turn lane for the multiple business accesses in this area. The skewed intersection at MT Secondary 241 (Lincoln Road) would be modified to provide a 90-degree approach for southbound traffic at US 2. The intersection of Water Plant Road, Lincoln Road, and US 2 would be evaluated for operational improvements during final design.

Through Fort Belknap, from the Milk River (RP 428.0) to the intersection of US 2 with MT Highway 66 (RP 428.52) the highway section would remain similar to the existing condition, with two travel lanes and eastbound right-turn acceleration and deceleration lanes from First Street to MT Highway 66. In addition, a westbound left-turn lane would be provided at First Street; and turn lanes would be added at the waste transfer station access. A widened median may be incorporated to give refuge for vehicles turning left onto US 2 from MT Highway 66. This may or may not be in lieu of the acceleration/deceleration lane at the transfer station. The provision of a widened median would not result in the need for additional right-of-way.

Eastbound left-turn lanes would be incorporated in rural sections at the following intersections with US 2, as warranted by traffic volumes or railroad crossing conditions: Highland Road (RP 393.6), John Stephens Road (RP 403.1), Old Highway Road (RP 405.8), Bagan Road (RP 407.4), Cherry Ridge Road (RP 412.4), Second Avenue in Zurich (RP 413.0), and Thirty Mile Road (RP 423.7).

School bus loading and unloading would be improved with the widened shoulders of the Improved Two-Lane Alternative. However, potential bus pull-out and/or turnaround locations would be discussed with the respective school districts.

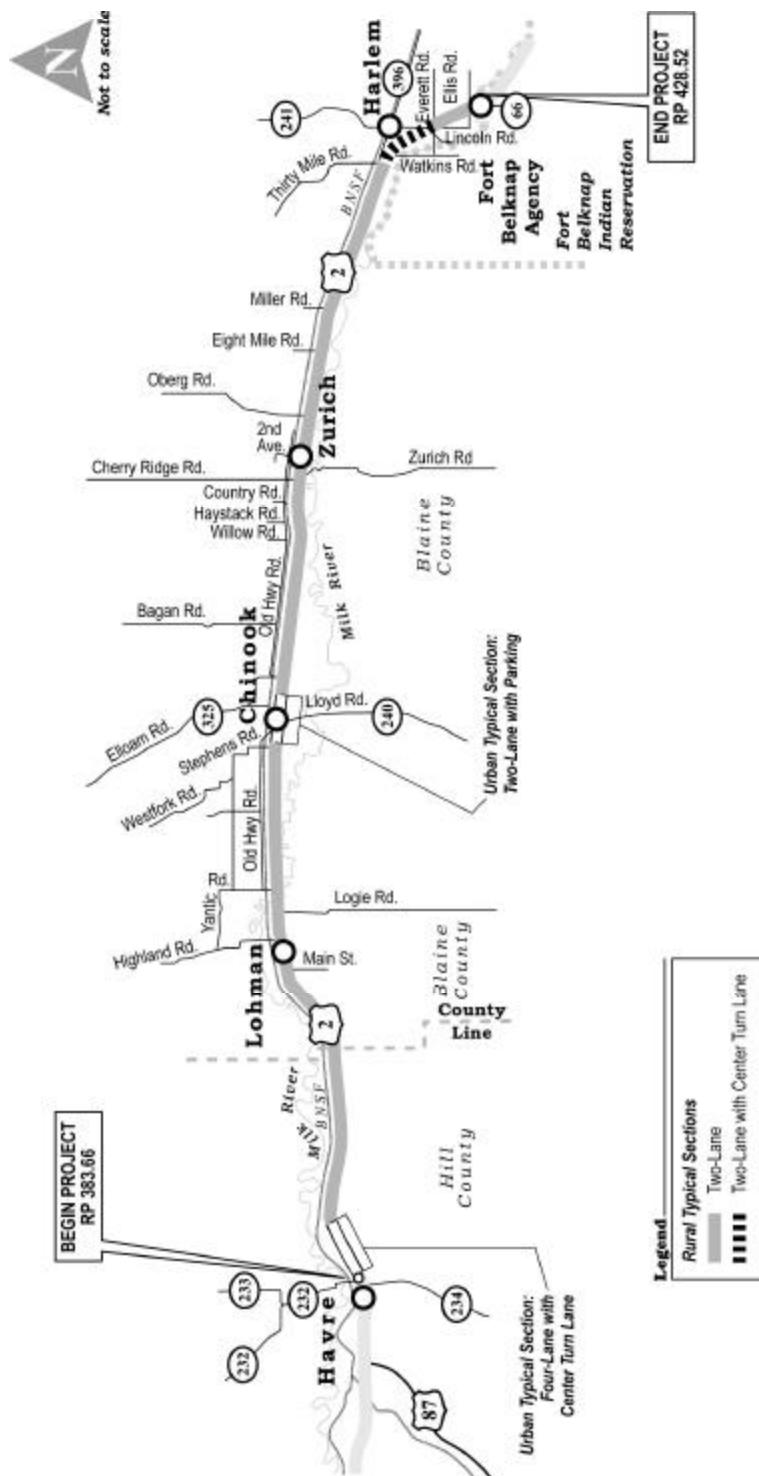
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A specific access management plan would be developed by MDT during final design; the plan would be consistent with the access management guidelines presented in Section 2.1.2.

The approximate project cost for this alternative, including construction, right-of-way, design, and other costs would be \$69.7 million. This cost was estimated using MDT unit prices and reflects 2003 present worth. This cost estimate would be refined in more detail during final design.

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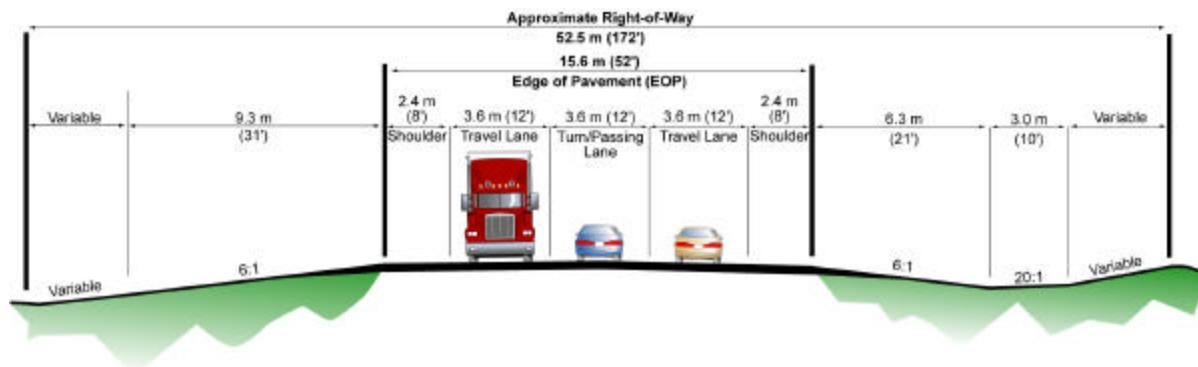
Figure 2.5 Preliminary Corridor Plan for Improved Two-Lane Alternative



2.5 Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

In rural segments of the project corridor, this alternative would provide an improved two-lane highway with intermittent passing lanes. MDT's standard two-lane section consists of two 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders; this alternative would also provide a system of intermittent 3.6 m (12 ft) passing lanes spaced every 8 to 13 km (5 to 8 mi) in each direction (see Figures 2.6 and 2.8). The passing lanes would serve to clear traffic around slower vehicles upon exiting communities and in dispersed locations in the corridor. The total roadway typical section width would be 12 m (40 ft) in two-lane sections and 15.6 m (52 ft) in three-lane sections. There would be no median.

Figure 2.6 Improved Two-Lane with Passing Lane Rural Typical Section



This system of passing lanes would provide an additional margin of safety and operational efficiency over the Improved Two-Lane Alternative. Passing lanes would be located throughout the project corridor and would clear traffic around slower vehicles upon exiting communities and in dispersed locations in the corridor. Sets of eastbound and westbound lanes would be located between Havre and Lohman, Lohman and Chinook, Chinook and Zurich, and Zurich and Harlem (see Figure 2.8). Passing lanes would be approximately 1.6 km (1 mi) long. The passing opportunities provided by this alternative would be safer and more consistent than those in the Improved Two-Lane Alternative because there would be a full passing lane for the maneuver without the risk of encountering opposing traffic. Additional dedicated left-turn lanes 3.6 m (12 ft) in width would be provided at all accesses that fall within a passing lane area, resulting in a widened section of 19.2 m (64 ft) for the length of the turn lane. These turn lanes would keep turning vehicles out of the high-speed passing lane.

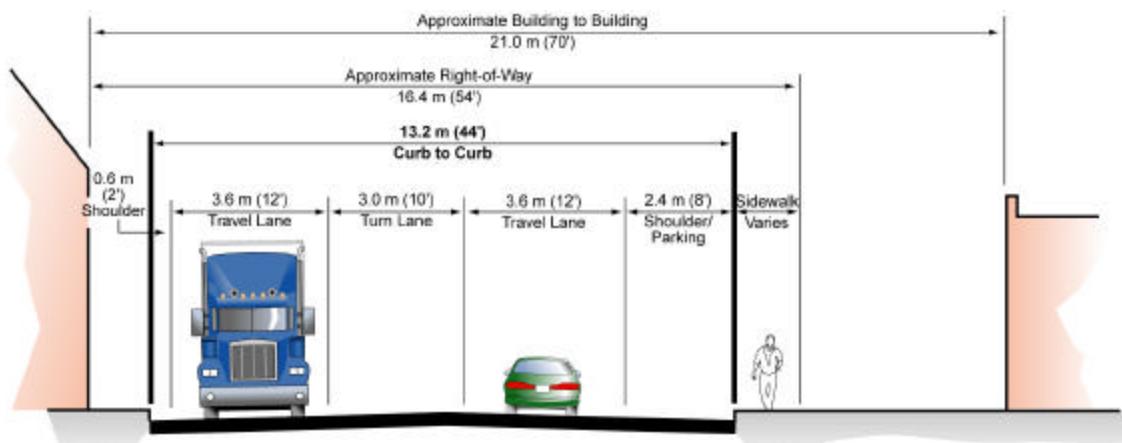
The typical section would differ in communities. The following descriptions provide examples of roadway widths and lane configurations in the communities. The Havre East Suburban segment, from RP 383.66 to RP 383.9, would consist of four 3.6 m (12 ft) travel lanes and a 4.8 m (16 ft) center two-way left-turn lane or series of left-turn lanes. At RP 383.9, the highway would taper down to two travel lanes with an eastbound passing lane and a center two-way left-turn lane or series of left-turn lanes. The portion of the highway from RP 383.66 to RP 384.7 at 38th Avenue Northeast would incorporate curb and gutter. The

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passing lane would extend for approximately 2.4 km (1.5 mi) east. The left-turn lanes would end at RP 385.2 with a left turn into a residential access road. These improvements would serve as a transition between the existing urban four-lane section in Havre and the proposed improved rural two-lane section to the east. The turn lane would serve the multiple accesses in this area and a dedicated passing lane would accommodate accelerating vehicles as they travel east from Havre. Please see Figure 2.8 for a plan view of the alternative.

Through Chinook from RP 403.4 to RP 404.0 the highway section would remain within the existing curb lines and would accommodate two travel lanes, a center two-way left-turn lane, and a shoulder/parking lane with limited parking in designated areas (see Figure 2.7). Improvements, including turn lanes, would be made at the intersection of Indiana Street and US 2 to improve turning movements across the railroad tracks to the north. Right-turn lanes may be added if warranted and sidewalks would be improved along US 2.

Figure 2.7 Urban Two-Lane with Turn Lane Typical Section, Chinook



Through Harlem, from Thirty Mile Road (RP 423.7) to MT Secondary 241 (Lincoln Road) (RP 425.6), the highway section would consist of two travel lanes, a center two-way left-turn lane or series of left-turn lanes, and westbound right-turn acceleration and deceleration lanes. This cross-section would provide left and right-turn lanes into the four major roads accessing Harlem and a turn lane for the multiple business accesses in this area. The skewed intersection at MT Secondary 241 (Lincoln Road) would be modified to provide a 90-degree approach for the southbound traffic at US 2. The intersection of Water Plant Road, Lincoln Road, and US 2 would be evaluated for operational improvements during final design.

Through Fort Belknap, from the Milk River (RP 428.0) to the intersection of US 2 with MT Highway 66 (RP 428.52) the highway section would remain similar to the existing condition, with two travel lanes and eastbound right-turn acceleration and deceleration lanes from First Street to MT Highway 66. In addition, a westbound left-turn lane would be provided at First Street, and turn lanes would be added at the waste transfer station access. A widened median may be incorporated to give refuge for vehicles turning left onto US 2 from MT Highway 66.

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This may or may not be in lieu of the acceleration/deceleration lane at the transfer station. The provision of a widened median would not result in the need for additional right-of-way.

Eastbound left-turn lanes would be incorporated in rural sections at the following intersections with US 2, as warranted by traffic volumes or railroad crossing conditions: Highland Road (RP 393.6), John Stephens Road (RP 403.1), Old Highway Road (RP 405.8), Bagan Road (RP 407.4), Cherry Ridge Road (RP 412.4), Second Avenue in Zurich (RP 413.0), and Thirty Mile Road (RP 423.7). Left-turn lanes would increase the highway typical section to 15.6 m (52 ft) at these locations.

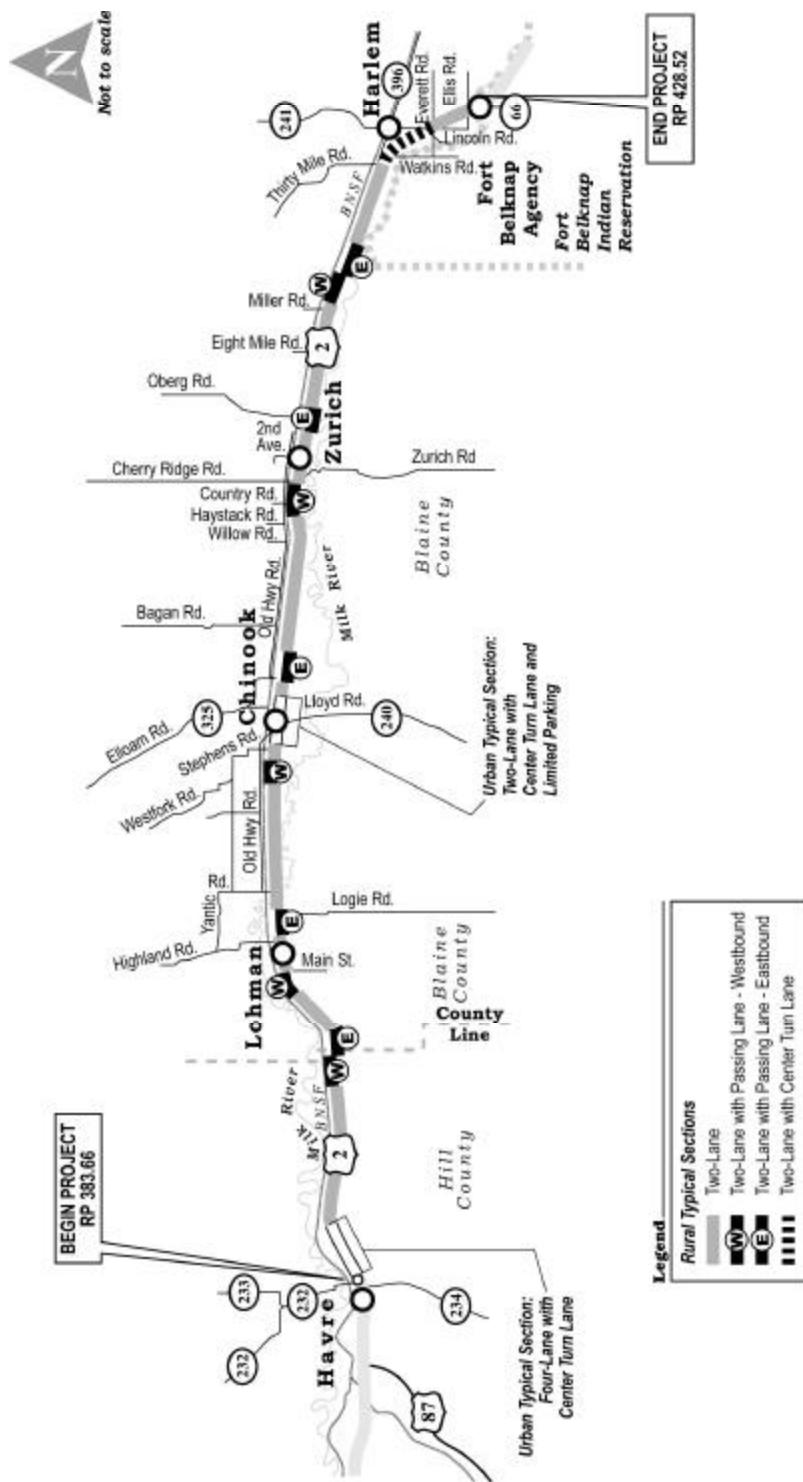
School bus loading and unloading would be improved with the widened shoulders of the Improved Two-Lane with Passing Lanes Alternative. However, potential bus pull-out and/or turnaround locations would be discussed with the respective school districts.

A specific access management plan would be developed by MDT during final design; the plan would be consistent with the access management guidelines presented in Section 2.1.2.

The approximate project cost for this alternative, including construction, right-of-way, design, and other costs would be \$73.4 million. This cost was estimated using MDT unit prices and reflects 2003 present worth. This cost estimate would be refined in more detail during final design.

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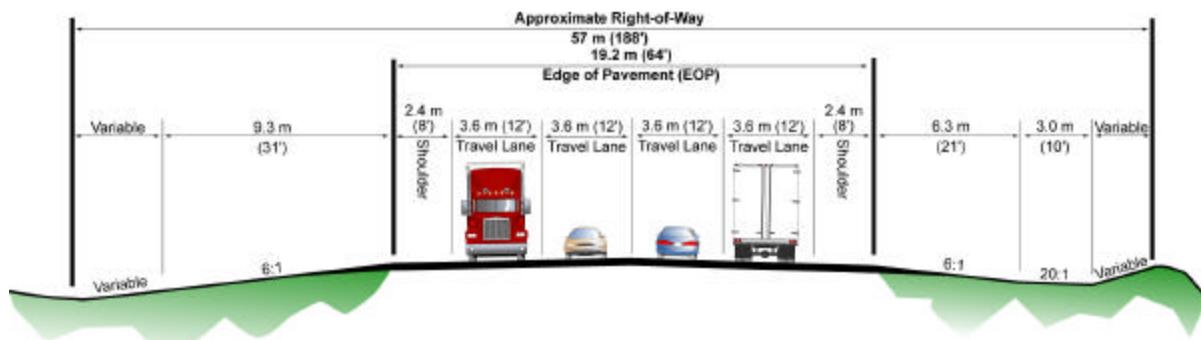
Figure 2.8 Preliminary Corridor Plan for Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)



2.6 Four-Lane Undivided

In rural segments of the corridor, this alternative would provide an undivided four-lane highway. The typical section would consist of four 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders; the total roadway section width would be 19.2 m (64 ft) (see Figure 2.9). There would be no median dividing opposing travel lanes.

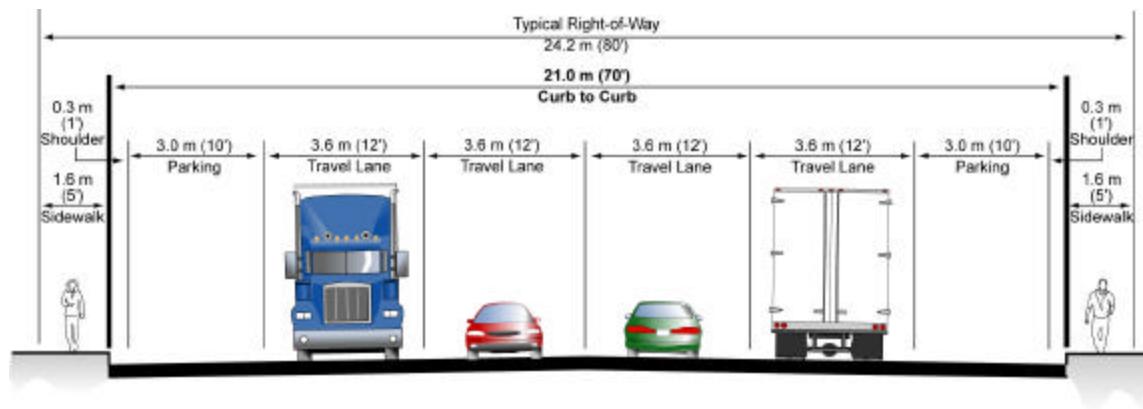
Figure 2.9 Four-Lane Undivided Rural Typical Section



The typical section would differ in communities. The following descriptions provide examples of roadway widths and lane configurations in the communities. The Havre East Suburban segment, from RP 383.66 to RP 385.2, would consist of four travel lanes and a center two-way left-turn or series of left-turn lanes. The portion of the highway from RP 383.66 to RP 384.7 at 38th Avenue Northeast would incorporate curb and gutter. This cross section would provide a left-turn lane for the multiple accesses in the area. Please see Figure 2.11 for a plan view of the alternative.

Through Chinook, from RP 403.4 to RP 404.0 the four-lane section would consist of four travel lanes and two shoulder/parking lanes with limited parking in designated areas (see Figure 2.10). The highway would maintain its current north curb line and expand south beyond the existing south curb line. Improvements, including turn lanes, would be made at the intersection of Indiana Street and US 2. Right-turn lanes may be added at other intersections if warranted and sidewalks would be improved along US 2.

Figure 2.10 Urban Four-Lane Typical Section, Chinook



Through Harlem, from Thirty Mile Road (RP 423.7) to MT Secondary 241 (Lincoln Road) (RP 425.6), the highway section would consist of four travel lanes and a center two-way left-turn lane or series of left-turn lanes. Westbound right-turn lanes would be added at the intersections of US 2 with Fourth Street and Main Street. This cross-section would provide turn lanes into the four major roads accessing Harlem and a turn lane for the multiple business accesses in this area. The skewed intersection at MT Secondary 241 (Lincoln Road) would be modified to provide a 90-degree approach for the southbound traffic at US 2. The intersection of Water Plant Road, Lincoln Road, and US 2 would be evaluated for operational improvements during final design.

Through Fort Belknap, from the Milk River (RP 428.0) to the intersection of US 2 with MT Highway 66 (RP 428.52) the highway section would transition from the improved four-lane to the existing two-lane section east of MT Highway 66. One of the eastbound travel lanes would become right-turn acceleration and deceleration lanes between First Street and MT Highway 66. One of the westbound travel lanes would end at RP 428.52, close to MT Highway 66. In addition, a westbound left-turn lane would be provided at First Street; and turn lanes would be added at the waste transfer station access. A widened median may be incorporated to give refuge for vehicles turning left onto US 2 from MT Highway 66. This may or may not be in lieu of the acceleration/deceleration lane at the transfer station. The provision of a widened median would not result in the need for additional right-of-way.

Eastbound left-turn lanes would be incorporated in rural sections at the following intersections with US 2, as warranted by traffic volumes or railroad crossing conditions: Highland Road (RP 393.6), John Stephens Road (RP 403.1), Old Highway Road (RP 405.8), Bagan Road (RP 407.4), Cherry Ridge Road (RP 412.4), Second Avenue in Zurich (RP 413.0), and Thirty Mile Road (RP 423.7).

Since school buses would not stop on the four-lane highway, appropriate locations for school bus pull-out and/or turnaround locations would be coordinated with the respective school districts.

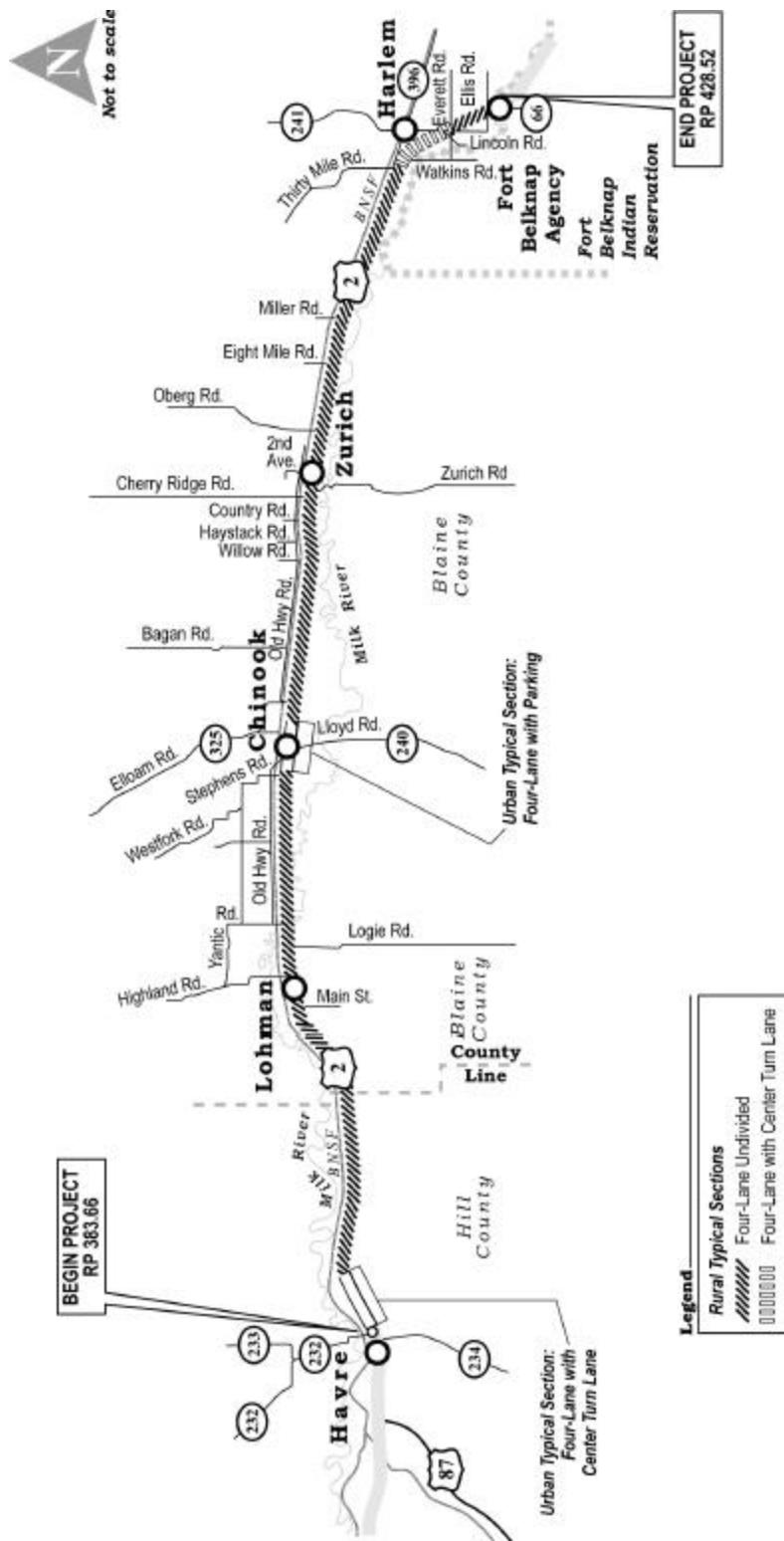
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A specific access management plan would be developed by MDT during final design; the plan would be consistent with the access management guidelines presented in Section 2.1.2.

The approximate project cost for this alternative, including construction, right-of-way, design and other costs would be \$94.5 million. This cost was estimated using MDT unit prices and reflects 2003 present worth. This cost estimate would be refined in more detail during final design.

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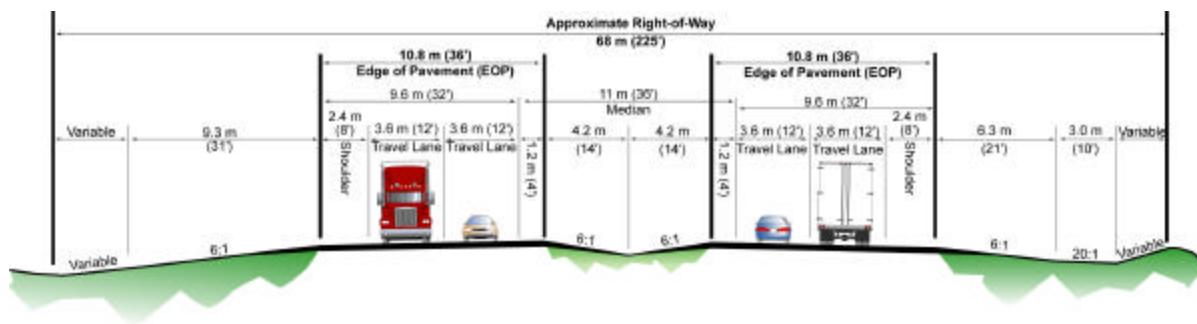
Figure 2.11 Preliminary Corridor Plan for Four-Lane Undivided Alternative



2.7 Four-Lane Divided

In rural segments of the corridor, this alternative would provide a divided four-lane highway. The typical section would consist of four 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) shoulders, divided by an 8.4 m (28 ft) landscaped median and 1.2 m (4 ft) inside shoulders (see Figure 2.12). The total roadway typical section width would be 30.2 m (100 ft). This section would provide improved safety in comparison to the four-lane undivided section, but would create greater physical impacts because of its wider cross-section.

Figure 2.12 Four-Lane Divided Rural Typical Section

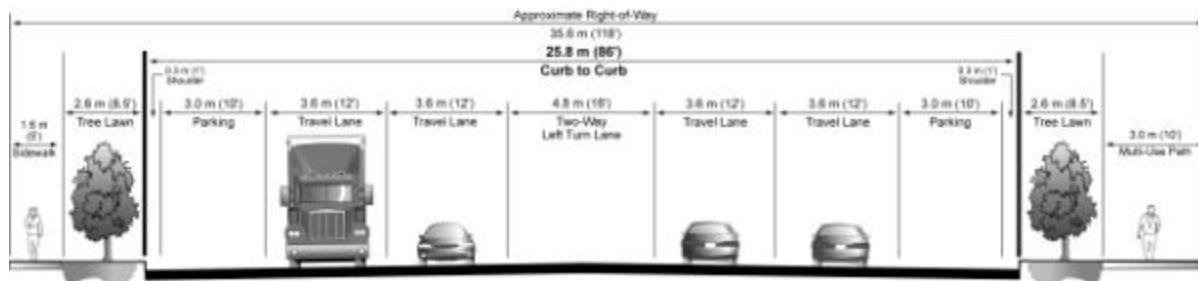


The typical section would differ through communities. The following descriptions provide examples of roadway widths and lane configurations in the communities. The Havre East Suburban segment, from RP 383.66 to RP 385.2, would consist of four travel lanes and a center two-way left-turn lane or series of left-turn lanes. The portion of the highway from RP 383.66 to RP 384.7 at 38th Avenue Northeast would incorporate curb and gutter. This cross section would provide a left-turn lane for the multiple accesses in the area. No median would be provided in this segment. Please see figure 2.14 for a plan view of the alternative.

Through Chinook from RP 403.4 to RP 404.0 the four-lane section would consist of four travel lanes, a center two-way left-turn lane, and two shoulder/parking lanes with limited parking in designated areas (see Figure 2.13). The highway centerline would shift approximately 23 m (75 ft) south to provide an increased offset from the railroad to improve safety at the Indiana Street intersection. Improvements, including turn lanes, would be made at the intersection of Indiana Street and US 2. Right-turn lanes may be added at the other intersections if warranted, and tree lawns and detached sidewalks or a multi-use path would be added along US 2.

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Figure 2.13 Urban Five-Lane Typical Section with Detached Sidewalk/Multi-Use Path, Chinook



Through Harlem, from Central Avenue (RP 424.0) to MT Secondary 241 (Lincoln Road) (RP 425.6), the highway section would consist of four travel lanes and a center two-way left-turn lane or series of left-turn lanes. An eastbound left-turn lane would be added at Central Avenue, and westbound right-turn lanes would be added at the intersections of US 2 with Fourth Street and Main Street. This cross-section would provide turn lanes into the four major roads accessing Harlem and a turn lane for the multiple business accesses in this area. The skewed intersection at MT Secondary 241 (Lincoln Road) would be modified to provide a 90-degree approach for the southbound traffic at US 2. The intersection of Water Plant Road, Lincoln Road, and US 2 would be evaluated for operational improvements during final design.

Through Fort Belknap, from the Milk River (RP 428.0) to the intersection of US 2 with MT Highway 66 (RP 428.52) the highway section would transition from the improved four-lane to the existing two-lane section east of MT Highway 66. One of the eastbound travel lanes would become a right-turn lane at MT Highway 66. One of the westbound travel lanes would end at RP 428.52, close to MT Highway 66. In addition, a westbound left-turn lane would be provided at First Street; and turn lanes would be added at the waste transfer station access. A widened median may be incorporated to give refuge for vehicles turning left onto US 2 from MT Highway 66. This may or may not be in lieu of the acceleration/deceleration lane at the transfer station. The provision of a widened median would not result in the need for additional right-of-way.

Eastbound left-turn lanes would be incorporated in rural sections at the following intersections with US 2, as warranted by traffic volumes or railroad crossing conditions: Highland Road (RP 393.6), John Stephens Road (RP 403.1), Old Highway Road (RP 405.8), Bagan Road (RP 407.4), Cherry Ridge Road (RP 412.4), Second Avenue in Zurich (RP 413.0), and Thirty Mile Road (RP 423.7). Left-turn lanes would not increase the highway typical section because the turn lane would be accommodated in the median.

Since school buses would not stop on the four-lane highway, appropriate locations for school bus pull-out and/or turnaround locations would be coordinated with the respective school districts.

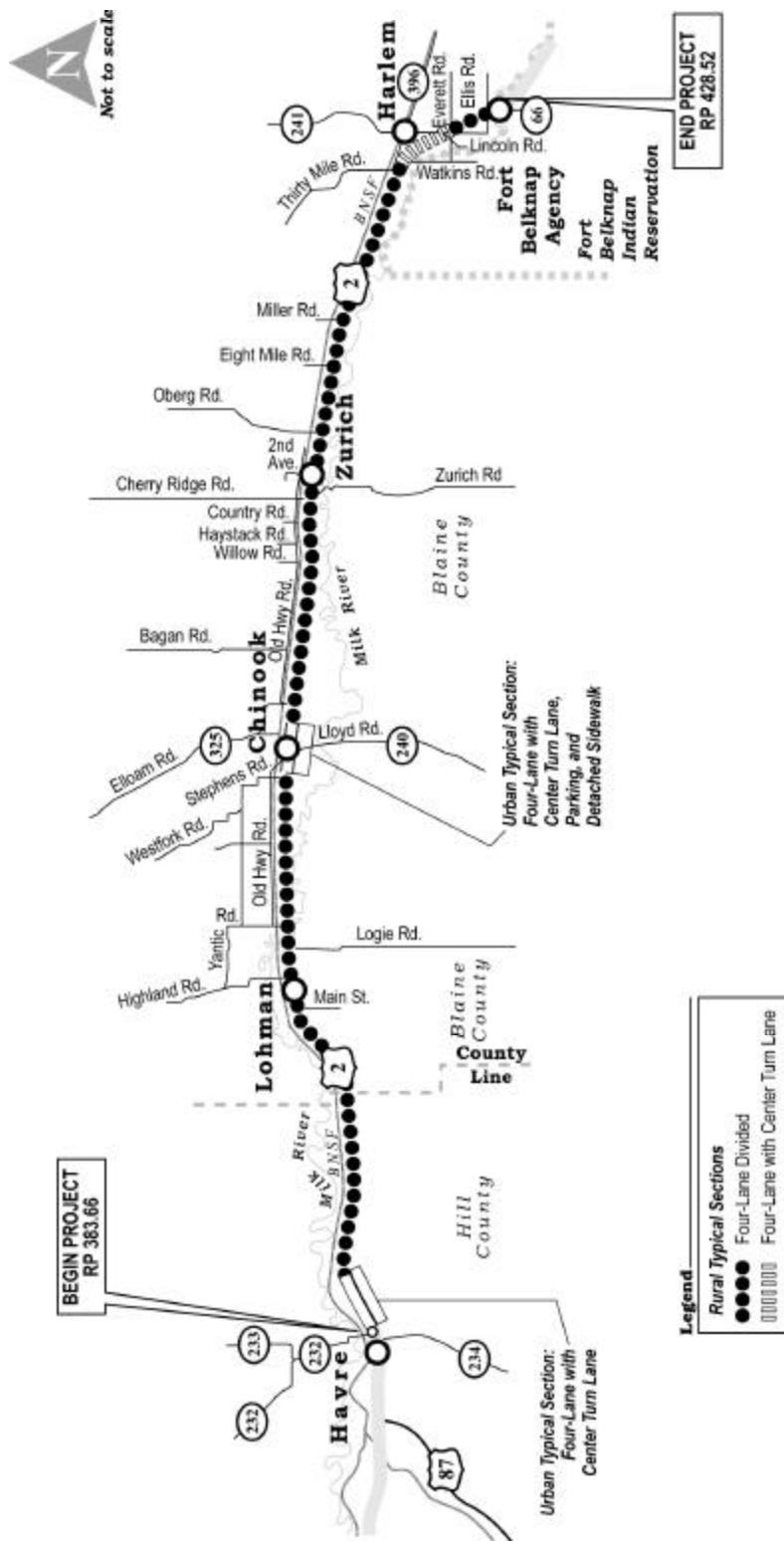
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A specific access management plan would be developed by MDT during final design; the plan would be consistent with the access management guidelines presented in Section 2.1.2.

The approximate project cost for this alternative, including construction, right-of-way, design and other costs would be \$106.8 million. This cost was estimated using MDT unit prices and reflects 2003 present worth. This cost estimate would be refined in more detail during final design.

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Figure 2.14 Preliminary Corridor Plan for Four-Lane Divided Alternative



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2.8 Context-Sensitive Design Elements

Highway improvements would incorporate context sensitive design concepts that consider the environment and setting of the project area. Common design treatments for physical elements along US 2 would enhance corridor identity through consistency and would simplify information interpretation for the user. Consistent design treatments for signage, landscape and entry treatments, pedestrian crossings, and wayside stops could be considered. The following concepts would apply to all build alternatives.

Signage

A signage theme common to US 2 would unify signage for attractions in the area and provide a consistent image for the corridor. Using the same types of signs for attractions, interpretive signs, and bridge and creek names would assist the traveler in finding locations in the area.

Wayside Stops

Wayside stops could be developed at cultural attractions or likely rest locations. Waysides could include a roadside pullout for two or three vehicles delineated by landscaping, picnic tables and interpretive signage.

Landscape and Entry Treatments

Landscaping and entry treatments would be incorporated in the design adjacent to communities along the highway to assist in identifying communities for travelers. East of Havre, landscaping would be incorporated along a proposed bicycle path north of the highway and would assist in identifying the entrance to Havre. In Chinook, landscape treatments along the highway west of Montana Street and east of Illinois Street would be incorporated to identify the urban limits of the town. Pedestrian improvements (described below) at the intersection of Indiana Street with US 2 would be combined with signage directing visitors to the Visitor Center and downtown Chinook.

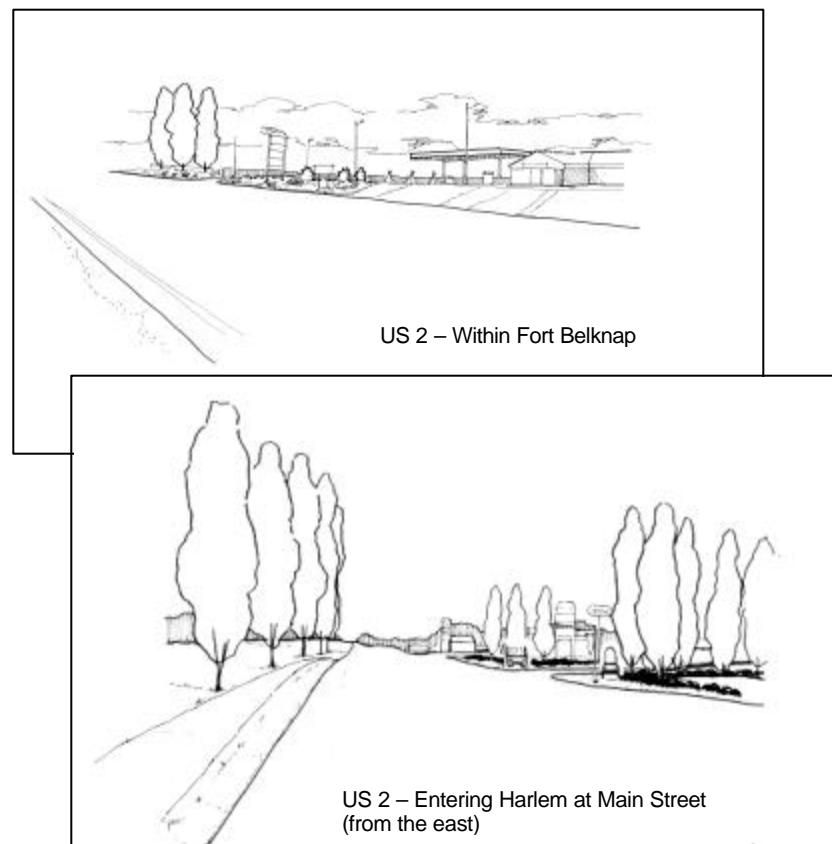
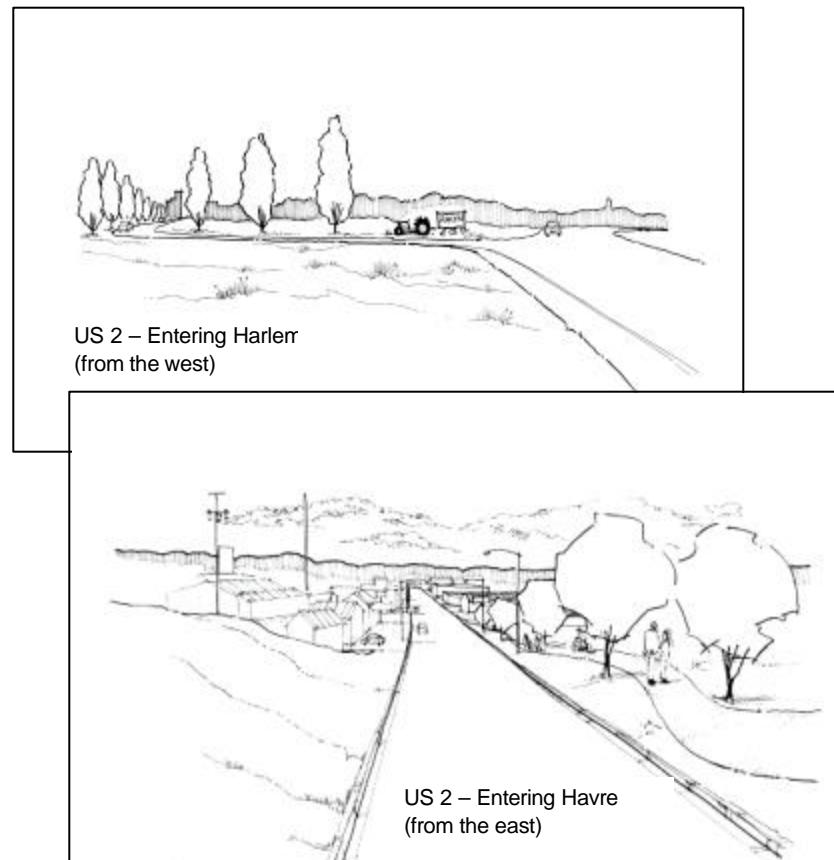
In Harlem, entry features could be installed at Central Avenue, Main Street, and Lincoln Road. The Main Street intersection could be highlighted as the primary access location by greater magnitude of landscape treatments, and signage for the adjacent Lions-Memorial Park. In Fort Belknap, signage and landscaping would identify the entrances to the community and encourage travelers to stop and experience attractions in the area. Examples of several of these landscape and entry treatments are provided in Figure 2.15.

MDT would coordinate with the local communities to define the extent of landscape and entry treatments. For landscape improvements within the right-of-way, MDT would maintain these improvements or would negotiate a maintenance plan agreement with local authorities.



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Figure 2.15 Community Gateway Treatment Concepts



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Pedestrian/Bicycle Paths

Pedestrian/bicycle paths would be added east of Havre and between Harlem and Fort Belknap. East of Havre, provision of a pedestrian/bicycle facility would create the opportunity for non-motorized travel along this segment of the corridor, and would create connectivity among the eastern residential areas and Havre. A 3.1 m (10 ft) wide path would extend along the north side of US 2 within the proposed highway right-of-way from west of 22nd Avenue Northeast in Havre to 38th Avenue Northeast near Halliburtons. This path would be part of the urban landscape treatments east of Havre.

The approximate 5.6 km (3.5 mi) distance between Harlem and Fort Belknap is a reasonable walking/bicycling distance, and a pedestrian/bicycle path would provide greater community connectivity and safety for non-motorist travel. The 3.1 m (10 ft) wide separated path would extend from Main Street in Harlem to First Street in Fort Belknap, where it would connect with streets and sidewalks within the Fort Belknap community. The pedestrian/bicycle path would be located on the north side of US 2 between Main Street in Harlem and the Milk River. The bike path would then proceed under the roadway bridge on the north side of the Milk River. A new separate bridge for pedestrians and bicyclists would cross the Milk River west of the roadway bridge and continue along the south side of US 2 to First Street in Fort Belknap. This pedestrian/bicycle path would be within the highway right-of-way, except within the Fort Belknap Reservation, where it would be a separate easement.

A gravel bicycle path currently exists south of the highway between Chinook and the Sweet Memorial Nursing Home to the west. This bicycle path would be replaced within the proposed right-of-way and could be paved to provide a better surface for pedestrians as well as bicyclists.

The bike paths would be within MDT highway right-of-way and would therefore be the responsibility of MDT. MDT would maintain the bike paths or negotiate a maintenance agreement with local authorities for these services.

Pedestrian Crossings

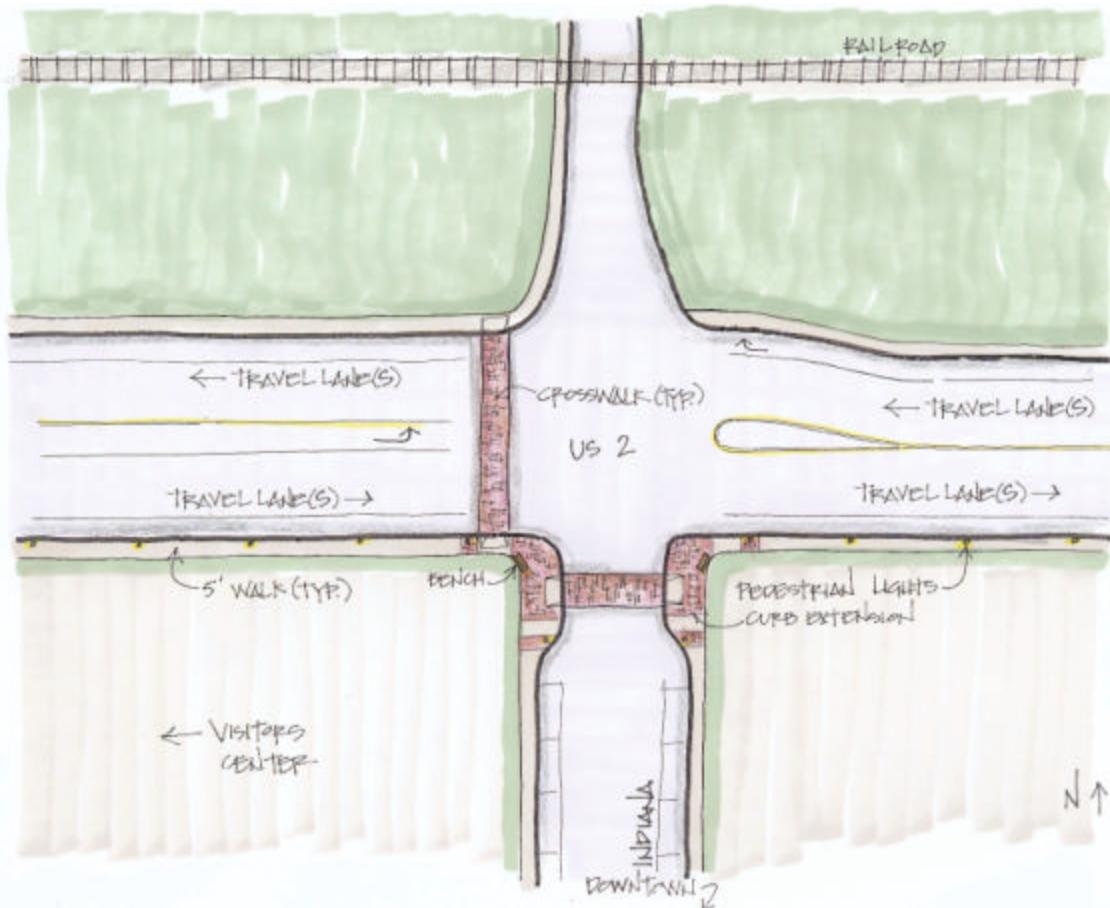
Pedestrian and vehicular safety improvements would be incorporated at the intersection of US 2 with Indiana Street in Chinook. Pedestrians and school children cross the BNSF Railway tracks and US 2 on Indiana Street when walking from north Chinook to downtown. Improvements to this intersection would improve pedestrian safety and visibility in this area.

Pedestrian crossing signs and crosswalk markings, such as colored or textured pavement, would assist in increasing visibility of this crossing (please see Figure 2.16). The crosswalk across US 2 would lie on the western side of the intersection, keeping pedestrians out of the westbound right-turn lane onto Indiana Street. The sidewalk would extend north across the railroad tracks and would be integrated with an improved railroad crossing surface on Indiana Street.

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Curb extensions, which would minimize walking distance across Indiana Street and would visually highlight the crossing to travelers, would be considered for the Indiana Street/US 2 intersection during final design. However, the radius of the corner between Indiana Street and US 2 would need to accommodate the turning movements of large trucks, which may limit the extent of such pedestrian enhancements.

Figure 2.16 Example Plan, Pedestrian Crossing at US 2 and Indiana Street



To improve vehicular safety at the Indiana Street/US 2 intersection and railroad crossing, signage would be used to warn travelers of approaching trains. Train-activated advance warning signs could be installed to alert vehicles of approaching trains before vehicles reach the intersection at Indiana Street. In addition, train-activated signage could be installed at the intersection to inform vehicles that turns across the railroad tracks are prohibited. Additional warning signs disclosing the limited distance between the tracks and the highway could be placed at the intersection as well. These optional signs would be evaluated through the design process, and the best solution for improving safety would be implemented.

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Chinook Treatments

Chinook warrants particular attention because of the highway alignment through this community. US 2 runs through the north edge of Chinook and is physically constrained by the numerous businesses immediately south of the highway and by the railroad, old grain facilities, and train depot to the north. Context-sensitive design considerations are particularly important in maintaining the existing physical and urban environment and sense of place along US 2 in Chinook.

Both two-lane alternatives through Chinook would be context-sensitive because they would remain within the existing right-of-way and would maintain the existing fabric and structure of the community. As shown in Figures 2.17 – 2.20, all of the existing buildings and signage in Chinook would be maintained under both two-lane alternatives. Proposed pedestrian facilities would include 1.6 m (5.0 ft) sidewalks along both the north and south sides of the highway. Other amenities could include decorative pedestrian lighting, as illustrated below. Figures 2.17 – 2.20 show examples of what the Improved Two-Lane and Improved Two-Lane with Passing Lanes alternatives might look like in Chinook.

Figure 2.17 Chinook, Improved Two-Lane Alternative: Example Perspective, View Looking East on US 2 from West Entrance of Chinook



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Figure 2.18 Chinook, Improved Two-Lane Alternative: Example Perspective, View Looking East on US 2 at Intersection with Indiana Street



Figure 2.19 Chinook, Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative): Example Perspective, View Looking East on US 2 from West Entrance of Chinook



Figure 2.20 Chinook, Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative): Example Perspective, View Looking East on US 2 at Intersection with Indiana Street



The Four-Lane Undivided Alternative through Chinook would minimize the physical footprint of a four-lane highway through the community. There would be numerous impacts to the physical form of Chinook immediately south of the highway; however, the minimized footprint of the alternative would impact as little of the urban fabric along US 2 as possible for a four-lane highway.

As shown in Figures 2.21 and 2.22, numerous businesses and signs to the south of US 2 would be displaced. The grain facilities north of the highway and some businesses south of the highway would remain. In some instances, buildings would remain but would lose parking or would have front parking relocated to the sides (as shown to the right in Figure 2.22 at the Chinook Visitor Center). The urban fabric of Chinook would appear much different than today. Pedestrian facilities would include 1.6 m (5.0 ft) sidewalks on both the north and south sides of the highway, as well as possible pedestrian lighting.

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Figure 2.21 Chinook, Four-Lane Undivided Alternative: Example Perspective, View Looking East on US 2 from West Entrance of Chinook



Figure 2.22 Chinook, Four-Lane Undivided Alternative: Example Perspective, View Looking East on US 2 at Intersection with Indiana Street



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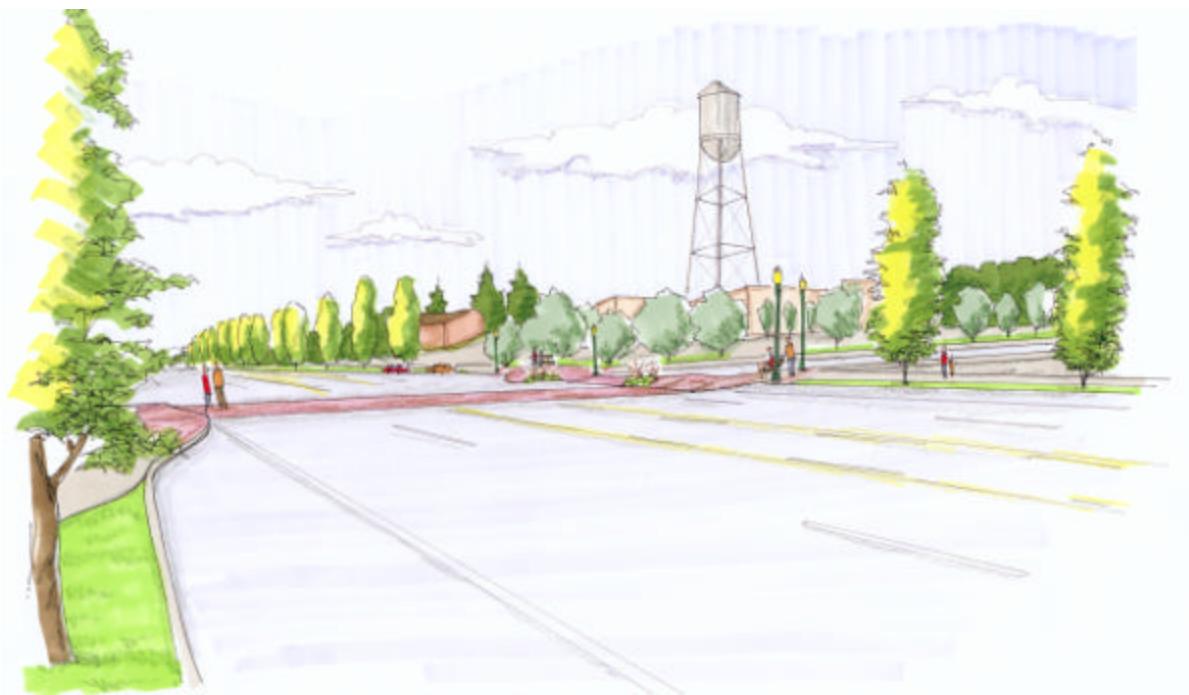
The wider roadway section coupled with the southerly shift of the alignment of US 2 through Chinook under the Four-Lane Divided Alternative would displace all of the businesses immediately south of the highway in the community. Figures 2.23 and 2.24 illustrate the application of context-sensitive design treatments that could address these impacts by creating a new sense of place in Chinook.

As shown in the figures, the existing businesses to the south of US 2 would be displaced; however, landscape improvements such as tree lawns on the north and south sides of the highway would help soften the highway through Chinook. Pedestrian facilities would be separated from the highway by the tree lawns and would include a 1.6 m (5.0 ft) sidewalk on the north side of the highway and a 3.0 m (10.0 ft) multi-use path on the south side. Additional amenities could include pedestrian lighting.

Figure 2.23 Chinook, Four-Lane Divided Alternative: Example Perspective, View Looking East on US 2 from West Entrance of Chinook



Figure 2.24 Chinook, Four-Lane Divided Alternative: Example Perspective, View Looking East on US 2 at Intersection with Indiana Street



2.9 Alternatives Considered but Eliminated

Conceptual illustrations of many of the following alternatives can be found in Appendix C, Alternatives Considered but Eliminated.

2.9.1 Corridor Alternatives Eliminated

These alternatives would consist of improvements and alignments that would apply to the entire project corridor from Havre to Fort Belknap.

Transportation System Management (TSM) Alternative

This alternative would consist of improvements that maximize the efficiency of the existing transportation system in the project corridor. Such operational system improvements include coordination of signal timing, implementation of one-way pairs of streets, high-occupancy vehicle lanes, or improved signal timing at specific locations. In areas of poor level of service or congestion such as large urban areas, this approach may be effective in improving traffic flow and reducing regional vehicle miles of travel (VMT) if applied on a regional basis. However, at this time no coordinated regional program is proposed by MDT and this concept is not applicable to this segment of US 2 due to the relatively low existing traffic volumes and resulting high levels of service on US 2.

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This alternative would not improve safety or reduce roadway deficiencies, and was therefore eliminated from consideration. However, certain components of TSM such as intersection improvements are included in all build alternatives to improve traffic operations in the corridor.

Travel Demand Management (TDM) / Mass Transit Alternative

This alternative would provide mobility options to travelers in order to reduce the number of vehicles using the road system. Mobility options include carpools, vanpools, buses, walking, and bicycling. FHWA Technical Advisory (T 6640.8A) indicates that this alternative is “usually relevant only for major projects proposed in urbanized areas over 200,000 population.” Although this approach helps to improve traffic operations and highway efficiency (two of the project needs), it is most effective within high-density urban areas with concentrated employment areas or other major destinations and does not operate favorably in rural or low-density areas such as along US 2. In addition, this alternative would not meet the project needs for improved safety and reduced roadway deficiencies. This alternative was therefore eliminated from consideration. Some specific elements of this alternative such as pedestrian and bicycle improvements have been incorporated into the alternatives under evaluation.

Southern Corridor Bypass

This option for the US 2 alignment would create a new highway corridor alignment in the region of the bluffs about 7 km (4 to 5 mi) south of the existing highway envelope. This new alignment would require that the existing north/south county and local roadway network be extended south to provide access to the new corridor. In addition, the existing US 2 roadway would need to be maintained to provide continued access. This redundant and extended network would add significant maintenance to the roadway infrastructure and create additional environmental impacts from the dual roadways.

This bypass alternative would not improve safety or address roadway deficiencies on the existing US 2. This proposed alignment would bypass Chinook, Harlem, and other businesses in the corridor and therefore would be contrary to the project need to support the economic vitality of the communities.

Per Montana Code Annotated §60-2-211, MDT may not construct highway bypass or relocation projects without the consent of incorporated communities that would be bypassed. Consent to or refusal of a bypass must be in the form of a resolution adopted by a majority of members of the governing body of the community. The communities of Chinook and Harlem passed resolutions refusing consent to the southern corridor bypass alignment. Please see Appendix B for a copy of Chinook City Council Resolution No. 695 and Harlem City Council Resolution No. 2-03-01.

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Consequently, this alternative was eliminated because it would not improve safety or reduce roadway deficiencies on US 2, and it would not support the economic vitality of the corridor communities.

Split Alignment

A four-lane split alignment alternative was proposed to minimize impacts to structures south of the existing highway. The split alignment would create westbound travel lanes north of the BNSF rail line from a point approximately 1.6 km (1 mi) east of Lohman to Harlem; eastbound travel lanes would be accommodated along the existing highway route south of the BNSF rail line. Overpasses would be constructed at the east and west ends of the project corridor to transition the westbound lanes from the north to the south side of the railroad. This alignment would utilize existing right-of-way from the frontage road that runs north of the railroad tracks parallel to US 2 between Lohman and west Chinook and between east Chinook and Zurich.

A new roadbed to the north of the railroad would require a wider right-of-way than the existing frontage road due to wider shoulder and clear zone requirements, and would require new right-of-way where there is no frontage road. In those locations where there is not adequate separation between the frontage road and the railroad, the new roadbed would need to move farther north than the existing frontage roads and would require a larger amount of right-of-way. The alignment of the eastbound travel lanes would shift south of the existing US 2 alignment to provide adequate distance between the railroad and highway at prioritized railroad crossings, and would create property impacts as well. This alignment would create substantial additional property, right-of-way, and irrigation impacts.

The alternative has been eliminated due to its inability to fulfill the project need for improved safety and improved traffic operations. Safety and operational concerns associated with this alternative include the potential for wrong way travel due to the numerous private and county road crossings. Additional railroad crossings would need to be constructed in areas with few existing crossings in order to create adequate access to both east- and westbound travel lanes for residences and businesses adjacent to the highway. The alignment would therefore increase traffic crossing the railroad, creating additional safety concerns.

Offset Alignment

Offsetting the entire alignment to the south to obtain adequate separation between the highway and railroad crossings was considered. After initial evaluation of this alternative it was determined that a constant offset impacted many environmentally sensitive areas and there was no need for an offset at the beginning or the end of the corridor where the railroad is not close to the highway. The additional costs associated with the environmental impacts, property acquisition, and relocations would also result in increased costs that were not warranted.

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2.9.2 Localized Alternatives Eliminated

These alternatives addressed localized segments of the project corridor.

Havre East New Alignment

This alternative would construct a new southern alignment as US 2 exits Havre at the east end of town. This alignment would bypass the area east of Havre that currently has closely spaced accesses along the highway and would revert back to the existing alignment east of 38th Avenue Northeast.

Although this alternative would provide efficient traffic operations and improved safety, it would not fulfill the project purpose of supporting economic vitality. Numerous commercial properties line the existing US 2 in this area; those businesses that are dependent on highway traffic for business would be bypassed under this concept.

Chinook Southern Bypass

This concept would realign US 2 to bypass completely around Chinook south of town. The realignment would begin approximately one mile west of town, veering south to bypass immediately south of the developed area of Chinook and would then rejoin the existing alignment approximately 1.6 km (1.0 mi) east of town. This would allow highway traffic to travel between Havre and Harlem without slowing to travel through Chinook, providing improved safety and traffic operations on US 2 without physical impacts to Chinook streets. However, this bypass would not improve safety, address roadway deficiencies, or improve traffic operations on the existing US 2.

The alternative would not fulfill the project need to support economic vitality because it would bypass the town of Chinook. Per Montana Code Annotated §60-2-211, MDT may not construct highway bypass or relocation projects without the consent of incorporated communities that would be bypassed. Consent to or refusal of a bypass must be in the form of a resolution adopted by a majority of members of the governing body of the community. The Chinook Southern Bypass alternative was rejected in the form of a resolution by the community of Chinook. Please see Appendix B for a copy of Chinook City Council Resolution No. 695.

Chinook Move Railroad

This concept would relocate the BNSF Railway two to three blocks north of its present location through the community of Chinook. Such a relocation would require moving approximately 3 to 5 km (2 to 3 mi) of the railroad, including the tie-ins at both ends of the segment. With the railroad removed from its current location, the existing railroad right-of-way could be used for US 2 highway improvements that would improve safety, reduce

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roadway deficiencies, and improve traffic operations. This would also eliminate the problem of vehicles queuing onto US 2 while stopped at the Indiana Street railroad crossing.

This alternative has been eliminated from consideration due to unreasonably high cost for implementation. BNSF has stated that relocation of the railroad facility through Chinook is unfeasible, due to unreasonably high cost and a relatively low amount of vehicular traffic at the crossing. In addition to cost, relocating the railroad to the north would create additional physical and natural resource impacts in currently undisturbed areas.

Four Narrow Lanes Through Chinook

This alternative was proposed to provide four lanes through Chinook without widening the existing roadway. This would accommodate four lanes through Chinook within the existing right-of-way and without impacting existing properties and businesses along US 2. The alternative would eliminate the existing parking on both sides of the highway and would create four travel lanes at 3.3 m (11 ft) wide each. The two outer lanes would be paved to curb face with no gutter pan. Travel lanes would be immediately adjacent to the curb with no shoulder buffer.

This alternative has been eliminated from further consideration because it would not support the project need to reduce roadway deficiencies and improve safety. The travel lanes would not meet MDT design standards of 3.6 m (12 ft) travel lanes for a National Highway System (NHS) route. NHS routes typically provide a high level of service and travel time efficiency, and tend to carry heavy trucks and regional traffic in addition to cars and local traffic. Design standards require 3.6 m (12 ft) travel lanes on an NHS route to allow for adequate width to safely accommodate heavy vehicles and trucks.

Chinook One-Way Couplet

This design concept would utilize First Street (existing US 2) and Second Street as a one-way couplet system for US 2 through Chinook. A one-way couplet with two through lanes in each direction would provide added capacity for US 2.

This alternative was removed from further consideration because of residents' concerns about safety and neighborhood impacts. Higher-speed traffic would be rerouted through a residential area that currently experiences a low volume of traffic. This alternative would isolate the residential blocks east of Ohio Street between First and Second Streets. In addition, the students and residents in this neighborhood would need to cross a roadway with high-volume regional traffic when walking to school or downtown; today, they cross streets with low-volume neighborhood traffic.

The hill on Second Street at Ohio Street has a substandard grade for the design speed and would compromise vehicle safety. Correcting the grade would create property impacts along Second Street and on Indiana, Ohio, and Illinois Streets. In addition to these neighborhood

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and safety impacts, out-of-direction travel impacts would result for eastbound and local traffic accessing businesses along First Street (US 2), and an additional bridge would be needed over the unnamed creek east of Chinook to tie in the westbound couplet to US 2. For these reasons, this alternative was eliminated from further study.

One-Way Couplets Through Harlem

Two one-way couplets were proposed to bring westbound traffic back into central Harlem. Each couplet would utilize the existing US 2 facility for eastbound traffic. The Harlem Lincoln Road One-Way Couplet would utilize Lincoln Road (MT Secondary 241) and Central Avenue to carry westbound traffic. The Harlem Old Highway 2 Couplet would utilize Old Highway 2, MT Highway 396, and Central Avenue to carry westbound traffic. These alternatives would require property acquisitions and demolition of businesses. Access to many businesses and residences would require out of direction travel.

The couplet alternatives were eliminated from further consideration because they do not support the project need for reduced roadway deficiencies, improved safety, or improved traffic operations. The highway alignment through Harlem would place US 2 traffic closer to the railroad and would therefore create another substandard railroad crossing. Vehicular, bike, and pedestrian safety would be impacted by the additional regional traffic through town. There would be potential for wrong way travel on the widely separated one-way pair of roadways. Vehicle speed and travel time would decrease for westbound traffic. The Harlem Old Highway 2 Couplet alignment would not accommodate westbound access to County Road 391.

Align US 2 Through Harlem to Dodson

Re-aligning US 2 along its old route through Harlem, and extending the alignment directly east to Dodson, was proposed to bring traffic back into central Harlem and create a more direct route to communities to the east. This alternative has been eliminated from consideration because it does not fulfill the project needs for improved safety and support of economic vitality. The alternative would place US 2 traffic closer to the railroad and thus create an additional substandard railroad crossing on the highway. It would impact vehicular, bicycle, and pedestrian safety with additional regional traffic through town. The alternative would also bypass Fort Belknap and its businesses.

Harlem Frontage Road

This concept would provide frontage road access to the businesses located along US 2 between Fourth Street and Main Street in lieu of the existing series of direct highway accesses. It would include moving US 2 to the southwest and utilizing the existing US 2 roadway as the frontage road. The public referred to this alternative as a bypass of a bypass.

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This alternative was eliminated from further consideration because it would be detrimental to the businesses that would be served by the frontage road, and would thus not fulfill the project need for support of economic vitality.

Relocate MT Highway 66

This concept would relocate the intersection of MT Highway 66 and US 2 to the east. The intent of this proposal was to address pedestrian problems in Half Town, where residents frequently cross MT Highway 66, and to relieve congestion at the intersection of MT Highway 66 and US 2. The alternative has been eliminated from consideration because it would bypass existing businesses at the existing MT Highway 66/US 2 intersection, and thus does not fulfill the project need to support economic vitality. In addition, this alternative is not within the logical termini of this project and should be addressed in a study of north-south travel on MT Highway 66.

2.9.3 Local Access Concepts Eliminated

These alternatives would consist of improvements to facilities other than US 2 within the project area. They were proposed to improve local vehicular, pedestrian, or bicycle access or movement.

Frontage Road Between Chinook and Zurich

This concept would create a parallel travel facility north of US 2, providing an option for local traffic to avoid traveling US 2. The existing frontage road north of the railroad tracks between Chinook and Zurich would be paved and improved to accommodate local traffic. The concept has been eliminated based on travel efficiency, engineering and cost feasibility. US 2 functions at a high level of service, and there is little need for traffic to divert to a lower speed facility. A very limited amount of traffic would use the facility, and the expense of improving the facility would not be justified for the anticipated low amount of diverted traffic.

Improve Old Highway 2 Between Harlem and Fort Belknap

This concept would create an option for local traffic between Harlem and Fort Belknap to avoid traveling on US 2 and use the local street network instead. Old Highway 2 would be paved and improved to provide a lower speed facility for local traffic. This concept has been eliminated based on travel efficiency, engineering and cost feasibility. Travel time efficiency on US 2 and improvements to existing intersections in Harlem and Fort Belknap would better accommodate vehicles entering the highway and merging with higher speed traffic. The cost of creating a redundant facility would not be justified for the anticipated low amount of diverted traffic.

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Bicycle Path Between Havre and Chinook

This concept would create a dedicated bicycle path along the highway to accommodate bicyclists between Havre and Chinook. This concept is not cost effective, because it provides a redundant facility for bicyclists. The proposed wider shoulder along the highway would improve bicycling conditions on the highway and would be sufficient for the volume of bicycle traffic anticipated.

Traffic Signal at the Indiana Street/US 2 Intersection in Chinook

Traffic signal control at the intersection of US 2 and Indiana Street was suggested during public meetings conducted for the project. A traffic signal warrant analysis was performed for existing and forecast traffic conditions. The results of the analysis indicated that the intersection would not meet traffic signal warrants for current or future traffic volumes. Therefore, traffic signal control would not be considered at this intersection.

Vehicular Grade-Separated Crossing of BNSF Railway for Indiana Street in Chinook

In order to improve vehicular traffic safety at the existing at-grade railroad crossing on Indiana Street in Chinook, an overpass or underpass of Indiana Street at the BNSF Railway crossing was considered. However, due to the proximity of the railroad tracks to US 2, the grade of the overpass or underpass approaches would require a bridge or underpass that would extend more than a block north and south of the railroad and US 2. This would not provide a direct connection between Indiana Street and US 2 and would have substantial community impacts. Indiana Street extends a few blocks north of the railroad tracks into a small residential area, and traffic volumes do not justify the cost or impacts of a grade-separated crossing.

Vehicular grade-separated crossings of the BNSF Railway for Cherry Ridge Road and other county roads were also suggested. Similar to Indiana Street, traffic volumes on these cross streets do not justify the high cost of this type of improvement.

Pedestrian Grade-Separated Crossing of US 2 and BNSF Railway in Chinook

Safety for pedestrians and school children crossing US 2 at Indiana Street was a concern noted during the public input process. A pedestrian overpass or underpass was considered but eliminated from further study. Use of a grade separation would require fencing along the roadway and railroad corridor. Because of the relatively flat topography of the area north and south of the tracks and highway, long approach ramps would be needed to meet ADA requirements, resulting in community and visual impacts. Pedestrian volumes from the small residential community to the north of the railroad tracks do not justify the cost or impacts associated with a pedestrian grade-separated crossing.

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Turn-outs for Mail Carriers at Rural Mailboxes

This concept was suggested early in the public input process as a means to improve safety and traffic operations along US 2. Mail carriers currently must stop along the highway; because of the narrow existing shoulder, mail carrier vehicles impede traffic in the through travel lanes of existing US 2. Because all build alternatives include widened shoulders, mail carrier vehicles would be able to stop along the improved shoulder and not impede through traffic. Therefore, mail carrier turn-outs would not be necessary.

2.10 Project Design Objectives

The Citizens Advisory Committee (CAC) provided important input from the community on the function and design of US 2 improvements within the context of the community's vision for the US 2 corridor. This vision for the US 2 corridor is summarized in a concise list of design objectives that follows. US 2 should:

- Enhance community connections;
- Provide a safe and harmonious travel experience for all users;
- Maintain and promote economic opportunity;
- Stay in context with the surrounding communities and environment; and
- Strengthen community identity.

These design objectives were taken into consideration in developing the conceptual design of the alternatives, especially the context-sensitive design elements discussed in Section 2.8. Later design phases for this project should also take these objectives into consideration. These objectives are explained in more detail below.

Enhancing Community Connections

The communities along US 2 are interconnected and depend upon one another for their vitality. To some degree, the communities in the project corridor function as one large dispersed community along the Hi-Line. US 2 is the thread that binds these communities to one another and to northern Montana and beyond. It should effectively and efficiently convey goods, services, and people to connect and support these communities. Highway improvements can not only create a safer roadway, but can also build a stronger connection among the Hi-Line communities and the rest of Montana.

A Safe and Harmonious Travel Experience for All Users

US 2 serves a wide variety of users, including regional traffic, local traffic, commercial trucks, agricultural equipment, school buses, and bicyclists. Each user group has different needs, purposes, and travel speeds. The highway should provide a positive traveling

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experience through ease of movement and access. All users should be able to use the highway facility with a minimum of conflicts, and turning onto and off of the highway should be a safe experience. The highway should efficiently accommodate the various modes and speeds of travel, and should function effectively for both local and regional traffic.

Maintaining and Promoting Economic Opportunity

US 2 serves and supports the existing communities along the Hi-Line, and is integral to their vitality. The community vision for the future includes increasing the highway's attraction as a desirable route for regional traffic and providing infrastructure to further opportunities for economic growth and development. Construction of a safer and more efficient highway may create a more enjoyable and desirable route for travelers and goods transport through northern Montana. Further development of directional signage, amenities signage, traveler facilities, and local tourist attractions can aid in this effort as well. Ultimately, the roadway should function as an economically viable route for goods and services and local and regional travel.

In Context with Our Communities and Environment

The development of the highway facility should be completed using context-sensitive design concepts and should consider the total context of the area. Context-sensitive design involves understanding the "context" of the area and developing a highway design that responds to that context. In this area, economic vitality now and well into the future is an important issue that will be addressed using this process. Context-sensitive design is a collaborative, interdisciplinary approach that involves all stakeholders in developing the concepts that will be incorporated into the proposed project.

The Hi-Line is historically a rural area, originally inhabited by Native American tribes, and then settled by railmen, cattle ranchers, and homesteaders in the late 1800s. Farming is, by and large, still the predominant force in the area, with many of the service industries oriented toward serving the agricultural community. US 2 should respect and respond to this rural lifestyle, fitting with the physical setting of the area in order to preserve and enhance the area's scenic, cultural, historic, environmental and commercial resources. The highway should provide the traveler a chance to experience the beauty and culture of the area and should showcase community values, giving the traveler a chance to pull over and enjoy the area.

Strengthening Community Identity

While communities are integrally connected to one another on an economic and social basis, each still maintains a distinct character and physical limits. US 2 improvements should strengthen that identity, helping to provide a sense of place in every town it passes through. The highway should acknowledge the concentration of urban development with amenities such as sidewalks, landscaping, pedestrian lights, directional and informational signs and



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banners where appropriate. In transition areas adjacent to communities, changes in speed and accommodation of increased accesses can enhance operations, while design elements such as trees and lights help to extend the urban context. Context-sensitive design principles also apply to strengthening community identity. Ultimately, the highway should respect and help to identify the character of each community it passes through.

3.0 Affected Environment

This chapter describes existing transportation, social, economic, and environmental conditions in the US 2 study area between Havre and Fort Belknap. Describing the affected environment creates a baseline that can be used to understand and compare the potential direct, indirect, and cumulative effects of each of the project alternatives. Environmental impacts are discussed in Chapter 4 of this document.

Guidance provided by the National Environmental Policy Act (NEPA), Montana Environmental Policy Act (MEPA), MDT, and FHWA identify subject areas requiring analysis. The following subjects have been identified and are documented in this chapter:

Transportation Conditions

- Access
- Safety
- Traffic Operations
- Pedestrian and Bicycle Considerations

Social and Economic Conditions

- Montana 2001 Senate Bill 3 and State Plans
- Land Use
- Farmlands
- Irrigation
- Social Conditions
- Economic Conditions
- Environmental Justice
- Right-of-Way and Relocation of Utilities
- Project Funding

Environmental Conditions

- Cultural and Historic Resources
- Air Quality
- Noise
- Water Resources and Water Quality

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- Wetlands
- Vegetation
- Wildlife and Aquatic Species
- Threatened and Endangered Species
- Floodplains
- Wild and Scenic Rivers
- Water Body Modifications
- Hazardous Materials
- Visual Resources
- Section 4(f) and Section 6(f) Properties

3.1 Transportation Conditions

US 2, part of the National Highway System, is the northernmost US highway across the continental United States. US 2 starts in Everett, Washington and continues east to St. Ignace, Michigan. (Another segment of US 2 extends between Burlington, Vermont and Houlton, Maine). The highway passes through Spokane, Washington and Sandpoint, Idaho before entering Montana. East of Montana, the highway passes through Minot and Grand Forks, North Dakota, and Duluth, Minnesota.

US 2 traverses through northern Montana with 1,080 km (670 mi) of continuity, shown in Figure 1.1 in Chapter 1, Project Purpose and Need, of this report. The four-lane I-90/I-94 interstate corridor is approximately 320 km (200 mi) south of the US 2 study corridor. Much of the alignment of US 2 parallels the BNSF Railway Hi-Line route. Therefore, both the rail and highway corridor are commonly referred to as the “Hi-Line.”

The Amtrak Empire Builder route provides passenger train service to the project area. Running between Chicago, Illinois and Seattle, Washington, this route travels the BNSF Hi-Line route and includes service to Glacier National Park. The only scheduled stop in the area is in Havre. The Amtrak train stops in Havre twice daily with one stop for the eastbound train and one stop for the westbound train, each with a layover of 20-25 minutes.

West of this study corridor, US 2 passes through Libby and Kalispell, Montana; travels along the south edge of Glacier National Park; and crosses I-15 in Shelby, Montana. At the west edge of Havre, US 2 intersects with US 87, which provides a direct route to Great Falls, located approximately 185 km (115 mi) southwest of Havre. Through Havre, roadways on the Secondary Highway System that intersect US 2 include MT Secondary 233, which leads north to the Port of Willow Creek border crossing, and MT Secondary 234, which extends south to the Rocky Boy’s Indian Reservation.

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Along the 72 km (45 mi) corridor between Havre and Fort Belknap, few intersecting roads exist with regional continuity. MT Secondary 240 intersects US 2 in Chinook and extends south to Cleveland, just north of the Bears Paw Mountains. In Harlem, MT Secondary 241 extends north to the Port of Turner Canadian border crossing. At Fort Belknap, MT Highway 66, part of the Primary Highway System, leads south to US 191, which continues south to Lewistown. East of this study corridor, US 2 passes through Malta, Glasgow, and Wolf Point to the eastern Montana state border.

3.1.1 Access

US 2 currently operates under the least restrictive form of access control, known as Regulated Access in the *Montana Road Design Manual*. Access is regulated through revocable permits for the construction and maintenance of approaches. The access points must satisfy spacing and design requirements, allow vehicles to enter and exit the highway with minimum interference to through traffic, and be located such that they best suit the traffic and land use characteristics of the highway.

US 2 functions as an arterial street on the east side of Havre with no access restrictions. The highway again serves as an arterial street as it passes through Chinook. Where the highway passes through agricultural land, between Havre and Chinook and between Chinook and Harlem, the density of access points is low. There are several county and local road intersections. Some houses and businesses have driveways connecting directly with the highway. The remaining driveways provide field and railroad access. The density of driveways through these sections of the highway ranges from approximately 0.6 to 2.1 access points per km (1 to 4 per mi).

Overall, the urban sections of US 2 within Havre and Chinook have high densities of access points per km of highway. There are also a relatively high number of public street intersections within these areas, as well as between Harlem and Fort Belknap. Many of the roadways intersecting US 2 from the north also cross the BNSF Railway with limited distance provided between the highway and the railroad tracks. The short distance between highway and railroad tracks limits the storage available for vehicles stopped on the cross streets and constrains sight distances for vehicles turning from US 2.

A summary of the current direct highway access along the corridor is provided in Table 3.1. The number of access points and type of use served is defined within the seven segments of the study area.

Table 3.1 Existing Corridor Access Summary

Number of Accesses	Project Segments							Corridor Totals
	Harve East Suburban	Harve East Rural	Lohman	Chinook Urban	Zurich	Harlem West Rural	Harlem to MT Highway 66	
Field	2	9	13	2	17	13	21	77
Residential	12	31	16	7	16	14	6	102
Commercial	28	5	1	20	1	0	5	60
Public Road	10	1	6	12	9	6	15	59
RR / Utility	0	1	5	4	7	2	1	20
Total	52	47	41	45	50	35	48	318

Source: Montana Department of Transportation. Compiled by David Evans and Associates, Inc.

3.1.2 Safety

Roadway Deficiencies. The existing highway between Havre and Harlem does not meet current MDT standards for a two-lane rural highway. Roadway geometry deficiencies include lack of adequate shoulder width, fill slope deficiencies in the clear zone, and inadequate distance between highway and railroad on cross streets.

The standard shoulder width for a Non-Interstate National Highway System (NHS) highway is typically 2.4 m (8 ft), with an adequate area for recovery should a vehicle leave the roadway. As shown in Table 1.4 in Chapter 1, the Project Purpose and Need of this report, the existing roadway has a substandard shoulder width of 0.6 m (2 ft) for 89 percent of the eastbound and 88 percent of the westbound travel lanes. Steep side slopes exacerbate this deficiency, as there are few safe places for vehicles to pull over. A wider shoulder width, in combination with an improved recovery area, can improve safety for errant vehicles, emergency vehicles, wide loads and agricultural equipment, and highway patrol cars stopping vehicles. School buses currently stop along the highway within the travel lanes during passenger pick-up and drop-off. With the lack of shoulders, students getting on or off the bus are standing either in the roadside ditch or near the travelway. US 2 is also a popular bicycle touring route in the summer, and the shoulders are too narrow to comfortably accommodate bicyclists and passing vehicles.

The clear zone guideline for a two-lane rural highway with a 110 km/h (70 mph) speed and average daily traffic volumes of 1,500 to 6,000 is approximately 84 m (28 ft) with a 6:1 or flatter fill slope. There is inadequate clear zone along 33 percent of the eastbound and 29 percent of the westbound travel lanes. Inadequate clear zone is a result of obstacles in the clear zone, steep side slopes, or inadequate width. Clear zone deficiencies create dangerous conditions for vehicles pulling off of the highway and for errant vehicles moving into the clear zone.

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The average railroad offset from the US 2 alignment for both public and private crossings within the project study area is 37 m (123 ft), with approximately 18 m (60 ft) as the minimum and 71 m (234 ft) as the maximum offset distance. Inadequate offset from the railroad causes two primary problems. Trucks turning onto US 2 have inadequate storage distance between the railroad and the travel lane, and they must stop on the railroad tracks while waiting to turn onto the highway. Also, vehicles turning off of US 2 must queue in the through travel lane on US 2 while trains are passing, as there is insufficient space between the roadway and railroad for them to wait on the cross street. In some areas, such as the crossing at Indiana Street in Chinook, inadequate sight distance compounds this problem.

Currently, the high number of public road intersections and private accesses and the lack of turn lanes create a situation where slow-moving vehicles entering and exiting the highway disrupt high-speed through traffic and pose safety concerns. The number of access points and lack of auxiliary turn lanes between Harlem and Fort Belknap in particular, especially at the intersection of Water Plant Road and Lincoln Road with US 2, are cited as major concerns by the public.

Crash History. The 2002 accident analysis prepared by MDT for this project, which included crash reports from 1997 through 2001, indicated that while the crash rate is higher than the statewide average for rural non-Interstate NHS routes, the severity index and severity rate are below statewide averages. The accident and severity rates are summarized in Table 1.5 in Chapter 1, Project Purpose and Need, of this report.

The MDT Statewide Engineering Improvement Program (SEIP) has performed several crash analyses on this corridor in the past decade, and there are five accident cluster locations for which no safety improvement projects have been identified and no recent improvements have been made. Table 1.6 in Chapter 1, Project Purpose and Need, of this report summarizes these five locations and lists MDT's recommendations for safety improvements.

The detailed accident data for 1997 through 2001 show a total of 14 crashes in the identified accident cluster from RP 384.3 to 384.9. This cluster is located just east of the Havre urban area. Four of these crashes were documented as alcohol or wild animal-related, and four of the remaining crashes were rear-end type accidents. The majority of the contributing circumstances were reported as speeding and careless driving. The MDT SEIP recommended a two-way left turn lane at this location.

A total of nine crashes in the identified accident cluster from RP 402.1 to 402.8 are detailed in the accident data for 1997 through 2001. This cluster is located immediately west of the Chinook urban area. Five of these crashes were documented as alcohol or wild animal-related, and two of the remaining crashes involved improper passing and lane changes. Slope flattening was recommended in the MDT SEIP for this location.

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The detailed accident data for 1997 through 2001 shows a total of ten crashes in the identified accident cluster from RP 405.2 to RP 406.3. This cluster is located east of the Chinook urban area and Lodge Creek bridge. Six of these crashes were documented as wild animal-related. Two of the remaining crashes involved eastbound drivers trying to overtake vehicles stopped to turn left from US 2 at RP 405.8. No feasible countermeasures to address a specific accident trend were identified at this location by the MDT SEIP.

A total of four crashes in the identified accident cluster from RP 406.8 to RP 407.2 are detailed in the accident data for 1997 through 2001. Two of these crashes were documented as wild animal-related, and two were single-vehicle accidents in which the drivers fell asleep and drove off of the roadway. The MDT SEIP recommended wider shoulders and rumble strips in this area.

The detailed accident data for 1997 through 2001 shows a total of 14 crashes in the identified accident cluster from RP 412.3 to RP 413.5. This cluster is located along the US 2 corridor through the town of Zurich. Ten of these crashes were documented as alcohol or wild animal-related. Two of the remaining crashes involved improper passing immediately west of Zurich, and one crash involved a left turning vehicle failing to yield to oncoming traffic. MDT did not identify any feasible countermeasures to address a specific accident trend at this location.

Some improvements were made as a result of identified accident clusters. A 1991 analysis by MDT identified an accident cluster between RP 383.1 and 383.9, which includes the western edge of this project. A two-way left turn lane and luminaires were installed at this location in July 1994 in an attempt to reduce crashes. In 1995, an accident cluster was identified between reference posts 389.2 and 390.0. This is located at a substandard horizontal curve east of Havre. MDT installed signing in June 1998 to increase driver awareness of the curved alignment. In 1990 and 1991, MDT identified accident clusters west of the bridge over Battle Creek between RP 409.6 and RP 409.9. Guardrail, slope flattening, and delineation were installed in August 1993.

One area of concern raised in recent years is along the new alignment of US 2 near Harlem. In 1994 MDT identified accident clusters between RP 423.9 and RP 428.5. Shoulder rumble strips were installed in August 1997. Also in 1994, MDT identified accident clusters between RP 424.4 and RP 424.8, and signs were installed by MDT maintenance in July 1996. In 1995 MDT identified accident clusters between RP 427.4 and RP 428.4. Delineation of the bridge approach guardrail was installed by MDT maintenance in June 1998. In 1999 MDT identified accident clusters between RP 424.0 and RP 424.4. Upgrades to this section were included in a roadway project in August 1997, and no further recommendations were made.

Crash Analysis. The five-year crash data were analyzed by study segment to determine the general nature and cause of each occurrence. As shown in Table 3.2, 43 percent of all crashes along the corridor occurred with a wild animal. Deer and other wildlife frequently

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cross the road shifting from cover and forage areas along the Milk River to forage in the agricultural fields near the river and the drainages. The lack of shoulders or adequate clear zone along the corridor makes it difficult to safely avoid an animal in the road.

Table 3.2 Crash Details by Segment (1997 through 2001)

Segment	Number of Accidents	Accident Severity			Alcohol-Related		Animal-Related	
		Property Damage Only	Injury	Fatality	Number	% of Total	Number	% of Total
Havre East Suburban	42	31	11	0	3	7%	6	14%
Havre East Rural	55	46	9	0	2	4%	29	53%
Lohman	66	39	26	1	12	18%	27	41%
Chinook Urban	12	9	3	0	1	8%	4	33%
Zurich	81	62	19	0	7	9%	43	53%
Harlem West Rural	37	28	9	0	2	5%	27	73%
Harlem to MT Highway 66	42	24	18	0	5	12%	9	21%
Totals	335	239	95	1	32	10%	145	43%

Source: Montana Department of Transportation. Compiled by David Evans and Associates, Inc.

There were 42 accidents in the Havre East Suburban segment with six involving an animal in the five-year study period. There were fewer on-roadway accidents than statewide averages with more accidents occurring on dry roads, cloudy weather, and dark-no lighted conditions. Many accidents were driveway-related. Three wild animal crashes occurred within 1.6 km (1 mi) of RP 384.0.

There were 55 crashes in the Havre East Rural segment with 29 involving a wild animal in the five-year study period. Data showed above statewide averages for property damages only, dry roads and dark-not lighted type accidents. Of the crashes reported between RP 389.0 and RP 393.0, 68 percent involved wild animals.

There were 66 accidents in the Lohman segment with 27 involving a wild animal in the five-year study period. Data showed above statewide averages for dry roads and dark-not lighted conditions. Twelve accidents listed alcohol as a contributing factor. There were five passing-related accidents, eight rear-ends and five angle accidents. Five wild animal crashes

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occurred within 1.6 km (1 mi) of RP 394.0, and 10 wild animal crashes occurred within 3.2 km (2 mi) of RP 398.0.

There were 12 crashes in the Chinook Urban segment. Three of the four crashes within this segment involving wild animals occurred between RP 404.5 and RP 405.0 on the east side of Chinook near the Lodge Creek bridge.

There were 81 crashes in the Zurich segment with 43 involving a wild animal in the five-year study period. Without alcohol and animal-related accidents included, the off-road and location unknown accidents exceed statewide averages. Nine accidents were passing related, and eight were rear-ends. Of the crashes reported between RP 407.8 and RP 411.0, 63 percent involved wild animals and nine wild animal crashes occurred within 1.6 km (1 mi) of RP 413.3.

There were 37 accidents in the Harlem West Rural segment with 27 involving a wild animal in the five-year study period. All seven crashes reported between RP 418.0 – 419.0 and six of the seven crashes reported between RP 421.0 – 422.0 involved wild animals.

There were 42 crashes in the Harlem to MT Highway 66 segment with nine involving an animal in the five-year study period. Ten accidents involved turning or slowing vehicles. Seventeen accidents were described as intersection-related. Eight crashes listed failure to yield as a contributing factor.

Public Safety. The following is a list of general travel safety concerns raised by citizens during the public involvement process:

- The existing highway is too narrow, has too steep side slopes, and lacks adequate shoulders.
- Varying speeds of different users on the highway is a safety concern. Citizens would like the highway to accommodate a wide variety of users (local, regional, trucks, school buses, agricultural equipment, and bicyclists).
- There is no place for the Highway Patrol to safely pull over vehicles.
- Farmers noted that agricultural equipment is difficult to move safely because there are no shoulders.
- Drivers find it difficult to avoid wildlife that has wandered onto the road.
- The roadway is shaded by the hills and trees in some locations, which causes dangerous icing in the winter months.
- Turning onto US 2 is often dangerous, as vehicles travel at high speeds and there is no accommodation for accelerating vehicles.

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- There is inadequate distance between the railroad and the highway at railroad crossings.
- Bridges are too narrow.
- Pedestrians need to be better accommodated at the US 2 and Indiana Street intersection in Chinook and along the highway between Harlem and Fort Belknap.

Pedestrians and Bicyclists. There are generally no sidewalks along the US 2 corridor, except for the sidewalk along the south side of US 2 through Chinook. Pedestrians walk along and across the highway in Chinook and at school bus stops east of Havre. No pedestrian crossing is marked at the intersection of US 2 and Indiana Street in Chinook, although the intersection experiences pedestrian traffic, particularly children walking to and from school. Citizens have identified the need to improve the safety of the pedestrian crossing at the intersection.

Currently, 89 percent of the project study area has 0.6 m (2 ft) shoulders, which are too narrow to comfortably accommodate bicyclists in the shoulder. According to MDT guidance, a widened shoulder would be a practical method of providing a bicycle facility where the bicycle traffic volume is not high enough to warrant separate bicycle lanes.

The *Montana Bicycle Safety Study Final Report* was issued by MDT in January of 2003. This study reviewed ways to improve bicycle safety in the state and associated costs of those improvements. The report concluded that improved bicycle facilities, public safety education and training, and stronger enforcement of vehicle codes and laws could be implemented to improve overall bicycle safety on state highways.

The *Bicycle and Pedestrian Transportation Policy Paper, TranPlan 21 – 2002 Update* identified two policy goals: institutionalize bicycle and pedestrian modes; and target bicycle-related and pedestrian improvements to account for urban, rural, and regional differences in current and future use. Actions listed in the study that could apply to this US 2 project include considering bicycle improvements based upon proven use or expected future use and improving bicycle and pedestrian facilities through existing projects.

3.1.3 Traffic Operations

The *Preliminary Traffic Engineering and Geometrics Report*, dated December 2002, analyzed existing traffic volumes and capacity for the US 2 corridor.

The traffic congestion experienced by drivers along a highway facility is reported through level of service (LOS) measurement. LOS is a qualitative measure that ranges from LOS A, describing the highest quality of traffic service when motorists are able to travel at their desired speed, to LOS F, which represents heavily congested flow with traffic demand exceeding capacity and highly variable speeds. The LOS analysis considers lane width, shoulder width, heavy vehicle percentages, type of terrain, percent no-passing zones, and

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number of access points as they affect traffic operations of a roadway segment. For a rural Non-Interstate NHS route in level or rolling terrain, the minimum recommended design level of service is LOS B. This LOS is an acceptable level of service that represents reasonably free flow. The general level of physical and psychological comfort provided to drivers is reasonably high. Drivers are delayed in platoons less than 50 percent of the time.

Table 3.3 summarizes the results of the analysis for 2002 traffic volumes in the project corridor under existing roadway conditions. As shown below, the existing condition currently provides a good level of service and meets recommended design levels.

Table 3.3 Existing PM Peak Hour Roadway Level of Service (LOS)

Segment	LOS
Havre East Suburban	B
Havre East Rural	B
Lohman	A
Chinook Urban	B
Zurich	A
Harlem West Rural	A
Harlem to MT Highway 66	B

Source: Analysis by David Evans and Associates, Inc with traffic counts by TD&H Engineering Consultants.

3.1.4 Pedestrian and Bicycle Considerations

Pedestrian traffic along the corridor is concentrated in the areas east of Havre and within Chinook. In Chinook, pedestrian traffic exists in several primary locations: along the highway in town; along the highway between town and the Sweet Memorial Nursing Home to the west; and crossing the highway at the intersection of US 2 with Indiana Street. Indiana Street connects the residential area north of the railroad and US 2 to central Chinook and, consequently, the Indiana Street intersection receives pedestrian traffic.

There is currently a sidewalk on the south side of US 2 in Chinook, and it extends west of Chinook. However, this sidewalk does not extend all the way to the nursing home, and there is no sidewalk on the north side of the highway in town. Citizens in Chinook have asked for a sidewalk on the north side of the highway and an extension of the south walk to the nursing home. Currently, there is a gravel bicycle path along a portion of this route to the nursing home.

US 2 is a popular bicycle touring route during the summer months and is listed as one of eleven selected adventure bicycling routes in the U.S. by the Adventure Bicycle Association. Most of the existing project study area has 0.6 m (2 ft) shoulders. Narrow shoulders on a

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high-speed roadway are not conducive for bicycling and result in bicyclists riding in the travelway.

3.2 Social and Economic Conditions

3.2.1 Montana 2001 Senate Bill 3 and State Plans

3.2.1.1 Montana 2001 Senate Bill 3/Montana Code Annotated 60-2-133

As discussed in Section 1.4, Project Background, Montana Code Annotated (MCA) 60-2-133 codifies a bill passed by the Montana State Legislature in 2001. The bill, sponsored by District 48 Senator Sam Kitzenberg, calls for the state to construct a four-lane highway along the present route of US 2 through Montana as a means of bringing economic development to northern Montana. Proponents of the bill state that construction of a four-lane highway would create an economic corridor through the northern part of the state and would link with efforts to construct a four-lane Highway 2 underway in North Dakota. MCA 60-2-133 directs that funding for the project come from federal sources that do not require matching state funds and that no funds be expended that would jeopardize the future of other highway projects in the state.

In the bill, “commission” refers to the Montana Transportation Commission and “department” refers to the Montana Department of Transportation. The text of the bill reads as follows:

2001 Montana Legislature

Senate Bill No. 3

Introduced by S. Kitzenberg

An act directing the department of transportation to construct a four lane highway generally along the present route of U.S. Highway 2, notifying the tribal governments on the Fort Peck, Fort Belknap, Blackfeet, and the Flathead Indian Reservations, amending Section 60-2-110, MCA, and providing an effective date.

Be it enacted by the Legislature of the State of Montana:

Section 1. U.S. highway 2 -- planning -- funding. (1) The commission shall direct the department to construct a four-lane highway generally along the present route of U.S. highway 2 from the North Dakota border to the Idaho border in order to increase tourism and to bring economic

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development to Montana. Planning for the U.S. highway 2 project must be included in any future fiscal plan developed by the department.

(2) The department shall seek additional federal funding that does not require a state funding match for the U.S. highway 2 project.

(3) The department may not expend any resources on the U.S. highway 2 project that would jeopardize any future highway projects.

Section 2. Section 60-2-110, MCA, is amended to read:

"60-2-110. Setting priorities and selecting projects. (1) ~~The Except as provided in [section 1], the~~ commission shall establish priorities and select and designate segments for construction and reconstruction on the national highway system, the primary highway system, the secondary highway system, the urban highway system, and state highways.

(2) The commission shall consult with the board of county commissioners of the county in which a highway is located when establishing priorities and when selecting and designating segments on the secondary highway system for construction and reconstruction.

(3) The commission shall consult with the appropriate local government authorities when establishing priorities and selecting and designating segments on the urban highway system for construction and reconstruction.

(4) The commission shall use information gathered or discovered by and documents prepared by the department, and department officials and employees shall provide assistance and advice.

(5) The commission shall establish and determine priorities and projects for rail and transit programs and, to the extent possible, coordinate intermodal transportation within the state.

(6) In carrying out the requirements of this section, the department shall:

(a) make recommendations to the commission;

(b) establish the requirements and procedures for administering this section; and

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(c) take all reasonable steps to ensure the integrity and viability of agricultural and rural transportation and related needs."

Section 3. Notification to tribal governments. The secretary of state shall send a copy of [this act] to each tribal government located on the Fort Peck reservation, the Fort Belknap reservation, the Blackfeet reservation, and the Flathead reservation.

Section 4. Codification instruction. [Section 1] is intended to be codified as an integral part of Title 60, chapter 2, part 1, and the provisions of Title 60, chapter 2, part 1, apply to [section 1].

Section 5. Effective date. [This act] is effective July 1, 2001.

-END-

3.2.1.2 Statewide Transportation Improvement Program

The Montana Statewide Transportation Improvement Program (STIP) is produced regularly by MDT to address Montana's transportation needs for upcoming fiscal years. The project schedule shown in the STIP is tentative to the extent that projects in the program are contingent upon funding availability, environmental review, design, and other factors. Projects included in the highways portion of the STIP are developed through MDT District nominations which are then prioritized and ranked. The highways program is developed each year with knowledge of the anticipated level of federal and state funding for the fiscal years included in the STIP.

Four previously planned projects along the US 2 study corridor have been put on hold pending the outcome of this EIS (see Section 1.4, Project Background). Two of these projects are listed in the 2004-2006 STIP: the Havre – East project (NH 1-6(24)384) was scheduled to receive funding for right-of-way and incidental construction in fiscal year 2005, and the Zurich – Harlem project (NH 1-7(19)414) was scheduled to receive funding for right-of-way and incidental construction in fiscal year 2006 (see Table 3.4). Both of these project development activities were designated as inactive pending the outcome of the US 2 Havre to Fort Belknap EIS. Funding for the other two projects has yet to be prioritized. One of the projects, Lohman-East and West (NH1-7(11) 394), was identified in earlier STIPs. The fourth project, Chinook-Urban (F 1-7(NP)404) was never identified in the STIP.

The Havre-East project would have reconstructed 16.4 km (10.2 mi) of US 2 from the eastern curb and gutter limits of Havre to the east. The proposed roadway reconstruction would have maintained a two-lane typical section on US 2 with wider shoulders and additional turn lanes. This project was listed in the 2001-2003 STIP, 2002-2004 STIP, 2003-2005 STIP, and 2004-2006 STIP. The Zurich – Harlem project included 11.8 km (7.3 mi) of resurfacing and

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shoulder widening between the towns of Zurich and Harlem. The proposed project would have maintained a two-lane typical section on US 2 with wider shoulders. This project was listed in the 2002-2004 STIP, 2003-2005 STIP and 2004-2006 STIP. The Lohman-East and West project included 15.6 km (9.7 mi) of reconstruction of US 2, including the replacement of the Milk River Bridge east of Lohman. The project would have maintained a two-lane typical section with wider shoulders. The proposed project was listed in the 2001-2003 STIP and 2002-2004 STIP.

The Milk River Bridge east of Lohman was replaced in 2004 after an accident in November of 2003 damaged the bridge beyond repair. This project is not included in the 2004-2006 STIP because the STIP was finalized prior to the events leading up to the bridge replacement. It is anticipated that the replacement project will be included in the 2005-2007 STIP.

Table 3.4 Projects in STIP along US 2 Proposed Improvement Corridor

Project Name	MDT Project No.	Project Limits	Type of Project	Fiscal Year
Current STIP Projects (2004-2006 STIP)				
Havre - East (includes Suburban & Rural Sections)	NH 1-6(24)384, CN 4049	RP 383.655 to RP 393.855, 16.4 km (10.2 mi)	Reconstruction with shoulder widening and turn lanes.	2005
Zurich - Harlem	NH 1-7(19)414, CN 2142	RP 414.0, to RP 421.3, 11.8 km (7.3 mi)	Resurfacing with shoulder widening.	2006
Previous STIP Projects				
Lohman-East and West	NH 1-7(11)394, CN 1314	RP 393.855 to RP 403.595, 15.6 km (9.7 mi)	Reconstruction with shoulder widening and Milk River Bridge replacement.	NA

Source: Montana Department of Transportation, 2004-2006 STIP, 2003-2005 STIP, 2002-2004 STIP, 2001-2003 STIP.

3.2.2 Land Use

The US 2 study area is located within Hill and Blaine Counties. It encompasses the area along US 2 from its western project terminus at the eastern curb and gutter limits of Havre to its eastern project terminus at its junction with MT Highway 66 in the Fort Belknap Indian Reservation. The towns of Lohman, Chinook, Zurich, Harlem, and Fort Belknap are adjacent to US 2 within the project limits. While it is not included in the study area, Havre is considered to be within the “area of influence” of the proposed project and is discussed in this section.

The primary land use along the corridor is irrigated farmland and non-irrigated pastureland. Although very little land in the counties is irrigated, the project corridor lies in the Milk River Valley and contains a large amount of irrigated land. Agricultural properties are

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irrigated through a network of canals fed by tributaries of the Milk River, which generally parallels the highway corridor. Commercial land uses are concentrated at four locations: (1) east of the Havre urban limit, (2) through Chinook, (3) along the bypass of Harlem, and (4) near MT Highway 66 in Fort Belknap. Between the towns, some residential land uses consisting primarily of scattered farmhouses also exist.

Hill County Land Use Plans. Currently, no land use planning or zoning document exists for Hill County in its entirety. The comprehensive plan for Havre (*Comprehensive Plan, Havre, Hill County, Montana*) was developed in 1971 and remains unchanged in 2003. This document identifies general areas of residential, commercial, industrial, conservation, and open space land uses within the Havre city limits and along the Milk River to the east and west of the city. Within the current project limits, the comprehensive plan identifies industrial land use for the land area north of US 2 from the project limits east to approximately 38th Avenue; no land use is indicated for the south side of US 2 within the project limits. Current land use north of US 2 from the Havre city limits to 38th Avenue consists primarily of residences and commercial/retail uses; current land use south of US 2 consists primarily of commercial/retail uses and non-irrigated farmland and rangeland.

The Hill County Planning Office has stated that there is no public development planned in Hill County within the project limits. There is no Capital Improvements Program in place for the county. Private development is currently being planned adjacent to the project corridor, south of US 2 and east of the Havre urban limits. It is understood that this development would include a golf course, home sites, an assisted-living facility, a full-service hotel, a gas station, and a clubhouse.

Hill County Land Use. Of the total 767,226 hectares (ha) (1,895,855 acres [ac]) in Hill County, privately-owned land accounts for approximately 84 percent of the land, while the remaining 16 percent is held by public entities. Federal lands comprise approximately 10 percent of county land area, tribal lands cover slightly less than 5 percent, and state and city/town owned lands account for slightly more than 1 percent.

According to 2002 data from the Montana State Library – Natural Resources Information Service, the total private agricultural land classification includes 637,659 ha (1,575,690 ac), or 83 percent, of the land area in Hill County. Fallow cropland accounts for 63 percent of Hill County land area, 482,859 ha (1,193,171 ac). Another 149,491 ha (369,399 ac) or 19 percent are classified as grazing land. Only 0.1 percent of land, 670 ha (1,655 ac), in Hill County is classified as irrigated. Wild hay, timber, and non-qualified agriculture account for the remaining agricultural acreage.

Other land use information for the county is older, dating from 1980s US Geological Survey (USGS) Land Use/Land Cover maps. According to these data, agriculture and rangeland are the largest land uses in Hill County, at 67 percent and 29 percent of total land use respectively. The remaining 4 percent of land use in the county consists of evergreen forest, wetlands, water, urban use, and bare ground.

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Adjacent to US 2, all of the land is privately owned with the exception of several parcels owned by the City of Havre and the State of Montana, including an abandoned rest area east of Havre. The majority of the land adjacent to US 2 is hilly terrain and is not farmed. Aside from business uses immediately east of Havre, the majority of land use along US 2 in Hill County is fallow land.

Blaine County Land Use Plans. The *Blaine County Master Plan* was drafted by the Blaine County Planning Board and adopted by the Blaine County Commission in 1996. This document does not identify land use goals for specific land areas within Blaine County. The primary purpose of the document is to protect existing and future economic opportunity and private property rights in Blaine County by ensuring public involvement in land use decisions made by federal and state agencies. The document also protects the multiple use concept on public lands because of the economic impacts of "grazing, timber, oil and gas, coal minerals, hunting and fishing, and other recreational uses."

The Blaine County Sanitarian and the Blaine County Commission have stated that there is no public or private development planned or proposed in Blaine County within the project study limits. There is no Capital Improvements Program in place for the county.

The County Commission indicated two areas that they would like to see redeveloped, however, there are no plans in place for either area. The Commission believes the old Columbia Grain Elevator east of Chinook would be an ideal location for manufacturing redevelopment, however, the railroad spur to this facility has been removed, which may decrease the viability of this site. The Commission has spoken with a private land owner northeast of Chinook about the possibility of creating a feeding system on that property to feed calves before they are shipped to feed lots. The County would also like to encourage the development of a diesel or alternative fuel facility, but there is no specific site or plan for such a facility.

Blaine County Land Use. Of the total 1,124,299 ha (2,778,203 ac) in Blaine County, privately-owned land accounts for approximately 58 percent of the land, while the remaining 42 percent is held by public entities. Federal lands comprise approximately 24 percent of county land area, tribal lands cover slightly more than 18 percent of the land area, and state and city/town owned lands account for less than 1 percent.

According to 2002 data from the Montana State Library – Natural Resources Information Service, the total private agricultural land classification, not including agricultural land on the Fort Belknap Indian Reservation, includes 644,408 ha (1,592,365 ac), or 57 percent, of the land area in Blaine County. Grazing land at 464,744 ha (1,148,407 ac) accounts for the largest percentage of land area (41 percent). 156,581 ha (386,920 ac), 14 percent, are classified as fallow cropland. 19,275 ha (47,629 ac), or 1.7 percent, of land in Blaine County is classified as irrigated. Wild hay, timber, and non-qualified agriculture account for the remaining agricultural acreage.

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Other land use information for the county is older, dating from 1980s USGS Land Use/Land Cover maps. According to these data, rangeland and agriculture are the largest land uses in Blaine County, at 70 percent and 24 percent respectively. The remaining 6 percent of land use in the county consists of evergreen forest, wetlands, water, deciduous forest, and urban land uses.

Adjacent to US 2, the majority of the land is privately owned. There are several parcels along the corridor owned by the State of Montana. The Bureau of Land Management (BLM) owns one parcel along the highway at RP 392.5 near the landfill. There is no specific use designated for this land. The Montana Department of Natural Resources and Conservation (DNRC) owns one land parcel along the highway at RP 418.0 between Zurich and Harlem. The site is dense clay range on classified grazing land. Per conversations with DNRC, little vegetation can grow on the site due to the impervious clay.

The Blaine County Airport Commission and the Blaine County Fairgrounds own land parcels south of the highway west of Chinook. The City of Harlem owns Lions Memorial Park at the intersection of Main Street and US 2 in Harlem. The Fort Belknap Indian Reservation owns all land adjacent to the highway south of the Milk River at the east end of the project corridor. The majority of the land adjacent to US 2 is privately owned farmland. Businesses exist along the highway in Chinook, Zurich, Harlem, and Fort Belknap.

Fort Belknap Indian Reservation Land Use Plans. Fort Belknap is currently in the process of reviewing and revising the *Fort Belknap Agency Zoning Ordinance* that dates from 1977. The revised document has an anticipated completion date of 2005. The existing zoning ordinance divides the community of Fort Belknap into zoning districts consisting of six separate land uses; provides regulations for building uses, bulk, and location within these districts; and delegates the authority for enforcement of the ordinance to the Fort Belknap Planning Board. The property immediately adjacent to US 2 in Fort Belknap is zoned for commercial land use.

Fort Belknap also has in place a resource management plan, the *Fort Belknap Integrated Resource Management Plan and Environmental Assessment*. This document provides resource management strategies for the various land management units (LMUs) in the reservation. The LMUs, which consist of rangeland, forestland, dryland farmland, irrigated farmland, and wildlife, do not lie immediately adjacent to US 2 in the project area.

Fort Belknap is in the process of creating a long-range transportation plan, which will address transportation, land use and development within the reservation. Tentative redevelopment plans include the possible development of a gaming and hotel area east of MT Highway 66 along US 2. The existing recreational vehicle park in this area may be expanded. The go-cart facility on the southeast corner of Main Street and US 2 may be redeveloped to provide additional truck parking for the adjacent Kwik Stop (a gas station and convenience store). A cultural center may be constructed south of Fort Belknap College on

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Blackfeet Street. The waste transfer site north of US 2 may be relocated to allow for additional development along US 2 in this area.

Fort Belknap Indian Reservation Land Use. According to the *Fort Belknap Reservation Integrated Resource Management Plan and Environmental Assessment* completed in 1991, the primary land use on the reservation is rangeland, comprising 46 percent, 115,854 ha (286,282 ac), of reservation land area. The next largest land uses are irrigated and dryland farmland, at 28 percent and 23 percent of total land area respectively. These figures are based on soil, terrain, and climate characteristics, however, and the actual amount of land farmed on the reservation is much smaller. Approximately half of the dryland farmland is actually farmed, and an even smaller amount of irrigated farmland is farmed due to inadequate irrigation facilities and insufficient water supply. The remaining uses on the reservation are forest and urban uses.

3.2.3 Farmlands

The majority of land within the project corridor is used for agricultural purposes. The 1981 Farmland Protection Policy Act requires that the effects of proposed highway projects be examined before any farmland is acquired.

Blaine County contains 644,408 ha (1,592,365 ac) of private land in agricultural use, not including agricultural land on the Fort Belknap Indian Reservation, which represents 57.3 percent of the land in the county. Grazing land is the largest agricultural use classification in the county at 41.3 percent of the total land. Another 13.9 percent is classified as fallow crop land. Irrigated land only represents 1.7 percent of the land in the county.

Hill County contains less private land in agricultural use, but Hill County is smaller in area than Blaine County, so the 637,659 ha (1,575,690 ac) of land in agricultural use represents 83.1 percent of the land in the county. Non-irrigated agricultural land represents 63.0 percent of the county and grazing land accounts for another 19.5 percent. Table 3.5 summarizes the agricultural use in each county.

Table 3.5 Classified Agricultural Use Summary

Agricultural Land Use Classifications	Hill County		Blaine County	
	Private Land Area	% of Total Land Area in the County	Private Land Area ¹	% of Total Land Area in the County
Grazing	149,491 ha (369,399 ac)	19.5%	464,744 ha (1,148,407 ac)	41.3%
Fallow Crop	482,859 ha (1,193,171 ac)	63.0%	156,581 ha (386,920 ac)	13.9%
Irrigated	670 ha (1,655 ac)	<0.1%	19,275 ha (47,629 ac)	1.7%
Wild Hay	68 ha (167 ac)	<0.1%	2,386 ha (5,895 ac)	0.2%
Timber	2,328 ha (5,753 ac)	0.3%	65 ha (160 ac)	<0.1%
Non-Qualified Agriculture	2,244 ha (5,545 ac)	0.3%	1,357 ha (3,354 ac)	0.1%
Total	637,659 ha (1,575,690 ac)	83.1%	644,408 ha (1,592,365 ac)	57.3%

1 Fort Belknap Indian Reservation land not included.

Source: Montana State Library - Natural Resource Information Service.

Similar to countywide land use patterns, agriculture is also the predominant land use within the project corridor. Despite the small amount of irrigated farmland in Blaine and Hill Counties, the project corridor lies in the Milk River Valley and is dominated by irrigated farmland, especially between Lohman and Fort Belknap. These agricultural properties are irrigated through a network of canals fed by tributaries of the Milk River, which generally parallels the project corridor. Grazing land and fallow cropland are also common along the project corridor.

In addition to agricultural use designations, certain land is identified as being important farmland based on soil types. The Secretary of Agriculture determines which soil types are of high agricultural value and designates them as important farmland. In accordance with the Farmland Protection Act of 1981, important farmland includes all land that is defined as prime, unique, or farmlands of statewide or local importance. The U.S. Department of Agriculture's Natural Resources and Conservation Service (NRCS) defines these as follows:

Prime Farmland – Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and within allowable soil erosion tolerance, as determined by NRCS.

Unique Farmland – Land other than prime farmland that is used for the production of specific high-value food and fiber crops, as determined by NRCS. It has the special

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combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods.

Local or Statewide Importance – Land other than prime or unique farmland that is determined to be important by the appropriate State, tribal, or unit of local government agency or agencies, with concurrence by the State Conservationist.

US Congressional Public Law 95-87 (*Federal Register* January 31, 1978: Part 657) requires the NRCS to identify and map prime and unique farmland. These farmlands are protected under the Farmland Protection Act of 1981. According to a review of the important farmland mapping obtained from the NRCS, the existing US 2 alignment within Hill and Blaine County traverses the following two types of important farmland for the entire length of the corridor:

1. “farmland of statewide importance”
2. “prime farmland if irrigated”

There is no “unique farmland” in the project corridor. The NRCS mapping indicates that 32 percent of the land in Blaine County and 66 percent of the land in Hill County is designated as important farmland. A total of 154,573 ha (381,955 ac) of agricultural land within Blaine County is classified as prime farmland if irrigated. Another 204,553 ha (505,462 ac) are classified as farmland of statewide importance. In Hill County, 307,276 ha (759,296 ac) of agricultural land are classified as prime farmland if irrigated and an additional 601 ha (1,485 ac) is identified as prime farmland if irrigated. Another 196,756 ha (486,195 ac) are classified as farmland of statewide importance.

3.2.4 Irrigation

There are four major irrigation districts in the US 2, Havre to Fort Belknap study area that operate as part of the Milk River Project:

- The Fort Belknap Irrigation District, which starts at the Milk River east of Lohman and extends east to Lodge Creek;
- The Alfalfa Valley Irrigation District, which extends from Lodge Creek to Battle Creek;
- The Zurich Irrigation District, which extends from east of Battle Creek to east of Harlem; and
- The Harlem Irrigation District, which is south and east of the Zurich Irrigation District.

The Milk River Project was authorized by the Secretary of the Interior on March 14, 1903. Today it operates under guidance of the U.S. Department of the Interior, Bureau of

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Reclamation. The entire Milk River Project furnishes water for irrigation of about 48,966 ha (121,000 ac) of farmland in north-central Montana.

Three canals cross US 2 in the project area. The Matheson Ditch is an independently operated ditch just east of Battle Creek. The Lower Canal and the Harlem Canal are operated by the Harlem Irrigation District. The Lower Canal crosses US 2 just to the north of the Milk River crossing north of Fort Belknap. The Harlem Canal runs adjacent to the highway for 2.4 km (1.5 mi) between Zurich and Harlem and crosses the highway south of Harlem. The Harlem Canal is the only canal in the project area that may be eligible for listing on the National Register of Historic Places (NRHP).

In addition, two privately-owned, center-pivot irrigation systems operate in the project area. These pivot systems are located immediately south of the highway between Chinook and Zurich.

Each of the major irrigation ditches provides water to hundreds of acres of land, and the ditches are designed to flow toward the Milk River. The existing pipe sizes are adequate, except for at the Harlem Canal. The Harlem Canal pipe may need to be upsized to accommodate increased flow.

3.2.5 Social Conditions

Population. Hill and Blaine Counties are rural, with a combined population density of 1.3 persons per square km (3.3 persons per square mi), compared to 2.4 persons per square km (6.2 persons per square mi) for the state as a whole. Hill County's 2000 population of 16,673 represents a 5.6 percent decline since 1990, a trend that was consistent with most other counties in eastern Montana. Blaine County outside the Fort Belknap Indian Reservation had a population of 4,208 in 2000, also down from 1990. In contrast, the Fort Belknap Indian Reservation (Blaine County portion) grew nearly 21 percent during the 1990s, to 2,801 residents (ICF Consulting, 2003b).

Havre, in Hill County, is the largest city in the project area with a 2000 population of 9,261 residents, which represents a 5.6 percent decline since 1990. Chinook, the largest community in Blaine County, has a population of 1,386; population has declined 8 percent since 1990. Harlem's population of 848 represents a 4 percent decline since 1990. The community of Fort Belknap has 1,262 residents, representing 20.6 percent growth since 1990 (ICF Consulting, 2003b).

The Montana Department of Commerce, Census and Economic Information Center issues population projections for individual counties within Montana. Hill County's projected growth rate for the 25-year period between 2000 and 2025 is 1.3 percent; the county is estimated to grow from 16,672 persons in 2000 to 16,890 persons in 2025. Blaine County's projected growth rate is 4.0 percent over the 25-year period between 2000 and 2025; the

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county is estimated to grow from 7,009 persons in 2000 to 7,290 persons in 2025 (NPA Data Services, 2002a).

Demographics. Like much of Montana, the population in the study area is aging. Between 1970 and 2000, the median age of Blaine County rose from 26.9 to 34.4 and in Hill County from 24.3 to 34.5. These age trends suggest that the counties have experienced notable out-migration. The aggregate age statistics actually mask underlying differences between the white population, which is aging even more than the median age would suggest, and the Native American population, which is experiencing a small baby boom. The median age on the Fort Belknap Reservation is 21.8 years. Hill and Blaine Counties have a lower median age than Montana as a whole, due to the large American Indian presence (ICF Consulting, 2003b).

Residents in the study region are predominantly white and Native American. Hill County is 80 percent white and 17 percent Native American, and Blaine County is 53 percent white and 45 percent Native American, per the 2000 US Census.

Income and Unemployment. In terms of personal income, Hill County, with more urban residents and a more diversified economy, fares better than Blaine County and the Fort Belknap Indian Reservation. Median household income in Hill County was \$30,781 in 2000, 93 percent of the state average. Blaine County, exclusive of the reservation, had a median household income of \$28,241, 86 percent of the state average. The median household income on the Fort Belknap Indian Reservation (Blaine County portion only) was \$21,152 in 2000, or 64 percent of the Montana average.

The unemployment rate in Hill County is currently 4.1 percent, lower than the Montana average of 4.6 percent. Unemployment in Hill County has generally been close to the statewide figure throughout the 1990s. Blaine County's unemployment rate has historically been higher than the Montana average. It currently stands at 5.6 percent, down from a high of 10.2 percent in 1997 (ICF Consulting, 2003b). Unemployment on the Fort Belknap Indian Reservation is very high, reported as 71 percent in the 2001 Bureau of Indian Affairs (BIA) Labor Force Report and 16.5 percent by the Montana Department of Labor and Industry (DLI).¹

Neighborhoods and Communities. In the Havre East Suburban segment, several residential areas lie north of the highway between 31st and 38th Avenues. These small neighborhoods depend on US 2 as their only route into Havre.

In Chinook, the majority of the community resides south of the BNSF Railway and US 2. Businesses line the south side of US 2, and several old grain storage facilities are located

¹ The U.S. BIA and Montana DLI use different methodologies for calculating unemployment rates, which accounts for the difference. Montana DLI figures include only those unemployed individuals who are actively seeking work. BIA figures are based on all working age individuals, and thus includes those unemployed individuals who have given up seeking work.

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north of the highway along the railroad at the east entrance into town. Commercial land use is concentrated immediately south of US 2, and residential land use is concentrated at the eastern end of town. Downtown Chinook, with local shops and eateries, lies on Indiana Street between Second and Fourth Streets. Community facilities, including the county building, city hall, high school, and Blaine County library, are located on Ohio Street, one block east of downtown.

There is a residential neighborhood in Chinook north of the BNSF Railway, and this neighborhood relies on the crossing of the railroad and US 2 at Indiana Street for its connection with greater Chinook. The Sweet Memorial Nursing Home lies less than 0.8 km (0.5 mi) west of Chinook on the south side of US 2. US 2 and the adjacent bicycle path connect the nursing home with Chinook.

In Harlem, highway-related businesses line US 2. Downtown Harlem, with local shops and eateries and a grocery store, is located on Main Street south of Central Avenue (the old US 2). Residences are spread throughout the community and do not front the highway. A network of local streets connects the community.

In Fort Belknap, commercial land uses line US 2 on the south, and Fort Belknap College is located one block south of the highway. Residences are spread throughout the community and do not front the highway. A network of local streets connects the community.

A spatial hierarchy exists among the communities themselves. Blaine County (Fort Belknap, Harlem, and Chinook) has relatively few specialized establishments and a low concentration of service sector businesses. Hill County (Havre) appears to provide some of these services for Blaine County, while others must be obtained in more distant locations like Great Falls. US 2 serves as the primary connection among these communities.

Community and Public Facilities. Primary community facilities include libraries, churches, schools, a bicycle path west of Chinook, medical facilities, and emergency services.

School buses serving Havre schools pick students up along the highway as far east as 38th Avenue. The parking lot of Halliburton's, a local business, serves as the school bus turnaround at 38th Avenue and US 2.

School buses serving Blaine County schools operate out of Harlem and Chinook. The majority of school bus stops in the county are within communities rather than along the highway, however, there are stops along US 2 between Harlem and Zurich. Chinook students living north of US 2 walk to school and must cross the highway at Indiana Street to reach the school, which is south of the highway.

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The primary health care facility and emergency room in the project area is Northern Montana Hospital in Havre. There is also a walk-in clinic and emergency room at the Fort Belknap Indian Community Health Center in the Fort Belknap community. MediVac flights operate from Harlem to Great Falls or Billings for emergencies.

Emergency fire and medical response in Blaine County, exclusive of the Fort Belknap Indian Reservation, consists of a county volunteer fire department and county volunteer emergency medical response team. The volunteer services operating out of Chinook serve the western half of the project study area to the Hill/Blaine County jurisdictional boundary, and services operating out of Harlem serve the eastern half of the study area to the Blaine/Phillips County jurisdictional boundary. Emergency services on Fort Belknap Indian Reservation operate out of the Fort Belknap community and are located on Main Street. The fire station is located on Main Street in Fort Belknap; the intersection of Main Street with US 2 is the primary access for the fire department. US 2 serves as the primary route for emergency services for the county.

The Havre Fire Department and ambulance services operate out of the Havre City Hall. The Fire Department services the Havre urban and rural area to a point 6.5 km (4 mi) west of the Hill/Blaine County boundary. The Bear Paw volunteer fire department services the rural portion of Hill County to the eastern county line. Havre ambulance service operates in the eastern half of Hill County to the eastern county line.

In Blaine County, law enforcement is provided by the Blaine County Sheriff. In Hill County, law enforcement is provided by the Havre Police Department within the Havre city limits and by the Hill County Sheriff in rural areas.

Rest Areas. Two state rest areas are located within or near the project corridor. Hill County maintains and operates a state rest area west of Havre, adjacent to the county fairgrounds. Fort Belknap maintains and operates a combined state rest area and visitor information center near the intersection of US 2 and MT Highway 66. MDT built both facilities with agreements that the local governments would maintain and operate them.

Parks and Recreational Facilities. Parks and recreational facilities within the study area include an unofficial fishing access on the Milk River, city parks in Chinook and Harlem, the Blaine County Fairgrounds, and a go-cart facility in Fort Belknap.

Montana Fish, Wildlife and Parks (MFWP) has stated that the area below the current Milk River Bridge, east of Lohman, is an “outstanding fishing hole” that has been used for decades. This location is not listed as an official fishing access.

Two city parks exist in Harlem and Chinook near US 2. Centennial Park in Chinook is located on the southeast corner of the intersection of Second and Indiana Streets, one block south of US 2. Indiana Street functions as Chinook’s “Main Street” between Second and

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Fourth Streets, and this park provides an entry feature to the downtown area. The park consists of a wide lawn and landscaping, with a shelter structure and picnic tables. Lions Memorial Park in Harlem sits at the northeast corner of the intersection of Main Street with US 2. The park consists of an entry marker, memorial stones, and flags, and it includes a picnic area. It sits back from the highway and cannot be easily seen from US 2.

Blaine County owns the Blaine County Fairgrounds, located south of US 2 immediately west of Chinook. The Fairgrounds are used for the county fair each year, and clubs such as riding groups and 4H use the arena. Blaine County also maintains a short bicycle trail immediately west of Chinook. The trail runs on the south side of US 2 between Chinook and the Sweet Memorial Nursing Home to the west. It was built in memory of Gary Steffenmeier through the Montana Community Transportation Enhancement Program. The trail functions as part of the transportation system connecting the Sweet Memorial Nursing Home to Chinook.

A go-cart facility is operated in Fort Belknap at the intersection of Main Street and US 2. The Reservation plans to redevelop this area in the future into truck parking for the adjacent gas station/convenience store to the east.

3.2.6 Economic Conditions

Employment by Industry. As shown in Table 3.6, the largest employment sources in the study area are the retail, services, and government sectors. Transportation-related businesses (mostly BNSF) are an important source of employment primarily in Havre. Less than 2 percent of all employment is in manufacturing, as compared to 5 percent in Montana as a whole. Farming is the major employment source outside of the cities and accounts for nearly 25 percent of employment in Blaine County. The distribution of employment across industry sectors changed little between 1990 and 2000 (ICF Consulting, 2003b).

The Montana Department of Commerce, Census and Economic Information Center issues employment forecasts by county. Hill County's projected employment growth for the 23-year period between 2002 and 2025 is 9.2 percent. Blaine County's projected employment growth for the same period is 4.8 percent. Farm employment is expected to decrease by approximately 16 percent in both counties, while private non-farm and government employment is expected to increase by approximately 11 percent (NPA Data Services, 2002b).

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Table 3.6 Study Region Employment (for Blaine and Hill Counties), 1990 and 2000

Industry	1990 Employment		2000 Employment		1990 to 2000
	Number	% of Total	Number	% of Total	Change
Farm employment	1,462	12%	1,485	12%	2%
Non-farm employment	10,599	88%	11,270	88%	6%
Ag. Services, forestry, fishing ¹	196	2%	290	2%	48%
Mining	87	1%	153	1%	76%
Construction	385	3%	508	4%	32%
Manufacturing ²	223	2%	148	1%	-34%
Transportation, communications, & public utilities ²	1,066	9%	908	7%	-15%
Wholesale trade	391	3%	372	3%	-5%
Retail trade	2,158	18%	2,323	18%	8%
Finance, insurance, & realestate	610	5%	695	5%	14%
Services	3,073	25%	3,533	28%	15%
<i>Non-Farm Private Employment Sub-Total³</i>	<i>8,189</i>	<i>68%</i>	<i>8,934</i>	<i>70%</i>	<i>9%</i>
Federal government, civilian	374	3%	337	3%	-10%
Military	240	2%	133	1%	-45%
State and local government	1,796	15%	1,866	15%	4%
<i>Government Employment Sub-Total</i>	<i>2,410</i>	<i>20%</i>	<i>2,336</i>	<i>18%</i>	<i>-3%</i>
Total³	12,061	100%	12,755	100%	6%

¹ Blaine County data unavailable for 2000; 1997 data reported² Blaine County data unavailable for 2000; 1999 data reported³ 2000 total and private employment subtotal are not equal to the sum of industry-specific data presented due to the prior year reporting for Blaine County as noted.

Source: ICF Consulting, Inc. July 2003. US 2, Havre to Fort Belknap EIS, Existing Economic Conditions Report.

Earnings by Industry. Services and state and local government are the important sources of income for the study area. The largest industries by earnings in Blaine County (2000) are state and local government (24 percent of total earnings), federal civilian government (21 percent), and services (15 percent). In Hill County, services (29 percent), transportation and public utilities (18 percent), and state and local government (17 percent) are the largest sources of earnings. More than two-thirds of transportation earnings in Hill County are from railroad industries (primarily BNSF); however, the transportation sector has declined in

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importance in Hill County from 1990, when it made up 24 percent of earnings. Farming earnings declined substantially during this period (ICF Consulting, 2003b).

Growing and Declining Sectors. For the study area, both the mining and construction sectors demonstrated considerable growth during the 1990s. As shown in Table 3.7, mining employment (primarily natural gas) increased 51 percent in Hill County and nearly tripled in Blaine County, although employment totals remain relatively low. Employment in the construction sector increased 29 percent in Hill County and 45 percent in Blaine County. Other high growth sectors in Hill County include agricultural services, forestry, and fishing (107 percent growth); finance, insurance, and real estate (23 percent); and services (22 percent). In Blaine County, the only other growth sectors are local and federal civilian government (ICF Consulting, 2003b).

The largest declining sectors in employment percentage terms are military (both counties), state government (both counties), manufacturing (Hill County), federal civilian government (Hill County), and finance (Blaine County) (ICF Consulting, 2003b).

Table 3.7 Growing and Declining Industries, 1990 – 2000 Employment Change

Top Growth Sectors in Hill County			Top Growth Sectors in Blaine County ¹		
Industry	2000 Employment	1990 to 2000 Change	Industry	2000 Employment	1990 to 2000 Change
Agric. services, forestry, fishing	188	107%	Mining	58	142%
Mining	95	51%	Construction	110	45%
Construction	398	29%	Local government	453	9%
Finance, insurance and real estate	611	23%	Federal civilian government	203	9%
Services	2886	22%			
Top Declining Sectors in Hill County			Top Declining Sectors in Blaine County		
Industry	2000 Employment	1990 to 2000 Change	Industry	2000 Employment	1990 to 2000 Change
Military	95	-50%	State government	24	-52%
Manufacturing	113	-41%	Military	38	-25%
Federal civilian government	134	-29%	Finance	84	-25%
Transportation/public utilities	840	-16%	Retail	374	-8%
State government	493	-13%	Farm	664	-8%

¹Only four Blaine County sectors show growth between 1990 and 2000.

Source: ICF Consulting, Inc. July 2003. US 2, Havre to Fort Belknap EIS, Existing Economic Conditions Report.

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Economic Initiatives

There are a number of activities and investments in the study area that could lead to economic growth, including proposals in the tourism, agriculture, manufacturing, energy, retail/services, and public sectors. Some of these initiatives are identified in the annual Comprehensive Economic Development Strategy developed by the Bear Paw Development Corporation for Hill, Blaine, Liberty, Chouteau, and Phillips Counties and the Fort Belknap and Rocky Boy's Indian Reservations. In addition, the Montana Economic Developers Association (MEDA) conducted a series of workshops along the Hi-Line in 2003 to assess communities' and counties' strengths and challenges and recommend possible actions and goals. Topics in the reports produced from these workshops range from education and healthcare, to youth activities, to agriculture and business, to resource management. Reports were completed for Hill County, Chinook, and Harlem. Although these reports do not constitute economic development plans for the communities, local governments may choose to adopt some of the recommendations into their planning processes.

Tourism. Hill and Blaine Counties and the Fort Belknap Indian Reservation contain a number of historical, cultural, and natural resource attractions. In addition, the proximity of Glacier National Park to the west on US 2 means that the study area experiences relatively high volumes of pass-through tourism traffic, particularly during the summer months. Less than 4 percent of pass-through travelers are estimated to visit the study area tourist attractions. Growth of the tourism sector appears promising if coupled with development and promotion of attractions such as Bear Paw Battlefield, the Buffalo Jump Archaeological Site (Wahkpa Chu'gn), Fort Assinniboine, and attractions on the Fort Belknap Indian Reservation. There are several initiatives under consideration that would support this growth, including a new visitor center at Havre, a multi-purpose events center, and a proposed golf course with hotel development. Plans to expand lodging capacity in Havre should better position the study area to capture any increase in tourism visitation. There is also potential for the Lewis and Clark Bicentennial Celebration to generate long-term awareness of the area's attractions and lead to a sustained increase in visitation and associated spending (ICF Consulting, 2003b).

Agriculture. The Hi-Line region relies heavily on agriculture, particularly wheat and cattle, as a source of employment and income. Virtually all grain grown in the study area is transported by truck from the field to grain elevators located along the BNSF rail line, and then by rail out of Montana. The recent consolidation of grain elevators appears to have increased grain truck traffic on US 2. Cattle are transported exclusively by truck to out-of-state finishing lots where they are fattened for slaughter. Opportunities for economic growth in the agricultural sector lie primarily with higher value crops, such as organic wheat (ICF Consulting, 2003b).

Manufacturing. There is little manufacturing in the study area, but several manufacturing businesses and initiatives offer potential for growth. A proposed biodiesel production facility could create 20 new high-paying jobs (possibly in Havre) and boost local demand for oil seed

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crops. A small but successful Havre firm that reconditions farm equipment has potential for expansion. A number of manufacturing initiatives in the study area have failed or relocated. A review of these initiatives detailed in *US 2, Havre to Fort Belknap EIS, Existing Economic Conditions Report* by ICF Consulting, Inc., suggests that factors such as the distance to market and high freight rates may have contributed to the lack of success but failure cannot be attributed to transportation conditions of the US 2 segment (ICF Consulting, 2003b).

Energy. The abundance of certain natural resources in the study area creates opportunities for the development of energy-related industries. In particular, the exploration and production of natural gas has seen considerable growth in recent years. Natural gas exploration and production relies on US 2 and its feeder road system to transport inputs (labor, machinery, and supplies) into and around the study area. However, transportation costs to the industry are negligible compared to other exploration and production costs. Another energy initiative involves a potential wind power generation facility at the Fort Belknap Reservation (ICF Consulting, 2003b).

Retail/Services. The retail and services sectors combined employ more than 6,500 people, or more than 50 percent of the workforce in the study area. Northern Montana Health Care, as the largest employer in Havre, is an important component of the service sector, although the organization currently has no plans for expansion. The Holiday Village Mall in Havre has seen a recent increase in occupancy and now employs more than 200 area residents. Retail sales in the study area have been helped in the past year by a stronger Canadian dollar, although Canadian shoppers account for only a small portion of study area retail sales and their numbers can fluctuate markedly depending on the exchange rate. Most retail and service businesses sell their products primarily to local residents or, in the case of Havre, to local residents and those in surrounding communities. This sector therefore presents fewer potential economic growth opportunities than businesses that sell products outside the region (ICF Consulting, 2003b).

Public Sector. There are several important and growing public sector activities in the study area that rely on US 2 and may benefit from US 2 improvements. One is the regional headquarters of the US Border Patrol, located in Havre, which relies on US 2 to access Canadian border crossings across all of north-central Montana. Another is a proposed munitions training facility for the Montana Air National Guard, which is currently planned for location in Phillips County, east of the study area. A third is Montana State University-Northern, which has several new initiatives underway including new degree programs and the construction of an applied research facility. The University has reported difficulty recruiting new faculty because of the remoteness of the area (ICF Consulting, 2003b).

3.2.7 Environmental Justice

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations*, directs federal agencies to consider impacts to minority and low-income populations as part of environmental analyses to ensure that

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federally-funded projects do not result in “disproportionately high and adverse human health or environmental effects” on these populations. FHWA issued a guidance document that establishes policies and procedures for complying with EO 12898 (FHWA 1998). This guidance defines a “disproportionately high and adverse effect” as one that is predominately borne by, suffered by, or that is appreciably more severe or greater in magnitude on minority and low-income populations than the adverse effect that will be suffered by the non-minority population and/or the non-low-income population.

Methodology

The study area encompasses two counties: Hill and Blaine Counties. The four largest communities within the study area are, from west to east, Havre (population 9,261), Chinook (population 1,386), Harlem (population 848), and the Fort Belknap Agency (population 1,262); two smaller communities, Lohman and Zurich, are also within the study area. Outside of these communities, the study area population resides in scattered farmhouses throughout the corridor. Although physically separated by many miles, many residents of the area view the project area as one collective community.

FHWA environmental justice guidance defines minority populations as “any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed FHWA program, policy, or activity.” Low-income populations are defined by FHWA as “a person whose household income is at or below the Department of Health and Human Services (HHS) poverty guidelines.” There are two federal measures of poverty: poverty thresholds as defined by the US Census and poverty guidelines defined by the HHS. HHS clarifies the distinction between the two measures:

“The **poverty thresholds** are the original version of the federal poverty measure. They are updated each year by the **Census Bureau**. The thresholds are used mainly for **statistical** purposes — for instance, preparing estimates of the number of Americans in poverty each year. (In other words, all official poverty population figures are calculated using the poverty thresholds, not the guidelines.) The **poverty guidelines** are the other version of the federal poverty measure. They are issued each year in the *Federal Register* by the **Department of Health and Human Services** (HHS). The guidelines are a simplification of the poverty thresholds for use for **administrative** purposes — for instance, determining financial eligibility for certain federal programs.”

Source: U.S. Department of Health and Human Services. *The 1999 HHS Poverty Guidelines*.
<<http://aspe.os.dhhs.gov/poverty/99poverty.htm>>

The HHS guidelines are determined and published at different levels depending on household size. While US Census data also consider household size for poverty thresholds, publicly

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reported data are rolled up for confidentiality reasons². Data in the format of the HHS guidelines were not available for this project area. Therefore, statistical analysis of corridor communities for this project used US Census data to determine concentrations of both minority and low-income populations.

Because of the small population and limited governmental services within the corridor communities, no reliable local statistical data were available to supplement Census data. However, in addition to statistical analysis of corridor communities, an extensive public involvement program was executed as part of this EIS, including numerous formal and informal consultations with tribal leaders and members, as well as individual and group contacts with all potentially affected households and employers in the project area. Each set of public meetings has been held in each of the four communities of Havre, Chinook, Harlem, and Fort Belknap. Representatives from each community participate on the Citizens Advisory Committee (CAC). The CAC represents community leaders and interests in the area. County commissioners, mayors, two tribal members, and members representing trucking, irrigation, business, economic development, and railroad interests serve on the CAC.

Minority Populations

The racial/ethnic composition of the study area is predominately white (71.4 percent) and American Indian (25.1 percent), as compared to the state of Montana, which has populations of 90.6 percent white and 6.2 percent American Indian. The remaining 3.5 percent minority population in the corridor includes primarily (in order of highest to lowest occurrence) persons identifying themselves as “more than one race,” “Asian alone,” and “some other race alone.” The disproportionately high percentage of Native Americans within the study area is primarily attributed to the presence of the Fort Belknap Reservation, which is located at the eastern end of the project corridor where 95.5 percent of the residents are American Indians. The community of Harlem, located just outside Fort Belknap Reservation, also has a much higher proportion of Native Americans (40.5 percent) than other communities in the corridor and would be considered a minority community for the purposes of environmental justice analysis. Outside of Fort Belknap and Harlem, other communities in the corridor are similar in racial composition to other areas in Montana. No other neighborhoods or areas within the corridor were identified during public involvement activities as potential minority populations.

Low-Income Populations

The communities along the Hi-Line are generally economically depressed, with lower household and per capita incomes, higher unemployment, and higher poverty rates than the

² Poverty thresholds and poverty guidelines are similar though not identical. For reference, the US Census poverty threshold for 1999 (the data reported on the 2000 Census) for a family of four was \$17,029. The HHS poverty guideline for a family of four for the same year was \$16,700.

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state of Montana. Table 3.8 presents poverty and income information for the corridor communities as compared with the state of Montana. As noted above, poverty rates are determined based on household size but only reported by the US Census as a percentage. Median household income is reported without distinction for household size.

Table 3.8 Poverty and Income Data for US 2 Corridor Communities

Area	Population (numbers of persons)	Poverty Rate (percentage living below poverty threshold)	Median Household Income (in 1999 \$)	Median Per Capita Income (in 1999 \$)
Montana	902,195	14.1	33,024	17,151
Blaine County	7,009	28.1	25,247	12,101
Hill County	16,673	18.4	30,781	14,935
Havre	9,623	17.5	29,944	15,847
Chinook	1,364	17.3	25,461	16,038
Harlem	865	23.0	27,794	13,295
Fort Belknap	1,277	38.3	22,000	9,053

Source: US Census 2000 Summary File 3 Data

Because the entire corridor is lower income than the rest of Montana, all of the corridor communities could be considered low-income populations with respect to environmental justice analysis. Within the corridor communities, Fort Belknap and Harlem have significantly higher percentages of households living in poverty. A CAC member identified one neighborhood east of Havre (a mobile home park) as a potential low-income area. No other neighborhoods or areas were identified during public involvement activities as low-income populations.

3.2.8 Right-of-Way and Relocation of Utilities

The existing right-of-way through the corridor was initially researched using county assessor's records. However, along much of the study corridor, these records show the property lines extending to the centerline of the highway, indicating that the highway may be located on easements. Therefore, the existing right-of-way for this report was measured using the distances between the fences running along the highway, or in locations where the railroad is adjacent, using the distance between the fences along the highway to the south and the approximated railroad right-of-way to the north. The railroad right-of-way was approximated from BNSF track plans. Based on these reference points, the approximate existing MDT-owned right-of-way was calculated to be 310.7 ha (767.8 ac). The approximate existing right-of-way widths measured within each segment are given in Table 3.9.

A portion of the right-of-way to the north of the highway lies on an easement with the BNSF Railway. Through Chinook, the grain facilities between US 2 and the railroad lie on an easement with both MDT and the railroad.

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Table 3.9 Approximate Existing Right-of-Way Widths

Project Segment						
Havre East Suburban	Havre East Rural	Lohman	Chinook Urban	Zurich	Harlem West Rural	Harlem to MT Highway 66
20 to 37 m (66 to 121 ft)	20 to 60 m (66 to 197 ft)	20 to 90 m (66 to 295 ft)	20 to 95 m (66 to 312 ft)	48 to 132 m (158 to 433 ft)	63 to 160 m (207 to 525 ft)	37 to 110 m (121 to 361 ft)

Source: Widths compiled by David Evans and Associates, Inc.

Throughout the project corridor overhead power and telephone lines exist in and/or adjacent to the right-of-way. There is a large electric substation immediately south of the highway in Harlem, and there are several smaller substations dispersed throughout the corridor. There are above- and below-ground utilities for transmission and local services (such as water, sewer, electric, and gas) in the communities in the project area.

3.2.9 Project Funding

MDT publishes a Tentative Construction Program (TCP) annually that shows committed funding for projects in a future five-year timeframe. In the 2002 TCP, which shows the MDT funding plan for the 2002 to 2006 timeframe, four highway construction projects are identified within the geographic limits of the US 2, Havre to Fort Belknap project. These projects are shown in Table 3.10. Of these four projects, the Havre – East reconstruction project had funding committed for contract letting in January of 2005, and the other three projects had funding that would be committed beyond 2006. These projects were designated as inactive once the US 2 Havre to Fort Belknap EIS began. All funding within the TCP must be fully allocated to projects. Therefore, the 2005 funding identified in the 2002 TCP for the Havre-East project was re-allocated to other projects within the Great Falls District.

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Table 3.10 Previously Planned Project Funding

Project Name	MDT Project No.	Project Limits	Type of Project	Funding	Status in 2002 TCP	Funding Source
Havre - East (includes Suburban & Rural Sections)	NH 1-6(24)384, CN 4049	RP 383.655 to RP 393.855, 16.4 km (10.2 mi)	Reconstruction with shoulder widening and turn lanes.	\$11.4 million	Funding identified for 2005	FHWA 87% MDT 13%
Lohman - East & West	NH 1-7(11)394, CN 1314	RP 393.855 to RP 403.595, 15.6 km (9.7 mi)	Reconstruction with shoulder widening and Milk River bridge replacement.	\$10.0 million	Beyond 2006	FHWA 87% MDT 13%
Zurich - Harlem	NH 1-7(19)414, CN 2142	RP 414.0, to RP 421.3, 11.8 km (7.3 mi)	Reconstruction with shoulder widening.	\$8.6 million	Beyond 2006	FHWA 87% MDT 13%
Chinook Urban	NH 1-7 () 404 CN 1509	RP 403.5, to RP 404.1, .96 km (0.6 mi)	Overlay and resurface	\$80, 000	Beyond 2006	FHWA 87% MDT 13%

Source: Montana Department of Transportation, November 23, 2001. *TCP Version #11.*

At this time there are no committed funds for projects within the limits of the Havre to Fort Belknap project. Funding for any two-lane alternatives would be scheduled through MDT's standard allocation process and could come from a variety of sources, including state and federal funds. The extent of available funding for construction in years 2008 and beyond will not be known until November 2004 when MDT prepares its TCP for the timeframe of 2005 through 2009. Per the requirements of MCA 60-2-133, funding for the four-lane alternatives must be federal funds that do not require matching state funds. Additionally, no funds are to be expended on a four-lane alternative that would jeopardize funding of future highway projects.

Because most federal highway money requires a state match, typically 87 percent federal funding with about 13 percent state funding in Montana, a special appropriation from Congress (that would require no state match) would be needed to fund a four-lane project on US 2. Funding with no requirement for state match, that would not jeopardize funding for other state highway projects, would require Congressional action or a non-highway program funding source. In addition, the specific timing of availability for this type of funding is highly uncertain.

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3.3 Environmental Conditions

3.3.1 Cultural and Historic Resources

Cultural resources are defined in Section 301 (5) of the National Historic Preservation Act (NHPA) of 1966, as amended, as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register [of Historic Places] (NRHP) including artifacts, records, and material remains related to such a property or resource” (16 USC 470w(5)). Established criteria (36 CFR 63) are used to determine if a cultural resource is eligible for listing on the NRHP. A property must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet at least one of the following criteria:

- A. Association with events that have made significant contribution to the broad patterns of history, or
- B. Association with historically significant persons, or
- C. Embodiment of distinctive characteristics of a type, period, or method of construction, or representation of the work of a master, or possession of high artistic values, or representation of a significant distinguishable entity whose components may lack individual distinction, or
- D. Has yielded, or may be likely to yield, information important in prehistory or history.

Resource Inventory

The US 2, Havre to Fort Belknap corridor extends through Hill and Blaine Counties approximately 72 km (45 mi) between RP 383.66 and RP 428.52. A cultural resources inventory for this corridor was completed in January 2003 by Ethnoscience in compliance with federal guidelines, including Section 106 of the NHPA and regulations at 36 CFR 800, to identify resources listed on or eligible for listing on the NRHP. The survey consisted of a pedestrian inventory of the project area conducted at 30 m (100 ft) transect intervals (lines on the ground surface where survey data are collected) for 90 m (300 ft) from the existing US 2 centerline for a total 180 m (600 ft) wide inventory corridor. Additional field work was completed to evaluate one structure in Chinook (Ethnoscience, 2003a), four archaeological sites near the Blaine/Hill County border (Ethnoscience, 2003b), a NRHP district evaluation for Lohman (Ethnoscience, 2004 and Brownell, 2004), and an irrigation ditch in Harlem (Ethnoscience, 2003c).

Prior to the field survey, Ethnoscience contacted tribal representatives from the Blackfeet, Rocky Boy, Fort Peck, Crow, and Fort Belknap tribes. Contact with the tribes was initiated to introduce the project and inquire if any tribes were interested in participating in the project, had information regarding sensitive sites within the project area, or desired additional information (see Appendix F for correspondence with tribes regarding cultural resources). Representatives from the Fort Belknap and Rocky Boy Reservations participated in portions

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of the survey and were briefed on the survey results. Fort Belknap Tribal representatives were also involved in the project's Citizen Advisory Committee (CAC) meetings, and a project presentation was made to the Tribal Council. In addition to tribal representatives, a number of residents and landowners were contacted to gather information on the area history and property uses.

Within the corridor, 95 sites were investigated, 61 of which had been previously identified and 34 that were identified during investigations for this project. Refer to Appendix F for a listing of all inventoried properties.

NRHP Status

MDT, acting on behalf of FHWA, determined 16 of the 95 sites investigated to be eligible for or listed on the NRHP. The Montana State Historic Preservation Office (SHPO) concurred with these determinations (see Appendix F for SHPO correspondence). The NRHP-eligible sites are listed in Table 3.11. No traditional cultural properties (locations rooted in community history and important to maintaining cultural identity, such as places important to Native American ceremonies) were identified during the survey or in consultation with Native American tribal representatives.

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Table 3.11 Properties Determined to be Eligible for, or Listed in the National Register of Historic Places

Site No.	Name	Period (Date)	# of Historic Features	Location	Description	NRHP Status
24BL838	Harlem – Snake Butte Railroad	Historic (1936-1937)	1	Harlem/Fort Belknap	22.5-km (14 mi) spur line to the Great Northern Railroad; transported rock from Snake Butte to the construction of Fort Peck Dam	Eligible, Criterion A
24BL981 (24BL1050)	Lodge Creek Bridge	Historic (1942)	1	Just east of Chinook	3-span reinforced concrete T-beam bridge built by the Walter Mackin company of Billings; 28.6 x 10.4 m (94 x 34 ft); excellent example of late classic reinforced concrete T-beam bridge	Eligible, Criterion C
24BL1146	Battle Creek Bridge	Historic (1915)	1	West of Zurich and north of BNSF Railway	Single span pin-connected Pratt through truss by O.E. Peppard of Missoula; 31.1 x 4.9 m (102 x 16 ft); excellent example of a metal through-truss bridge constructed during late 19 th /early 20 th century in Montana	Eligible, Criterion C
24BL1248	Bear Paw Court motel, apartments, and neon sign	Historic (1951)	3 (two buildings and sign)	North and south sides of Second Street at Montana Street in Chinook	Extremely rare, unaltered example of 1950s era roadside motel architecture; structure retains original features such as trim, fittings and fixtures, and furniture, and original neon sign	Eligible, Criterion C
24BL1251	Jamieson Motors building	Historic (1910)	3 (building and two signs)	Southeast corner of First Street & Pennsylvania Street in Chinook	Excellent architectural example of an early 20 th century automotive related building; virtually unaltered since its construction in 1910; still retains two 1930s era neon signs	Eligible, Criterion C
24BL1254	Pehrson's Exxon	Historic (1951)	1	Southeast corner of First Street & Illinois Street in Chinook	Excellent examples of 1950s era roadside gas station architecture	Eligible, Criterion C
24BL1351 (24BL943)	Harlem Canal	Historic (1903)	1	Canal starts 2.4 km (1.5 mi) east of Zurich and flows east, terminating 9.6 km (6 mi) east of Harlem (total canal length is 29 km (18 mi))	Significant for its role in the settlement and agricultural development of the region; constructed as part of the Milk River Project, the first irrigation project in Montana by the US Reclamation Service	Eligible, Criterion A

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Table 3.11 Properties Determined to be Eligible for, or Listed in the National Register of Historic Places (continued)

Site No.	Name	Period (Date)	# of Historic Features	Location	Description	NRHP Status
24BL1541	Vincent Pefaur Farmstead	Historic (1920-1952)	9 (house, chicken coop, well house, two migrant worker houses, storage building, granary, Quonset-type barn, and privy)	5.6 km (3.5 mi) west of Harlem, south of US 2	Well-preserved representation of an early 20 th century farmstead complex in northern Montana; migrant worker buildings highlight the importance of the sugar beet industry in the early 20 th century	Eligible, Criteria A and C
24BL1542	Knute and Ardele Kulbeck Farmstead	Historic (early-mid 20 th century)	2 (barn and milk house)	4 km (2.5 mi) west of Harlem, south of US 2	Farmstead consists of three features, two of which are NRHP-eligible. Historic barn and milk house are representative of the early dairy industry in the Milk River Valley during the early and middle portions of the 20 th century	Eligible, Criteria A and C
24BL1725	Zurich grain elevator complex	Historic (1915-1975)	5 (two grain elevators, office, grain bin, and outhouse)	North of US 2 on the east edge of Zurich	Important historic cultural resource associated with early 20 th century agricultural and economic development of Zurich and surrounding region; excellent example of early 20 th century wood frame grain elevator construction	Eligible, Criteria A and C
24BL1726	Burns Farmstead	Historic (1910)	1	Directly south of Zurich, south of US 2	The farmstead consists of 18 features, only one of which, the barn, is NRHP-eligible. The barn is an important historic cultural resource, both as an excellent example of early 20 th century barn architecture and construction, and as a well-known local landmark that has been featured in numerous artworks	Eligible, Criterion C
24BL1728	Chinook grain elevator complex	Historic (1952-1978)	6 (three grain bins, grain elevator annex, grain elevator and drive house, and office)	North of US 2 in Chinook	Important historic cultural resource associated with the economic boom of post-war agricultural and economic development of Chinook and surrounding region; excellent example of post-World War II era wood frame commercial feed mill and elevator architecture	Eligible, Criteria A and C
24BL1729	GTA Feed Mill grain elevator complex	Historic (1947-1954)	5 (warehouse/office, feed mill, drive house, grain elevator, and grain elevator annex)	North of US 2 in Chinook, immediately west of old railroad depot	Important historic cultural resource associated with the economic boom of post-war agricultural and economic development of Chinook and surrounding region; excellent example of post-World War II era wood frame commercial feed mill and elevator architecture	Eligible, Criteria A and C

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Table 3.11 Properties Determined to be Eligible for, or Listed in the National Register of Historic Places (continued)

Site No.	Name	Period (Date)	# of Historic Features	Location	Description	NRHP Status
24BL1731	Fifteen Mile Creek Bridge	Historic (1949)	1	1 km (0.6 mi) east of Zurich on US Highway 2 at Fifteen Mile Creek	2-span continuous steel stringer bridge with a concrete deck and piers, constructed by Walter Mackin company of Billings; 33 x 10.4 m (108 x 34 ft); excellent example of steel stringer highway bridge with concrete side-rails	Eligible, Criterion C
24BL1574 (24BL1543)/ 24HL942	Great Northern Railroad/ Burlington Northern – Santa Fe Railway	Historic (1887)	Multiple (rails, ties, signals, bridges, pole line)	Full length of the railroad through Blaine County and Hill County	Significant for its historical association with the settlement and economic development of agriculture and copper mining in northern Montana in the late 19 th century; the railroad, four bridges, two crossing signals, and a pole line are considered eligible	Listed, Criteria A and C
24HL1133	Sunset Drive-In Theater	Historic (1948)	5 (movie screen, two movie screen foundations, projection building/snack bar, and ticket booth)	East end of Havre, Montana	Closed drive-in movie theater complex. Drive-ins represent a significant part of American culture and identity. The Sunset Drive-in is a well-preserved and complete example of a drive-in theater.	Eligible, Criteria A and C

Source: Compiled by DEA from Ethnoscience, January 2003. *Fort Belknap to Havre: A Cultural Resource Inventory Along US Highway 2*.

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One site, the Milk River Bridge (24BL1734), suffered a loss of integrity during the preparation of this EIS. In November 2003, the Milk River Bridge was seriously damaged in a highway accident that caused the collapse of one of the trusses supporting the bridge. The formerly eligible site had to be removed and replaced. US Highway 2 (Sites 24BL1573 and 24HL1128) was not evaluated for this project because it is covered by a 2001 Programmatic Agreement (PA) among FHWA, the Advisory Council on Historic Preservation (AHP), and Montana SHPO for Historic Roads and Bridges in Montana, which abrogates the necessity for evaluating, assessing, and mitigating effects to distinct road segments.

Four additional properties were determined ineligible for the NRHP by the FHWA and MDT, based on the Ethnoscience inventory. Montana SHPO disagreed with this recommendation. MDT, on behalf of FHWA, provided additional information to SHPO regarding these properties, but the disagreement about eligibility persists. Because these properties are outside of the impact area for this project (i.e., they will not be affected by any of the build alternatives), MDT and FHWA have decided to leave the question of eligibility of these structures unresolved. These properties include:

- Site 24BL1718, East Chinook School, was the first school in Chinook and operated from 1900 until 1972. The site is located east of Chinook and consists of four features – three structures and a corral.
- Site 24BL1720, Bunkhouse, is an early homestead property located east of Chinook and constructed circa. 1934 to 1940. It consists of one structure.
- Site 24BL1722, Chinook Depot, is located on the north side of US 2 in Chinook. It consists of a depot, warehouse, and two concrete foundations.
- Site 24BL1730, the Bitzer and O'Hanlon Farmstead, is located on the eastern edge of Chinook. It is an early farmstead that has operated from 1930s to present.

3.3.2 Air Quality

National Ambient Air Quality Standards

To protect the public from health hazards associated with air pollution, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for seven criteria pollutants in association with the Clean Air Act (CAA) of 1990. These seven criteria pollutants are carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, reactive volatile organic compounds, lead, and particulate matter less than 10 microns in diameter (PM₁₀). Areas that do not meet these air quality standards are designated as non-attainment areas and are required to submit plans to MDEQ and EPA to attain these standards. The proposed project is located in an unclassified/attainment area of Montana as defined by standards set by 40 CFR 81.327. Under this classification, the project is not subject to Transportation Conformity requirements of the CAA, and no air quality modeling is required for this project.

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Air Quality Monitoring

The Montana Department of Environmental Quality has no air quality monitors in or near the study area because this area is not a concern for any of the seven criteria pollutants mentioned above.

3.3.3 Noise

Noise is defined as unwanted or excessive sound and has been identified by the federal government as an undesirable by-product that can be annoying; interfere with sleep, work, or recreation; and in extremes cause physical and psychological damage. Sound is quantified by a unit of measure called decibels (dB). For highway traffic noise, high- and low-pitched sounds are adjusted or weighted to approximate the way that an average person hears sounds. The adjusted sounds are called "A-weighted levels" (dBA). The A-weighted decibel scale begins at zero, which represents the faintest sound that can be heard by humans with very good hearing. The loudness of sounds (that is, how loud they seem to humans) varies from person to person, so there is no precise definition of loudness. Table 3.12 lists typical sound levels measured in the environment and characterizes the subjective human response to various intensities of noise.

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Table 3.12 Weighted Sound Levels and Human Response

Sound Source	A-Weighted Sound Level (dBA)	Response Criteria
Carrier deck jet operation	140	Limit of amplified speech
Siren at 30 m (100 ft)	130	Painfully loud
Jet takeoff at 60 m (200 ft)	120	Threshold of feeling and pain
Auto horn at 1 m (3 ft)		
Riveting machine	110	
Jet takeoff at 610 m (2,000 ft)		
Shout at 0.2 m (0.5 ft)	100	Very annoying
New York subway station		
Heavy truck 15 m (50 ft)	90	Hearing damage (8-hour exposure)
Pneumatic drill at 15 m (50 ft)		
Passenger train at 30 m (100 ft)	80	Annoying
Helicopter (in flight) at 152 m (500 ft)		
Freight train at 15 m (50 ft)		
Freeway traffic at 15 m (50 ft)	70	Intrusive
Air conditioning unit at 6 m (20 ft)	60	
Light auto traffic at 15 m (50 ft)		
Normal speech at 4.5 m (15 ft)	50	Quiet
Living room	40	
Bedroom		
Library		
Soft whisper at 4.5 m (15 ft)	30	Very quiet
Broadcasting studio	20	
	10	Just audible
	0	Threshold of hearing

Source: CEQ, 1970

The level of highway traffic noise depends on: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic (FHWA, 1992). Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. As a person moves away from a highway, traffic noise levels are buffered by distance, terrain, vegetation, and natural and manmade obstacles.

FHWA regulations (23 CFR 772) require the following during the planning and design of a highway project: (1) identification of traffic noise impacts; (2) examination of potential mitigation measures; (3) the incorporation of reasonable and feasible noise mitigation

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measures into the highway project; and (4) coordination with local officials to provide helpful information on compatible land use planning and control. The regulations contain noise abatement criteria (NAC), which represent the guidelines on the upper limit of acceptable highway traffic noise for different types of land uses and human activities (Table 3.13).

Noise levels are measured in dBA and reported in $L_{eq}(h)$, which describes the average noise energy level over one hour. This is because highway noise is never constant. The noise level changes with the number, type, and speed of the vehicles that produce the noise. $L_{eq}(h)$ represents a constant, average sound level, and FHWA uses the $L_{eq}(h)$ as the acceptable noise descriptor for highway transportation projects.

Table 3.13 Noise Abatement Criteria

Activity Category	Acceptable Levels ($L_{eq}(h)$)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	---	Undeveloped lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: *Federal Register*, Volume 47, No. 131, July 8, 1982, Rules and Regulations

23 CFR 772 and MDT's Traffic Noise Policy, Traffic Noise Analysis and Abatement: Policy and Procedure Manual (June 2001) state that traffic noise impacts occur when the predicted $L_{eq}(h)$ noise level at a receptor location in a project's design year approaches or exceeds the NAC values listed in Table 3.13, or when the predicted traffic noise levels in the design year substantially exceed the existing ambient noise levels at a receptor. MDT defines "approach" as 1 dBA less than the NAC values and "substantially exceed" as 13 dBA greater than the existing ambient noise level at a receptor.

FHWA regulations do not require that the NAC be met in every instance. Rather, they require that every reasonable and feasible effort be made to provide noise mitigation when the criteria are approached or exceeded. Compliance with the noise regulations is a prerequisite for the granting of Federally-funded highway construction or reconstruction projects.

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The Traffic Noise Study for the US 2 Havre to Fort Belknap project was conducted by Big Sky Acoustics, LLC (according to FHWA regulations in 23 CFR 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, and MDT's *Traffic Noise Analysis and Abatement: Policy and Procedure Manual* (June 2001)) The study evaluated potential noise impacts at noise-sensitive receptor locations (e.g., residences, groups of residences, mobile homes, apartments, nursing homes, churches, hotels, parks, and campgrounds) due to vehicles traveling on US 2 within the project limits.

Noise sensitive receptors were identified within approximately 150 m (492 ft) of the existing US 2 centerline. The approximate receptor locations are shown on Figures 1 through 8 in Appendix G and include single-family residences, groups of residences, mobile homes, apartments, a nursing home, churches, hotels, parks, and campgrounds. For this noise study, traffic noise level impacts were evaluated for the existing conditions (i.e., no changes to the existing highway) in 2002, No-Build Alternative (i.e., no changes to the existing highway) in 2027, and the four proposed build alternatives (i.e., Improved Two-Lane, Improved Two-Lane with Passing Lanes, Four-Lane Undivided, and Four-Lane Divided) in 2027.

For the noise analysis, FHWA's Traffic Noise Model (TNM) Version 1.0 computer program was used to predict the existing noise levels at the receptors due to traffic on the existing US 2 roadway. The noise levels for each receptor in the corridor are identified in Appendix G. Currently, only one receptor in the corridor – HM:M1 McGuire's Motel in Harlem – has a noise level that meets the NAC criteria for 2002 if no changes are made to the existing highway.

Full documentation of the noise analysis undertaken for this project can be found in the *US 2 Havre to Fort Belknap, Traffic Noise Study*.

3.3.4 Water Resources and Water Quality

Water resources are the supply of ground and surface water in a given area, and include streams, lakes, rivers, reservoirs, and ground water supplies. Water resources in the area consist of those elements crucial to maintaining the ecosystem. Elements to characterize these resources include the hydrology of the basin, stream hydraulics, floodplains, aquatic life, aquatic habitat, and water quality. Uses of water resources may include public water supplies, agricultural supplies, fisheries, recreational uses, wildlife, aquatic habitat, and other functions of a stream system.

Water resources will be addressed through a general discussion of the watershed, water bodies, ground water, water quality, regulatory environment, and municipal water supplies.

Watershed. The project corridor is located within the Upper Missouri Drainage Basin and the Milk River watershed sub-basin identified as USGS hydrologic unit code (HUC) 10050004. USGS 4th Code HUC's include the Middle Milk – HUC 10050004, Lodge – HUC 10050007, and Battle – HUC 10050008.

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The southern tip of the Lodge Hydrologic Unit (HU) extends across US 2 at Chinook with the western border of the HU located near RP 403.3 just west of Chinook and the eastern border crossing US 2 near RP 406.3.

The Battle HU is located just east of the Lodge HU and runs adjacent to the north side of US 2 in Sections 30, 29, and 28. Here, the southern lobe of this HU crosses US 2 with the western border located near RP 407.9, then in Section 27 the eastern border of this HU crosses US 2 near RP 410.2

Water Bodies. There are nine major water bodies located in the study area: Milk River, Little Box Elder Creek, Clear Creek, Red Rock Creek (Coulee), Lodge Creek, Battle Creek, Snake Creek, Thirty Mile Creek, and the Fort Belknap Canal. Other water bodies flow within the project area but are not listed as major water bodies by the Montana Natural Resource Information System. Major water bodies are described below and illustrated in Appendix A, Resource Maps. The fisheries Resource Values of each water body determined by Sport Fisheries Values and Species and Habitat Values are also noted. Possible values range between limited (lowest rating) and outstanding (highest rating) (MFWP). These values are for the portion of the water body in the project area.

- **Milk River** – The Milk River flows southeasterly from Canada and continues to flow easterly, while meandering parallel to US 2 on both the north and south side of the road, from Havre to Fort Belknap. This river crosses under US 2 in a southerly direction at RP 397.8 west of the town of Chinook. It crosses under US 2 and Old US 2 just north of the intersection of US 2 and MT Highway 66 at Fort Belknap, in an easterly direction at RP 427.9. At several points along the corridor, this river channel flows adjacent to the highway. Fisheries Resource Value: High-Value.
- **Little Box Elder Creek** – Little Box Elder Creek flows north under US 2 west of the Hill/Blaine County line at RP 389.3, where it joins the Milk River just north of the highway. Fisheries Resource Value: Moderate.
- **Clear Creek** – Clear Creek flows north under US 2 at the east end of the town of Lohman at RP 396.0, where it joins the Milk River approximately 402 m (1,320 ft) north of town. The Fort Belknap Dam and gauging station is located just northeast of this confluence. Fisheries Resource Value: Substantial.
- **Red Rock Creek (Coulee)** – Red Rock Creek (Coulee) is an intermittent stream that flows south under US 2 west of Chinook at RP 402.3. This stream then joins the Milk River 305 m (1,000 ft) south of Chinook adjacent to the filtration plant. Fisheries Resource Value: Substantial.
- **Lodge Creek** – Lodge Creek is an intermittent stream that flows south, crossing under US 2 near RP 404.6 east of the town of Chinook. This creek then joins the Milk River just over 1.6 km (1 mi) southeast of Chinook. Fisheries Resource Value: High-Value.

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- **Battle Creek** – Battle Creek flows in a southeasterly direction from the Canadian border. This creek crosses US 2 at RP 409.9 east of the town of Chinook, and then joins the Milk River 0.8 km (0.5 mi) south of that point. Fisheries Resource Value: Substantial.
- **Snake Creek** – Snake Creek flows north and joins the Milk River west of Harlem, 840 m (2,640 ft) south of US 2 at RP 417.0. US 2 does not cross Snake Creek. Fisheries Resource Value: Substantial.
- **Thirty Mile Creek** – Thirty Mile Creek flows east/southeast 201 m (660 ft) north of Old US 2 through the north end of Harlem. Fisheries Resource Value: Limited.

The Fort Belknap, Harlem and Lower Canals in the Milk River Valley are addressed in Section 3.2.4, Irrigation. Wetlands are addressed in Section 3.3.5, Wetlands.

Other water bodies located in the vicinity include the Canal Creek Coulee, Davey Creek Coulee, Three Mile Coulee, Six Mile Coulee, Coal Creek, and Fifteen Mile Creek. Only two of these water bodies flow under US 2 to the Milk River. Fifteen Mile Creek flows south under US 2 at RP 413.9 east of Zurich. This creek then joins the Milk River 0.2 km (0.1 mi) south of US 2. Davey Coulee Creek is an intermittent stream which flows north under US 2 west of Lohman at RP 393.5.

Additionally, ox-bow lakes (horseshoe-shaped lake alongside a winding river) in various stages of development are located to the north and south of the Milk River along the US 2 corridor between Havre and Fort Belknap, particularly at the east end of the project area. Some of these lakes appear to be intermittent.

Regulatory Environment. MDEQ has responsibility for preserving and maintaining the quality of Montana's water supply. MDEQ has responsibility under the Clean Water Act (CWA) and the Montana Water Quality Act (MWQA) to monitor and assess the quality of Montana surface waters. The CWA requires states to adopt standards for protection of surface water quality. Montana's standards are designed to maintain water quality that will support the beneficial uses identified by the Montana Water-Use Classification System. Classifications assigned by this system require waters to support some or all of the following uses: drinking and food processing; bathing; swimming and contact recreation; growth and propagation of fish and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial supply.

Section 303(d) of the CWA and related regulations require states to assess the condition of their waters to determine where water quality is impaired (i.e., does not fully meet standards) or threatened (i.e., is likely to violate standards in the near future). The result of this review is the 303(d) List, which must be submitted to the EPA every other year. Section 303(d) also requires states to prioritize and target water bodies on their 303(d) List for which calculations of total maximum daily loads (TMDLs) for pollutants are required, and to develop such strategies for improving impaired and threatened waters (MDEQ 303(d) Report, 2002).

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Four river or stream segments within the project area are listed on the 2002 or 1996 303(d) List. In 1997 the Montana Legislature amended the state water qualities law to require that impairment determination be supported by “sufficient credible data.” Therefore, the 2002 List includes waters that have been reassessed and found to be impaired on the basis of sufficient credible data. TMDLs have not been developed for these waters; TMDL development is scheduled for 2007. See Table 3.14 for waters listed on the MDEQ Year 2002 303(d) List and Table 3.15 for 1996 listings that have not yet been reassessed.

Table 3.14 2002 Montana State 303(d) Listings – Water Body Segments within Project Area

Water Body	Beneficial Uses (Use Support)	Probable Causes of Impaired Quality	Probable Sources Causing Impaired Quality
Milk River from Fresno Dam to Whitewater Creek HUC10050004 (parallel to US 2 throughout project area)	Agricultural: <i>fully</i> Aquatic Life Support: <i>not assessed</i> Drinking Water Supply: <i>not supporting</i> Industrial: <i>fully</i> Recreation: <i>not assessed</i> Warm Water Fishery: <i>not assessed</i>	Mercury, metals	Agriculture, crop-related sources, grazing related sources, hydromodification
Battle Creek from headwater to the mouth of Milk River HUC10050008 (intersects with project area east of Chinook)	Agricultural: <i>fully</i> Aquatic Life Support: <i>partial</i> Drinking Water Supply: <i>fully</i> Industrial: <i>fully</i> Recreation: <i>fully</i> Warm Water Fishery: <i>partial</i>	Algal growth/chlorophyll, nutrients, other habitat alterations, riparian degradation, and siltation	Agriculture, grazing related sources

Source: Montana Department of Environmental Quality. *303(d) Report*. 2002.

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Table 3.15 1996 Montana State 303(d) Listings for Reassessment – Water Body Segments within Project Area

Water Body	Probable Impaired Uses	Probable Causes of Impaired Quality	Probable Sources Causing Impaired Quality
Little Box Elder Creek from headwater to the mouth of the Milk River HUC10050004 (intersects with project area near the Hill/Blaine County line)	Aquatic Life Support Cold Water Fishery-trout	Nutrients, siltation, thermal modifications	Agriculture, irrigated crop production, range land, stream bank modification/destabilization
Lodge Creek from Canadian border to the mouth of the Milk River HUC10050007 (intersects with the project area east of Chinook)	Drinking Water Supply Warm Watery Fishery	Noxious aquatic plants, nutrients, organic enrichment/DO, other inorganics, salinity/TDS/chlorides	Agriculture, irrigated crop production, range land

Source: Montana Department of Environmental Quality. *303(d) Report*. 1996.

Ground water. The Average Annual Precipitation (AAP) from 1961 to 1990 was 25.4 to 30.5 cm (10 to 12 in) in the area from Havre to the area immediately east of the Hill/Blaine County line. From here the AAP increases to 30.5 to 35.6 cm (12 to 14 in) to the town of Zurich where it decreases to 25.4 to 30.5 cm (10 to 12 in) (AAP) beyond Fort Belknap.

There are no sole source aquifers located at or near this project site. (A sole source aquifer is one that supplies 50 percent or more of the drinking water for an area.) The closest sole source aquifer is the Missoula Valley Aquifer located in western Montana (EPA, 2001).

There are hundreds of wells located on either side of US 2 along the project corridor. This Ground Water Information Center (GWIC) well data is on file at the Montana Bureau of Mines and Geology (MBMG) web site, and includes the well log number, water quality, owner, water right number, Public Water Supply (PWS) identification (ID), depth, and date the report was completed.

Municipal Water Supply. There are three public water supply (PWS) sources in the project area. A PWS ground water source is located just west of the project starting point in the city of Havre, and is within 30 m (100 ft) of US 2 and Seventh Avenue to the south of RP 382.8. Two private residential PWS ground water sources are located within 60 m (200 ft) south of US 2 at RP 392.3 and 395.2.

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Although not currently used for drinking water, Montana statute (ARM 17.30.625(1)) requires surface waters within the project area (which are classified as either B-1 or B-3, both of which support drinking water) to meet drinking water standards. The Milk River is contaminated with mercury and other metals and does not meet water quality standards for drinking water. As noted previously, MDEQ is developing TMDLs for the Milk River to address mercury and metals contamination, and TMDLs are scheduled to be completed by the end of the 2007 calendar year. Lodge Creek also may not meet drinking water standards and will be reassessed by MDEQ to determine if impairment is supported by credible scientific evidence and if TMDLs will be required.

3.3.5 Wetlands

Wetlands are an important biological resource that perform many functions, including ground water recharge, flood flow attenuation, erosion control, and water quality improvement. They also provide habitat for many plants and animals.

Clean Water Act Section 404 Jurisdiction

Wetlands are regulated by Section 404 of the Clean Water Act (CWA), Executive Order (EO) 11990, *Protection of Wetlands*, and EO 11998, *Floodplain Management*. Under Section 404, a permit is required from the U.S. Army Corps of Engineers (COE) before dredge or fill materials can be discharged into waters of the United States.

The category “Waters of the U.S.” includes those waters listed in 33 CFR 328.3(a). The lateral limits of jurisdiction in those waters may be divided into three categories. The categories include (1) territorial seas, (2) tidal waters, and (3) non-tidal waters. (See 33 CFR 328.4 (a)(b)(c) for a detailed definition of “Waters of the U.S.”). For the purpose of this document, the term “Waters of the U.S.” means:

- All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation or destruction of which could affect interstate or foreign commerce; and tributaries of waters identified above.

Under both COE regulations at 33 CFR 328.3 and EPA regulations at 40 CFR 230.0, the term “wetlands” refers to those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetlands that fall under the jurisdiction of the COE are referred to as “jurisdictional” wetlands. Wetlands that do not fall under the jurisdiction of the COE are referred to as “non-

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jurisdictional.” The following guidelines are used in categorizing wetlands as jurisdictional or non-jurisdictional.

- Wetlands are defined by the COE as areas which possess the three mandatory parameters described in Section 404 of the Clean Water Act (CWA), which are hydrophytic vegetation, hydric soils, and wetland hydrology. (The definition given is that of a wetland. As mentioned below there are some areas that meet the three criteria for a wetland but are not jurisdictional.)
- Non-jurisdictional wetland areas are defined as wetlands not connected to waters of the U.S. or to other jurisdictional wetlands by surface water or ground water based on the United States Supreme Court ruling of the Solid Waste Agency of Northern Cook County vs. U.S. Army Corps of Engineers (SWANCC Decision), No. 99-1178, January 9, 2001. In addition, prior to the recent court decision, Headwaters, Inc. v. Talent Irrigation District, 243 F.3d 526 (9th Cir. 2001) (Talent Decision), based on COE guidance, the COE did not, except in exceptional cases, consider ditches excavated on dry land as jurisdictional waters of the U.S.
- Since the Talent Decision, the COE has taken greater jurisdiction over surface water channels, natural or man-made, that drain into a water of the U.S. These waters and wetlands are referred to as “Talent” waters and wetlands. Non-jurisdictional ditches, canals, and their adjacent wetlands are more limited. Based on the recent Talent Decision non-jurisdictional ditches and canals are those unnatural drainages created in uplands that do not discharge to other wetlands or waters of the U.S. through a surface water connection. These ditches are intended for irrigation purposes and water flow is often controlled by head gates or comprised of roadside runoff.

Wetlands in this report are described according to the following categories: jurisdictional wetlands; potential “Talent waters” jurisdictional wetland areas, ditches, and canals; and non-jurisdictional wetland areas, ditches and canals.

All of the areas that are determined to be wetlands, whether they be jurisdictional or non-jurisdictional, are subject to review by the COE during the permit process.

Executive Order 11990

Wetlands are also protected by Executive Order (EO) 11990, which directs Federal agencies to avoid new construction in wetlands unless there is no practicable alternative. EO 11990 makes no distinction between wetlands under the jurisdiction of the COE and isolated, intrastate wetlands. If the COE agrees that a wetland is not under its jurisdiction, FHWA and MDT must still decide under EO 11990 if there is a practicable alternative to using the wetland area. If avoidance is not possible, then FHWA and MDT must determine that all practicable mitigation to the wetland is considered and ultimately implemented (USDOT, 2004.)

Research Methods

A wetland delineation was conducted along the project corridor between September 10 and September 17, 2002 as part of the *US 2 Havre to Fort Belknap Biological Resources Report* (BRR) (December 19, 2003) completed for this project. The width of the wetland study area generally extends from the north side of the BNSF Railway right-of-way to approximately 244 m (800 ft) south of the US 2 existing pavement. The study area also extends south on MT Highway 66 located near the eastern terminus of the project to encompass transitions to the intersection with US 2. Subsequent to the “Talent Decision,” an addendum (September 2004) to the wetlands section of the BRR was prepared to reflect changes in categorizing jurisdictional and non-jurisdictional wetlands.

Preliminary research and a site-specific investigation were conducted for the presence of jurisdictional and non-jurisdictional wetlands in the US 2 corridor study area. The method used requires that evidence of three parameters (a dominance of hydrophytic vegetation, hydric soils, and wetland hydrology) be simultaneously present for a wetland determination as required by the COE Wetlands Delineation Manual.

Vegetation. Vegetation was considered hydrophytic (adapted to wet conditions) when over 50 percent of the dominant plant species had an indicator status of facultative (FAC), facultative wetland (FACW), or obligate (OBL), or when facultative-upland (FACU) species were directly observed in saturated soil conditions during the growing season. Table 3.16 describes indicator statuses given to plant species.

Table 3.16 Wetland Plant Indicators

Wetland Type	Code	Comment
Obligate Wetland	OBL	Plants that occur almost always (estimated probability >99%) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1%) in non-wetlands.
Facultative Wetland	FACW	Plants that occur usually (estimated probability 67% to 99%) in wetlands, but also occur (estimated probability 1% to 33%) in non-wetlands.
Facultative	FAC	Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands.
Facultative Upland	FACU	Plants that occur sometimes (estimated probability 1% to <33%) in wetlands, but occur more often (estimated probability 67% to 99%) in non-wetlands.
Upland	UPL	Plants that occur rarely (estimated probability <1%) in wetlands under natural conditions.
No Agreement	NA	The regional panel was not able to reach a unanimous decision on this species.
No Indicator Status	NI	Plants which do not have sufficient data available to estimate their probability of occurrence in wetlands.
No Occurrence	NO	The species does not occur in that region.

Source: Environmental Laboratory, 1987, *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*, U.S. Army Engineers Waterways Experiment Station, Vicksburg, Michigan.

Soils. In accordance with the methodology, soil samples were taken at all sampling plots and other points on the site, and were examined for indicators of hydric conditions. Hydric soils are those that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth of hydrophytic vegetation.

Hydrology. Wetland hydrology was evaluated at each data plot location and other locations throughout the site. Evaluation of hydrology included observation of surface water, soil saturation, ground water depth, ponding or evidence of drainage patterns.

Areas which possessed the three mandatory parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) were identified as wetlands. These wetland areas were then further categorized as jurisdictional or non-jurisdictional.

Based on mapping research, irrigation canals and ditches were assessed to determine if they were jurisdictional wetlands, potential “Talent waters” jurisdictional ditches or canals, or non-jurisdictional ditches or canals. Most sites categorized as non-jurisdictional are linear drainages, irrigation and roadside ditches, and canals that are created in uplands and do not discharge to other waters of the U.S. or a jurisdictional wetland.

Wetlands in ditches that convey waters of the U.S. were categorized as jurisdictional. Potential “Talent waters” jurisdictional wetland areas, ditches, and canals were identified based on an assessment of the available mapping and some field review. Due to the level topography, the network of ditches, and in some cases the lack of flowing water in the ditches, it could not always be determined whether these waters were discharging into waters of the U.S. Therefore, to provide the most conservative estimate of jurisdictional impact for this EIS, these ditches and canals were identified as potential “Talent waters” jurisdictional ditches, and canals.

A jurisdictional determination request containing the information presented in the EIS was submitted to the COE. The COE responded that final jurisdiction will be determined after the EIS is finalized. The analysis in the EIS therefore assumes that the COE regulates all wetlands identified as jurisdictional or as potential “Talent waters” jurisdictional wetland areas, ditches, and canals. (Refer to COE letter of September 20, 2004 in Appendix B.) Additional coordination with the COE will occur during final design of individual projects.

Description of Existing Wetlands in Project Corridor

A total of 111 areas along the project corridor were assessed to determine whether they can be classified as wetlands. Within the study area, the inventory identified 28 jurisdictional wetland sites; 39 potential “Talent waters” jurisdictional wetland areas, ditches, and canals; and 41 non-jurisdictional wetland areas, ditches, and canals. Three remaining sites, the Harlem, Lower, and Milk River Canals were also assessed and found to contain no wetland

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areas because they are concrete-lined canals. The wetlands in the project corridor are identified on the Resources Maps in Appendix A.

Functional Value Assessment. The jurisdictional wetlands and wetland areas, and the non-jurisdictional wetland areas were evaluated for functional value according to the MDT Montana Wetland Assessment Form. The specific functions a wetland provides, and the degree to which it performs those functions, depend on several factors including type, size, plant diversity, and the location of the wetland. A qualitative assessment of wetland functions was performed for the following functions:

- **Wildlife habitat** – includes habitat for big game, small mammals, birds, amphibians, reptiles and other species.
- **Fish/aquatic habitat** – includes habitat for fish and other aquatic species.
- **Flood attenuation and surface water storage** – the ability to detain moving water for a short duration when the flow is outside of its channel.
- **Sediment/toxicant retention and removal** – the ability to remove or retain sediment, nutrients, and/or toxicants; requires proximity to a source of these constituents and an avenue for transport.
- **Sediment/shoreline stabilization** – the ability to dissipate flow or wave energy, reducing erosion.
- **Production export/food chain support** – the potential to produce and export food/nutrients for living organisms.
- **Ground water discharge/recharge** – the ability to add or remove ground water from the local system.
- **Uniqueness** – special values based on rarity, replacement potential, and condition.
- **Recreation/education potential** – the ability to provide recreational or educational opportunities.

Through an evaluation process using the MDT Wetland Field Evaluation Form, MDT classifies wetlands into one of four wetland functional categories. The wetland field evaluation form assesses and evaluates twelve possible primary functions of wetlands and identifies the category of wetland as Category I through Category IV. Category I wetlands are exceptionally high quality and are generally rare to uncommon in the state or are important from a regulatory standpoint. Category II wetlands are more common than Category I wetlands, and are those that provide habitat for sensitive plants or animals, function at very high levels for wildlife/fish habitat, are unique in a given region, or are assigned high ratings for many of the assessed functions and values.

Category III wetlands are common, generally diverse, and often smaller and more isolated than are Category I and II wetlands. They can provide many functions and values, although

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they may not be assigned high ratings for as many parameters as are Category I and II wetlands. Category IV wetlands are generally small, isolated, and lack vegetative diversity. Their sites provide little in the way of wildlife habitat, and are often directly or indirectly disturbed.

All of the wetlands in the project corridor are Category III or IV wetlands. The wetlands assessed in the project corridor are considered lower quality because US 2 is located adjacent to all of the wetlands. Each wetland also has at least one culvert that could bring contaminants into the wetland system. In addition, the rural residential and agricultural uses near the wetlands may cause fertilizers, pesticides or stock manure discharges to be added to the shallow water table. None of the wetlands in the project corridor has irreplaceable ecological functions, such as a peat wetland or a forested wetland component greater than one acre. The completed MDT Wetland Field Evaluation Forms can be found in the *US 2 Havre to Fort Belknap Biological Resources Report* (December 19, 2003).

Jurisdictional Wetlands. The total area of jurisdictional wetlands in the study area is 32.0 ha (79.5 ac). Table 3.17 lists the location, U.S. Fish and Wildlife Service (USFWS) classification, MDT functional category, and area of jurisdictional wetlands. Detailed descriptions of jurisdictional wetlands in the project corridor can be found in the *US 2 Havre to Fort Belknap Biological Resources Report* (December 19, 2003). Classification of jurisdictional wetlands is subject to COE review.

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Table 3.17 Jurisdictional Wetlands Identified in Project Corridor

Jurisdictional Wetlands	Location (RP)	USFWS Classification	MDT Functional Category	Area hectares (acres)
B	383.6	Palustrine, emergent, seasonally flooded	III	0.5 ha (1.3 ac)
A	383.7	Palustrine, emergent, seasonally flooded	III	1.1 ha (2.8 ac)
C Little Box Elder Creek	389.1	Palustrine, scrub-shrub, temporarily flooded	III	1.4 ha (3.4 ac)
D	389.4	Palustrine, emergent, seasonally flooded	III	0.7 ha (1.7 ac)
E	390.2	Palustrine, emergent, seasonally flooded	IV	0.1 ha (0.2 ac)
F	392.0	Palustrine, emergent, semi-permanently flooded, diked/impounded	III	1.9 ha (4.6 ac)
H	392.2	Palustrine, emergent, semi-permanently flooded, diked/impounded	III	1.0 ha (2.6 ac)
I	392.5	Palustrine, emergent, seasonally flooded	IV	0.3 ha (0.6 ac)
L Clear Creek	395.9	Palustrine, scrub-shrub, temporarily flooded	III	1.2 ha (3.1 ac)
N	396.5	Palustrine, emergent, seasonally flooded	III	3.1 ha (7.6 ac)
Qx Milk River	397.8	Riverine, lower perennial, unconsolidated bottom, intermittently exposed	III	0.3 ha (0.8 ac)
P Oxbow of Milk River	398.2	Palustrine, emergent, semi-permanently flooded	III	2.1 ha (5.2 ac)
Q Oxbow of Milk River	398.3	Palustrine, emergent, semi-permanently flooded	III	2.8 ha (6.9 ac)
R Red Rock Creek (Coulee)	402.3	Palustrine, emergent, seasonally flooded	IV	0.7 ha (1.8 ac)
S	402.6	Palustrine, emergent, seasonally flooded	IV	0.1 ha (0.2 ac)
V Unnamed Creek	404.0	Palustrine, emergent, semi-permanently flooded, excavated	III	0.8 ha (2.0 ac)
Px Lodge Creek	404.5	Riverine, lower perennial, intermittent, streambed, semipermanently flooded, excavated	III	2.5 ha (6.2 ac)
Sx	406.0	Palustrine, emergent, seasonally flooded	IV	0.1 ha (0.2 ac)
W	406.0	Palustrine, emergent, semi-permanently flooded, excavated	III	1.3 ha (3.3 ac)
X Battle Creek	410.0	Palustrine, emergent, seasonally flooded	III	2.0 ha (5.0 ac)

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Table 3.17 Jurisdictional Wetlands Identified in Project Corridor (continued)

Jurisdictional Wetlands	Location (RP)	USFWS Classification	MDT Functional Category	Area hectares (acres)
Y Oxbow of Milk River	412.2	Palustrine, aquatic bed, semi-permanently flooded	III	0.9 ha (2.3 ac)
Z Oxbow of Milk River	412.3	Palustrine, aquatic bed, semi-permanently flooded	III	0.8 ha (1.9 ac)
Ax Milk River	413.0	Riverine, lower perennial, unconsolidated bottom, permanently flooded, intermittently exposed	III	1.3 ha (3.3 ac)
Bx	413.3	Palustrine, emergent, semi-permanently flooded, excavated	III	1.3 ha (3.3 ac)
Rx Fifteen Mile Creek	413.8	Riverine, lower perennial, intermittent, streambed, seasonally flooded	III	0.9 ha (2.3 ac)
Ox	427.5	Palustrine, emergent, seasonally flooded	III	0.2 ha (0.5 ac)
Tx	427.8	Riverine, lower perennial, unconsolidated bottom, intermittently exposed	III	0.7 ha (1.8 ac)
Nx Oxbow of Milk River	428.2	Riverine, lower perennial, permanently flooded, unconsolidated bottom, intermittently exposed	III	1.9 ha (4.6 ac)
Total Area of Jurisdictional Wetlands in Project Corridor				32.0 ha (79.5 ac)

Source: David Evans and Associates, Inc., December 19, 2003. *US 2 Havre to Fort Belknap Biological Resources Report*.

Potential “Talent Waters” Jurisdictional Wetland Areas, Ditches, and Canals. The total area of potential “Talent waters” jurisdictional wetland areas, ditches, and canals in the study area is 10.3 ha (25.3 ac). The majority of these are ditches or drainage canals constructed in uplands that have developed wetland characteristics and may have downstream surface water discharging to waters of the U.S. and/or jurisdictional wetlands. The remaining eight are wetland areas with hydrology related to road run-off and groundwater seepage associated with jurisdictional wetlands. Table 3.18 lists the location, USFWS classification, MDT functional category, and acreage of potential “Talent waters” jurisdictional wetland areas, ditches, and canals. Detailed descriptions of potential “Talent waters” jurisdictional wetland areas, ditches and canals in the project corridor can be found in the *US 2 Havre to Fort Belknap Biological Resources Report* (December 19, 2003) and *Addendum* (September 2004).

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Table 3.18 Potential “Talent Waters” Jurisdictional Wetland Areas, Ditches, and Canals Identified In Project Corridor

Wetlands	Location (RP)	USFWS Classification	MDT Functional Category	Area hectares (acres)
Wetland Areas				
G	392.2	Palustrine, emergent, seasonally flooded	IV	0.1 ha (0.2 ac)
J	395.0	Palustrine, emergent, seasonally flooded	IV	0.1 ha (0.2 ac)
K	395.0	Palustrine, emergent, seasonally flooded	IV	0.2 ha (0.5 ac)
O	397.0	Palustrine, emergent, seasonally flooded	IV	0.1 ha (0.3 ac)
T	402.6	Palustrine, aquatic bed, semi-permanently flooded, diked/impounded	IV	0.2 ha (0.5 ac)
Kx	418.7	Palustrine, emergent, semi-permanently flooded	III	1.4 ha (3.4 ac)
Lx	418.8	Palustrine, emergent, semi-permanently flooded	III	1.7 ha (4.1 ac)
Mx	420.4	Palustrine, emergent, seasonally flooded	IV	0.5 ha (1.3 ac)
Subtotal for Wetland Areas				4.3 ha (10.5 ac)
Ditches and Canals				
NJVVV	398.3	unknown	unknown	0.1 ha (0.2 ac)
NJB	400.6	unknown	unknown	0.3 ha (0.6 ac)
NJC	400.6	unknown	unknown	0 ¹
NJA	400.6	unknown	unknown	0 ¹
NJD	400.6	unknown	unknown	0.1 ha (0.3 ac)
NJF	400.6	unknown	unknown	0.1 ha (0.2 ac)
NJG	400.6	unknown	unknown	0.1 ha (0.1 ac)
NJBB	401.8	unknown	unknown	0.4 ha (0.9 ac)
NJM	402.9	unknown	unknown	0.04 ha (0.1 ac)
NJN	403.8	unknown	unknown	0 ¹
NJP	404.2	unknown	unknown	0.04 ha (0.1 ac)
NJPP	404.2	unknown	unknown	0 ¹
NJQ	404.3	unknown	unknown	0.1 ha (0.3 ac)

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Table 3.18 Potential “Talent Waters” Jurisdictional Wetland Areas, Ditches, and Canals Identified In Project Corridor (continued)

Wetlands	Location (RP)	USFWS Classification	MDT Functional Category	Area hectares (acres)
NJQQ	404.3	unknown	unknown	0 ¹
NJFFF	404.5	unknown	unknown	0 ¹
NJV	405.7	unknown	unknown	0 ¹
NJW	405.8	unknown	unknown	0.04 ha (0.1 ac)
NJWW	405.8	unknown	unknown	0 ¹
NJAA	407.1	unknown	unknown	0 ¹
NJCC	408.0	unknown	unknown	0.1 ha (0.2 ac)
NJEE	408.5	unknown	unknown	0 ¹
NJKKK	413.2	unknown	unknown	0 ¹
NJNN	413.5	unknown	unknown	0 ¹
NJHH	414.5	unknown	unknown	0.1 ha (0.4 ac)
NJTT	420.7	unknown	unknown	0.9 ha (2.1 ac)
NJUU	420.7	unknown	unknown	2.9 ha (7.2 ac)
NJZZ	420.9	unknown	unknown	0.1 ha (0.4 ac)
NJVV	421.4	unknown	unknown	0.1 ha (0.4 ac)
NJIII	421.5	unknown	unknown	0.4 ha (1.0 ac)
NJXX	422.3	unknown	unknown	0 ¹
NJYY	422.4	unknown	unknown	0.1 ha (0.2 ac)
Subtotal for Ditches and Canals				6.0 ha (14.8 ac)
Total Area of Potential “Talent Waters” Jurisdictional Wetland Areas, Ditches, and Canals in the Project Corridor				10.3 ha (25.3 ac)

¹Wetland area is less than 0.04 ha (0.1 ac).Source: David Evans and Associates, Inc., December 19, 2003. *US 2 Havre to Fort Belknap Biological Resources Report*.

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Non-Jurisdictional Wetland Areas, Ditches, and Canals. The total area of non-jurisdictional wetland areas, ditches, and canals in the study area is 26.9 ha (65.7 ac). The majority of the non-jurisdictional wetlands are typical ditches or drainage canals constructed in uplands that have developed wetland characteristics, but do not discharge to waters of the U.S. or jurisdictional wetlands. Table 3.19 lists the location, USFWS classification, MDT functional category, and acreage of non-jurisdictional wetland areas, ditches, and canals. Ditches that are in close proximity and have similar features are grouped together. Detailed descriptions of non-jurisdictional wetland areas, ditches and canals in the project corridor can be found in the *US 2 Havre to Fort Belknap Biological Resources Report* (December 19, 2003).

Table 3.19 Non-Jurisdictional Wetland Areas Identified In Project Corridor

Non-Jurisdictional Wetlands	Location (RP)	USFWS Classification	MDT Functional Category	Area hectares (acres)
Non-Jurisdictional Wetland Areas				
M	396.4	Palustrine, emergent, seasonally flooded	IV	0.1 ha (0.2 ac)
U	402.9	Palustrine, aquatic bed, semi-permanently flooded, diked/impounded	III	1.8 ha (4.4 ac)
Cx	414.5	Palustrine, emergent, temporarily flooded	IV	0.2 ha (0.4 ac)
Dx	415.0	Palustrine, emergent, temporarily flooded	III	14.2 ha (35.1 ac)
Ex	415.0	Palustrine, emergent, seasonally flooded, excavated	IV	1.0 ha (2.4 ac)
Fx	415.3	Palustrine, emergent, temporarily flooded	IV	0.4 ha (0.9 ac)
Gx	415.3	Palustrine, emergent, temporarily flooded	IV	0.2 ha (0.5 ac)
Hx	416.0	Palustrine, emergent, temporarily flooded	IV	1.7 ha (4.1 ac)
Ix	416.6	Palustrine, emergent, temporarily flooded	IV	0.3 ha (0.6 ac)
Jx	416.9	Palustrine, emergent, temporarily flooded	IV	0 ¹
Ux	425.7	Palustrine, emergent, semi-permanently flooded	IV	0.04 ha (0.1 ac)
Vx	427.2	Palustrine, emergent, seasonally flooded	IV	0.3 ha (0.7 ac)
Subtotal for Non-Jurisdictional Wetland Areas				20.2 ha (49.4 ac)
Non-Jurisdictional Ditches and Canals				
NJI, NJJ, and NJL	401.1 to 401.9	unknown	unknown	0 ¹
NJGG, NJGGG, and NJH	400.6 to 400.7	unknown	unknown	1.1 ha (2.6 ac)
NJMM	403.5	unknown	unknown	0.1 ha (0.2 ac)

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Table 3.19 Non-Jurisdictional Wetland Areas Identified In Project Corridor
(continued)

Non-Jurisdictional Wetlands	Location (RP)	USFWS Classification	MDT Functional Category	Area hectares (acres)
Non-Jurisdictional Ditches and Canals (continued)				
NJR and NJS	404.2 to 404.4	unknown	unknown	0.1 ha (0.5 ac)
NJT and NJU	405.1 to 405.7	unknown	unknown	0.2 ha (0.4 ac)
NJX, NJY, NJZ, NJBBB, and NJDD	406.3 to 408.3	unknown	unknown	0.4 ha (1.1 ac)
NJAAA and NJFF	409.9 to 410.4	unknown	unknown	0.2 ha (0.4 ac)
NJMMM, NJKK, NJJJ, and NJLL	411.4 to 412.0	unknown	unknown	0.7 ha (1.7 ac)
NJLLL and NJNN	412.5 to 413.5	unknown	unknown	0.04 ha (0.1 ac)
NJII	414.5	unknown	unknown	0.1 ha (0.3 ac)
NJE and NJHHH	417.1	unknown	unknown	1.4 ha (3.4 ac)
NJSS	417.9	unknown	unknown	0.1 ha (0.1 ac)
NJRR	419.3	unknown	unknown	1.2 ha (2.9 ac)
NJEEE	428.5	unknown	unknown	1.0 ha (2.6 ac)
Subtotal for Non-Jurisdictional Ditches and Canals ²				6.7 ha (16.3 ac)
Total Area of Non-Jurisdictional Wetland Areas, Ditches, and Canals in Project Corridor				26.9 ha (65.7 ac)

¹Wetland area is less than 0.04 ha (0.1 ac).

²Total does not match areas in table due to rounding.

Source: David Evans and Associates, Inc., December 19, 2003. *US 2 Havre to Fort Belknap Biological Resources Report*.

3.3.6 Vegetation

The general landscape of the study area consists of rolling plains, prairie, agricultural land, and riparian areas of the Milk River. The majority of land within the study corridor is irrigated and cultivated for crops, primarily wheat, barley, hay, and corn.

Vegetation in the plains and prairie areas outside of the cultivated land areas consists of western wheatgrass (*Pascopyrum smithii*), crested wheatgrass (*Agropyron cristatum*), needleandthread (*Stipa comata*), bluebunch wheatgrass (*Agropyron spicatum*), blue grama (*Bouteloua gracilis*), leadplant (*Amorpha canescens*), scarlet globemallow (*Sphaeralcea coccinea*), American vetch (*Vicia americana*), prickly pear (*Opuntia*), fringed sagewort

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(*Artemisia frigida*), kochia (*Kochia scoparia*), slimflower scurfpea (*Psoralea tenuiflora*), and Missouri goldenrod (*Solidago missouriensis*).

The riparian areas of the rivers and creeks consist primarily of vegetation such as peachleaf willow (*Salix amygdaloides*), box elder (*Acer negundo*), plains cottonwood (*Populus deltoides*), red-osier dogwood (*Cornus sericea*), chokecherry (*Prunus virginiana*), sandbar willow (*Salix exigua*), reedtop (*Agrostis stolonifera*), threadleaf sedge (*Carex filifolia*), showy milkweed (*Asclepias speciosa*), and reed canarygrass (*Phalaris arundinacea*).

There are also areas of salt flats where the vegetation primarily consists of foxtail barley (*Hordeum jubatum*), nuttall saltbush, alkali, cordgrass (*Spartina alterniflora*), kochia, silver sagebrush (*Artemisia cana*), crested wheatgrass, inland saltgrass (*Distichlis spicata*), and spreading orache (*Atriplex patula*).

Noxious weeds. EO 13112, *Invasive Species*, addresses federal agency responsibilities with respect to noxious weeds. As a federally-funded action, this project is subject to the provisions of EO 13112. According to the Blaine County Weed Supervisor, noxious weeds such as Canada thistle (*Cirsium arvense*), spotted knapweed (*Centaurea repens*), leafy spurge (*Euphorbia esula*), field bindweed (*Convolvulus arvensis*), and Russian knapweed (*Acroptilon repens*) may be found along the right-of-way in the project area. All of these noxious weeds were observed in the project area during the field investigation.

3.3.7 Wildlife and Aquatic Species

3.3.7.1 Wildlife

Wildlife baseline conditions include Montana State terrestrial species of special concern and the general terrestrial wildlife in the project area including mammals, bats, amphibians and reptiles, and birds. Federally-listed threatened and endangered species are discussed separately in Section 3.3.8, Threatened and Endangered Species, of this report. Elevations in the project area range from 700 to 793 m (2,300 to 2,500 ft). Habitat communities in the area include rolling hills and dryland agricultural fields. Wildlife species within the vicinity of the proposed project are typical of these types of rural habitats. Most areas of uncultivated plains and prairie lands are used for grazing, and many areas have been overgrazed by cattle and horses.

Montana Species of Special Concern. In addition to the federally listed threatened and endangered species (Section 3.3.8, Threatened and Endangered Species, of this report), the Montana Natural Heritage Program (MTNHP) completed a database search of state species of special concern and watch species for Montana that could potentially occur in the project area. MTNHP collects information on Montana's species and assigns a rank to indicate its relative degree of rarity or imperilment on a 5-point scale with 1 being the highest concern and 5 the lowest (1 = critically imperiled because of extreme rarity; 2 = imperiled because of

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rarity; 3 = very rare locally or restricted range vulnerable to extinction because of other factors; 4 = apparently secure; 5 = demonstrably secure). Each rank is assigned in relation to species abundance over its entire range (Global or G-rank), and within Montana (State or S-rank). There is potential habitat in the project area for three terrestrial Montana species of special concern: swift fox (*Vulpes velox*), northern leopard frog (*Rana pipiens*), and sage grouse (*Centrocercus urophasianus*).

Swift fox is listed by the MTNHP as a species of special concern with G3/S3 ranking. No swift fox have been documented in the project area or project corridor. The swift fox can occupy a variety of upland habitat types found in the project area from grasslands, plains to foothills. The nearest documentation of individual swift fox is approximately 40 km (25 mi) northeast of Havre and 24 km (15 mi) north of Zurich.

Northern leopard frogs are listed by the MTNHP as a species of special concern with a G5/S3 ranking. No northern leopard frogs have been documented in the project area, and none were found during field visits. Research shows the project area is within the habitat range of this species. Northern leopard frogs are found in or near water in non-forest habitats and prefer densely vegetated areas such as wet sedge-meadows or cattail marshes. Breeding takes place in lakes, ponds, or springs. Potential habitat for the species may exist in the densely vegetated portions of the oxbow wetland areas (Wetlands P, Q, Y, Z, and Nx) and excavated stock ponds (potential "Talent waters" jurisdictional wetlands Kx and Lx) that are located in the project area.

Sage grouse are listed by the MTNHP as a species of special concern with a G4/S4 ranking. No sage grouse were observed during the field visit and it is unlikely that the species would be found in the project area. This species uses a variety of habitats throughout the year but the primary component necessary is species of *Artemisia spp.* This species also utilizes alfalfa fields averaging approximately 58 ha (144 ac) or greasewood bottoms averaging 37 ha (91 ac). The project area does not contain the significant amounts of sagebrush habitat necessary to maintain a sage grouse population. Plant species such as sagebrush, alfalfa, and greasewood are found in the project area, but are located in pockets of prairie habitat fragmented by farmland and rural development.

In addition to the state or federally protected species, the project area is home to many common terrestrial wildlife species discussed below.

Terrestrial Mammals. Urban wildlife species (squirrels, skunks, voles, shrews, mice, raccoons, and rats) within the project area are common near the towns of Havre and Chinook. In addition to these species, white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), rabbits (*Sylvilagus*), common porcupine (*Erethizon dorsatum*), American Badger (*Taxidea taxus*), red fox (*Vulpes vulpes*), ground squirrels (*Spermophilus*) and other open forest and grassland animals (rural wildlife) likely use habitat within project areas located outside the urban areas.

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White-tailed deer are commonly found in the project area, including the Milk River riparian area, which is an important east-west wildlife corridor. Several white-tailed deer were observed in the wooded riparian areas and agricultural fields during site visits. Forested cover provides the best habitat, but grasslands are suitable when the topography provides concealment, especially when associated with wetland or riparian vegetation. Croplands are a reliable year-round food source and provide cover from July through November. White-tailed deer may use croplands for extended periods, but they must retreat to permanent cover for protection from weather and predators after harvest is completed.

Bat Species. Two bat species that may inhabit the study area are the little brown myotis (*Myotis lucifugus*) and the big brown bat (*Eptesicus fuscus*). These species may be found in the riparian habitat of the Milk River, Battle Creek, Lodge Creek, Red Rock Creek (Coulee), Clear Creek, Little Box Elder Creek, and Fifteen Mile Creek in the project area.

Terrestrial Amphibians and Reptiles. Terrestrial amphibians and reptiles known to live in Hill and Blaine County include: tiger salamander (*Ambystoma tigrinum*), western chorus frog (*Pseudacris triseriata*), racer (*Coluber constrictor*), gopher snake (*Pituophis catenifer*), western rattle snake (*Crotalus viridis*), western terrestrial garter snake (*Thamnophis sirtalis*), and plains garter snake (*Thamnophis radix*).

Tiger salamanders may be found near the smaller creeks in the project area such as Red Rock Creek (Coulee), Clear Creek, Little Box Elder Creek and Fifteen Mile Creek. Habitat for western chorus frogs may be found in the open water oxbow wetlands in the project area (Wetlands P, Q, Y, Z, and Nx) and in excavated stock ponds (potential "Talent waters" jurisdictional wetlands Kx and Lx). All of the snake species mentioned above could be found in upland habitat in the project area that has not been converted to agricultural land.

Birds. Several bird species are present in the project vicinity and were observed during the field visits. Although not species of concern at the federal or state level, these birds are protected by the Federal Migratory Bird Treaty Act (MBTA) of 1918. These species include American robin (*Turdus migratorius*), black-capped chickadee (*Poecile atricapillus*), common crow (*Corvus brachyrhynchos*), song sparrow (*Melospiza melodia*), northern flicker (*Colaptes auratus*), mourning dove (*Zenaida macroura*), common poorwill (*Phalaenoptilus nuttalli*), chimney swift (*Chaetura pelasgica*), cliff swallow (*Petrochelidon fulva*), black-billed magpie (*Pica pica*), northern mockingbird (*Mimus polyglottos*), black-headed grosbeak (*Pheucticus melanocephalus*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), turkey vulture (*Cathartes aura*), kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), eastern kingbird (*Tyrannus tyrannus*), gray catbird (*Dumetella carolinensis*), red-tailed hawk (*Buteo jamaicensis*), violet-green swallow (*Tachycineta thalassina*), killdeer (*Charadrius vociferus*), and great blue heron (*Ardea herodias*). Other bird species are likely present in the project area but were not observed during field visits.

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All bridge crossings were examined for bird nests during site visits between June 26 - July 1 and October 9 - 11, 2002. No active nests were observed during these site visits. However, decaying remnants of cliff swallow nests were observed, indicating previous use of bridge structures for nesting by this species. No other nest remains were observed.

Animal/Vehicle Collisions. Over a third of the accidents reported on US 2 in the study corridor involved white-tailed deer, as well as small mammals such as skunks, porcupines, rabbits, and fox. As noted in Section 3.1.2, Safety, of this report, 43 percent of all reported crashes in the US 2 corridor during the period from 1997 through 2001 occurred with a wild animal.

3.3.7.2 Aquatic Species

The following discussion of aquatic baseline conditions focuses on Montana State aquatic species of special concern and the general aquatic life that exists within the aquatic habitat found in the project area. There are no federally listed threatened or endangered aquatic species in the project area.

Aquatic Habitat. There are numerous water bodies (described in Section 3.3.4, Water Quality and Water Resources) providing aquatic habitat in the project area. There also are 32 bridges, including two bridges over the Milk River and numerous irrigation culverts, crossing aquatic areas along US 2 in the study area.

Montana Species of Special Concern. MTNHP completed a database search of species of special concern and watch species for Montana that could potentially occur in the project area. Three aquatic MTNHP-listed species of special concern are known to occur within or adjacent to the project area: the pearl dace (*Semotilus margarita*), sauger (*Stizostedion canadense*), and a hybrid species, the northern redbelly/finescale dace (*Phoxinus eos x phoxinus neogaeus*).

Pearl dace is listed by the MTNHP as a species of special concern with a G5/S2 ranking. This species was not observed during field visits but has been documented in Red Rock Creek (Coulee), Lodge Creek, and Battle Creek. The preferred habitat includes headwater spring ponds and small spring-fed streams that have cool, clear waters with sand and gravel bottoms and moderate amounts of vegetation. They also congregate behind beaver dams. This species spawns from May 1 to June 30 (FishBase, 2003). Spawning habitat is located in the project area in Red Rock Creek (Coulee), Lodge Creek, and Battle Creek.

Northern redbelly / finescale dace is listed by the MTNHP as a species of special concern in Montana with a S3 ranking. It is not federally ranked because it is a hybrid species. The redbelly dace occurs in several water bodies in the project area, including the Milk River, Little Box Elder Creek, Red Rock Creek (Coulee), and Battle Creek. The hybrid dace occurs in Lodge Creek. Generally the hybrid is more rare, occurring in only 13 of the 49 waters

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statewide where redbelly dace occur (FishBase, 2003). Redbelly dace inhabit small streams (fast or slow) and bog lakes over a variety of bottom types. They most often are in or near beds of emergent and floating plants. Northern redbelly dace prefer quiet waters in beaver ponds, bogs and clear streams (Scott and Crossman 1973, Holton and Johnson 1996). The finescale dace likes similar habitat but is also found in larger lakes. Spawning periods for the hybrid are unknown, but the northern redbelly spawns in early summer (May 1 to July 30) and the finescale in spring (April 1 to May 31) (MFWP 2001). Spawning habitat is not present in the project area.

Sauger is listed by the MTNHP as a species of special concern with a G5/S2 ranking. Spawning habitat is located within the project area in the Milk River, Lodge Creek and Battle Creek. Sauger prefer large, turbid slow moving rivers, and large, cool shallow lakes. Sauger spawn in the spring (March 15 to May 30) when water temperatures reach the upper 40s. Females lay between 10,000 to 50,000 eggs. The eggs are adhesive and stick to vegetation, sticks, and stones until they hatch in 10 days or more. Sauger prefer to forage for aquatic insects, crayfish, and small fishes during periods of low light (dawn and dusk). Spawning habitat is found several hundred yards below the RP 397.8 Milk River bridge crossing east of Lohman.

Aquatic Species. Other aquatic species, including many game fish species commonly found in the Milk River and its tributaries in the project area include big mouth buffalo (*Ictiobus cyprinellus*), black bullhead (*Ameiurus melas*), black crappie (*Pomoxis nigromaculatus*), brassy minnow (*Hybognathus hankinsoni*), brook stickleback (*Culaea inconstans*), brook trout (*Salvelinus fontinalis*), burbot (*Lota lota*), channel catfish (*Ictalurus punctatus*), cisco (*Coregonus reighardi*), common carp (*Cyprinus carpio*), creek chub (*Semotilus atromaculatus*), emerald shiner (*Notropis atherinoides*), flathead chub (*Platygobio gracilis*), flathead minnow (*Pimephales promelas*), freshwater drum (*Aplodinotus grunniens*), goldeye (*Hiodon alosoides*), Iowa darter (*Etheostoma exile*), lake chub (*Couesius plumbeus*), lake whitefish (*Coregonus clupeaformis*), largemouth bass (*Micropterus salmoides*), longnose dace (*Rhinichthys cataractae*), longnose sucker (*Catostomus catostomus*), mottled sculpin (*Cottus bairdi*), mountain sucker (*Catostomus platyrhynchus*), mountain whitefish (*Prosopium williamsoni*), northern pike (*Esox lucieus*), northern redbelly dace (*Phoxinus eos*), rainbow trout (*Oncorhynchus mykiss*), river carpsucker (*Carpiodes carpio*), sauger/walleye hybrid (*S. canadense x Stizostedion vitreum*), shorthead redhorse (*Moxostoma macrolepidotum*), shovelnose sturgeon (*Scaphirhynchus platorynchus*), smallmouth bass (*Micropterus dolomieu*), small mouth buffalo (*Ictiobus bubalus*), spottail shiner (*Notropis hudsonius*), stonecat (*Noturus flavus*), walleye (*Stizostedion vitreum*), western silvery minnow (*Hybognathus argyritis*), white crappie (*Pomoxis annularis*), white sucker (*Catostomus commersoni*), and yellow perch (*Perca flavescens*).

The walleye, a MFWP game species, is known to spawn in the project area. Spawning for this species occurs at the RP 397.8 Milk River Bridge crossing, several hundred meters (several hundred yards) below the bridge at a rock/gravel riffle. The spawning period is from April 15 to May 30.

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Fish species commonly found in Little Box Elder Creek include brook trout, brown trout, flathead chub, longnose dace, longnose sucker, mottled sculpin, northern redbelly dace, rainbow trout, and white sucker.

Fish species commonly found in Clear Creek include black bullhead, black crappie, brook trout, brown trout, common carp, emerald shiner, flathead minnow, lake chub, longnose dace, northern sucker, mottled sculpin, mountain sucker, northern pike, rainbow trout, stonecat, walleye, western silvery minnow, white sucker, and yellow perch.

Fish species commonly found in Red Rock Creek (Coulee) include black bullhead, black crappie, brassy minnow, brook stickleback, common carp, emerald shiner, flathead minnow, flathead chub, Iowa darter, lake chub, longnose dace, longnose sucker, northern pike, northern redbelly dace, pearl dace, stonecat, walleye, western silvery minnow, white sucker, and yellow perch.

Fish species commonly found in Lodge Creek include black bullhead, brook stickleback, common carp, emerald shiner, flathead minnow, lake chub, lake whitefish, longnose dace, northern pike, northern redbelly dace, pearl dace, redbelly/finescale dace, stonecat, sauger, walleye, western silvery minnow, white sucker, yellow perch.

Fish species commonly found in Battle Creek include black bullhead, brook stickleback, common carp, emerald shiner, flathead chub, flathead minnow, Iowa darter, lake chub, longnose dace, northern pike, northern redbelly dace, sauger smallmouth bass, stonecat, walleye, white sucker, and yellow perch.

No surveys were conducted for Fifteen Mile Creek, but this drainage likely contains minnow species. This drainage is of little fisheries consequence.

3.3.8 Threatened and Endangered Species

In accordance with Section 7(c) of the Endangered Species Act (ESA) of 1973, this project was evaluated to assist FHWA in its coordination with USFWS in determining the potential effects on plant and animal species listed by the USFWS as threatened, endangered, candidate, or proposed. The ESA directs federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the existence of any threatened or endangered species, or result in the destruction of their critical habitat.

According to the *US 2 Havre to Fort Belknap Biological Resources Report*, the USFWS identified four threatened, endangered, candidate, or proposed threatened species potentially occurring in the project corridor. These species include bald eagle (*Haliaeetus leucocephalus*), black-footed ferret (*Mustela nigripes*), mountain plover (*Charadrius montanus*), and black-tailed prairie dog (*Cynomys ludovicianus*) (Table 3.20).

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The mountain plover was proposed to be listed as a USFWS threatened species in 2002, and is therefore included on the USFWS correspondence letter. However, the USFWS withdrew the proposal to list the mountain plover based on more current information on the species. No mountain plover were observed during site visits, and none have been documented along US 2 south of the railroad in the project area. Therefore, the species is not discussed further in this report.

Table 3.20 Federally Endangered, Threatened, and Candidate Species Potentially Occurring in the Project Area

Species	Habitat	Status
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Mixed coniferous forest, cottonwood riparian areas near water	FT
Black-footed ferret (<i>Mustela nigripes</i>)	Prairie dog towns located in short or middle grass prairie	FE
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Grassy rolling plains	C

Status: C – Candidate, FE – Federally Endangered, FT – Federally Threatened, PT – Proposed Threatened

Source: David Evans and Associates, Inc., December 19, 2003, *US 2 Havre to Fort Belknap Biological Resources Report*.

Bald Eagle. Wintering activity for bald eagles (approximately October 31 to March 31) does occur on the Milk River, which crosses US 2 twice in the project area, and occasional transient individuals have been documented on the Milk River in the spring and fall. However, no nests are documented near the project site, and no documented roosts or perch sites are present in the project area. The nearest documented nesting territory is located along the Missouri River, south of Big Sandy, approximately 96 km (60 mi) south of the project area. The nearest documented nest on the Milk River is located approximately 161 km (100 mi) east of the project area near Glasgow.

Black-footed Ferret. Habitat for black-footed ferrets may exist outside the project area in prairie dog colonies located 3.2 km (2 mi) north of US 2 between Zurich and Harlem, and at least 3.2 km (2 mi) north of Harlem and the Milk River on BLM land. No black-footed ferrets were observed during site visits, and none have been documented in or near the project vicinity.

Black-tailed Prairie Dog. No black-tailed prairie dogs have been documented in the project area, and none were observed during the site visit. Agricultural land and residential development have limited the availability of suitable habitat in the project area. The nearest documented black-tailed prairie dog colony is located 3.2 km (2 mi) north of US 2 and the railroad between Zurich and Harlem. Fauna West (1999) also documented two colonies, north of Harlem on BLM land.

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3.3.9 Floodplains

EO 11988, *Floodplain Management*, requires federal agencies to avoid direct or indirect support of floodplain development whenever a practicable alternative exists. EO 11988 and 23 CFR 650 Subpart A require an evaluation of project alternatives to determine the extent of any encroachment into the base floodplain. The base flood (100-year flood) is the regulatory standard used by federal agencies and most states to administer floodplain management programs. A “100-year floodplain” is defined as lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, with a 1 percent or greater chance of flooding in a given year. As described in FHWA’s floodplain regulation (23 CFR 650 Subpart A), floodplains provide natural and beneficial values serving as areas for “fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and ground water recharge.”

US 2 heads east from Havre through Lohman, Chinook, and Zurich before turning southeast toward Harlem and Fort Belknap. The Milk River flows southeasterly from Canada and continues easterly from Havre, meandering roughly parallel to US 2 throughout the study area. The Milk River crosses under US 2 twice within the study area:

- From north to south at RP 397.8 west of the town of Chinook; and
- From west to east at RP 427.9 just north of the Fort Belknap Agency.

At several points along the corridor, the Milk River channel flows adjacent to the highway. The highway also makes several crossings of Milk River tributaries within the study area. These streams include five perennial streams (Little Box Elder Creek, Clear Creek, Lodge Creek, Battle Creek, and Fifteen Mile Creek) and six intermittent streams (4 unnamed tributaries, Red Rock Creek (Coulee) and Lodge Creek).

Within or near the study area, the Federal Emergency Management Agency (FEMA) has delineated approximate 100-year floodplain boundaries for the Milk River, Little Box Elder Creek, Davey Coulee Creek, Clear Creek, Three Mile Coulee Creek, Red Rock Creek (Coulee), Lodge Creek, Battle Creek, Six Mile Coulee Creek, Coal Creek, Fifteen Mile Creek, Thirty Mile Creek, and several unnamed tributaries. Two sites in the study area are prone to flooding: the bridge at the north fork of Battle Creek (RP 410) and the Davey Coulee Creek bridge (RP 393.5).

The 100-year floodplain is narrow in width between Havre and Lohman, ranging from approximately 500 to 1,000 m (1,640 to 3,280 ft) in width. East of Lohman, the floodplain becomes considerably broader, ranging from approximately 3,000 to 5,000 m (9,840 to 16,400 ft) wide. The floodplain constricts near Chinook and again west of Harlem near RP 421, but otherwise remains between 3,000 to 5,000 m (9,840 to 16,400 ft) wide throughout the eastern portion of the project corridor. The approximate floodplain boundaries within the study area are illustrated in Figure 3.1, 100-Year Floodplain.

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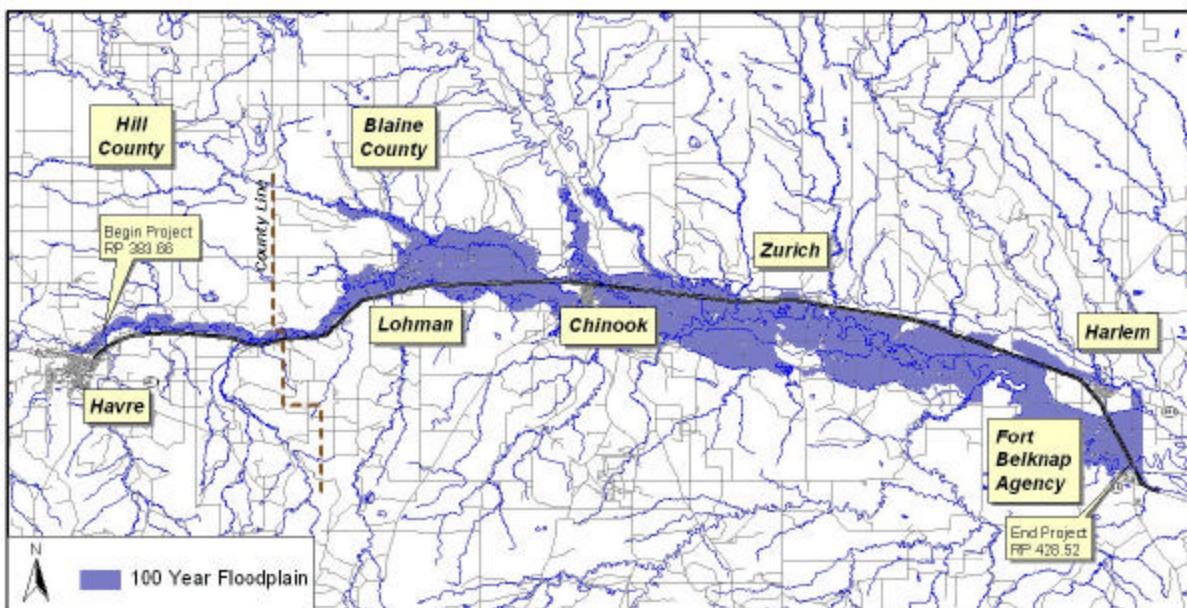
Within the study area, the existing US 2 alignment lies within or in close proximity to the 100-year floodplain for a large part of the project corridor. The BNSF Railway and highway were both originally constructed parallel to the Milk River from Havre to the mouth of the river, east of Glasgow, where it joins the Missouri River. The location of these two transportation routes adjacent to the Milk River has hindered the ability of the river to overflow freely into its floodplain. In some cases, the existing highway and railroad embankments form new manmade edges of the floodplain.

The existing 72.2 km (44.9 mi) segment of US 2 from Havre to Fort Belknap has 20.0 km (12.4 mi) of longitudinal encroachments into the Milk River floodplain. In addition to these longitudinal encroachments in the floodplain, there are transverse encroachments of the floodplains of three unnamed Milk River tributaries, Davey Coulee Creek, and Clear Creek.

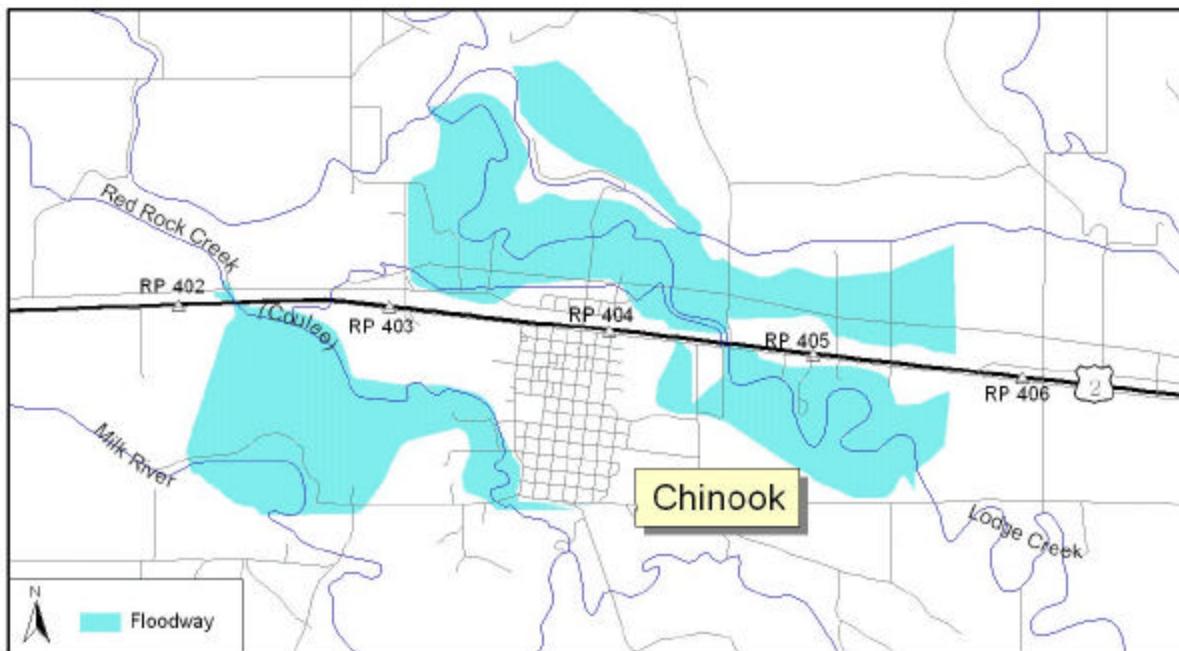
Within 0.8 km (0.5 mi) of the project corridor, there are more than 233 square km (90 square mi) of 100-year floodplain. The amount of existing US 2 right-of-way that is within this floodplain is less than 1.3 square km (0.5 square mi), or less than 0.5 percent of the total 100-year floodplain area in the project corridor.

The unincorporated areas of Hill and Blaine Counties, the cities of Havre, Chinook, and Harlem, and the Fort Belknap Indian Reservation participate in the National Flood Insurance Program. Regulatory floodways have been designated in the immediate vicinity of Chinook and Harlem (see Figures 3.2 and 3.3). A floodway is a floodplain area that is reserved from obstructions, such as buildings or fill materials, so that floodwaters may move downstream and allow flood heights in the remainder of the floodplain to stay at desirable levels. Floodways are associated with the Milk River and Red Rock Creek (Coulee) west and south of Chinook; Lodge Creek north and east of Chinook; and Thirty Mile Creek north of Harlem. US 2 transversely crosses Red Rock Creek (Coulee) and two locations on Lodge Creek floodway.

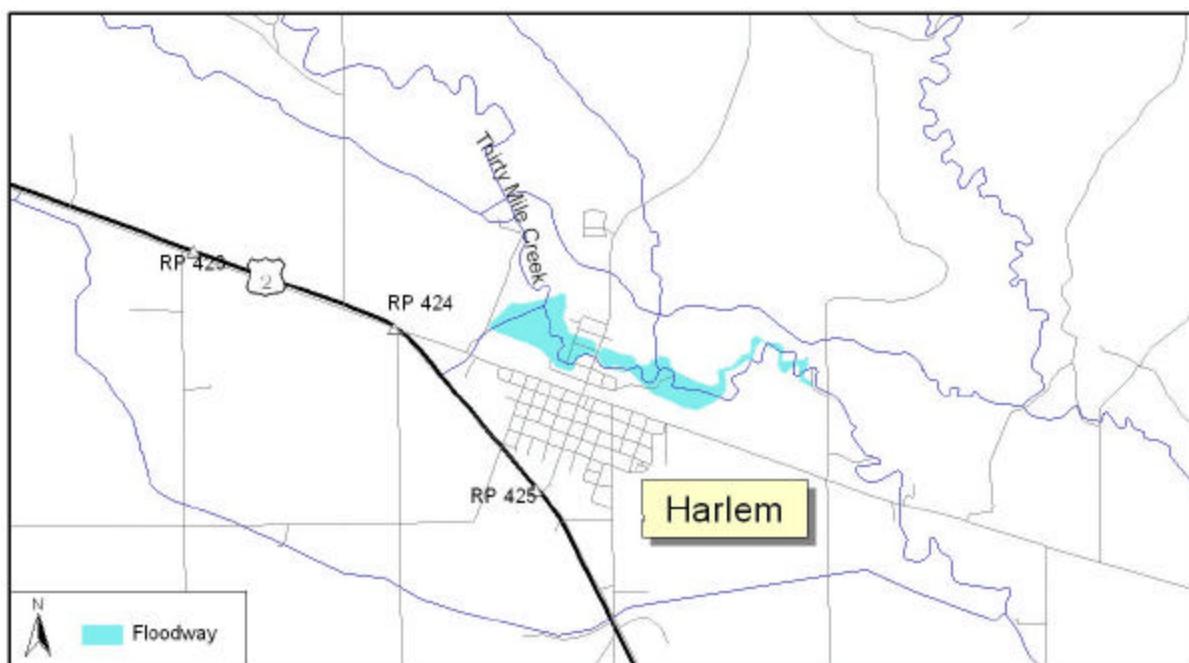
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Figure 3.1 100-Year Floodplain

Source: FEMA Flood Insurance Rate Maps

Figure 3.2 Chinook Floodway Map

Source: FEMA Flood Insurance Study

Figure 3.3 Harlem Floodway Map

Source: FEMA Flood Insurance Study

3.3.10 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 established the National Wild and Scenic River System to protect the nation's highest quality natural rivers. The only river in the project area, the Milk River, is not designated as a wild and scenic river.

The two rivers in Montana that are designated as National Wild and Scenic Rivers – the upper Missouri River, from Fort Benton downstream to the Robinson Bridge, and the north, middle, and south forks of the Flathead River in northwest Montana – are not near the project area.

3.3.11 Water Body Modifications

Existing Conditions

There are presently 32 bridges on US 2 within the project limits that are identified in MDT's bridge inventory. These bridges range from small irrigation or drainage structures to major river crossings. All river and creek crossings are described, however, only the ditches and canals spanned by bridges 18.3 m (60.0 ft) long or greater, with piers in the channel, are listed. The older, original bridges are predominately timber girder structures, as well as several types of concrete and steel structures. Fisheries Resource Values are determined by Sport Fisheries Values and Species and Habitat Values and range between limited (lowest

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rating) and outstanding (highest rating) (MFWP). These values are for the portion of the water body in the project area.

Creeks and Rivers

- **Little Box Elder Creek (RP 389.3).** US 2 crosses Little Box Elder Creek 9.7 km (6 mi) east of Havre. The creek flows north under US 2, where it joins the Milk River just north of the highway. The highway crosses the creek with a four span timber girder bridge 31.1 m (102.0 ft) long, 9.2 m (30.2 ft) wide. There are three sets of piers in Little Box Elder Creek. Fisheries Resource Value: Moderate.
- **Clear Creek (RP 396.0).** US 2 crosses Clear Creek 12.9 km (8 mi) west of Chinook at the east end of the town of Lohman. It flows north where it joins the Milk River approximately 0.4 km (0.25 mi) north of the highway. The Fort Belknap Dam and gauging station are located just northeast of this confluence. This timber girder bridge is 18.0 m (59.0 ft) long, 8.7 m (28.4 ft) wide with three spans. There are two sets of piers in Clear Creek. Fisheries Resource Value: Substantial.
- **Milk River (RP 397.8 and 427.9).** The US 2 alignment crosses the Milk River 9.7 km (6 mi) west of Chinook at RP 397.8. MDT constructed a new bridge in 2004 in this location to replace the original bridge that was seriously damaged in an accident in late 2003. US 2 crosses the river just north of Fort Belknap at RP 427.9 on an 8.6 m wide pre-stressed concrete girder bridge with three spans. There are two sets of piers in the Milk River at this location. Fisheries Resource Value: High-Value.
- **Red Rock Creek (Coulee) (RP 402.3).** US 2 crosses Red Rock Creek (Coulee) over a timber girder bridge 1.9 km (1.2 mi) west of Chinook. This is an intermittent stream that flows south joining the Milk River 305 m (1,000 ft) south of Chinook, adjacent to the filtration plant. The highway crosses the creek with a bridge 18.0 m (59.0 ft) long, 8.6 m (28.3 ft) wide with three spans. There are two sets of piers in the water. Fisheries Resource Value: Substantial.
- **Lodge Creek (RP 404.6).** US 2 crosses Lodge Creek just east of Chinook with a concrete tee bridge. This is an intermittent stream flowing south joining the Milk River just over 1.6 km (1 mi) southeast of Chinook. This bridge is 28.7 m (94.0 ft) long, 8.4 m (28 ft) wide with three spans and two piers in the water. Fisheries Resource Value: High-Value.
- **Battle Creek (RP 409.9).** US 2 crosses Battle Creek over a pre-stressed girder bridge 4.8 km (3 mi) west of Zurich. This creek flows southeasterly from the Canadian border and joins the Milk River 0.8 km (0.5 mi) south of US 2. This single span bridge, which was replaced in 1999, is 43.8 m (143.5 ft) long, and 12.3 m (40.2 ft) wide. Fisheries Resource Value: Substantial.
- **Fifteen Mile Creek (RP 413.8).** US 2 crosses Fifteen Mile Creek over a steel girder bridge 1.6 km (1 mi) east of Zurich. This creek flows south under US 2, where it joins the Milk River 0.4 km (0.25 mi) south of the highway. This bridge is 33.8 m

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(111.0 ft) long, 8.6 m (28.2 ft) wide, with two spans and one set of piers in the water. Fisheries Resource Value: Limited.

Stockpasses, Ditches and Irrigation Canals

US 2 crosses numerous man-made stockpasses, ditches and irrigation canals along the project corridor. The majority of these are similar in construction and size being timber girder bridges between 3.7 m (12 ft) and 17.7 m (58 ft) long. Three of these bridge crossings however are longer than 17.7 m (58 ft) and contain piers in the channel. These water bodies are discussed below.

- **Red Rock Creek (Coulee) Overflow (RP 404.1).** US 2 crosses Red Rock Creek (Coulee) Overflow with a timber girder bridge in Chinook. This bridge is 18.3 m (60.0 ft) long, 10.3 m (33.8 ft) wide, and has three spans. There are two sets of piers in the water.
- **Stockpass and Irrigation (RP 405.6).** US 2 crosses this water body over a timber girder bridge 1.6 km (1 mi) east of Chinook. This bridge is 46.6 m (153.0 ft) long, 8.62 m (28.3 ft) wide, and has eight spans. Seven piers are in the water.
- **Lower Canal (RP 427.9).** US 2 crosses the Lower Canal on this three-span pre-stressed girder structure in Fort Belknap. This structure is 65.2 m (214.0 ft) long and 8.6 m (28.2 ft) wide with three spans.

3.3.12 Hazardous Materials

An Initial Site Assessment (ISA) and visual review of the US 2 project corridor was conducted in December 2002 and submitted in February 2004 by Terracon. The ISA concluded that the right-of-way and immediate area of the project corridor does not include any national Superfund sites. The ISA report also indicated there are no licensed landfills, abandoned mine reclamation sites, hazardous spill sites or point source discharge locations known to occur in the project corridor. Within the project area, there is one hazardous waste site, one bridge that may have been painted with lead-based paint, sites with potential soil and ground water contamination from storage tanks, and sites associated with inactive rail loading sites, industrial sites, electrical substations, and abandoned and active farmsteads.

Montana Comprehensive Environmental Cleanup and Responsibility Act (CECRA) Sites. The Diamond Asphalt refinery site is a medium-priority CECRA site located east of Chinook in the project area. The CECRA program is similar to the federal Superfund program. CECRA facilities are ranked maximum, high, medium, low, and operation and maintenance priority based on the severity of contamination at the facility and the actual and potential impacts of contamination to public health, safety, and welfare and the environment. There are currently 208 sites on the CECRA list, 79 of which are ranked “medium” priority.

The Diamond Asphalt site is an abandoned refinery, located northeast of Lodge Creek, east of Chinook, and contains extensive tar-contaminated soil. Fenced tar/sludge pits are located

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as close as 18 m (60 ft) south of the south edge of US 2 pavement. These pits have been documented as seeping into ground water. The hydrologic gradient flows to the south, and ground water contamination has not been identified upgradient from this site.

Bridges. One steel bridge, the Fifteen Mile Creek Bridge, in the project area is likely to have been painted with lead-based paint. The Occupational Safety and Health Administration (OSHA) standard for lead regulates disturbance of any painted surface with a detectable level of lead. The OSHA standard requires worker protection and personal monitoring of exposure limits during demolition. The lead-containing debris can be disposed of at any approved solid waste handling facility. Most bridges along US 2 are constructed with treated timber.

Storage tank sites. The identified storage tank sites that may have potential for soil or ground water contamination are located in four areas: Lohman, Chinook, the eastern Chinook area, and Harlem (Figure 3.4). These sites are briefly described below.

Lohman – Two abandoned underground storage tanks (USTs) associated with the closed Midway Motel south of US 2.

Chinook – eleven leaking UST (LUST)/UST/aboveground storage tank (AST) sites adjacent to the existing MDT right-of-way in Chinook. Montana Department of Environmental Quality (MDEQ) LUST files indicate that soil and ground water contamination from these sites is widespread and expands into the existing right-of-way.

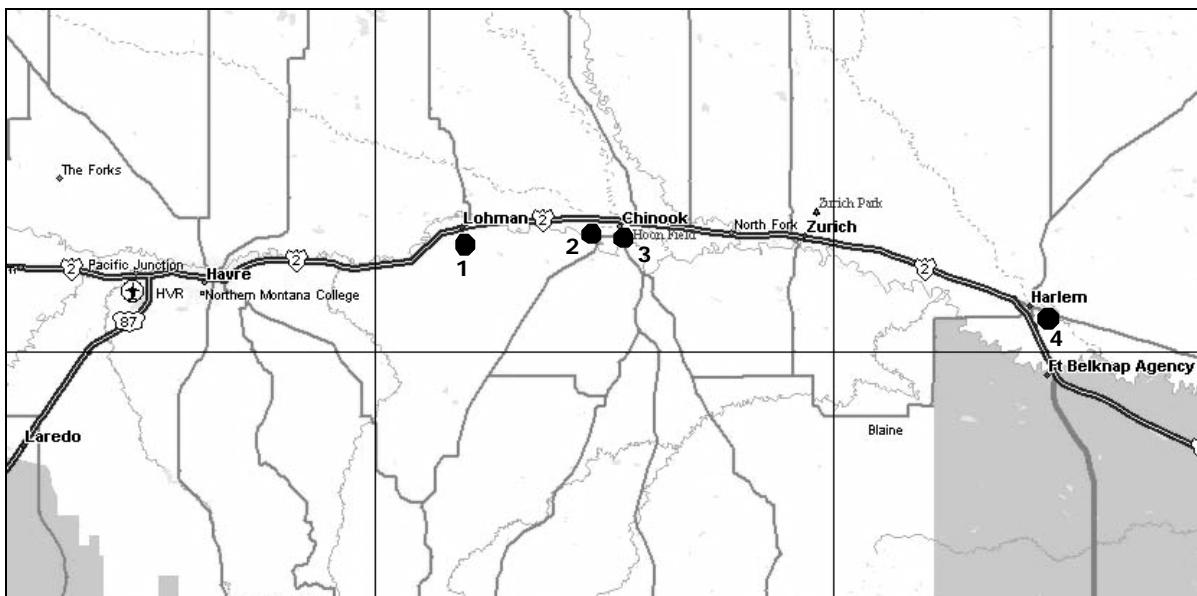
- Removed/abandoned USTs at closed Doughton Ford Dealership
- Conoco C-Store LUST #306204-1547
- Farmer's Union Oil LUST #310274-1072, 2559, 2974
- Town Pump LUST #306221-1410 & #308688-1514
- Jamieson Motors LUST #300035-3019
- Johnies Standard LUST #302291-3585
- Pehrson's Exxon LUST #306475-3824
- Ezzie's Wholesale LUST #307801-2835
- Removed ASTs old Conoco bulk plant
- Removed ASTs old Farmers Union bulk plant
- Removed ASTs old Phillips bulk plant

East of Chinook – Two abandoned USTs associated with the abandoned Diamond Asphalt Refinery on the east side of Lodge Creek.

Harlem

- Equity CO-OP LUST #310408-3132 north of the existing right-of-way
- Conoco E-Z Mart LUST #305982-1555 north of the existing right-of-way

Figure 3.4 Map of Known and Suspected LUST/UST/AST Sites



LEGEND:

1. Abandoned UST site adjacent to south side of existing ROW at Midway Motel, Lohman
2. Numerous LUST/UST/AST sites adjacent to existing ROW with known soil/ ground water contamination in Chinook
3. Potential abandoned USTs on south side of existing ROW and soil/ground water contamination associated with abandoned asphalt refinery adjacent to south side of existing ROW, east of Lodge Creek on eastern edge of Chinook (also a CECRA site)
4. Two LUST sites north of existing ROW in Harlem

Source: Terracon, February 2004, MDT Initial Site Assessment for Hazardous Materials/Substances.

Other Inactive and Abandoned Sites. US 2 is located adjacent to the railroad for much of the distance between Havre and Harlem. Throughout this portion of the corridor a number of abandoned and active railroad loading facilities are located along the railroad right-of-way to the north of US 2. Abandoned sites in Zurich (a large area of coal waste and other material spilled during operation) and Chinook (contaminated soil and ground water associated with abandoned bulk plants located adjacent to the railroad and beyond the north edge of the right-of-way) are evident.

Many of the abandoned commercial, agricultural, and residential structures within the project area may contain asbestos. Demolition of these structures would require testing and appropriate removal of asbestos. Asbestos fiber emissions and waste disposal are regulated as hazardous air pollutants under 40 CFR 61. OSHA requires workers to be protected from asbestos fibers. The State of Montana further requires a project permit when greater than 1

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linear m (3 linear ft) or 0.28 square meters (3 square feet) of regulated asbestos-containing material is disturbed during planned renovation or demolition activities.

3.3.13 Visual Resources

The existing highway alignment was used to establish a baseline of the visual resources found both on and along the roadway. The baseline visual conditions were identified and categorized based on USGS quadrangle maps and site observations during field surveys. The existing topography, site lines, landscape boundaries, natural features, and general site character were identified, and the alignment was separated into landscape units (LUs), each with distinct visual and landscape characteristics.

Landscape Units

The existing US 2 alignment, from the start of the project at RP 383.66 to the end of project at RP 428.52, passes through 11 distinct LUs. Additional details on these LUs are available in the technical report, *US 2 Havre to Fort Belknap Visual Assessment*, David Evans and Associates, August 2003. From west to east the LUs are as follows:

- LU 1 – Havre Transitional Area, RP 383.6 to RP 385.0
- LU 2 – Rural Open Space, RP 385.0 to RP 395.6
- LU 3 – Lohman Area, RP 395.6 to RP 396.2
- LU 4 – Rural Open Space, RP 396.2 to RP 403.0
- LU 5 – Chinook Area, RP 403.0 to RP 405.0
- LU 6 – Rural Open Space, RP 405.0 to RP 412.6
- LU 7 – Zurich Area, RP 412.6 to RP 413.2
- LU 8 – Rural Open Space, RP 413.2 to RP 424.2
- LU 9 – Harlem Area, RP 424.2 to RP 425.6
- LU 10 – Rural Open Space, RP 425.6 to RP 428.0
- LU 11 – Fort Belknap Agency Area, RP 428.0 to RP 428.5

Urban areas interspersed with rural and open space areas characterize the visual resources in the project area. Throughout the corridor, overhead power lines and railroad tracks parallel US 2 and create strong linear visual elements. Agricultural fields on either side of the highway create texture and color that can dominate vistas in the fore- and middleground of the landscape, where agricultural structures near the highway can offer contrasting form, scale and color in their separate, distinct groups.

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The built environment within the corridor consists of one- to two-story structures in most places, with higher profile grain elevators in several locations. Urban areas consist of small clusters of structures (residences and businesses) that provide visual distraction from the highway and railway, which are the most predominant built features in the landscape.

In the rural area landscape units, flat topography, rolling hills, some steep slopes, and stream channel ravines characterize the visual resources. Low-lying vegetation (riparian grasses and agricultural crops) is present throughout the corridor with small stands of deciduous trees providing some vertical contrast to the more wide-open spaces.

3.3.14 Section 4(f) and Section 6(f) Properties

Section 4(f)

Section 4(f) of the 1966 Department of Transportation Act, which is codified at 49 U.S.C. §303, and FHWA regulations found at 23 C.F.R. §771.135, prohibits FHWA from approving the use of land from a significant publicly owned public park, recreation area, or wildlife or waterfowl refuge, or any significant historic site, unless a determination is made that there is no feasible and prudent alternative to the use of land from the property and the action includes all possible planning to minimize harm to the property.

Each of the public agencies that owns property in the corridor was surveyed to determine if they had resources on their properties that might meet the definitions of Section 4(f)-protected properties. The BLM and DNRC responded that they do not have present or planned Section 4(f) uses on their properties (refer to Appendix B, Agency Correspondence). There is a bike path in Chinook along US 2 that was built through the Montana Community Transportation Enhancement Program (CTEP), but the primary purpose of this facility is transportation not recreation (see Appendix I, Section 4(f) Evaluation); FHWA guidance for 4(f) excludes bike paths used primarily for transportation. Section 4(f) could apply to the following public parks if they are impacted by any of the alternatives: Lions Memorial Park on Main Street in Harlem and Centennial Park on Indiana Street in Chinook. The Blaine County Fairgrounds in Chinook is also a Section 4(f) resource because it is a publicly-owned facility that is open to the public and used for recreation such as horseback riding.

There are no wildlife or waterfowl refuges within the corridor. There are several significant historic properties in the corridor as described in Section 3.3.1.

Section 6(f)

Section 6(f) resources are those acquired through the use of Land and Water Conservation Funds (LWCF). The LWCF (Public Law 88-578) was enacted by Congress to provide money to federal, state, and local governments to purchase lands for maintaining or enhancing recreational opportunities, clean water, wildlife habitat, scenic resources, historic sites, and wilderness areas (Land and Water Conservation Fund, 2003; U.S. Forest Service,

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2003). Resources that have been purchased using LWCF cannot be converted to highway uses without the approval of the Department of Interior's National Park Service (NPS). Section 6(f) directs the NPS to assure that replacement lands of equal value, location, and usefulness are provided to mitigate conversions of these lands for highway use.

No Section 6(f) lands have been identified in the project area by MFWP, which administers this program in Montana. (See Appendix B, MFWP letter dated January 7, 2003.)

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4.0 Environmental Consequences

This chapter follows NEPA and MEPA guidance for analyzing potential effects that the proposed action and/or alternatives may have on the existing transportation, social, economic, and environmental conditions and describes measures proposed to mitigate any adverse impacts. This chapter provides the analytical basis for evaluating the comparative merits of the alternatives. These analyses integrate issues and concerns raised during the public and agency scoping process and through discussions held with community members during the public involvement process.

4.1 Transportation Conditions

4.1.1 Access

Specific impacts to accesses will be determined in conjunction with the Access Management Plan established during design phase of the project. Access management will follow the guidelines presented in Section 2.1.2.

No-Build Alternative

With this alternative, the corridor would not meet MDT standards for access management. No access management plan would be developed for the corridor, and future accesses would be considered through the MDT access permit process.

Improved Two-Lane Alternative

With this alternative, the highway would be a limited access facility consistent with MDT guidelines presented in Section 2.1.2. The approach to managing access would vary by highway segment based on the type of access and its specific location with respect to other accesses along the highway and public road intersections. Access management would provide safety and traffic operation benefits and help meet the public's goal of improving the ability to get on and off the highway by concentrating vehicular turning movements so they can be accommodated with appropriate intersection treatments (i.e., turn lanes).

Although reasonable access will be accommodated to all adjacent properties, some driveways may be consolidated with other driveways or realigned to intersect other nearby public roadways. Since access to properties may not be directly to US 2, some out-of-direction travel may result, which may increase travel time at driveway access points. However, this increase may be offset by overall improved travel time along the entire US 2 study corridor.

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Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Overall corridor access management impacts under this alternative would be the same as those indicated for the Improved Two-Lane Alternative. The highway would be a limited access facility consistent with MDT guidelines, and the approach to managing access would vary by highway segment based on the type of access and location along the corridor. However, it should be noted that within the sections of the corridor with passing lanes, left turns from the passing lane would be restricted at future driveways unless turn lanes are provided. Allowing left-turn movements from the passing lane, given the potential concentration of passing maneuvers in the short sections of passing lanes, would be a hazardous condition that warrants access restriction.

Four-Lane Undivided Alternative

Overall corridor access management impacts under this alternative would be generally the same as those indicated for the Improved Two-Lane Alternative. The highway would be a limited access facility consistent with MDT guidelines, and the approach to managing access would vary by highway segment based on the type of access and location along the corridor.

Four-Lane Divided Alternative

Overall corridor access management impacts under this alternative would generally be the same as those indicated for the Improved Two-Lane Alternative. The highway would be a limited access facility consistent with MDT guidelines, and the approach to managing access would vary by highway segment based on the type of access and location along the corridor. However, because a median would exist in the middle of the highway, full access requiring breaks in the median would generally only be provided at no more than 0.8 km (0.5 mi) spacing in rural areas and 0.4 km (0.3 mi) spacing in the developed sections of the corridor. Accesses between these spacing requirements would operate as right-in/right-out, which may cause additional circuitous and out-of-direction travel for drivers wanting to make a left turn at these locations.

Mitigation

Any build alternative would involve an Access Management Plan that may require some driveways to be consolidated with other driveways or realigned to intersect with other nearby intersecting public roadways. Maintaining adequate access to US 2, perhaps via an intersecting public roadway in lieu of direct highway access, would mitigate impacts to individual property owners. The Access Management Plan will be established during the final design phase of the project and will require Transportation Commission approval.

4.1.2 Safety

Direct and indirect impacts to safety were evaluated by studying the effects of alternative design elements on potential accidents and vehicular, pedestrian, and bicyclist safety.

The StratBENCOST model, explained further in Section 4.2.9, Benefit-Cost Analysis, is structured to calculate accident cost savings by making assumptions about the accident rate for a given facility type and traffic volume. The model is not structured to determine changes in accident rates for an improvement to a rural two-lane highway that does not modify the number of lanes. Therefore, in order to improve the accuracy of the calculations, accident benefits were determined outside the model.

Traffic safety impacts were estimated by reviewing national and statewide accident rates and the effects of roadway improvements on accident rates. The total accident rate for each alternative was estimated from the existing accident rate, which was calculated from the five-year crash study explained in Section 3.1.2, Safety. Accident reduction percentages were applied to the existing total accident rate based on studies published by FHWA on the safety effects of geometric changes on two-lane roadways (FHWA, 2000a). Examples of the geometric changes included in the studies are shoulder width and clear zone, number of lanes, median type, and number of accesses. The improvement benefits estimated from these nationwide studies were adjusted to conditions specific to the US 2 corridor. Some types of accidents experienced along the corridor (e.g., alcohol-related, weather-related) may not be affected by any geometric improvement. The resulting accident rates estimated for each alternative should be considered only for comparison to other alternatives, as they are not intended to be a prediction of future accident rates for any alternative.

No-Build Alternative

Under the No-Build Alternative, there would be no changes to vehicular, pedestrian or bicycle safety conditions. Pedestrian safety issues in Chinook would not be addressed.

Travel safety concerns raised during the public involvement process would remain. Emergency services would continue to experience difficulty traveling the corridor and responding to accidents on the highway due to narrow shoulders and steep side slopes in the clear zone. Farmers' concerns about safety when moving wide agricultural equipment would continue for the same reasons.

The existing 1997-2001 accident rate for the corridor is 1.51 per million vehicle miles traveled (VMT), which would translate to approximately 93.0 accidents per year in the design year 2027, assuming annual accident rates stay the same and traffic volume increases as projected.

Improved Two-Lane Alternative

Corridor. This alternative would improve operations and safety for emergency and law enforcement services, agricultural equipment, and school buses traveling on US 2, due to wider shoulders and an improved clear zone. Vehicles would be able to safely pull to the side of the road for passing emergency vehicles; law enforcement would be able to pull traffic safely to the side of the road; wide agricultural equipment would be able to travel in or partially within the shoulder; and school children would be able to safely stand on the widened shoulder and approach stopped school buses.

Although wild animal-related crashes are a large percentage of the crash history, the locations of the accidents are dispersed throughout all segments of the corridor. The relatively flat topography and open fields surrounding the majority of the roadway make it difficult to build infrastructure (e.g., wildlife fencing) that would be effective in creating distinct wildlife crossings with underpasses or bridges. The increased sight distance and recovery area provided with clear zone improvements would help drivers avoid crossing wildlife and may decrease animal-related accidents. Wildlife-related accident impacts and mitigation are discussed in more detail in Section 4.3.7, Wildlife and Aquatic Species.

The benefit-cost analysis detailed in Section 4.2.9, Benefit-Cost Analysis of this report demonstrated that this alternative would provide safety benefits for users of US 2. The vehicle accident rate is estimated to be 1.36 per million VMT (compared to a no-build accident rate of 1.51 per million VMT), which would translate into approximately 83.8 accidents per year in the design year 2027 (compared to a no-build estimate of 93.0 accidents per year), assuming annual accident rates stay the same and traffic volume increases as projected.

The wider shoulders and improved clear zone with this alternative are consistent with the slope flattening and wider shoulders recommended by the MDT SEIP to mitigate accident clusters identified east and west of the Chinook urban area.

This alternative would increase the distance between US 2 and the railroad at railroad crossings prioritized by levels of safety and traffic volume with considerations for cultural, economic, and environmental resources. The offset improvements for each alternative are shown in Table 4.1. The offsets were measured from centerline of railroad track to the proposed edge of travelway for each alternative. Increasing the offset at these locations would improve the safety and operation of the crossings and the US 2 intersections by providing adequate storage distance for passenger vehicles and trucks between the railroad and the highway. Safety at railroad crossings and high-volume intersections would also be improved by adding turn lanes at these intersections.

The distance between the highway and the railroad would be increased at all of the railroad crossings listed in Table 4.1. This alternative would provide the greatest separation of the

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build alternatives between the highway and the railroad at the majority of the crossings listed in Table 4.1.

The offset distance at most crossings would be improved to the minimum 46 m (150 ft) guidance. Several crossings, however, would not meet the minimum offset due to other constraints. The crossing at Indiana Avenue in Chinook would not meet the desired offset because the highway would remain within the existing curb lines and therefore could not shift south to increase the offset in this location.

The offset at the crossings at Cherry Ridge Road and Second Avenue in Zurich would be increased, but not to the recommended distance; the Milk River lies directly south of the highway in this location and constrains the highway alignment. At Thirty Mile Road, auxiliary lanes would be added to increase vehicle storage on the highway. These auxiliary lanes would improve safety and reduce the need for an increased offset from the railroad in this location.

Table 4.1 Approximate Railroad Offsets (in m (ft)) at Public Roads

Public Road	Alternatives				
	No - Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Highland Road	45 (150)	55 (185)	55 (185)	55 (175)	50 (160)
Yantic Road	35 (110)	45 (155)	45 (155)	45 (140)	35 (125)
Hall Road	35 (110)	55 (180)	55 (180)	50 (165)	45 (150)
Coal Mine Road	35 (110)	55 (180)	55 (180)	50 (165)	45 (150)
John Stephens Road	40 (125)	55 (180)	55 (180)	50 (165)	45 (155)
Indiana Avenue	30 (95)	30 (100)	30 (95)	30 (100)	50 (160)
Elloam Road	20 (75)	45 (155)	45 (150)	45 (145)	40 (125)
Old Highway Road	35 (105)	55 (175)	55 (175)	50 (165)	45 (155)
Bagan Road	35 (110)	55 (175)	55 (175)	50 (165)	45 (150)
Fork Road	50 (155)	55 (190)	55 (190)	55 (175)	50 (160)
County Road	35 (120)	45 (150)	40 (125)	40 (140)	35 (120)
Cherry Ridge Road	30 (95)	35 (120)	35 (120)	30 (105)	30 (95)
MT 436 (2nd Avenue)	35 (110)	40 (135)	40 (135)	40 (125)	35 (110)
Oberg Road	35 (105)	55 (180)	55 (180)	50 (165)	45 (150)
Eight Mile Road	55 (185)	65 (220)	65 (220)	65 (210)	60 (190)
Miller Road	70 (235)	80 (265)	80 (265)	75 (250)	70 (235)
Thirty Mile Road	25 (80)	30 (90)	30 (90)	30 (90)	25 (80)

Source: Data compiled by David Evans and Associates, Inc.

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This alternative would provide 2.4 m (8 ft) shoulders, which would create safer conditions for bicyclists and through traffic traveling the US 2 corridor. The proposed design includes rumble strips in the shoulder; therefore, the area outside the rumble strips that is usable for bicyclists would be 2 m (6.5 ft), which is more than the minimum 1.2 m (4 ft) area recommended by the AASHTO *Guide for the Development of Bicycle Facilities* (1999) for bicycle use. The rumble strips would also provide a visual and audible warning for vehicles wandering into the shoulder area where bicyclists may be riding.

Havre East. This alternative includes a center two-way left turn lane or a series of left turn lanes from RP 383.6 to RP 385.2, which is consistent with the mitigation recommended by the MDT SEIP for an accident cluster identified in this area. Intersection-related accidents may decrease with the separation of slow-moving vehicles from through traffic in the area. However, left-turning traffic at driveways would have an additional lane to cross, which may increase intersection-related accidents.

This alternative would provide a pedestrian/bicycle path between east Havre residential areas and Havre proper. This connection would provide safe travel out of vehicular travel lanes for pedestrians and bicyclists between these areas.

Chinook. This alternative would improve safety for pedestrians traveling across the railroad to and from north Chinook. Pedestrian treatments at the US 2 and Indiana Street intersection would increase awareness of the pedestrian crossing for motorists traveling on US 2. The sidewalk would be extended north across the railroad tracks to direct pedestrian traffic to the crosswalk on the west side of Indiana Street.

This alternative would also provide an improved pedestrian and bicycle connection between Chinook and the Sweet Memorial Nursing Home to the west. This connection would keep pedestrians and bicyclists out of the US 2 vehicular travel lanes in this area, increasing pedestrian, bicycle and vehicular safety.

Right- and left-turn lanes at the railroad crossing north of US 2 in Chinook would provide increased storage space for vehicles turning from US 2. However, the substandard storage distance for vehicles crossing the railroad and turning onto US 2 would not be improved because the westbound travel lane would remain in its existing location.

Harlem. This alternative would provide a pedestrian/bicycle path extending from Main Street in Harlem to First Street in Fort Belknap. This connection would improve safety for pedestrians and bicyclists traveling between these neighboring communities by keeping them out of the vehicular travel lanes.

The left and right turn lanes provided with this alternative in this area would improve safety for the relatively high volume of local traffic turning on and off of the highway in Harlem.

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Intersection-related accidents may decrease with the separation of slow-moving vehicles from through traffic in the area.

Fort Belknap. This alternative would remove pedestrians and bicyclists from vehicular travel lanes by providing a pedestrian/bicycle path extending from Main Street in Harlem to First Street in Fort Belknap.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

This alternative includes the same wider shoulders, improved clear zone, increased railroad offsets and intersection turn lanes as the Improved Two-Lane Alternative. The system of passing lanes would provide an additional margin of safety and operational efficiency over the Improved Two-Lane Alternative. The intermittent passing lanes, spaced 8 to 13 km (5 to 8 mi) apart, would clear traffic around slower vehicles upon exiting communities and in dispersed locations in the corridor. The passing opportunities provided by this alternative would be safer and more consistent than those in the Improved Two-Lane Alternative because there would be a full passing lane for the maneuver without the risk of encountering opposing traffic. This may diminish the number of head-on and sideswipe accidents caused by improper passing along the corridor.

The benefit-cost analysis detailed in Section 4.2.9, Benefit-Cost Analysis of this report demonstrated that this alternative would provide safety benefits for users of US 2. The vehicle accident rate is estimated to be 1.26 per million VMT (compared to a no-build accident rate of 1.51 per million VMT), which would translate into approximately 77.6 accidents per year in the design year 2027 (compared to a no-build count of 93.0 accidents per year), assuming annual accident rates stay the same and traffic volume increases as projected.

This alternative would provide nearly the same benefits from increased distance between the highway and the railroad as the Improved Two-Lane Alternative. However, in the location of passing lanes, where the highway section is wider than a two-lane, the offset would be less than that of the Improved Two-Lane. Only one high priority crossing, County Road west of Zurich, would experience this lesser offset.

Four-Lane Undivided Alternative

Corridor. This alternative includes the same wider shoulders, improved clear zone, increased railroad offsets and intersection turn lanes as the Improved Two-Lane Alternative, with similar resulting vehicle, pedestrian, and bicyclist safety benefits of these specific roadway improvements. General corridor impacts to vehicles, pedestrians, and bicyclists under this alternative would be the same as those indicated for the Improved Two-Lane Alternative.

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The additional lane in each direction may diminish the number of accidents caused by improper passing because vehicles would not have to enter oncoming traffic lanes in order to pass along the entire length of the corridor. However, the additional lane may also increase accidents caused by changing lane maneuvers. Vehicles turning left on or off the highway would have an additional lane of traffic to cross; this could increase the number of right-angle and broadside accidents at intersections. The possibility of left-turning vehicles from US 2 to minor intersecting streets and driveways slowing and waiting in the inside through lane to make the left turn raises safety concerns with the higher speeds of the corridor and density of accesses. Since no median is provided under this alternative, there would be no separation of opposing traffic flows or left-side recovery area for out-of-control vehicles, and head-on collision potential would be a safety concern.

The benefit-cost analysis detailed in Section 4.2.9, Benefit-Cost Analysis of this report demonstrated that this alternative would provide safety benefits for users of US 2. The vehicle accident rate is estimated to be 1.22 per million VMT (compared to a no-build accident rate of 1.51 per million VMT), which would translate into approximately 75.2 accidents per year in the design year 2027 (compared to a no-build count of 93.0 accidents per year), assuming annual accident rates stay the same and traffic volume increases as projected.

This alternative would increase the distance between the highway and the railroad at all of the high-priority railroad crossings listed in Table 4.1. In general, this alternative provides fewer crossing-related safety benefits than the two-lane alternatives; the typical cross section of this alternative is wider than the two-lane typical cross section, and the distance between the railroad and the highway would therefore be less than that of the two-lane alternatives.

In most cases, the highway offset would be improved over the existing condition to meet the 46 m (150 ft) offset. Some crossings, however, would not meet the desired minimum offset due to other constraints. The Yantic Road crossing east of Lohman sits near a series of large oxbow wetlands that lie immediately south of the highway. In order to minimize impacts to these wetlands, the highway alignment would remain to the north and would not meet the desired 46 m (150 ft) offset.

The crossing at Indiana Street in Chinook would not meet the desired offset; this alternative minimizes the impacts of a four-lane highway through Chinook by keeping the highway as far north as possible and maintaining the approximate location of the existing north travel lane. MDT plans to close the crossing at Elloam Road, east of Chinook, as part of the Junction US 2 – North project, discussed in Section 4.6, Cumulative Impacts. Therefore, the highway alignment would not be shifted to provide the desired offset in this location.

The railroad crossings at County Road, Cherry Ridge Road, and Second Avenue in Zurich, similar to the two-lane alternatives, would not meet the desired minimum offset because the Milk River immediately to the south constrains the alignment. Because the four-lane section is wider than the two-lane section, the offset at these crossings would be less for this

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alternative. At Thirty Mile Road, auxiliary lanes would be added to increase vehicle storage on the highway. These auxiliary lanes would improve safety and reduce the need for an increased offset from the railroad in this location.

Havre East. Impacts east of Havre would be the same as those indicated for the Improved Two-Lane Alternative. However, left-turning traffic at driveways would have an additional lane to cross, which may increase intersection-related accidents.

Chinook. Impacts in Chinook would be the same as those indicated for the Improved Two-Lane Alternative. However, this alternative would also create additional lanes of traffic to be crossed by pedestrians traveling across the railroad to or from north Chinook. Pedestrian crossing enhancements at the Indiana Street intersection would help identify the intersection as a pedestrian crossing.

Harlem. Impacts in Harlem would be generally the same as those indicated for the Improved Two-Lane Alternative. However, left-turning traffic at accesses in this area would have an additional lane to cross, which could increase intersection-related accidents.

Fort Belknap. Impacts in Fort Belknap would be generally the same as those indicated for the Improved Two-Lane Alternative since the number of travel lanes would be the same through Fort Belknap under this alternative.

Four-Lane Divided Alternative

Corridor. This alternative includes the same wider shoulders, improved clear zone, increased railroad offsets, and intersection turn lanes as the Improved Two-Lane Alternative, with similar vehicular, pedestrian, and bicyclist safety benefits of these specific roadway improvements.

The additional lane in each direction may diminish the number of accidents caused by improper passing because vehicles would not have to enter oncoming traffic lanes in order to pass along the entire length of the corridor. However, the additional lane may also increase accidents caused by changing lane maneuvers. Vehicles turning left on or off the highway would have an additional lane of traffic to cross; this could increase the number of right-angle and broadside accidents at intersections.

This alternative would provide additional safety benefits over the Four-Lane Undivided Alternative because the presence of a grass median would physically separate opposing traffic flows, reduce headlight glare, and provide a recovery area for out-of-control vehicles; a reduced potential for head-on collisions could be expected. Also, the access management inherent with the physical constraint of the center median may decrease driveway-related accidents. Left turns would be restricted to locations of median openings where a turn lane would be provided to separate and store left turning vehicles from the high-speed through traffic.

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As noted in the 2001 AASHTO publication *Geometric Design of Highways and Streets*, a median should preferably be provided for improved safety when improving an existing two-lane arterial to a multi-lane facility. Research has shown that four-lane undivided facilities have significantly more collisions than four-lane facilities with medians. If traffic volumes justify the construction of multi-lane arterials in rural areas with high speeds, it is generally considered that opposing traffic should be separated by a median.

The benefit-cost analysis detailed in Section 4.2.9, Benefit-Cost Analysis of this report demonstrated that this alternative would provide the greatest safety benefits of the build alternatives for users of US 2. The accident rate is projected to be 1.13 per million VMT (compared to a no-build accident rate of 1.51 per million VMT), which would translate into approximately 69.6 accidents per year in the design year 2027 (compared to a no-build count of 93.0 accidents per year), assuming annual accident rates stay the same and traffic volumes increase as projected.

This alternative would increase the distance between the highway and the railroad at the majority of the high-priority railroad crossings listed in Table 4.1. This alternative would provide the fewest crossing-related safety benefits of the build alternatives because its wider cross-section would place travel lanes closer to the railroad. Some crossings would not meet the desired 46 m (150 ft) offset due to other constraints; these crossings are the same crossings listed under the Four-Lane Undivided Alternative except for the Indiana Street crossing in Chinook, which would be improved.

Havre East. Impacts east of Havre would be the same as those indicated for the Four-Lane Undivided Alternative.

Chinook. Impacts in Chinook would be the same as those indicated for the Four-Lane Undivided Alternative. However, safety would be further improved at the railroad crossing at Indiana Street because US 2 travel lanes would shift farther south at the intersection with Indiana. This would provide increased vehicle storage distance between the railroad and the travel lanes and improve safety for vehicles crossing the railroad and turning onto US 2.

Harlem. Impacts in Harlem would be the same as those indicated for the Four-Lane Undivided Alternative since the lane configuration through Harlem would be the same under this alternative.

Fort Belknap. Impacts in Fort Belknap would be the same as those indicated for the Four-Lane Undivided Alternative. However, left turning traffic at accesses in this area would have an additional lane to cross, which would potentially result in an increase in intersection-related accidents.

Mitigation

No mitigation for any alternative.

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4.1.3 Traffic Operations

The traffic congestion experienced by drivers along a highway facility is reported through a Level of Service (LOS) measurement. LOS is a qualitative measure that ranges from LOS A, describing the highest quality of traffic service when motorists are able to travel at their desired speed, to LOS F, which represents heavily congested flow with traffic demand exceeding capacity and highly variable speeds. The level of service analysis considers the effects of lane width, shoulder width, heavy vehicle percentages, type of terrain, percent no-passing zones and number of access points on the traffic operations of a roadway segment. For a rural non-Interstate NHS route in level or rolling terrain, MDT has a minimum recommended design level of service of LOS B. LOS B is an acceptable level of service that represents reasonably free flow. The general level of physical and psychological comfort provided to drivers is reasonably high. Drivers are delayed in platoons less than 50 percent of the time.

To evaluate the impacts of the alternatives on the traffic operations of the study area corridor, the level of service for the roadway segments west and east of Chinook were analyzed using procedures for two-lane roads in the *Highway Capacity Manual* (Transportation Research Board, 2000). To facilitate the analysis, the Highway Capacity Software 2000 was used.

Historic traffic volume data for the Havre to Fort Belknap section of US 2 shows very little growth along the corridor over the past ten years. Travel patterns and traffic characteristics differ between the sections of highway located east of Havre and the area west of Fort Belknap. While population has shown little to no growth at Havre, the Fort Belknap area is experiencing population growth. Therefore, MDT volume forecasts for the corridor predict slightly higher volumes between Chinook and Fort Belknap than between Havre and Chinook.

The average annual traffic growth rate between 2007 and 2027¹ provided by MDT is 1 percent per year west of Chinook and 2 percent per year east of Chinook (Table 4.2). Given historic traffic growth rates, which show traffic volume growth trends to be relatively stagnant, and population trends, which show the overall corridor population to be declining, these average annual growth rates are considered aggressive. These growth rates result in the following traffic volume projections for the project study area.

Table 4.2 Average Annual Daily Traffic

Section of Corridor	2002	2007	2027
West of Chinook	2,890	3,040	3,700
East of Chinook	2,330	2,570	3,820

Source: MDT

¹ Roadway design for reconstruction projects is typically based on a 20-year projection of traffic volume. This ensures that there will be adequate capacity to accommodate increasing traffic volumes through the life of the facility under reasonable maintenance. As the letting date for this project is 2007, the 20-year volume projection is for 2027.

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Table 4.3 summarizes the results of the LOS analysis for 2027 traffic volumes under the roadway conditions of each alternative.

Table 4.3 2027 PM Peak Hour Roadway Level of Service by Alternative

Section of Corridor	Alternative				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
West of Chinook	B	B	B	A	A
East of Chinook	B	B	B	A	A

Source: Analysis by David Evans and Associates, Inc with traffic volumes by MDT.

Impacts to safe passing opportunities along the corridor are assessed by studying impacts to the passing zones provided along the corridor.

No-Build Alternative

The analysis shows that US 2 would continue to operate at an acceptable level of service (LOS B) through 2027 without any improvements. A drop in service to LOS C may be experienced through the Chinook Urban segment due to lack of passing opportunities and lower speed limits as characterized by the urban nature of the roadway.

The roadway pavement markings along the US 2 corridor provide for passing along 81 percent of the entire corridor. The actual passing supply depends on the availability of passing sight distance and gaps in the opposing traffic stream. The compounding effects of high speeds, the magnitude and density of accesses, high volume of trucks, narrow shoulders, and flat grade along the majority of the study corridor results in greater than normal uncertainty in passing opportunities, regardless of the passing zones provided by the roadway striping. The increase in traffic volumes estimated through 2027 would produce more traffic platoons and fewer gaps in opposing traffic, which would result in longer queues of traffic, driver impatience, and more uncertainty in passing maneuvers in the study corridor.

Improved Two-Lane Alternative

US 2 would operate at an acceptable level of service (LOS B) through 2027 with this alternative. Although wider shoulders and an improved clear zone would create a safer and more comfortable driving experience, these geometric improvements would have only a nominal impact on the volume of traffic that can be accommodated by the facility.

This alternative would result in minimal anticipated changes in the percentage of area striped for passing zones along the corridor. Higher traffic volumes in the future would result in

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more traffic platoons and fewer gaps in opposing traffic. However, the wider shoulders and clear zone would create safer passing opportunities by providing space for vehicles to utilize the shoulder, if necessary, during passing maneuvers and improving passing sight distance.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

With this alternative, US 2 would operate at an acceptable level of service (LOS B) through 2027. Although the intermittent passing lanes would provide safer and more consistent passing opportunities, the traffic volumes along the highway are too low to experience an improvement in level of service from the small increase in overall corridor capacity, which is constrained by the two-lane segments of the facility.

The percentage of area striped for passing zones provided along the corridor would be less with this alternative because passing would not be permitted in the opposing direction where a passing lane would exist. However, the passing opportunities provided would be safer and more consistent since there would be a full passing lane for the maneuver without the risk of encountering opposing traffic.

In Chinook, a continuous two-way left-turn lane would be provided through town. On a two-lane highway, left-turn lanes at intersections are desirable to allow for deceleration and provide a refuge for left-turning vehicles. In Chinook, the frequency of public street and driveway intersections along US 2 necessitates a continuous two-way left-turn lane rather than a series of separate left-turn lanes at individual intersections.

In order to remain within the existing curb and gutter section, this turn lane would require removal of the northern lane of on-street parking in Chinook. This would result in greater impacts to on-street parking than the Improved Two-Lane Alternative. Although both two-lane alternatives would remove on-street parking on the north side of US 2 between Indiana and Illinois Streets, as a result of the westbound right-turn lane onto Indiana Street, this alternative would also remove on-street parking on the north side of US 2 west of Indiana Street and east of Illinois Street.

Four-Lane Undivided Alternative

This alternative would improve the level of service experienced by drivers traveling the corridor to LOS A. The additional lane in each direction would greatly increase the volume of traffic that could be accommodated by the facility. With the volumes expected along the corridor through 2027, the operation of vehicles would be virtually unaffected by the presence of other vehicles and minor disruptions to flow would be easily absorbed without a change in travel speed.

This alternative would increase the amount of safe passing opportunities along the entire distance of the study corridor with the additional lane in each direction. However, the lack of

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median to separate opposing traffic flows and provide space for speed change and storage of left-turning vehicles would impact traffic operations.

Four-Lane Divided Alternative

Level of service and passing opportunity impacts under this alternative would be the same as those indicated for the Four-Lane Undivided Alternative. In addition, traffic operations benefits would be provided by the median area, which provides a physical and psychological separation from opposing traffic, helps to reduce headlight glare, and provides a space for speed changes and storage for left-turning vehicles.

Mitigation

No mitigation for any alternative.

4.1.4 Pedestrian and Bicycle Considerations

Impacts to pedestrians and bicyclists are assessed by studying impacts to pedestrian and bicycle facilities.

No-Build Alternative

The existing sidewalk and crosswalk conditions would not be improved. Accommodations for bicyclists would not be provided along the corridor. No new pedestrian/bicycle paths or sidewalks would be provided to connect areas within the communities of Havre, Chinook and Harlem/Fort Belknap. School children would still continue to wait for school buses on narrow shoulders and side slopes.

Improved Two-Lane Alternative

This alternative would provide 2.4 m (8 ft) shoulders. The area outside the rumble strips that is usable for bicyclists would be 2 m (6.5 ft), which is more than the minimum 1.2 m (4 ft) area recommended by the AASHTO *Guide for the Development of Bicycle Facilities* (1999) for bicycle use. The wider shoulder would also provide an area for school children to wait for and approach school buses.

This alternative would provide a pedestrian/bicycle path between east Havre residential areas and Havre proper, extending from the Havre city limits east to 38th Avenue. This path would create the opportunity for non-motorized travel along this segment of the corridor and connect the eastern residential areas and Havre.

Intersection improvements at US 2 and Indiana Street in Chinook would provide for an enhanced pedestrian crossing of US 2. Signage and other intersection treatments would increase awareness of the crossing for motorists traveling on US 2. The sidewalk would be

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extended north across the railroad tracks to direct pedestrian traffic to the crosswalk on the west side of Indiana Street.

This alternative would also provide an improved pedestrian and bicycle connection between Chinook and the Sweet Memorial Nursing Home to the west. The existing sidewalk along the south side of US 2 would be improved and extended west to the pedestrian/bicycle path leading to the nursing home. The existing bicycle path would be relocated to the south within the new right-of-way.

A pedestrian/bicycle path would be provided from Main Street in Harlem to First Street in Fort Belknap. This connection would encourage non-motorized travel between these neighboring communities.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Pedestrian and bicyclist impacts under this alternative would be the same as those indicated for the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

This alternative would provide the same pedestrian and bicycle facilities along the corridor and within the Havre, Harlem and Fort Belknap areas as those described for the Improved Two-Lane Alternative. Also, with a four-lane cross-section school buses would pull off of the highway to stop and, therefore, children would not need to cross the highway or stand along the shoulder.

This alternative would create additional lanes of traffic for pedestrians crossing US 2 at Indiana Street in Chinook. Pedestrian improvements at this intersection would help in identifying the pedestrian crossing location, and signage and other intersection treatments would increase awareness of the crossing for motorists traveling on US 2. The sidewalk would be extended north across the railroad tracks to allow for a defined pedestrian crossing.

Impacts to the pedestrian and bicycle connection between Chinook and the Sweet Memorial Nursing Home would be the same as those indicated for the Improved Two-Lane Alternative.

Four-Lane Divided Alternative

Pedestrian and bicyclist impacts under this alternative would be the same as those indicated for the Four-Lane Undivided Alternative.

Mitigation

No mitigation for any alternative.

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4.2 Social and Economic Conditions

4.2.1 Montana 2001 Senate Bill 3 and State Plans

4.2.1.1 Montana 2001 Senate Bill 3/Montana Code Annotated 60-2-133

Montana 2001 Senate Bill 3, codified in Montana Code Annotated (MCA) 60-2-133, directs the Transportation Commission to direct the department of transportation to construct a four-lane highway along the present route of US 2 in Montana. To accomplish this task, MCA 60-2-133 directs MDT to seek additional federal funding that does not require a state funding match and also directs that MDT may not expend any resources on the project that would jeopardize other future highway projects. Each of the proposed alternatives is evaluated for consistency with the interpretation of this legislation by the Montana Transportation Commission and the Revenue and Taxation Interim Legislative Committee.

No-Build Alternative

The No-Build Alternative complies with MCA 60-2-133 if MDT is unable to obtain additional federal funding for a four-lane alternative that does not require a state funding match.

Improved Two-Lane Alternative

This alternative complies with the requirements of MCA 60-2-133 if MDT is unable to obtain additional federal funding for a four-lane alternative that does not require a state funding match.

Improved Two-Lane with Passing Lanes (Preferred Alternative)

This alternative complies with the requirements of MCA 60-2-133 if MDT is unable to obtain additional federal funding for a four-lane alternative that does not require a state funding match.

Four-Lane Undivided Alternative

This alternative would provide four travel lanes for the full length of the project corridor, except for the transition section to the existing two-lane highway at the east end of the project area. The alternative is consistent with the requirements of MCA 60-2-133 if MDT is successful in obtaining additional federal funding that does not require a state funding match needed for the additional costs to build the added two lanes and the effort does not jeopardize other highway projects.

Four-Lane Divided Alternative

This alternative would provide four travel lanes throughout the project corridor, except for the transition section to the existing two-lane highway at the east end of the project corridor. The alternative is consistent with the requirements of MCA 60-2-133 if MDT is successful in obtaining additional federal funding that does not require a state funding match needed for the additional costs to build the added two lanes and the effort does not jeopardize other highway projects.

4.2.1.2 Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program (STIP) schedules upcoming highway projects to address Montana's near-term transportation needs. For fiscal years 2004 – 2006, the STIP lists two projects that are located on US 2 between Havre and Fort Belknap. These projects, Havre-East (NH 1-6(24)384) and Zurich-Harlem (NH 1-7(19)414), have been placed on hold pending the outcome of this EIS; they were scheduled in the STIP to receive funding for right-of-way and incidental construction in fiscal years 2005 and 2006, respectively. The Havre-East project entailed reconstruction of the existing two-lane highway with shoulder widening and turn lanes from the eastern curb and gutter limits of Havre to the east 16.4 km (10.2 mi). The Zurich-Harlem project proposed shoulder widening and resurfacing of the existing two-lane highway for 11.8 km (7.3 mi) between Zurich and Harlem. The Lohman-East and West project (NH 1-7(11)394) was identified in earlier STIPs (2001-2003 and 2002-2004); it entailed reconstruction of the two-lane highway with shoulder widening for 15.6 km (9.7 mi) near Lohman. These three projects represent approximately 61 percent of the project corridor.

No-Build Alternative

The No-Build Alternative is not consistent with the 2004-2006 STIP; it does not provide for improvements to US 2 east of Havre or between Zurich and Harlem.

Improved Two-Lane Alternative

This alternative would be consistent with corridor projects identified in the STIP; it would provide two-lane improvements with wider shoulders and additional turn lanes.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

This alternative would be consistent with corridor projects identified in the STIP; it would provide two-lane improvements with wider shoulders and additional turn lanes.

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Four-Lane Undivided Alternative

The projects identified in the STIP for the US 2 corridor between Havre and Fort Belknap propose two-lane improvements and shoulder widening; the four lanes proposed in this alternative would not be consistent with those projects.

Four-Lane Divided Alternative

The projects identified in the STIP for the US 2 corridor between Havre and Fort Belknap propose two-lane improvements and shoulder widening; the four lanes proposed in this alternative would not be consistent with those projects.

Mitigation

No mitigation for any alternative.

4.2.2 Land Use

Assessment of land use impacts is a qualitative analysis of the impacts to existing and proposed land uses within the study area and of the indirect impacts to future land use and population patterns. There are no land use plans for Hill and Blaine Counties. The Havre *Comprehensive Plan* addresses a small portion of the project corridor from the Havre urban limits to 38th Avenue. The Fort Belknap Agency *Zoning Ordinance* addresses zoning in the Fort Belknap community. Alternatives are evaluated for consistency with these two documents.

No-Build Alternative

The No-Build Alternative is consistent with the Havre *Comprehensive Plan* and the Fort Belknap Agency *Zoning Ordinance*. Existing land uses would not be expected to change, and the No-Build Alternative would allow future development in Fort Belknap to continue as stated. Agriculture would remain the primary land use in the corridor, with commercial land use located along US 2 in the communities of Havre, Chinook, Harlem, and Fort Belknap also continuing.

There would be no growth impacts under the No-Build Alternative. Hill County population projections estimate a 1.3 percent growth rate for the 25-year period between 2000 and 2025, from 16,673 persons in 2000 to 16,890 persons in 2025. Blaine County population projections estimate a 4 percent growth rate for the same 25-year period, from 7,009 persons in 2000 to 7,290 persons in 2025 (NPA Data Services, 2002a). These growth rates would not be expected to change under the No-Build Alternative, and there would be no impacts to population density.

Improved Two-Lane Alternative

The Improved Two-Lane Alternative is consistent with the Havre *Comprehensive Plan* and the Fort Belknap Agency *Zoning Ordinance*. No changes to the types of land use in the rural segments or communities in the project corridor would be anticipated. Agriculture would remain the primary land use in rural segments of the project corridor. Existing residential and commercial uses would remain the primary land uses along US 2 in Havre, Lohman, Chinook, Harlem, and Fort Belknap. Proposed development in Fort Belknap would be able to proceed as stated.

The economic study conducted for this project examined the reliance of the region's economic development strategy on infrastructure needs (ICF Consulting, 2003b). The study concludes that capacity improvements to US 2 are unlikely to induce development, but safety and operational improvements can help sustain the region's economy and ensure the potential for future growth. Proposed highway improvements are therefore not expected to induce growth beyond current population projections for Hill and Blaine Counties, and there would be no anticipated substantial, foreseeable, induced development due to improvements.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

This alternative would have the same land use impacts described for the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

This alternative would have the same land use impacts as those described for the Improved Two-Lane Alternative in rural areas and all communities except Chinook.

The land uses along US 2 may be impacted in Chinook due to the acquisition of many highway-related businesses along the south side of US 2. Some of these businesses might relocate on their current parcel or to another nearby site, but many of them may have difficulty doing so in the smaller land area remaining along US 2 with this alternative. The land uses in the next block south are industrial, commercial, and residential; these land uses would become the new frontage to US 2. Therefore, the existing land use pattern along US 2 in Chinook would change.

This alternative would provide the minimum right-of-way impacts of a four-lane alternative through Chinook. Accordingly, the minimized right-of-way would not be wide enough to allow for landscape treatments such as street trees to be planted adjacent to the sidewalk.

Four-Lane Divided Alternative

This alternative would have the same land use impacts as those described for the Improved Two-Lane Alternative in rural areas and all communities except Chinook. This alternative

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would require more right-of-way through Chinook than the Four-Lane Undivided Alternative because of the increased offset of US 2 from the railroad at Indiana Street. This alternative would therefore require acquisition of more businesses along the south side of US 2 than the Four-Lane Undivided Alternative. The industrial, commercial, and residential uses in the next block south would become the new frontage to US 2, and the existing land use pattern along US 2 would change.

In addition, this alternative would provide a tree lawn and detached sidewalk or multi-use path on both sides of the highway through Chinook. The tree lawn would allow for landscape treatments such as street trees along the highway and benches near the sidewalks. These landscape treatments would provide a buffer between the highway and the new land use to the south and would visually minimize the impacts of the loss of acquired or relocated businesses immediately south of the highway.

Mitigation

No mitigation for any alternative.

4.2.3 Farmlands

As discussed in Section 4.2.8, Right-of-Way and Relocation of Utilities, between 90 and 156 ha (223 and 386 ac) of private agricultural land would be converted from agricultural to right-of-way use under the build alternatives.

A substantial portion of those agricultural lands within the study area are designated as important farmland. As such, MDT, on behalf of FHWA, requested that the NRCS be a cooperating agency in a September 17, 2002 letter to Montana State Conservationist, Mr. Dave White. NRCS declined this request but encouraged continued coordination to identify important farmlands. NRCS data on soils and important farmlands were obtained via the NRCS website and utilized to map and assess potential impacts to important farmland in the study area.

In accordance with the Farmland Protection Policy Act (7 U.S.C. 4201 et. seq.), Farmland Conversion Impact Rating forms (#AD-1006) were completed by the Chinook Field Office of the NRCS for both Blaine and Hill Counties. Each alternative would result in less than 160 total points. Because of the large total area of each county that is designated as important farmland and the ratings below 160 points, under the provisions of 7 CFR 658.4(c)(2), no additional consideration for protection is necessary.

There are two types of important farmland in Blaine and Hill counties: (1) farmland of statewide importance; (2) prime farmland if irrigated.

The potential farmland impacts of each alternative due to additional right-of-way acquisition are summarized in Table 4.4.

Table 4.4 Summary of Important and Prime Farmland Impacts

Important Farmland Categories	Alternatives				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Undivided Four-Lane	Divided Four-Lane
Statewide Importance	0	11.5 ha (28.5 ac)	12.1 ha (29.9 ac)	12.4 ha (30.7 ac)	18.3 ha (45.3 ac)
Prime if Irrigated	0	23.2 ha (57.3 ac)	24.1 ha (59.8 ac)	26.3 ha (65.0 ac)	33.5 ha (82.9 ac)
Total¹	0	34.7 ha (85.8 ac)	36.2 ha (89.6 ac)	38.7 ha (95.6 ac)	51.9 ha (128.1 ac)

¹ Totals may not equal exact sum of subtotals due to rounding.

Source: Data derived from NRCS Soil Survey GIS data and important farmland designations.

Despite the fact that a substantial portion of the study area is designated as important farmland, the area of potential impact for each alternative is less than 1 percent of the total area of important farmland in each county.

No-Build Alternative

The No-Build Alternative would have no impacts on important farmland in the project area.

Improved Two-Lane Alternative

Additional right-of-way requirements for the Improved Two-Lane Alternative would impact 34.7 ha (85.8 ac) of important farmland. Most of the impacts (78 percent) to Farmland of Statewide Importance would occur in Hill County east of Havre. Most of the impacts (85 percent) to farmlands designated as Prime if Irrigated would occur in the eastern portion of the study area between Zurich and Harlem. The distribution of potential Farmland Impacts is summarized in Table 4.4.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The addition of a passing lane to the Improved Two-Lane with Passing Lanes Alternative increases the potential impact to a total of 36.2 ha (89.6 ac) of important farmland. The potential impacts for this alternative are less than 1 percent higher than the Improved Two-Lane, and the impacts would be distributed very similarly along the corridor. The distribution of potential Farmland Impacts is summarized in Table 4.4.

Four-Lane Undivided Alternative

Additional right-of-way requirements for the Four-Lane Undivided Alternative would impact 38.7 ha (95.6 ac) of important farmland. Most of the impacts to Farmland of Statewide Importance (75 percent) would occur in Hill County east of Havre. Most of the impacts (78 percent) to farmlands designated as Prime if Irrigated would occur in the eastern portion of the study area between Zurich and Harlem. The distribution of potential Farmland Impacts is summarized in Table 4.4.

Four-Lane Divided Alternative

The addition of a median to the Four-Lane Divided Alternative would increase the potential impact to important farmland throughout the corridor to a total of 51.9 ha (128.1 ac). The potential impacts for this alternative are 25 percent higher than the Four-Lane Undivided Alternative. The distribution of potential Farmland Impacts is summarized in Table 4.4.

Mitigation

Land designated as important farmland by the NRCS abuts the existing US 2 right-of-way throughout much of the project corridor. When there is no feasible alternative to taking this land for right-of-way, the roadway alignment will be designed to take a narrow, linear strip and avoid fragmenting the farmland parcels as much as possible. Farmlands adjacent to the roadway may be subject to access modifications; however, access will be maintained to all ownerships and properties. Mitigation will include the use of BMPs to limit disturbance and control erosion.

4.2.4 Irrigation

Irrigated farmland comprises a large portion of the land in Blaine County adjacent to the project corridor. Impacts to the irrigation facilities in the project area are discussed below.

No-Build Alternative

There would be no impacts to irrigation systems under the No-Build Alternative. Existing irrigation systems would not be expected to change.

Improved Two-Lane Alternative

The ownership and acreage of irrigated land would only be affected in those areas where lands are acquired for the proposed new roadway alignment and associated embankments. The total area of land impacted by the additional right-of-way required by this alternative equals approximately 104.6 ha (258.4 ac). Irrigated land taken as right-of-way under this alternative amounts to linear parcels of land adjacent to the highway. Conservatively estimating that the entire right-of-way requirement consists of irrigated farmland, the

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impacted area would represent only 0.5 percent of the irrigated land in Hill and Blaine counties. Because land lost to right-of-way would be negligible, the existing irrigation facilities would remain appropriately sized for the land they irrigate. The impact on the land not taken as right-of-way and currently irrigated would also be negligible because impacted irrigation facilities would be replaced. In cases where the ditches or crossing would be upsized, land that is irrigated downstream of such improvements would benefit from improved capacity. No depreciation of land would occur due to deprivation of irrigation water.

The Fort Belknap Irrigation District facilities cross the highway six times, at RPs 398.5, 399.0, 399.5, 400.6, 403.2, and 404.5. The Alfalfa Valley Irrigation District facilities cross US 2 four times, at RPs 405.7, 406.1, 406.8, and 407.0. The Zurich Irrigation District facilities cross US 2 at RP 418.8. The Harlem Irrigation District canals cross US 2 twice: the Harlem Canal crosses at RP 425.7 and the Lower Canal crosses at RP 427.9. Each of these lateral crossings would be physically impacted by this alternative. See also Section 4.3.5, Wetlands, for additional information on impacts to non-jurisdictional ditches and canals.

The Fort Belknap Irrigation District contains irrigation facilities that run parallel and adjacent to US 2 in the following locations: RP 398.3 to 398.5; RP 400.6 to 402.3; and RP 403.0 to 403.6. The Alfalfa Valley Irrigation District contains one irrigation facility that runs parallel and adjacent to US 2 from RP 404.5 to 408.0. The Harlem Canal runs parallel and adjacent to the highway from RP 421.0 to 422.4. Each of these facilities would experience longitudinal impacts under this alternative.

There are no irrigation facilities crossing or paralleling US 2 west of the Milk River Bridge, and therefore no irrigation impacts would occur west of the Milk River Bridge under any of the alternatives. The two center pivot irrigation systems south of the highway between Chinook and Zurich would not be impacted by this alternative.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The total area of land impacted by the additional right-of-way required by this alternative is approximately 124.2 ha (307.0 ac). Irrigated land taken as right-of-way under this alternative amounts to linear parcels of land adjacent to the highway. Conservatively estimating that the entire right-of-way requirement consists of irrigated farmland, the impacted area would represent only 0.6 percent of the irrigated land in Hill and Blaine counties. Because land lost to right-of-way would be negligible, the existing irrigation facilities would remain appropriately sized for the land they irrigate. The irrigation facilities in each district would experience similar lateral and longitudinal impacts as described in the Improved Two-Lane Alternative.

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Four-Lane Undivided Alternative

The total area of land impacted by the additional right-of-way required by this alternative is approximately 137.5 ha (339.8 ac). Irrigated land taken as right-of-way under this alternative amounts to linear parcels of land adjacent to the highway. Conservatively estimating that the entire right-of-way requirement consists of irrigated farmland, the impacted area would represent only 0.7 percent of the irrigated land in Hill and Blaine counties. Because land lost to right-of-way would be negligible, the existing irrigation facilities would remain appropriately sized for the land they irrigate. The irrigation facilities in each district would experience similar lateral and longitudinal impacts as described in the Improved Two-Lane Alternative.

Four-Lane Divided Alternative

The total area of land impacted by the additional right-of-way required by this alternative is approximately 181.0 ha (447.2 ac). Irrigated land taken as right-of-way under this alternative amounts to linear parcels of land adjacent to the highway. Conservatively estimating that the entire right-of-way requirement consists of irrigated farmland, the impacted area would represent only 0.9 percent of the irrigated land in Hill and Blaine counties. Because land lost to right-of-way would be negligible, the existing irrigation facilities would remain appropriately sized for the land they irrigate. The irrigation facilities in each district would experience similar lateral and longitudinal impacts as described in the Improved Two-Lane Alternative.

Mitigation

For all alternatives, mitigation of lateral impacts to irrigation facilities in each district will consist of reconstruction by MDT of the existing culverts to maintain existing size and flow requirements. Operators of the irrigation districts will be contacted for the flow requirements on their irrigation ditches during final design. These requirements will be used to size the reconstructed lateral crossings during the final design of this project. Based on preliminary discussions with the Harlem Irrigation District, the crossing of the Harlem Canal at US 2 may need to be upsized to handle more flow.

For all alternatives, mitigation of longitudinal impacts to facilities in each district will consist of every reasonable effort to relocate these facilities along the new roadway embankment, maintaining the capacity of the original ditch.

Impacted irrigation canals and ditches will be relocated in consultation with ditch owners to minimize impacts to farming operations.

4.2.5 Social Conditions

The social impacts of the alternatives were estimated by reviewing preliminary right-of-way plans developed for each road design alternative and reviewing context sensitive design treatments.

No-Build Alternative

This alternative would not result in any positive or negative impacts on community cohesion, travel patterns and accessibility, school districts, recreation areas, churches, businesses, police and fire protection, or highway and traffic safety. No social groups would be disproportionately affected.

Improved Two-Lane Alternative

Community cohesion. This alternative would have positive impacts on community cohesion through the implementation of context sensitive design and improved connections between communities. Several design features of the alternative such as entry features, landscape treatments, pedestrian/bicycle paths and crossings, and signage would promote a more cohesive sense of community along the Hi-Line. Improved connections between communities are discussed under travel patterns and accessibility impacts.

The traffic safety and operations improvements described in Section 4.1.2, Safety and Section 4.1.3, Traffic Operations would also strengthen cohesion between the communities in the corridor. US 2 serves as the only link between Havre, Lohman, Chinook, Zurich, Harlem, and Fort Belknap, and the highway supports the daily movement of study area residents to do shopping, reach services, or commute to jobs. Many residents view the entire project study area as one large community. Additional information on the economic relationships between the study area communities can be found in *US 2, Havre to Fort Belknap EIS, Existing Economic Conditions Report* (ICF Consulting, 2003b).

Travel patterns and accessibility. This alternative would provide direct accessibility benefits by improving vehicular access to businesses located adjacent to US 2. In east Havre, the center two-way left turn lane would provide better access to businesses lining US 2 east of Havre. In Harlem, left and right turn lanes would improve access to businesses lining US 2 on each side of Main Street.

Access management developed during final design would provide safety and traffic operation benefits. It would help meet the public's goal of improving the ability of motorists to get on and off the highway by concentrating movements so they can be accommodated with appropriate intersection treatments (i.e. turn lanes). Please see Section 4.1.1, Access for further discussion of these impacts.

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This alternative would provide direct accessibility benefits for pedestrians and bicyclists in the project area by strengthening connections between communities. Between residential areas east of Havre and Havre proper, a pedestrian/bicycle path would extend from the Havre city limits east to 38th Avenue and would improve access.

In Chinook, this alternative would enhance conditions for pedestrians and vehicles traveling across the railroad to or from north Chinook. Pedestrian improvements at the intersection would increase awareness of the crossing for motorists traveling on US 2. These improvements could serve to strengthen the connection between Chinook and north Chinook.

This alternative would also provide an improved pedestrian and bicycle connection between Chinook and the Sweet Memorial Nursing Home to the west. The existing sidewalk along the south side of US 2 would be improved and extended west to the pedestrian/bicycle path that runs west to the nursing home. The existing bike path would be relocated to the south within the new right-of-way.

This alternative would improve pedestrian and bicycle access between Harlem and Fort Belknap by providing a pedestrian/bicycle path extending from Main Street in Harlem to First Street in Fort Belknap.

This alternative would also improve accessibility by providing better identification of attractions through signage and entry feature additions. A signage theme common to US 2 would consistently identify cultural attractions. Using the same types of signs for identification of attractions and for interpretive signs would assist travelers in finding such locations. Improved signage would provide better identification of downtown Chinook and local attractions. In Harlem, entry features and improved signage at the primary access points would strengthen identification of the community from the highway and would better identify Lions Memorial Park to passing motorists. Entry features and improved signage at First Street and Main Street in Fort Belknap would also strengthen identification of the community from the highway.

Impacts on school districts, recreation areas, rest areas, churches, businesses, police and fire protection. There would be no impact on the school districts, recreation areas, rest areas, or churches. No population growth would be expected, and existing social services have adequate capacity to meet community needs. Wider shoulders and an improved clear zone would improve operations and safety for police, fire protection, and emergency ambulance services; please see Section 4.1.2, Safety for a discussion of these benefits.

Please see Section 4.2.6, Economic Conditions, and Section 4.2.8, Right-of-Way and Relocation of Utilities, for a discussion of impacts to businesses in the corridor.

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Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Community cohesion. Impacts would be the same as those indicated for the Improved Two-Lane Alternative. In addition, because this alternative would result in slightly greater traffic safety benefits and travel time savings than the Improved Two-Lane Alternative, it would further strengthen cohesion between the communities in the corridor. Please refer to Section 4.1.2, Safety, and Section 4.1.3, Traffic Operations for a discussion of these impacts.

Travel patterns and accessibility. Impacts would be the same as those indicated for the Improved Two-Lane Alternative with the following additional impacts. Within the sections of the corridor with passing lanes, future highway access facilities that require left turns from the passing lane would be restricted unless turn lanes are provided. Allowing left turn movements from the passing lane, given the potential concentration of passing maneuvers in the short sections of passing lanes, would be a hazardous condition that warrants access restriction.

In Chinook, the center left-turn lane through town would improve access to local streets. Please see Section 4.1.1, Access for a discussion of access impacts.

Impacts on school districts, recreation areas, rest areas, churches, businesses, police and fire protection. Impacts would be the same as those indicated for the Improved Two-Lane Alternative. Please see Section 4.2.6, Economic Conditions and Section 4.2.8, Right-of-Way and Relocation of Utilities for a discussion of impacts to businesses in the corridor.

Four-Lane Undivided Alternative

Community cohesion. This alternative would have positive impacts on community cohesion through the implementation of context sensitive design and improved connections between communities, similar to those described under the Improved Two-Lane Alternative. In addition, because this alternative would result in slightly greater traffic safety benefits and travel time savings than the Improved Two-Lane Alternative or the Improved Two-Lane with Passing Lanes Alternative, it would further strengthen cohesion between the communities in the corridor. Please refer to Section 4.1.2, Safety, and Section 4.1.3, Traffic Operations for a discussion of these impacts.

However, within Chinook, there would be an adverse effect. There would be a greater separation of north Chinook from the main town area because of the wider highway and relocation or acquisition of many businesses south of US 2.

The relocation or acquisition of these businesses would also create a significantly different landscape along US 2 than exists today. Nearly half of the businesses immediately south of US 2 would be relocated, and of the remaining businesses, nearly half are currently not operating. Travelers passing through Chinook would see much sparser business development along the highway than currently exists. US 2 does not function as Chinook's main street,

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however, and these changes may not affect community cohesion beyond the adverse effect to north Chinook described above. For a more detailed discussion of the economic impacts of business displacements, please see Section 4.2.6.2, Business Displacements.

Travel patterns and accessibility. Impacts in Havre, Harlem, and Fort Belknap would be the same as those indicated for the Improved Two-Lane Alternative. Overall corridor access management impacts under this alternative would be the same as those indicated for the Improved Two-Lane Alternative. Please refer to Section 4.1.1, Access for a discussion of these impacts.

This alternative would create additional lanes of traffic that would need to be crossed by pedestrians and vehicles traveling between north Chinook and the main part of Chinook. Pedestrian improvements would increase awareness of the crossing for motorists traveling on US 2.

Impacts to the pedestrian/bicycle connection between Chinook and the Sweet Memorial Nursing Home would be the same as those indicated for the Improved Two-Lane Alternative. Similar to the Improved Two-Lane Alternative, improved signage would better identify downtown Chinook and local attractions to tourists.

Impacts on school districts, recreation areas, rest areas, churches, businesses, police and fire protection. This alternative would not impact the school districts, recreation areas, rest areas, or churches. Wider shoulders and an improved clear zone would improve operations and safety for police, fire protection, and emergency ambulance services; please see Section 4.1.2, Safety for a discussion of these benefits.

Please see Section 4.2.6, Economic Conditions and Section 4.2.8, Right-of-Way and Relocation of Utilities for a discussion of impacts to businesses in the corridor.

Four-Lane Divided Alternative

Community cohesion. This alternative would have positive impacts on community cohesion through the implementation of context sensitive design and improved connections between communities, similar to those described under the Improved Two-Lane Alternative. In addition, because this alternative would result in greater traffic safety benefits and travel time savings than the other three build alternatives, it would further strengthen cohesion between the communities in the corridor.

However, within Chinook, there would be a greater separation of north Chinook from the main town area because of the wider highway and relocation of many businesses south of US 2. The tree lawn adjacent to the highway in this alternative would help to visually minimize the separation between north Chinook and the new frontage to the south.

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Every business immediately south of US 2 would be acquired and relocated, significantly changing the existing landscape along the highway. Similar to the Four-Lane Undivided Alternative, however, US 2 does not function as Chinook's main street, and therefore community cohesion may not be greatly affected. The addition of consistent landscaping along both sides of the highway may help to offset impacts to cohesion by providing a unified streetscape through Chinook. For a more detailed discussion of the economic impacts of business displacements, please see Section 4.2.6.2, Business Displacements.

Travel patterns and accessibility. Impacts would be the same as those indicated for the Four-Lane Undivided Alternative. Overall corridor access management impacts under this alternative would be the same as those indicated for the Improved Two-Lane Alternative. The highway would be a limited access facility consistent with MDT guidelines. The approach to managing access would vary by segment based on the access category. The presence of the median would reduce accessibility for motorists who are entering and exiting the facility. Please see Section 4.1.1, Access for a discussion of these impacts.

Impacts on school districts, recreation areas, rest areas, churches, businesses, police and fire protection. Impacts on school districts, recreation areas, rest areas, churches, police and fire protection would be the same as those indicated for the Four-Lane Undivided Alternative. More businesses would be impacted by this alternative than the other alternatives. Please see Section 4.2.6, Economic Conditions and Section 4.2.8, Right-of-Way and Relocation of Utilities for a discussion of impacts to businesses in the corridor.

Mitigation

No mitigation for any alternative.

4.2.6 Economic Conditions

The economic impacts of the alternatives were estimated through a review of economic data (employment, sales, etc.), a review of preliminary right-of-way plans developed for each road design alternative, review of context sensitive design treatments, and extensive interviews with business and community leaders in the corridor. Additional information and analysis of economic conditions in the project area and potential regional economic impacts of transportation improvements can be found in *US 2, Havre to Fort Belknap EIS, Existing Economic Conditions Report* (ICF Consulting, 2003b).

4.2.6.1 Economic Growth Impacts

No-Build Alternative

Projected population growth rates are less than one-half of 1 percent per year for both Hill and Blaine Counties through the year 2025 (NPA Data Services, August 2002). The No-

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Build Alternative would not likely result in any change to the current economic conditions or projected growth rates.

Improved Two-Lane Alternative

As discussed in Section 4.2.2, Land Use, proposed highway improvements would not be expected to induce growth beyond current population projections for either county, and no substantial, foreseeable, induced development would be anticipated.

The largest industries by both employment and earnings in the two counties are government, retail, and services. Additional economic growth initiatives have been proposed in these sectors as well as the tourism, agriculture, manufacturing, and energy sectors. This alternative would be unlikely to create substantial growth in these industries, as described in detail below, and would not be expected to generate many additional jobs in the corridor. As discussed at the end of this section under Business Displacement Impacts, any displaced businesses that do not relocate would cause a permanent loss of jobs and business activity in the corridor as well as a loss of property tax revenue.

This alternative would also result in some limited economic benefits to the economy of the corridor communities. There would be some economic benefits to traveler-serving businesses and tourist attractions as a result of improved highway signage. There may also be small economic benefits to some businesses as a result of improved traffic safety. However, this alternative, like the other alternatives, is unlikely to create substantial growth in the major sectors of the corridor economy since growth is dependent on a variety of factors other than the current condition of US 2. These factors include distance to markets, lack of capital and market demand constraints.

Tourism Sector. The corridor contains a number of historical, cultural, and natural resource attractions. In addition, the proximity of Glacier National Park to the west on US 2 means that the study area experiences relatively high volumes of pass-through tourism traffic, particularly during the summer months. The tourism sector would be likely to experience small, direct economic benefits from this alternative due to improved identification of the area's attractions and therefore a larger portion of US 2 travelers stopping to visit attractions. A signage theme common to US 2 would consistently identify the cultural attraction signage and assist the traveler in finding such locations. Improved signage would also provide better identification of downtown Chinook, Harlem, and Fort Belknap. Direct contributions to retail sales and possibly business growth in these areas would result from these improvements, although the benefits are likely to be small.

Agricultural sector. This alternative is unlikely to result in economic growth in the agricultural sector. Although the agricultural sector relies heavily on US 2 to transport crops, livestock, and supplies, transport costs for agricultural producers in the area are driven primarily by shipping distance. There is no evidence that the current condition of US 2 is adversely affecting the profitability of farmers and ranchers in Hill and Blaine Counties.

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Given the distance to markets faced by producers in the area and the relatively high level of service associated with the No-Build Alternative, the Improved Two-Lane Alternative would not substantially affect the economic outlook for farming and ranching in the study area.

Manufacturing sector. The Improved Two-Lane Alternative is unlikely to result in substantial economic growth in the manufacturing sector. A small number of manufacturing ventures do reportedly suffer from the narrow roadway and related safety issues in the corridor, and safety and operational improvements to the segment may result in lower transport costs for these firms and improve their competitiveness. However, a review of manufacturing initiatives that have failed in the corridor or have relocated to another location suggests that, while transportation factors such as the distance to market and high freight rates may have contributed to the lack of success, failure cannot be attributed to the conditions of the US 2 segment. Moreover, discussions with economic development experts in the corridor communities suggest that factors such as lack of capital and distance to market rather than the current condition of US 2 hinder the growth or establishment of manufacturing businesses.

Energy sector. This alternative is unlikely to result in substantial economic growth in the energy sector. The abundance of certain natural resources in the study area creates opportunities for the development of energy-related industries. In particular, the exploration and production of natural gas has seen considerable growth in recent years. Although the natural gas industry uses US 2 and its feeder road system to transport inputs (labor, machinery, and supplies) into and around the project area, the economic outlook of this sector is driven almost entirely by market prices for energy and availability of energy resources and is not affected by the condition of US 2.

Government sector. There are several important and growing public sector activities in the study area. One is the regional headquarters of the US Border Patrol, located in Havre, which relies on US 2 to access Canadian border crossings across all of north-central Montana. Another is a proposed munitions training facility for the Montana Air National Guard, which is currently planned for location in Phillips County, east of the study area. A third is the region's educational institutions, particularly Montana State University-Northern, which has several new initiatives underway including new degree programs and the construction of an applied research facility. These institutions and agencies rely on US 2 for the safe and reliable movement of employees and students. However, because they are government-funded activities to serve public needs, they are unlikely to expand or generate more economic benefits for the study area as a result of US 2 improvements.

Retail and services sectors. This alternative would have few direct impacts on established business districts. There would be some accessibility benefits for the businesses lining US 2 east of Havre from the addition of a center two-way left turn lane. In Harlem, left and right turn lanes would improve access to businesses lining US 2 on each side of Main Street. In these areas, there may be small direct contributions to retail sales and possibly business growth as a result of this alternative.

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The retail and services sectors combined employ more than half the workforce in the corridor. Most retail and service businesses sell their products primarily to local residents or, in the case of Havre, to local residents plus those in surrounding communities. Retail sales in the study area have been helped in the past year by a stronger Canadian dollar, although Canadian shoppers account for only a small portion of study area retail sales. This sector is therefore less of a potential economic growth engine than businesses that sell products outside the region. As described under the tourism sector, traveler-serving businesses are likely to experience small, direct economic benefits from this alternative due to improved identification of the area's attractions. However, with the possible exception of the limited instances described above, most retail and service establishments are unlikely to contribute to regional economic growth by expanding operations or locating in the study area as a result of this or any of the alternatives.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The effects of this alternative on economic and employment growth in the tourism, agricultural, manufacturing, energy, government, and retail/services sectors would be similar to those described for the Improved Two-Lane Alternative. The passing lanes included in this alternative may improve safety and reduce overall travel times but would not provide additional improved access to local businesses or otherwise provide economic or job growth benefits.

Four-Lane Undivided Alternative

The effects of this alternative on economic and employment growth in the tourism, agricultural, manufacturing, energy, government, and retail/services sectors would be similar to those described for the Improved Two-Lane Alternative. The additional travel lanes included in this alternative may improve safety and reduce overall travel times but they would not provide improved access to local businesses beyond that provided by the Improved Two-Lane Alternative or otherwise provide economic or job growth benefits. As discussed below under Section 4.2.6.2, Business Displacement Impacts, displaced businesses that do not relocate would cause a permanent loss of employment and income and loss of property tax revenue in the corridor. Indirect impacts to the economy could result in Chinook, where the majority of the business impacts occur.

Four-Lane Divided Alternative

The effects of this alternative on economic and employment growth in the tourism, agricultural, manufacturing, energy, government, and retail/services sectors would be similar to those described for the Four-Lane Undivided Alternative.

Mitigation

No mitigation for any alternative.

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4.2.6.2 Business Displacement Impacts

Business displacements would result from right-of-way impacts to businesses in the project corridor under each alternative. In some instances, businesses would be impacted by proposed right-of-way, but they would fall outside of the construction limit. The impacts to businesses have been identified based on the current level of conceptual design. The actual impacts may vary depending on final design. All potentially impacted businesses are listed in Table 4.5.

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Table 4.5 Impacts to Business Structures by Alternative¹

Segment	Business & Location	Alternatives				
		No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Havre East Rural	Auction yard, east of Havre	None	Impacted ²	Impacted ²	Impacted ²	Impacted
	Briese Brothers, east of Havre (two buildings)	None	None	None	None	Impacted ²
Lohman	Plainsman Bar, west of Lohman	None	None	None	None	Impacted ²
	Midway Tavern, Lohman (not currently operating)	None	Impacted ²	Impacted ²	Impacted ²	Impacted
	Closed business, Lohman (not currently operating) (two buildings)	None	Impacted ²	Impacted ²	Impacted ²	Impacted
Chinook Urban	Sweet Memorial Nursing Home, Chinook	None	Impacted ²	Impacted ²	Impacted ²	Impacted ²
	Hesston, Chinook	None	None	None	None	Impacted
	Hardware store, Chinook (not currently operating)	None	None	None	None	Impacted
	Auto parts store, Chinook (not currently operating)	None	None	None	None	Impacted
	Gas station near Bear Paw Court Motel, Chinook (not currently operating)	None	None	None	None	Impacted
	Cenex, Chinook	None	None	None	Impacted	Impacted
	Tastee Bite Café, Chinook (not currently operating)	None	None	None	Impacted	Impacted
	Town Pump /Lucky Lil's ³ , Chinook	None	None	None	None	Impacted ³
	Jamieson Motors, Chinook	None	None	None	Impacted	Impacted
	Chinook Visitor Center, Chinook	None	None	None	None	Impacted
	Chinook Motor Inn, Chinook	None	None	None	None	Impacted
	Precision Body Shop, Chinook	None	None	None	None	Impacted

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Table 4.5 Impacts to Business Structures by Alternative (continued)

Segment	Business & Location	Alternatives				
		No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Chinook Urban (continued)	B&L Mechanics, Chinook	None	None	None	Impacted	Impacted
	Scott's Autobody, Chinook	None	None	None	Impacted	Impacted
	Pehrson's Exxon, Chinook	None	None	None	Impacted	Impacted
	DePriest GMC, east of Chinook	None	Impacted	Impacted	Impacted	Impacted
	Ezzie's Wholesale, east of Chinook	None	Impacted	Impacted	Impacted	Impacted
Zurich	Monarch Auto Sales, east of Chinook (two buildings)	None	Impacted	Impacted	Impacted	Impacted
	Diamond Asphalt Refinery, east of Chinook (not currently operating)	None	Impacted ²	Impacted	Impacted	Impacted
	Spa Bar, Zurich (not currently operating)	None	Impacted	Impacted	Impacted	Impacted
Harlem to MT Highway 66	Hart of the West, Harlem	None	None	None	Impacted ²	Impacted ²
	McGuire's Motel, Harlem	None	Impacted ²	Impacted ²	Impacted ²	Impacted ²

¹ Impacts are based on conceptual design and may change during final design.² Structures would fall within right-of-way limits but would not be within the construction limits.³ Site includes two businesses.

No-Build Alternative

There would be no impacts to businesses under this alternative.

Improved Two-Lane Alternative

This alternative would impact six operating businesses in the project corridor. The impacted businesses employ approximately 67 workers. Of these businesses, three businesses would be within the construction limits (see Table 4.5 above) and would likely be displaced. The remaining businesses would fall within the proposed right-of-way limits but would be outside of the construction limits. Avoidance or minimization of impacts to businesses would be considered, if feasible, during final design.

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Four of the impacted operating businesses are outside of the incorporated Chinook city limits but are near Chinook (Monarch Auto Sales is located in the Zurich highway design segment but is near Chinook). One of these businesses, the Sweet Memorial Nursing Home, would fall within the proposed right-of-way but would not be impacted by construction and, therefore, may be avoided during final design. The remaining three businesses would be impacted by construction and may not be able to relocate on their existing parcels. In the case of one auto dealer (DePriest GMC), there is room on the lot for relocation, but environmental conditions and building requirements may make it financially challenging to rebuild. The other two Chinook area businesses, Ezzie's Wholesale and Monarch Auto Sales, rely on proximity to US 2 for business viability. Relocation within Chinook would be challenging, but there are other areas where vacant property borders US 2 that may be suitable for relocation. There would be no direct impacts to businesses in the incorporated city limits of Chinook because the roadway improvements would be kept within the existing right-of-way in this location. Some businesses in Chinook could be indirectly affected by a loss of some on-street parking spaces. On-street parking would be maintained on both sides of US 2 through Chinook in this alternative; however, sight distance requirements at intersections with US 2 would eliminate some on-street parking in those areas to improve safety. Auxiliary lanes at the Indiana Street intersection would eliminate parking on the south side of US 2 between New York and Ohio Streets and on the north side of US 2 between New York and Illinois Streets.

In addition to the four businesses impacted near Chinook, a motel in Harlem (McGuire's Motel) and a stockyard east of Havre would fall within the proposed right-of-way limits. They would not fall within the construction limits, however, and therefore may be avoided during final design.

During the right-of-way acquisition process, which typically occurs well in advance of construction, a relocation advisor from MDT will maintain listings of commercial properties to help businesses find comparable properties, and will work with businesses to increase the likelihood of relocating within the same community. For additional information on MDT's Relocation Assistance Program, please contact the MDT Right-of-Way Bureau at P.O. Box 201001, Helena, MT, 59620-1001, phone (406) 444-6055.

The conversion of private land to public right-of-way, as well as any permanent business closures resulting from the alternative, would cause a loss of property tax revenue in both Hill and Blaine Counties. If displaced businesses are able to relocate to currently vacant or underutilized parcels, the resulting property tax revenue would partially offset this loss. There would be no loss of property tax revenues within the incorporated Chinook city limits because this alternative would remain within the existing highway footprint through town. Relocation or acquisition costs would be approximately \$900,000.

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Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The impacts to businesses under this alternative would be similar to those described for the Improved Two-Lane Alternative. An additional impact would be the loss of some on-street parking spaces on the highway in Chinook due to the removal of the north parking lane on US 2 in Chinook under this alternative. The parking lane would be removed to accommodate the two-way center left-turn lane, which would improve safety, especially at Indiana Street.

Four-Lane Undivided Alternative

This alternative would impact twelve operating businesses in the project corridor. The impacted businesses employ over 105 workers. Of these businesses, eight businesses would be within the construction limits (see Table 4.5 above) and would likely be displaced. The remaining businesses would fall within the proposed right-of-way limits but would be outside of the construction limits. Avoidance or minimization of impacts to businesses would be considered, if feasible, during final design.

Nine of the twelve impacted operating businesses are in or near Chinook (including the four businesses discussed under the Improved Two-Lane Alternative). The widening of US 2 to four travel lanes with parking in Chinook would result in the need for additional right-of-way. The railroad is located on the north side of the highway and therefore the widening would occur to the south, impacting approximately half of the businesses on US 2 within Chinook. Similar to the Improved Two-Lane Alternative, the nursing home west of Chinook would fall within the proposed right-of-way limits but would not be impacted by construction and, therefore, may be avoided during final design. The remaining eight businesses (including two vehicle repair and service businesses, two vehicle sales and service businesses, two vehicle retailers, and two businesses selling fuel) would be impacted by construction. Per conversations with business owners in and near Chinook, only four of these businesses may be able to relocate on their current parcels (Cenex, Jamieson Motors, Scott's Autobody, and Pehrson's Exxon). The remaining four businesses may therefore be required to relocate to another parcel. All of these businesses depend on proximity to the highway for their viability. These impacted businesses would need to relocate to a site adjacent to the highway to maintain viability, which would be difficult due to the limited developable frontage along US 2 in Chinook. The railroad prevents business frontage along the north side of US 2, and the only opportunities for relocation on the south side of US 2 are three parcels occupied by businesses that are currently not operating. Additionally, the properties south of US 2 are contaminated by numerous leaking underground storage tanks. This contamination is widespread and decreases property values and would be encountered by any business trying to relocate to another property on US 2 in Chinook.

Three of the impacted businesses that may not be able to relocate on their current parcels were discussed under the Improved Two-Lane Alternative (DePriest GMC, Ezzie's Wholesale, and Monarch Auto Sales). The fourth, B&L Mechanics, provides auto repair services for the local and regional area. This business could potentially retain auto sales on

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the property but would have a difficult time retaining the auto repair services. Any relocation may entail a temporary disruption of business. Several business owners have indicated that they may elect to cease operation if faced with the prospect of relocation.

In addition to the nine impacted businesses in or near Chinook, the motel in Harlem and stockyard east of Havre would be impacted as discussed under the Improved Two-Lane Alternative. One additional operating business in Harlem, Hart of the West, would be impacted by this alternative. All three of these businesses would fall within proposed right-of-way limits but would not fall within the construction limits and may, therefore, be avoided during final design.

Any displaced business that does not relocate would cause a permanent loss of employment and income. Employment and income losses from displaced businesses could also reduce employment and income elsewhere in the project corridor through decreased spending on goods and services. The loss of businesses along the south side of US 2 in Chinook would also result in fewer supplier and buyer opportunities for businesses in Chinook. If a large number of the displaced businesses are unable to relocate, there would be indirect impacts to the Chinook economy, where the majority of business impacts occur. Chinook residents, and residents in surrounding areas who use these services in Chinook, would need to obtain these services elsewhere. In particular, the disproportionate number of auto-related businesses that would be impacted would reduce options for auto repair and sales services in the community if these businesses do not relocate. While business patrons may be able to obtain some of these services in Harlem or Fort Belknap, they would need to travel to Havre for the majority of them because of the limited services available in the rest of the project corridor.

In addition to physical and right-of-way impacts, businesses in Chinook could be affected by a loss of some on-street parking spaces due to sight distance requirements at intersections and auxiliary lanes at the Indiana Street intersection.

The conversion of private land to public right-of-way, as well as any permanent business closures resulting from the alternative, would cause a loss of property tax revenue in both Hill and Blaine Counties. This alternative would cause a loss in property tax revenues for Chinook of approximately \$10,000 annually, or 1.5 percent of the city's total property tax revenue, if businesses are unable or choose not to relocate. If displaced businesses were able to relocate to currently vacant or underutilized parcels, the resulting property tax revenue would partially offset these losses. Relocation or acquisition costs would be approximately \$1.8 million.

Four-Lane Divided Alternative

This alternative would impact more businesses than any other alternative. Twenty operating businesses would be impacted, three-quarters of which are located in or near Chinook. The impacted businesses employ approximately 170 workers. Of these businesses, fifteen businesses would be within the construction limits (see Table 4.5 above) and would likely be

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displaced. The remaining businesses would fall within the proposed right-of-way limits but would be outside of the construction limits. Avoidance or minimization of impacts to businesses would be considered, if feasible, during final design.

Fifteen of the twenty impacted operating businesses are in or near Chinook. The widening of US 2 to four travel lanes with parking, a center turn lane, sidewalks, and landscape amenities, along with the increased offset from the railroad at Indiana Street, would result in the greatest right-of-way requirement of the build alternatives. This alternative would displace most of the existing buildings between US 2 and Second Street in Chinook. Similar to the other alternatives, the nursing home west of Chinook would fall within proposed right-of-way limits but would not be impacted by construction. The remaining 14 businesses would be impacted by construction. Per conversations with business owners in and near Chinook, only two of the fourteen businesses (Cenex and Precision Auto Body) may be able to relocate on their current parcels. The remaining 12 businesses may therefore be required to relocate to another parcel. Nearly all of these businesses depend on proximity to US 2 for their viability, including two vehicle repair and service businesses, two vehicle sales and repair businesses, two vehicle retailers, three fuel stations, and one hotel. These impacted businesses would need to relocate to a site adjacent to the highway to maintain viability, which would be difficult due to the limited developable frontage along US 2 in Chinook and widespread contamination on properties adjacent to US 2. A number of business owners have indicated that they may elect to cease operation if faced with the prospect of relocation.

Outside of Chinook, the same businesses would be impacted in Harlem and east of Havre as discussed under the Four-Lane Undivided Alternative. Two additional operating businesses, Briese Brothers east of Havre and the Plainsman Bar near Lohman, would be impacted as well. All of these businesses except the stockyard east of Havre would fall within proposed right-of-way limits but would not fall within the construction limits and may therefore be avoided during final design. The stockyard would likely need to relocate to another parcel, and there are numerous undeveloped parcels in the area that may be suitable for relocation.

Any displaced business that does not relocate would cause a permanent loss of employment and income, which could also reduce employment and income elsewhere in the project corridor through decreased spending on goods and services. The loss of businesses along the south side of US 2 in Chinook would also result in fewer supplier and buyer opportunities for businesses in Chinook. If a large number of the displaced businesses were unable to relocate, there would be further indirect impact to the Chinook economy, where the majority of business impacts occur. In particular, the disproportionate number of auto-related businesses that would be impacted would greatly reduce options not only for auto repair and sales services, as indicated under the Four-Lane Undivided Alternative, but also fuel sales in Chinook if these businesses do not relocate. As discussed under the Four-Lane Undivided Alternative, residents using these services in Chinook would need to drive to Havre to obtain the majority of these services if they are unable to relocate in Chinook.

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The conversion of private land to public right-of-way, as well as any permanent business closures resulting from the alternative, would cause a loss of property tax revenue in Hill and Blaine counties. This alternative would cause a loss in property tax revenues for Chinook of approximately \$25,000 annually, or 4 percent of the city's total property tax revenue, if businesses are unable or choose not to relocate. Blaine County would also experience a small loss of revenues. If displaced businesses are able to relocate to currently vacant or underutilized parcels, the resulting property tax revenue would partially offset these losses. Relocation or acquisition costs would be approximately \$2.7 million.

Mitigation

In general, the proposed right-of-way for each alternative would provide a consistent corridor width in which the travelway, clear zone, and drainage would be accommodated. In specific locations, this right-of-way area may be reduced to minimize impacts, if safety is not compromised. In particular, right-of-way minimization will be considered under each alternative at those businesses outside the construction limits (identified above in Table 4.5). Even if right-of-way is minimized to avoid impacting structures, business operations such as parking, circulation, or access could still be impacted.

Mitigation measures that will be considered to avoid or minimize impacts include reconfiguring accesses, steepening the side slopes adjacent to the roadway, constructing a retaining wall, or shifting the alignment. Final design should evaluate the practicality and benefit of such measures while weighing risk, safety, and the ability of the business to operate with either direct or indirect (i.e. loss of parking or limited access) impacts. During final design, these potential avoidance or mitigation measures will be weighed with the ability of the business to operate for its intended use or identify additional design requirements to allow the business to continue operating.

The acquisition of land or improvements for highway construction is governed by state and federal laws and regulations designed to protect both the landowners and taxpaying public. Landowners affected are entitled to receive fair market value for any land or buildings acquired and any damages as defined by law to remaining land due to the effects of highway construction. This action will be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646 as amended), (42 U.W.C. 4601, et. seq.) and the Uniform Relocations Act Amendments of 1987 (P.L. 100-17).

Improved Two-Lane. Shifting the alignment in specific locations to minimize business displacement was investigated. However, any shifts in the alignment would result in a tradeoff of impacts, such as safety or another relocation; therefore shifting the alignment would not minimize impacts. Since this alternative includes the narrowest typical section that would provide safety improvements to meet the project purpose and need, the alternative has included the minimization of impacts into the design. Within Chinook, to avoid and minimize impacts, improvements to US 2 would be kept within the existing right-of-way. Specific design measures such as steeping sideslopes, constructing retaining walls, or

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minimizing right-of-way will be investigated at individually impacted sites during final design.

Improved Two-Lane with Passing Lanes (Preferred Alternative). Since the same sites are impacted as in the Improved Two-Lane Alternative, the mitigation would also be the same.

Four-Lane Undivided. As with both two-lane alternatives, the proposed alignment was designed to minimize impacts. In the rural areas of the corridor the Four-Lane Undivided Alternative is the narrowest four-lane typical section, which results in minimizing impacts associated with a four-lane alternative.

In Chinook, where the majority of impacts occur, several urban typical section modifications were assessed. An alternative was examined, called Four Narrow Lanes Through Chinook, that would provide four travel lanes within the existing US 2 curb lines. However, the existing highway section through Chinook cannot accommodate four travel lanes that meet current MDT design standards, therefore the alternative was dismissed for safety reasons (see Section 2.9.2). Other options examined included elimination of one of the proposed parking lanes and/or sidewalks through Chinook under the Four-Lane Undivided Alternative. The proposed sidewalk on the north side of US 2 through Chinook would lie north of the existing north curb line and would not affect any buildings on that side of the highway; eliminating this sidewalk would therefore not minimize impacts. The proposed sidewalk on the south side of the highway through Chinook is required to serve pedestrians walking to and from businesses adjacent to US 2. Further, removing the sidewalk did not narrow the roadway enough to reduce impacts to businesses.

The removal of one parking lane in Chinook would reduce the roadway width by 3 m (10 ft). Although the narrower roadway footprint would impact two fewer businesses in Chinook, those businesses would nonetheless be displaced because their proximity to the roadway would not allow for adequate sight distance for vehicles turning on to US 2. There is no feasible minimized alternative for a four-lane highway in Chinook beyond that proposed for the Four-Lane Undivided Alternative. As discussed above, both of the two-lane alternatives would minimize impacts in Chinook and the rural corridor.

Four-Lane Divided. Similar to the other build alternatives, the proposed alignment was designed to minimize impacts.

In Chinook, where the majority of impacts occur, an enhanced landscaping treatment including a tree lawn on both sides of US 2 and space for additional pedestrian amenities such as benches would be incorporated into the design to offset the economic impacts of displacing existing businesses. These features would improve the aesthetics, and could make the area more attractive to businesses, and encourage travelers to stop in Chinook for services.

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As discussed above, both the two-lane alternatives and the Four-Lane Undivided Alternative would minimize business displacement impacts in Chinook and the rural corridor resulting from the Four-Lane Divided Alternative.

4.2.7 Environmental Justice

The communities of Fort Belknap and Harlem have substantially higher number of minorities (Native Americans) than the state and are considered minority communities for the purposes of environmental justice analysis. In addition, the entire project area is low-income in relation to the rest of the state of Montana. Within the corridor, Fort Belknap and Harlem have higher percentages of people living in poverty. One neighborhood east of Havre has been identified as low-income by the CAC. Impacts to the corridor communities and to specific neighborhoods, businesses, and individuals (to the extent possible while maintaining privacy consideration for corridor residents) were analyzed to determine if there were any "disproportionately high and adverse human health or environmental effects" resulting from any of the project alternatives.

No-Build Alternative

The no-build alternative would not benefit minority and low-income populations through implementation of the improved community transitions, accesses, connections, and signage, which would be achieved under any of the build alternatives. There would be no adverse impacts such as residential or business relocations and no increase or decrease in community services resulting from the No-Build Alternative.

Improved Two-Lane Alternative

All of the corridor communities, and particularly communities of Harlem and Fort Belknap, would experience some positive effects from implementation of this or any of the build alternatives through improved community transitions, improved accesses to businesses, strengthened connections between communities, improved community identity through entry features and improved signage, improved pedestrian and bicycle movements within communities, and improved awareness for passing motorists of cultural attractions in these areas.

Minority Populations

The Fort Belknap Reservation would not be adversely impacted by this or any other build alternative. There would be no right-of-way acquisition on tribal land. A proposed bike path, which is considered by Fort Belknap as an amenity, would be constructed on an easement adjacent to US 2 and accessible to the Reservation and Harlem communities. None of the natural or cultural resources on the Reservation would be affected by the implementation of any of the build alternatives. Easier highway access and improved signage could benefit public exposure to tribal cultural resources.

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For this project, potential adverse social/community impacts are generally associated with right-of-way and relocations requirements and potential loss of or decreased convenience of access to private business services.

None of the relocation impacts would disproportionately affect minority communities of Fort Belknap and Harlem. As shown in Section 4.2.8, Right-of-Way and Relocation of Utilities, no right-of-way is needed from the Fort Belknap Reservation, and the right-of-way required within Harlem is similar to other corridor locations. Of the 32 potential relocations, none are located in the Fort Belknap Reservation and only three (a utility substation, one business, and one residence) are located in Harlem. The business and residence would fall within the proposed right-of-way limits but would not be within the construction limits and may therefore be avoided in final design. The utility substation would be impacted by construction and would need to be relocated. There are available parcels in the area for relocation of any of these structures. Therefore, the adverse impact from relocations for this project would not be predominately borne by a minority population; and the adverse impact suffered by the minority population would not be more severe or greater in magnitude than the adverse impact that would be suffered by the non-minority population. There would be no “disproportionately high and adverse human health or environmental effect” on minority populations due to the relocations.

Low-Income Populations

The only “readily identifiable” low-income neighborhood (outside of Fort Belknap) is located east of Havre. The residences in this area were avoided in preliminary design under all of the build alternatives and are therefore not adversely affected. The addition of a sidewalk in front of the mobile home park would provide an amenity and improve safety and pedestrian access to this neighborhood. Noise levels from the highway improvements in this area would not increase beyond acceptable standards or be “substantially increased” over existing conditions (see Appendix G).

Low-income *persons* may be adversely affected by relocations of a personal residence or business/employer. Under the Improved Two-Lane Alternative, five occupied residences and six operating commercial properties would be affected. Other relocations would be an abandoned residence, non-operating businesses, outbuildings, or utility substations.

There is available housing stock within the corridor to accommodate residential relocations, and relocations would be implemented in compliance with equity requirements of federal and state relocation procedures and would not result in an adverse impact to relocated residents.

Four of the business relocations are located near Chinook, one in Harlem, and one in a rural area east of Havre. As noted in Section 4.2.6.2, Business Displacements, the Havre and Harlem businesses and one business near Chinook may be able to be avoided during final design. The remaining three businesses near Chinook may not be possible to relocate in the same community because of a lack of viable sites fronting US 2. These three impacted

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businesses in Chinook employ a total of 10 people. Potentially impacted jobs could be low wage jobs, but it is unknown whether the households to which these employees belong qualify as low-income on the basis of poverty thresholds as there may be one or more wage earner in the household.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Impacts under this alternative would be similar to those indicated for the Improved Two-Lane Alternative. Positive impacts would be similar, and relocations would be identical.

Four-Lane Undivided Alternative

Minority Populations

Impacts would be similar to those described under the Improved Two-Lane Alternative for minority populations in Harlem and Fort Belknap. As described below, the availability of auto sales and repair services in Chinook could be reduced if impacted businesses were not able to or did not choose to relocate, thereby placing additional demand on other businesses with those services in Chinook. If the remaining services are not adequate for the demand, those residents in Harlem and Fort Belknap using such services may need to travel farther to obtain these services in Havre or Malta.

Low-Income Populations

Impacts to neighborhoods east of Havre and in Harlem and Fort Belknap would be similar to those indicated for the Improved Two-Lane Alternative. In the Chinook area, as discussed in Section 4.2.6.2, Business Displacements, eight operating businesses would be impacted by the project construction limits, potentially affecting both jobs and availability of services if the businesses did not or could not relocate. The eight businesses in Chinook employ approximately 49 people. Based on preliminary design and information provided by business owners, four of these eight businesses could likely relocate on their existing properties. The four businesses that may not be able to relocate employ approximately 17 people.

If owners of the four businesses that could not relocate on their existing properties were not able to or did not choose to relocate on a different site, as many as 17 jobs would be lost in Chinook. A number of auto sales and repair services would be eliminated in Chinook, placing additional demand on other sales and repair services in town. Business owners report that auto repair services are already overloaded in Chinook. If the remaining services were not adequate for the demand, residents of Chinook and nearby communities would need to travel farther to obtain these services in Havre. As a community, Chinook is low-income in comparison with the state and nation but average within the corridor. Wage and commute information is not available for the workers at these businesses to establish whether the impacts of job loss may affect low-income persons or whether the relocation of the jobs to another area in the corridor would present a hardship for workers commuting to a new

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location. It is unknown whether the households to which these employees belong qualify as low-income on the basis of poverty thresholds as there may be one or more wage earner in the household.

Four-Lane Divided Alternative

Minority Populations

Impacts would be similar to those described under the Improved Two-Lane Alternative for minority populations in Harlem and Fort Belknap. However, as described below, an even greater number of automotive services could be impacted in Chinook, creating a greater likelihood of longer travel to Havre or Malta for Harlem and Fort Belknap residents to obtain these services.

Low-Income Populations

Impacts would be similar to those indicated for the Four-Lane Undivided Alternative with the exception of impacts in Chinook. As discussed in Section 4.2.6.2, Business Displacements, 14 operating businesses would be impacted by the project construction limits, potentially affecting both jobs and availability of services if the businesses did not or could not relocate. The 14 businesses in Chinook employ approximately 113 people. Based on preliminary design and information provided by business owners, two of these 14 businesses could likely relocate on their existing properties. The 12 businesses that may not be able to relocate employ approximately 97 people.

If owners of the Chinook businesses that could not relocate on their existing property were not able to or did not choose to relocate on a different site, as many as 97 jobs would be lost in Chinook, and most automotive sales, automotive repair services, and fuel stations in Chinook would be eliminated. Additionally, business owners report that auto repair services are already overloaded in Chinook. While Havre could likely absorb the additional demand, residents of Chinook and nearby communities would have to commute much longer distances for these services as well as fuel stations and auto dealers.

Mitigation

Please see Section 4.2.6.2, Business Displacements and Section 4.2.8.2, Relocations for mitigation for relocations.

4.2.8 Right-of-Way and Relocation of Utilities

4.2.8.1 Right-of-Way

Under each of the build alternatives, additional right-of-way would need to be acquired by MDT to accommodate any new alignment and/or road widening. In some cases, right-of-

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way acquisitions may require relocating homes, businesses, out buildings, and/or utility structures (see Section 4.2.8.2, Relocations, below). Table 4.6 summarizes the right-of-way requirements of each of the alternatives.

The right-of-way requirements that have been identified at this time are conceptual due to the current level of design. In some instances, the right-of-way impacts might be less depending on refinements during final design.

In general, right-of-way for the rural areas was set either approximately 3 m (10 ft) from the proposed construction limit (cut and fill line) or by MDT's standard right-of-way section, whichever was greater. Right-of-way in urban areas was set approximately 1 m (3 ft) behind back of sidewalk.

Table 4.6 Right-of-Way Requirements

Right-of-Way	Alternatives				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Existing MDT-Owned Right-of-Way	310.7 ha (767.8 ac)	310.7 ha (767.8 ac)	310.7 ha (767.8 ac)	310.7 ha (767.8 ac)	310.7 ha (767.8 ac)
Additional Right-of-Way Required	0	104.3 ha (257.6 ac)	123.8 ha (305.9 ac)	136.3 ha (336.7 ac)	179.3 ha (443.1 ac)
Total Right-of-Way Area Required	310.7 ha (767.8 ac)	415.0 ha (1,025.4 ac)	434.5 ha (1,073.7 ac)	447.0 ha (1,104.5 ac)	490.0 ha (1,210.9 ac)

In addition to the right-of-way requirements identified in Table 4.6, it is likely that a construction easement with BNSF will be necessary to accommodate grading of side slopes and drainage improvements during construction of the new roadway. Table 4.7 summarizes potential area of permanent construction impacts on BNSF Railway right-of-way for each of the alternatives.

Table 4.7 BNSF Railway Easement Requirements

Alternatives				
No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
0	3.0 ha (7.4 ac)	3.9 ha (9.7 ac)	4.1 ha (10.2 ac)	14.7 ha (36.4 ac)

Table 4.8 summarizes the additional right-of-way requirements by land use type and ownership for each of the alternatives. The impacts summarized in this table are for right-of-way acquisitions only; potential impacts to structures are discussed in Section 4.2.8.2 below.

Potential right-of-way requirements on public lands include Federal (BLM), State of Montana (including DNRC), and Blaine County (Airport Commission and Fairgrounds) lands. MDT will apply for formal right-of-way easements across publicly owned lands. Private land potential right-of-way requirements include residential, commercial and agricultural lands. Potential utility right-of-way requirements include property owned by local utilities. No tribal land would be required for additional right-of-way.

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Table 4.8 Additional Right-of-Way Requirements by Land Use Type and Ownership

Land Use Type	Alternatives				
	No-Build	Improved Two-Lanes	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Public Land	-	1.9 ha (4.8 ac)	1.9 ha (4.8 ac)	2.5 ha (6.2 ac)	4.0 ha (9.9 ac)
Private Land					
Residential	-	7.3 ha (18.1 ac)	7.4 ha (18.2 ac)	8.1 ha (20.1 ac)	10.3 ha (25.6 ac)
Commercial	-	4.5 ha (11.2 ac)	4.6 ha (11.4 ac)	6.1 ha (15.2 ac)	9.6 ha (23.7 ac)
Agricultural	-	90.2 ha (222.8 ac)	109.6 ha (270.7 ac)	119.1 ha (294.2 ac)	154.9 ha (382.9 ac)
Subtotal ¹	-	102.0 ha (252.1 ac)	121.5 ha (300.3 ac)	133.3 ha (329.5 ac)	174.9 ha (432.1 ac)
Tribal Land	-	0 ²	0 ²	0 ²	0 ²
Utilities	-	0.3 ha (0.8 ac)	0.3 ha (0.8 ac)	0.4 ha (1.0 ac)	0.4 ha (1.0 ac)
Total Additional Right-of-Way Required ¹	-	104.3 ha (257.6 ac)	123.8 ha (305.9 ac)	136.3 ha (336.7 ac)	179.3 ha (443.1 ac)

¹Totals may not equal exact sum of subtotals due to rounding.²The proposed bicycle path between Harlem and Fort Belknap would be constructed on an easement within the Fort Belknap Reservation.

Note: The right-of-way requirements that have been determined at this time are conceptual due to the current level of design.

No-Build Alternative

There would be no additional right-of-way required as a result of the No-Build Alternative.

Improved Two-Lane Alternative

The Improved Two-Lane Alternative would have the least right-of-way impact when compared to the other alternatives. The additional right-of-way required for the Improved Two-Lane Alternative would be 104.3 ha (257.6 ac). The majority (approximately 86 percent) of additional right-of-way required by this alternative would be agricultural property. The proposed bicycle path between Harlem and Fort Belknap would be

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constructed on an easement within the Fort Belknap Reservation. An additional 3.0 ha (7.4 ac) of BNSF Railway right-of-way would be required as a permanent easement.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The additional right-of-way required for the Improved Two-Lane with Passing Lanes Alternative would be 123.8 ha (305.9 ac). The majority (approximately 88 percent) of additional right-of-way required by this alternative would be agricultural property. An additional 3.9 ha (9.7 ac) of BNSF Railway right-of-way would be required as a permanent easement.

Four-Lane Undivided Alternative

The additional right-of-way required for the Four-Lane Undivided Alternative would be 136.3 ha (336.7 ac). The majority (approximately 87 percent) of additional right-of-way required by this alternative would be agricultural property. An additional 4.1 ha (10.2 ac) of BNSF Railway right-of-way would be required as a permanent easement.

Four-Lane Divided Alternative

The Four-Lane Divided Alternative would have the greatest right-of-way impact when compared to the other alternatives. The additional right-of-way required for the Four-Lane Divided Alternative would be 179.3 ha (443.1 ac). The majority (approximately 86 percent) of additional right-of-way required by this alternative would be agricultural property. An additional 14.7 ha (36.4 ac) of BNSF Railway right-of-way would be required as a permanent easement.

4.2.8.2 Relocations

Under each of the build alternatives, right-of-way requirements may result in relocating or acquiring homes, businesses, outbuildings, or utility structures. The relocation requirements that have been identified at this time are based on a conceptual level of design. After final design of the project, MDT will prepare a relocation plan based on right-of-way requirements for the selected road design.

In general, structures that fall within the proposed right-of-way but are not physically impacted (i.e. structures that would fall outside of the construction limit) will be considered during final design for avoidance or minimization measures such as minimization of right-of-way requirements. Physically impacted structures (those within the construction limit) are likely to be relocated or acquired if no feasible mitigation measures can be identified. (Please see mitigation discussion at the end of this section.)

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Table 4.9 shows the number and type of potentially impacted structures under each of the alternatives. The table identifies physically impacted structures (those within the construction limits), structures that fall within the right-of-way but are not physically impacted (those outside of the construction limits), and the total number of impacted structures. There are no residential neighborhoods, public facilities, non-profit organizations, or special family groups that would be affected by any of the alternatives.

Table 4.9 Summary of Impacted Structures Within Right-of-Way¹

Structure Type	Structure Impact	Alternatives			
		No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided
Residential	<i>Within construction limits</i>	0	0	0	1
	<i>Outside construction limits</i>	0	6	6	5
	Total	0	6	6	8
Residential Outbuilding ²	<i>Within construction limits</i>	0	3	3	4
	<i>Outside construction limits</i>	0	5	5	1
	Total	0	8	8	9
Commercial	<i>Within construction limits</i>	0	4	5	11
	<i>Outside construction limits</i>	0	8	7	8
	Total	0	12	12	19
Commercial Outbuilding ²	<i>Within construction limits</i>	0	1	1	3
	<i>Outside construction limits</i>	0	2	2	2
	Total	0	3	3	9
Utility ³	<i>Within construction limits</i>	0	3	3	3
	<i>Outside construction limits</i>	0	0	0	0
	Total	0	3	3	3
Total	<i>Within construction limits</i>	0	11	12	22
	<i>Outside construction limits</i>	0	21	20	20
	Total	0	32	32	42
					59

¹ Impacts were determined on the basis of conceptual design and may change during final design.

² Outbuildings include, but are not limited to, garages, sheds, barns, etc.

³ Utility in this table is defined as an electrical substation.

No-Build Alternative

This alternative would not impact or result in the displacement of any residences, businesses, or other structures.

Improved Two-Lane Alternative

Under this alternative, 32 residential and commercial structures, outbuildings, and utility substations would fall within the proposed right-of-way limits. Of these 32 structures, 11

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would be impacted by construction. Six residential structures and eight residential outbuildings would fall within the proposed right-of-way limits. None of the residences would be impacted by the construction limits. One of the residences is abandoned. Residential impacts are dispersed throughout the corridor.

Twelve commercial structures and three associated outbuildings would fall within the proposed right-of-way; five of the commercial structures are not associated with operating businesses. Four of the 12 commercial structures would be within the construction limits. Impacts are concentrated in Chinook and Lohman. Six commercial structures in or near Chinook would fall within the proposed right-of-way limits; three of these would be within the construction limits. Three commercial structures in Lohman would fall within the proposed right-of-way limits; these structures would not be impacted by the construction limits, and none of the structures is associated with an operating business. Impacts to businesses are discussed in greater detail in Section 4.2.6.2, Business Displacements.

Three utility substations would fall within the proposed right-of-way limits and would be impacted by construction. Two small substations would be impacted in the Lohman and Harlem West project segments. The third substation impacted would be the large power substation in Harlem. Throughout the corridor, overhead power and telephone lines would be impacted due to shifts in the roadway alignment and improved clear zone. In some cases, however, the southerly shift of the proposed alignment would not impact overhead utilities, which generally run on the north side of US 2. Utilities such as water, sanitary, electric, and gas service in local communities may require relocation. Specific plans for relocations would be coordinated in the final design phase. Numerous fences, including fenced livestock areas, would be impacted in the corridor. Existing stockpasses could also be impacted by proposed bridge replacements.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

This alternative would have similar impacts to structures, business operations, fences, and utilities from proposed right-of-way requirements as the Improved Two-Lane Alternative. In addition to the impacts detailed for the Improved Two-Lane Alternative, one additional abandoned commercial structure near Chinook would fall within the construction limits.

Four-Lane Undivided Alternative

Under this alternative, 42 residential and commercial structures, outbuildings, and utility substations would fall within the proposed right-of-way limits. Of these 42 structures, 22 would be impacted by construction. Six residential structures and nine residential outbuildings would fall within the proposed right-of-way limits. One of the residences would be impacted by the construction limits. One of the residences is abandoned. Residential impacts are dispersed throughout the corridor.

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Nineteen commercial structures and five associated outbuildings would fall within the proposed right-of-way; six of the commercial structures are not associated with operating businesses. Eleven of the 19 commercial structures would be within the construction limits. Impacts are concentrated in Chinook and Lohman, with nearly all of the additional impacts from this alternative occurring in Chinook. Twelve commercial structures in or near Chinook would fall within the proposed right-of-way limits; ten of these would be within the construction limits. Two of the structures that would be impacted by construction in and near Chinook are not associated with operating businesses. Three commercial structures in Lohman would fall within the proposed right-of-way limits; these structures would not be impacted by the construction limits, and none of the structures is associated with an operating business. Impacts to businesses are discussed in greater detail in Section 4.2.6.2, Business Displacements.

Impacts to utilities would be similar to those described for the Improved Two-Lane Alternative. However, overhead utilities may experience greater impacts due to the wider roadway envelope. Fences, including livestock pens, would be impacted throughout the corridor under this alternative.

Four-Lane Divided Alternative

Under this alternative, 59 residential and commercial structures, outbuildings, and utility substations would fall within the proposed right-of-way limits. Of these 59 structures, 45 would be impacted by construction. Eight residential structures and nine residential outbuildings would fall within the proposed right-of-way limits. Four of the residences would be impacted by the construction limits. One of the residences is abandoned. Residential impacts are dispersed throughout the corridor, except in Lohman where two occupied residences would fall within the proposed right-of-way limits; only one of these would be impacted by construction.

Thirty commercial structures and nine associated outbuildings would fall within the proposed right-of-way; nine of the commercial structures are not associated with operating businesses. Twenty-three of the 30 commercial structures would be within the construction limits. Impacts are concentrated in Chinook and Lohman, with nearly all of the additional impacts from this alternative occurring in Chinook. Twenty commercial structures in or near Chinook would fall within the proposed right-of-way limits; eighteen of these would be within the construction limits. Five of the structures that would be impacted by construction in and near Chinook are not associated with operating businesses. Four commercial structures in and near Lohman would fall within the proposed right-of-way limits; three of these structures are abandoned and would not be impacted by the construction limits. One of these structures is associated with an operating business, but it would not be within the construction limits. Impacts to businesses are discussed in greater detail in Section 4.2.6.2, Business Displacements.

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Utilities may experience greater impacts due to the wider roadway section. Impacts to fences and utilities would be similar to those described for the Four-Lane Undivided Alternative.

Mitigation

In general, the proposed right-of-way for each alternative would provide a consistent corridor width in which the travelway, clear zone, and drainage are accommodated. In some specific locations, this area may be able to be reduced to minimize impacts if safety is not compromised. In particular, right-of-way minimization will be considered under each alternative at those residential and commercial structures outside the construction limits but within the right-of-way (identified above in Table 4.9). Even if right-of-way is minimized to avoid impacting structures, physical impacts to the property, such as changes to accesses or circulation within the property, could still result.

Impacts to structures may be avoided or minimized by reconfiguring the access, steepening the side slopes adjacent to the roadway, constructing a retaining wall, or shifting the alignment. Final design should evaluate the practicality and benefit of such measures while weighing risk, safety, and the ability of the residence or business to function with either direct or indirect (e.g. loss of parking or limited access) impacts. Please see Section 4.2.6, Economic Conditions for a list of potential mitigation measures by alternative to be considered during final design for impacted businesses. These measures would be assessed for impacted residential properties as well.

Within Lohman and Chinook, where concentrated impacts would occur, avoidance and minimization measures were assessed. The highway alignment could not be shifted farther north to avoid or minimize impacts to structures in Lohman because the railroad is on the north side, and the highway is shifted south to provide the minimum offset needed for safety at two high priority railroad crossings in Lohman. In Chinook, several urban typical section modifications for the four-lane alternatives were assessed but were not found to avoid or minimize impacts. Please see the mitigation discussion in Section 4.2.6, Economic Conditions for detailed information.

Impacted fences, including livestock pens, will be relocated in consultation with the property owner. Property owners with impacted stockpasses would be consulted during final design to continue to accommodate this use as needed. Impacted utilities, including electric substations, overhead telephone and power lines, and local utilities will be relocated as needed in consultation with the utilities.

The acquisition of land or improvements for highway construction is governed by state and federal laws and regulations designed to protect both the landowners and taxpaying public. Landowners affected are entitled to receive fair market value for any land or buildings acquired and any damages as defined by law to remaining land due to the effects of highway construction. This action will be in accordance with the Uniform Relocation Assistance and

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Real Property Acquisition Policies Act of 1970 (P.L. 91-646 as amended), (42 U.W.C. 4601, et. seq.) and the Uniform Relocations Act Amendments of 1987 (P.L. 100-17).

Utility relocations will be coordinated with the utility companies prior to construction. Consultation for easement within the railroad right-of-way will be undertaken with BNSF.

4.2.9 Benefit-Cost Analysis

Benefit-cost analysis is a tool used to evaluate public expenditure decisions. The analysis involves identifying and quantifying all the benefits and costs to society that will accrue if a project is undertaken. For transportation projects, this process involves estimating a dollar value for benefits to users of the facility (e.g., reduced accidents, vehicle operating costs, and travel time), and comparing these benefits to project costs (e.g., construction, operations, and maintenance expenditures). Total costs are subtracted from total benefits to calculate net benefit.

StratBENCOST Model Overview

The StratBENCOST model was used to perform the benefit-cost analysis. StratBENCOST was originally developed in 1996 for the Transportation Research Board and is widely used by state departments of transportation and metropolitan planning organizations to assist in transportation planning and project decision making efforts.² The model can be used to analyze a variety of highway projects, including:

- resurface/rehabilitation vs. complete reconstruction
- bridge rehabilitation vs. replacement
- lane addition
- facility upgrade
- increasing capacity (using new technology)

These types of projects can be assessed at a micro or macro level from a single roadway segment to a highway network. Inputs necessary to run the model include roadway physical characteristics (number of lanes, road grade, pavement surface characteristics, traffic capacity), operational characteristics (traffic volume and speed, vehicle composition, peaking characteristics), and project characteristics (construction costs, right-of-way costs, maintenance costs, and project schedule).

StratBENCOST compares project costs to the user benefits of transportation investments. Costs can include:

² StratBENCOST was developed under National Cooperative Highway Research Program (NCHRP) Project 2-18(3) and is available from the Transportation Research Board.

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- *Project construction costs* – the costs of materials and labor used in building a project, including context sensitive design elements and environmental impacts mitigation
- *Project right-of-way costs* – the costs associated with obtaining land for a construction project
- *Other project costs* – items such as performance bond costs, insurance, and legal fees not related to right of way acquisition or engineering costs
- *On-going maintenance costs* – items such as minor pot hole repair, bridge, railing and culvert repairs, signage, fences, speed enforcement, snow removal, and administrative costs associated with operating a roadway over the 20-year facility design life
- *On-going life-cycle costs* – costs associated with periodic resurfacing and rehabilitation

User benefits (and disbenefits) are experienced directly by system users as a consequence of the improvement. They can include changes in travel time, operating costs, and safety.

- *Travel time changes* – projects that reduce roadway congestion or allow higher speeds will reduce travel time. The value of this benefit is calculated by applying the time savings to a monetary estimate of the traveler's value of time.
- *Vehicle operating cost changes* – these may include changes to vehicle wear-and-tear or fuel consumption due to speed, route, and pavement surface changes. In many cases an improvement will allow higher speeds, which reduces fuel economy and increases vehicle operating costs. These higher costs may be offset by reduced vehicle wear as a result of pavement surface improvements.
- *Safety changes* – a project may change the number of vehicle crashes. Safety cost components include the cost of fatalities, injuries, and vehicle damage. Typically a "willingness to pay" approach is used to determine the dollar value of these benefits.

There may also be benefits (or disbenefits) associated with vehicle air pollution emissions. This analysis has not estimated emissions costs because the study region does not include any area designated as non-attainment with respect to EPA's national ambient air quality standards, and vehicle speeds do not vary significantly across the alternatives, so changes in emissions would be negligible.

Since benefits and costs often occur at different times over the lifespan of a project, they must be adjusted according to when they occur. Due to the time cost of money and the value placed on immediate consumption, future benefits and costs are worth less than those incurred immediately. To account for this, future benefits and costs are discounted and then summed to arrive at a present value. A benefit/cost decision is then made by comparing the present value of the discounted stream of benefits to the present value of the discounted stream of costs.

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Key Model Parameters

Several key parameters govern the benefit-cost analysis and must be specified at the outset in the StratBENCOST model.

- *Project period* specifies the time required for construction of a project alternative. In this analysis the Improved Two-Lane and Improved Two-Lane with Passing Lanes Alternatives are assumed to have a project period of four years, and the Four-Lane Undivided and Four-Lane Divided Alternatives are assumed to have a project period of five years. The reality of funding constraints or other limitations may result in a longer construction period, particularly for the four-lane alternatives.
- *Period of analysis* specifies the number of years over which annual costs and benefits are calculated. The period of analysis includes both the project period (construction phase) and the design life of the facility. In this analysis, most project costs are associated with construction and will occur in the first few years of the analysis period, and benefits begin to accrue only after the improvement is complete and available to users. An analysis period of 25 years was used, after which the facility is assumed to require reconstruction or major rehabilitation. This is based on a 20-year facility design life and a four- or five-year construction period. For the purposes of consistency, a 25-year period of analysis was used for all alternatives.
- *Discount rate* is the rate at which future benefits and costs are reduced. The higher the discount rate, the greater the reduction in future benefits and costs. The discount rate is selected to reflect the opportunity cost of capital, which is the before-tax rate of return to incremental private investment. The future benefits and costs in StratBENCOST are given in *real* terms (i.e., they do not reflect inflation), so a real discount rate was used³. A discount rate of 4 percent was selected, based on discussions with MDT and reflecting historic trends in 10-year U.S. Treasury note yields (FHWA 1998a and OMB 1992).
- *Traffic variables* are based on MDT data and are consistent with the *Preliminary Traffic Engineering and Geometrics Report* (DEA 2002). In particular, the initial year AADT is 2,805, the annual change in AADT is 1.5 percent, and trucks and buses make up 9.5 percent and 0.7 percent of AADT, respectively.

Costs

Table 4.10 shows project costs and on-going costs associated with each alternative. Project costs are one-time costs and are assumed to be spread evenly over the project period. The construction period for both two-lane alternatives is four years; the construction period for

³ In other words, the costs in the StratBENCOST model do not increase with inflation. The purpose of discounting in benefit-cost analysis is to convert costs and benefits in different years to values that are in comparable terms. If the model costs did rise with inflation, then the discount rate would need to be higher in order to factor in the rate of inflation as well as the rate of return to investment. Because the model costs do not rise with inflation, the discount rate does not include an inflation component.

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the four-lane alternatives is five years. On-going costs occur every year during the analysis period, except during construction. The No-Build Alternative has no project costs but does have maintenance and lifecycle costs. Maintenance and lifecycle costs generally increase with the roadway size (width) of each alternative.

Table 4.10 Project Costs and On-going Costs (in millions of 2003 dollars)

	Alternative				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Project Costs (one time)					
Construction	-	62.9	66.4	85.1	95.4
Right-of-Way	-	2.4	2.4	3.5	4.8
Other	-	4.4	4.6	5.9	6.6
On-Going Costs (per year)					
Maintenance	0.15	0.24	0.30	0.47	0.52
Lifecycle	0.8	1.4	1.7	3.5	4.0

Table 4.11 illustrates the effect of discounting future costs to arrive at a present value. As described above, in a benefit-cost analysis framework, future benefits and costs are discounted to reflect the time cost of money and allow comparison of benefits and costs that occur at different points in time. Streams of benefits and costs are discounted and summed to arrive at a present value.

In Table 4.11 below, the first line shows the total project costs, which is the sum of the construction, right of way, and other costs shown in Table 4.10. The construction costs are spread over four or five years to reflect the construction period. The next line shows the present value of those project costs when discounted at a rate of 4 percent annually. The third line in Table 4.11 below shows the on-going costs (maintenance and lifecycle costs, as shown in Table 4.10) for the period of analysis. As described above, for the No-Build Alternative, the on-going costs occur annually throughout the 25-year analysis period. For the build alternatives, the on-going costs occur annually after construction of the facility is complete. The fourth line in Table 4.11 shows the present value of the on-going costs when discounted at a rate of 4 percent annually. The next line shows the present value of the incremental on-going costs, or the difference between a build alternative and the no-build

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alternative. The last line shows the total costs associated with each alternative in present value terms, calculated by summing the present value of project costs and the present value of the incremental on-going costs. These present value costs are compared with project benefits in the summary of benefits and costs.

Table 4.11 Summary of Costs and Present Value of Costs (in millions of 2003 dollars)

Costs	Alternative				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Total Project Costs (undiscounted)	0	69.7	73.4	94.5	106.8
Present Value of Project Costs (discounted)	0	65.8	69.3	87.5	98.9
Total On-Going Costs (undiscounted)	23.8	34.4	42.0	79.4	90.4
Present Value of On-Going Costs (discounted)	15.4	20.5	24.9	46.1	52.5
Present Value of Incremental On-going Costs (build minus no-build alternative) (discounted)	0	5.0	9.5	30.7	37.1
Present Value of Total Costs (discounted)	0	70.8	78.8	118.2	136.0

Benefits

Benefits are generated by reduced vehicle operating costs, fewer vehicle accidents, and reduction in travel time. The StratBENCOST model is structured to calculate accident cost savings by making assumptions about the accident rate for a given facility type and traffic volume. The model is not structured to determine changes in accident rates for an improvement to a rural two-lane highway that does not modify the number of lanes. Therefore, in order to improve the accuracy of the calculations, accident benefits were determined outside the model, as described below, then combined with the other model-calculated benefits.

Table 4.12 shows the estimated rate of fatality, injury, and property damage only (PDO) accidents for each alternative. For the No-Build Alternative, the fatality, injury, and PDO accident rates were provided by MDT based on accident data for the US 2 study corridor for the period 1997 through 2001. For the build alternatives, the change in total accident rate was determined based on research documenting changes to safety and accident rates due to highway improvements (FHWA 2000a), adjusted to conditions specific to the US 2 corridor. These total accident rates were then disaggregated to the three accident types using the observed distribution in the US 2 study corridor for the period 1997 through 2001.

Table 4.12 Accident Rates by Type and Alternative (per million VMT)

Accident Type	Alternative				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Fatality	0.0045	0.0041	0.0038	0.0037	0.0034
Injury	0.428	0.386	0.357	0.346	0.321
Property Damage Only	1.077	0.970	0.899	0.870	0.806
Total¹	1.51	1.36	1.26	1.22	1.13

¹ Totals do not equal exact sum of subtotals due to rounding.

The accident rates in Table 4.12 are applied to the segment VMT to determine the annual number of accidents. Annual accident costs are calculated using the following average per incident costs:

- Fatality accident \$3,000,000
- Injury accident \$60,000
- Property damage only accident \$2,300

Per accident costs by type were provided by MDT. The values are based on FHWA's October 31, 1994 Technical Advisory, "Motor Vehicle Accident Costs," and updated by FHWA based on the gross domestic product (GDP) implicit price deflator. The injury accident cost is an average of three types of injury accidents provided in the 1994 Technical Advisory, weighted to reflect Montana historic crash data.

The total accident cost for each alternative is calculated by summing the total accident costs for each type of accident. Total costs by accident type equal the product of the yearly VMT, the accident rate for the type of accident, and the accident cost by type of accident. The summation is as follows:

$$S_j \text{ (Accident rate)}_j \times \text{ (Yearly VMT)} \times \text{ (Accident costs by type of accident)}_j$$

where j is defined as the type of accident.

Using the above formula, the total accident costs for each year and each alternative were calculated. The accident *benefits* for each alternative are calculated as the difference between the No-Build accident costs and the build alternative accident costs. This assumes that the accident benefits for each alternative will come into effect only after the construction of the project. Accident benefits change in each analysis year because of the growth in VMT.

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Table 4.13 shows, as an example, the accident benefits in year 5 (the first year of operation of the four-lane alternatives).

Table 4.13 Example of Annual Accident Benefits (Year 5, in millions of 2003 dollars)

		Alternative				
		No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Total Accident Costs		2.06	1.87	1.73	1.68	1.55
Accident Benefits ¹		-	0.20	0.33	0.39	0.51

¹ In this table, benefits may not exactly equal the difference in accident costs due to rounding.

The annual accident benefits are discounted over the analysis period to arrive at the present value of benefits for each build alternative, shown in Table 4.14. These benefits are combined with other benefits, determined using the StratBENCOST model.

The second category of benefits is vehicle operating cost savings. Vehicle operating costs change due to a change in pavement surface condition (which affects tire wear, other vehicle maintenance costs, and fuel consumption) and a change in travel speed (which affects fuel consumption). Under all alternatives, the pavement surface is assumed to deteriorate until the roadway is resurfaced. The StratBENCOST model default pavement deterioration rate was used for all alternatives. This analysis utilizes an index of 1 to 5, with 1 representing the poorest pavement surface condition and 5 the best condition. The No-Build Alternative is assumed to have a current pavement surface index of 3 and receive resurfacing at years 5 and 15 of the analysis period, at which point the pavement surface index becomes 4. The build alternatives are assumed to have a pavement surface index of 5 upon construction and receive resurfacing every 10 years after construction, at which point the pavement surface index again becomes 5.

Table 4.14 shows the vehicle operating cost savings for each build alternative, discounted for each year of the analysis period and summed to arrive at a present value. The bulk of these benefits result from the improved pavement condition under the build alternatives. The operating cost benefits are slightly lower for the four-lane alternatives because these alternatives allow slightly higher speeds, which reduces fuel economy and increases operating costs.

The final category of benefits is travel time savings, which are calculated based on the relationship between traffic volume and roadway capacity. Because the study segment operates at a high level of service under the No-Build Alternative, the travel time savings under the build alternatives are small. StratBENCOST calculates travel time savings using a

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value of time of \$12 per hour for passenger vehicles, \$32 per hour for trucks, and \$83 per hour for buses. Table 4.14 shows the travel time savings and total benefits by build alternative. Note that because only a small portion of total benefits are generated as a result of travel time savings, the comparison of total benefits to costs (described in the next section) is generally not sensitive to the value of time figures described above.

Table 4.14 Present Value of Benefits by Build Alternative¹ Over 25 Years (in millions of 2003 dollars)

Accident Type	Build Alternative			
	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Accident Cost Savings	2.7	4.5	5.1	6.5
Vehicle Operating Cost Savings	35.0	34.8	30.4	30.4
Travel Time Savings	0	1.2	6.1	6.4
Total Benefits²	37.6	40.5	41.7	43.3

¹The No-Build Alternative, not shown in this table, has zero benefits under the benefit-cost analysis framework because benefits are defined as the difference between a build and No-Build Alternative.

²Due to rounding, the benefits in this table may not sum to the total.

The StratBENCOST model can report results in probabilistic terms to help assess the likelihood of output values that have uncertainty. The values reported here are the mean (most likely) values. Using this function, the model suggests a 90 percent probability that the benefits will fall in the following ranges:

- Vehicle Operating Cost Savings, two-lane alternatives: \$24.7 to \$46.1 million (2003)
- Vehicle Operating Cost Savings, four-lane alternatives: \$21.3 to \$40.8 million (2003)
- Travel Time Savings, two-lane alternatives: \$0 to \$1.9 million (2003)
- Travel Time Savings, four-lane alternatives: \$5.0 – \$9.9 million (2003)

Probabilistic results are unavailable for the accident benefits because they are calculated outside the model.

Summary of Benefits and Costs

Table 4.15 shows the present value of total benefits and costs. All build alternatives result in a negative net benefit (benefit less cost). Benefits are approximately one-half of the costs of the two-lane alternatives and approximately one-third of the costs of the four-lane

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alternatives. If, due to funding limitations or other constraints, the construction period extends beyond the four- or five-year minimum period analyzed (without a change in total construction costs), then the present value of the total costs would decrease slightly, although costs would still exceed benefits.

The No-Build Alternative has zero benefits and zero costs under a benefit-cost analysis framework.⁴ Thus, the no build alternative has the highest net benefit (zero) among all alternatives.

The benefits increase slightly with each build alternative but generally show little variation across alternatives. Total benefits under the Four-Lane Divided are only 15 percent higher than the benefits under the Improved Two-Lane. This reflects the fact that the segment carries relatively low traffic volumes and the accident rates and travel times do not vary greatly across build alternatives.

Project costs increase substantially across the build alternatives. The total costs (present value) of the both two-lane alternatives are relatively close (11 percent difference). However, the costs of the Four-Lane Undivided and Four-Lane Divided Alternatives are 67 percent and 92 percent higher than the Improved Two-Lane Alternative, respectively.

Table 4.15 Summary of Benefits and Costs by Build Alternative¹ Over 25 Years (in millions of 2003 dollars)

Accident Type	Build Alternative			
	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Total Benefits (present value)	37.6	40.5	41.7	43.3
Total Costs (present value)	70.8	78.8	118.2	136.0
Net Benefits (present value)	-33.2	-38.3	-76.5	-92.7
Benefit-Cost Ratio	0.53	0.51	0.35	0.32

¹The No-Build Alternative, not shown in this table, has zero benefits under the benefit-cost analysis framework because benefits are defined as the difference between a build and No-Build Alternative.

These results are not surprising for a project that would improve a rural highway with relatively low traffic volumes, high level of service, and no extraordinary safety problems.

⁴ The analysis does account for the maintenance and lifecycle costs associated with the No-Build Alternative. But for comparison purposes, the benefit-cost analysis defines total costs as the difference between a build alternative and the No-Build Alternative. In that context, the No-Build Alternative has zero costs.

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Typically, most of the benefits from highway widening projects accrue as a result of a reduction in congestion and travel time. Because the build alternatives would have little effect on overall average travel time, the total benefits are relatively small, and are substantially outweighed by the costs.

Sensitivity Analysis

StratBENCOST Sensitivity Analysis. In order to gauge the sensitivity of the benefit-cost analysis results to input values, benefits were calculated using higher traffic growth rates. This allows an estimation of the amount of vehicle traffic that would be needed in order for benefits to exceed costs. Analysis showed that a 6 percent annual growth rate for traffic (which is four times higher than currently predicted by MDT) would be needed before any build alternative would produce positive net benefits.

StratBENCOST Comparison to Montana Highway Reconfiguration Study. In 2001, at the request of Governor Martz, MDT and the Reconfiguration Study Steering Committee initiated a Highway Reconfiguration Study to examine the economic impacts of widening Montana's two-lane highways. An integral part of the study effort has been the development of the Highway Economic Analysis Tool (HEAT), which, in addition to providing the economic information necessary for the study, will provide MDT with an analysis tool it can use to analyze the economic impacts of proposed highway improvements. At the programming level, HEAT will provide MDT with the tool necessary to integrate economic criteria into its overall project selection process (Performance Programming Process) as directed by House Joint Resolution 30 of the 2001 Legislature.

MDT plans to use HEAT as a consistent method to analyze economic impacts of proposed corridor level improvements at both the planning and project development stages, such as the US 2 Havre-Fort Belknap corridor EIS. At the request of the Reconfiguration Study Steering Committee, Cambridge Systematics recently completed a HEAT analysis test scenario for the entire US 2 corridor in the state of Montana. The test scenario modeled both upgrading the existing facility to an improved two-lane with passing lanes facility as well as upgrading to an undivided four-lane facility. The US 2 border to border HEAT model scenario estimated the benefit-cost ratio for the two-lane configuration is 0.3 and the estimated benefit-cost for the four-lane facility is 0.2. The benefit-cost ratio equals the dollar value of benefits divided by the project costs. A ratio below 1.0 means that project costs exceed project benefits.

The benefit-cost analysis for the US 2 EIS was performed using StratBENCOST, a traditional benefit-cost analysis tool. The StratBENCOST analysis estimated the benefit-cost ratio for the two-lane with passing lanes facility is 0.51 and the estimated benefit-cost for the undivided four-lane facility is 0.35. While the StratBENCOST model analyzes highway user benefits against project costs, the HEAT model aggregates macro-economic benefits across the state against these same cost factors. Although two different models were used to estimate the benefits and costs of the US 2 corridor within the EIS limits and from border to border, the results are comparable. Although the results of the HEAT analysis indicate a

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lower benefit-cost ratio than the StratBENCOST model, this is appropriate given that the existing and projected traffic volumes on US 2 – Havre to Fort Belknap EIS corridor are significantly higher than the traffic volumes on most of the US 2 corridor analyzed by HEAT. In conclusion, these two independent analyses show that the project costs exceed the project benefits for improving US 2.

Impacts Analysis

The following impacts are based on the StratBENCOST analysis conducted for the Havre to Fort Belknap project corridor.

No-Build Alternative

The benefit-cost ratio for the No-Build is zero. Because the build alternatives all have negative net benefits, the No-Build Alternative at zero would have the highest net benefit of all alternatives.

Improved Two-Lane Alternative

The benefit-cost ratio for the Improved Two-Lane Alternative is 0.53. Therefore, costs exceed benefits by a ratio of approximately 1.9-to-1. Of the build alternatives, this alternative would be the best economically, even though costs exceed benefits, because it has the least negative net benefits.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The benefit-cost ratio for the Improved Two-Lane with Passing Lanes Alternative is 0.51. Therefore, costs exceed benefits by a ratio of approximately 2.0-to-1.

Four-Lane Undivided Alternative

The benefit-cost ratio for the Four-Lane Undivided Alternative is 0.35. Therefore, costs exceed benefits by a ratio of approximately 2.9-to-1.

Four-Lane Divided Alternative

The benefit-cost ratio for the Four-Lane Divided Alternative is 0.32. Therefore, costs exceed benefits by a ratio of approximately 3.1-to-1. Of the build alternatives, this alternative has the worst benefit-cost ratio.

Mitigation

No mitigation for any alternative.

4.2.10 Project Funding

The sources of any additional funds required for the proposed alternatives are dependent on the number of lanes proposed in the alternative. Regardless of which alternative is selected, construction will be divided into four or five logical, cost-effective sections or phases. MDT typically constructs projects in a corridor starting at one end and moving to the other. This construction sequence minimizes traffic disruption, helps with driver expectancy, and provides more efficient construction sequencing for the contractor. The overall corridor project would be built in phases (i.e. several smaller projects), with funding priorities for these projects established through consideration of the National Highway System needs within the Great Falls District.

No-Build Alternative

The No-Build Alternative would not entail any additional costs above those currently anticipated for routine maintenance of the US 2 facility.

Improved Two-Lane Alternative

The estimated cost for this alternative, including design, right-of-way, construction, and other costs is \$69.7 million in 2003 present worth. Since the 12 m (40 ft) Improved Two-Lane Alternative is MDT's design standard for this type of highway facility, funding for this alternative could be obtained through MDT's regular funding prioritization process.

If the US 2, Havre to Fort Belknap project had not superseded the four previously planned projects, the 44.8 km (27.8 mi) of the project corridor contained within those projects would have been funded for a roadway section improved to MDT's standards for the applicable safety and capacity conditions. For MDT planning purposes, funding levels for these projects were based on a two-lane facility similar to most of US 2; however, these levels would be refined after the project development and NEPA process identified the appropriate specific improvements. It is expected that additional funding for the remaining 27.4 km (17.1 mi) of the project corridor would have become available at some point in the next decade to bring the remaining sections up to standard as well. Therefore, there is reasonable certainty that funding for this alternative would become available to complete all phases of the project at the two-lane standard.

The overall corridor project would be built in phases (i.e. several smaller projects), with funding priorities for these projects established through consideration of the National Highway System needs within the Great Falls District.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The estimated cost for this alternative, including design, right-of-way, construction, and other costs is \$73.4 million in 2003 present worth, or 5 percent more than the Improved Two-Lane

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Alternative. Similar to the Improved Two-Lane Alternative, funding could come from a variety of sources, including state and federal funds. The overall corridor project would be built in phases (i.e. several smaller projects), with funding priorities for these projects established through consideration of the National Highway System needs within the Great Falls District.

Four-Lane Undivided Alternative

The estimated cost for this alternative, including design, right-of-way, construction, and other costs is \$94.5 million in 2003 present worth, or 35 percent more than the Improved Two-Lane Alternative. Because this alternative proposes four travel lanes along US 2, the additional funding needed to construct the four-lane, or \$24.8 million would be limited to 100 percent federal funding only, as stipulated in MCA 60-2-133 (see Section 3.2.1, Montana 2001 Senate Bill 3 and State Plans). Additionally, per MCA 60-2-133, such funds must not require matching state funds, and no funds are to be expended on this alternative that would jeopardize funding of any other highway project in the state.

Because of the stipulations on its funding source, the additional funding required for this alternative could take more time to acquire than the additional funds for either of the two-lane alternatives. Most federal highway money requires state matching funds, which are not allowed for this alternative; a special appropriation from Congress would therefore be required to fund this alternative. Acquisition of this type of appropriation is uncertain and could delay construction of this alternative.

Acquisition of additional funding for this alternative is uncertain, and an overall four-lane standard for the project could not be built without reasonable confidence that the unique type of funding needed to complete the overall project would be secured for all final phases. Design and construction of this alternative would not occur until all funding for the project is acquired. Therefore, this alternative has a greater possibility of being delayed than either of the two-lane alternatives.

Four-Lane Divided Alternative

The estimated cost for this alternative, including design, right-of-way, construction, and other costs is \$106.8 million in 2003 present worth, 52 percent more than the Improved Two-Lane Alternative, or an additional \$37.1 million. Similarly to the Four-Lane Undivided Alternative, the additional funding of \$37.1 million would have to be federal funding that does not require state matching funds, and the additional funding cannot jeopardize funding of other highway projects in the state. A special appropriation from Congress would therefore be required to fund this alternative. Acquisition of additional funding for this alternative is uncertain, and an overall four-lane standard for the project could not be built without reasonable confidence that the unique type of funding needed to complete the overall project would be secured for all final phases. Design and construction of this alternative therefore has a greater possibility of being delayed than either of the two-lane alternatives.

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Mitigation

No mitigation for any alternative.

4.3 Environmental Conditions

4.3.1 Cultural and Historic Resources

Section 106 of the National Historic Preservation Act requires federal agencies to identify NRHP-eligible cultural resources within the project area and then determine the effects of the proposed project on NRHP-eligible cultural resources. For this project, MDT/FHWA identified 16 historic properties eligible for or listed on the NRHP within the area of potential effect for one or more project alternatives. MDT/FHWA determined whether the proposed project alternatives would have No Effect, No Adverse Effect, or Adverse Effect on each of these historic properties. The SHPO has concurred with the determination of effect (see Appendix F for SHPO correspondence). Adverse Effect determinations require FHWA and MDT to consult with the SHPO, Advisory Council on Historic Preservation, and other interested parties to develop a Memorandum of Agreement or Programmatic Agreement, which specify mitigation plans or alternatives to mitigate adverse effects for the Preferred Alternative.

Two segments of the US 2 highway (Sites 24BL1573 and 24HL1128) were not evaluated for NRHP eligibility because a Programmatic Agreement abrogates the necessity of evaluating eligibility, impacts, or mitigation for these properties under the requirements of Section 106 of the National Historic Preservation Act. For this project, impacts to cultural sites would occur from various construction activities, including cut-and-fill, site grading, and construction of structures. Impacts are summarized for all alternatives in Table 4.16, Cultural Resource Impacts by Alternative. All of the build alternatives affect historic resources. Generally, MDT/FHWA determined that both two-lane alternatives would adversely affect three historic properties, the Four-Lane Undivided Alternative would adversely affect five historic properties, and the Four-Lane Divided Alternative would adversely affect six historic properties. The SHPO has concurred with these determinations (see Appendix F for SHPO correspondence).

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Table 4.16 Cultural Resource Impacts by Alternative

Cultural Site	Alternatives				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
24BL838 Harlem-Snake Butte Railroad Site	No Effect	No Effect. Existing alignment impacts site, and additional impacts do not compromise site integrity.	No Effect. Existing alignment impacts site, and additional impacts do not compromise site integrity.	No Effect. Existing alignment impacts site, and additional impacts do not compromise site integrity.	No Effect. Existing alignment impacts site, and additional impacts do not compromise site integrity.
24BL981 (24BL1050) Lodge Creek Bridge	No Effect	Adverse Effect. Bridge would be replaced.			
24BL1146 Battle Creek Bridge	No Effect	No Effect. Outside of right-of-way and cut and fill areas. No impact.	No Effect. Outside of right-of-way and cut and fill areas. No impact.	No Effect. Outside of right-of-way and cut and fill areas. No impact.	No Effect. Outside of right-of-way and cut and fill areas. No impact.
24BL1248 Bear Paw Court Motel	No Effect	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	Adverse Effect. Sign (which is a contributing element to the site) would be impacted. Building would not be impacted.
24BL1251 Jamieson Motors	No Effect	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	Adverse Effect. Building and signs would be impacted by right-of-way.	Adverse Effect. Building and signs would be impacted by right-of-way.
24BL1254 Pehrson's Exxon	No Effect	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	Adverse Effect. Building would be impacted by right-of-way.	Adverse Effect. Building would be impacted by right-of-way.

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Table 4.16 Cultural Resource Impacts by Alternative (continued)

Cultural Site	Alternatives				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
24BL1351 (24BL943) Harlem Canal	No Effect	No Effect. No rechanneling or operational changes required. Site integrity is not compromised.	No Effect. No rechanneling or operational changes required. Site integrity is not compromised.	No Effect. No rechanneling or operational changes required. Site integrity is not compromised.	No Effect. No rechanneling or operational changes required. Site integrity is not compromised.
24BL1541 Vincent Pefaur Farmstead	No Effect	Adverse Effect. Impacts 0.3 ha (0.8 ac) or 8% of site property. Proposed right-of-way also would impact 6 of 9 site features: a house, 2 migrant worker buildings, 2 other farmstead buildings, and a Quonset-type barn.	Adverse Effect. Impacts 0.3 ha (0.8 ac) or 8% of site property. Proposed right-of-way also would impact 6 of 9 site features: a house, 2 migrant worker buildings, 2 other farmstead buildings, and a Quonset-type barn.	Adverse Effect. Impacts 0.3 ha (0.8 ac) 8% of site of site property. Proposed right-of-way also would impact 6 of 9 site features: a house, 2 migrant worker buildings, 2 other farmstead buildings, and a Quonset-type barn.	Adverse Effect. Impacts 0.4 ha (1.0 ac) or 11% of site property. Proposed right-of-way also would impact 6 of 9 site features: a house, 2 migrant worker buildings, 2 other farmstead buildings, and a Quonset-type barn.
24BL1542 Knute and Ardele Kulbeck Farmstead	No Effect	No Adverse Effect. Impacts 0.3 ha (0.6 ac) or 23% of site property. No impact to any site features.	No Adverse Effect. Impacts 0.3 ha (0.6 ac) or 23% of site property. No impact to any site features.	No Adverse Effect. Impacts 0.3 ha (0.7 ac) or 26% of site property. No impact to any site features.	No Adverse Effect. Impacts 0.3 ha (0.8 ac) or 29% of site property. No impact to any site features.
24BL1725 Zurich Grain Elevator Complex	No Effect.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.

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Table 4.16 Cultural Resource Impacts by Alternative (continued)

Cultural Site	Alternatives				
	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
24BL1726 Burns Farmstead	No Effect.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.
24BL1728 Chinook Grain Elevator Complex	No Effect	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.
24BL1729 GTA Feed Mill Grain Elevator Complex	No Effect	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.	No Effect. Outside of right-of-way and cut and fill areas. No impact to access or operations.
24BL1731 Fifteen Mile Creek Bridge	No Effect	Adverse Effect. Bridge would be replaced.			
24BL1574 (24BL1543)/ 24HL942 Great Northern Railroad/ Burlington Northern – Santa Fe Railroad	No Effect	No Effect. Outside of the right-of-way and cut and fill areas. No impact to operations.	No Effect. Outside of the right-of-way and cut and fill areas. No impact to operations.	No Effect. Outside of the right-of-way and cut and fill areas. No impact to operations.	No Effect. Outside of the right-of-way and cut and fill areas. No impact to operations.
24HL1133 Sunset Drive-In Theater	No Effect	No Effect. No impact to any site features. No impact to access or operations.	No Effect. No impact to any site features. No impact to access or operations.	No Effect. No impact to any site features. No impact to access or operations.	No Effect. No impact to any site features. No impact to access or operations.

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No-Build Alternative

The no-build alternative would not affect any historic sites, buildings or structures in the corridor, although the historic bridges would likely require replacement in the future.

Improved Two-Lane Alternative

One historic farmstead and two historic bridges would be adversely affected by the implementation of the Improved Two-Lane Alternative. These resources include:

- 24BL1541, the Vincent Pefaur Farmstead, where six of the nine site features would be impacted by the right-of-way.
- 24BL981 (24BL1050), the Lodge Creek Bridge, which would require replacement because it is functionally obsolete (too narrow).
- 24BL1731, the Fifteen Mile Creek Bridge, which would require replacement also because it is too narrow.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Adverse Effects for the Improved Two-Lane with Passing Lanes Alternative are the same as for the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

In addition to the historic properties affected by both two-lane alternatives, two additional historic properties would be adversely affected by the implementation of the Four-Lane Undivided Alternative. These properties include:

- 24BL1251, Jamieson Motors, which is within the right-of-way and construction limits for this alternative.
- 24BL1254, Pehrson's Exxon, which also is within the right-of-way and construction limits.

Four-Lane Divided Alternative

In addition to the five properties impacted by the Four-Lane Undivided Alternative, the Four-Lane Divided Alternative also would adversely affect historic property 24BL1248, the Bear Paw Court Motel. Under the Four-Lane Divided Alternative, the neon sign, which is a contributing historical feature of the site, would be impacted by the right-of-way requirements and construction limits for implementation of this alternative.

Mitigation

Avoidance measures for all cultural resources were considered during conceptual design. In cases where the design did not require a tradeoff with safety or other resource impacts,

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changes such as alignment shifts were incorporated into the design. The sites that could not be avoided are discussed below.

Chinook Sites. For the historic properties on the south side of US 2 in Chinook (sites 24BL1248 – Bear Paw Court Motel, 24BL1251 – Jamieson Motors, and 24BL1254 – Pehrson’s Exxon), both two-lane alternatives were able to avoid impacts because the improved highway would be accommodated within the existing curb lines. For the four-lane alternatives, impacts could not be avoided to sites 24BL1251 (Jamieson Motors) and 24BL1254 (Pehrson’s Exxon) because of the need to widen the roadway to the south. In addition, the neon sign of the Bear Paw Court Motel, Site 24BL1248, is impacted in the Four-Lane Divided Alternative due to the wider right-of-way requirements. Realigning the roadway under the four-lane alternatives to miss these sites would not be possible because (1) it would result in impacts to another historic property (Site 24BL1728) and (2) it would result in a further reduction of the already inadequate offset (i.e., the distance between the highway and the railroad that allows for safe rail and vehicular operations) with the railroad crossing at Indiana Street. Therefore, shifting the alignment was not possible to avoid these sites in the four lane alternatives.

A minimized four-lane alternative through Chinook was also investigated to avoid these sites. Minimization options considered for reducing the highway footprint (typical section) and preserving some of the existing resources (24BL1248, 24BL1251, and 24BL1254) included removing the sidewalk and removing the parking lane. Removing the sidewalks or parking lane did not narrow the roadway enough to preserve the historic structures.

Historic Bridges. There are two impacted historic bridges in the corridor: 24BL981/1050 (Lodge Creek Bridge), and 24BL1731 (Fifteen Mile Creek Bridge). These bridges would be replaced because they are too narrow. For the Improved Two-Lane and Improved Two-Lane with Passing Lanes Alternatives, new bridges would be constructed adjacent to the existing bridges, providing an opportunity to avoid impacting these structures. MDT will use its Adopt a Bridge program to try to identify a new owner for each bridge. If new owners cannot be identified, MDT will remove the bridges to avoid safety and liability concerns.

For the Four-Lane Undivided and Four-Lane Divided Alternatives, Site 24BL981/1050 (Lodge Creek Bridge) could be avoided. However, Site 24BL1731 (Fifteen Mile Creek Bridge) would be directly impacted because it would be within the right-of-way and would require removal during construction. Prior to construction, MDT will use its Adopt a Bridge program to try to identify a new owner for Lodge Creek Bridge. Shifting the alignment to avoid impacting Fifteen Mile Creek would result in substantially increased wetlands and property impacts. If the alignment were shifted to miss the bridge, MDT would still need to find a new owner willing to take over maintenance. If a new owner could not be found, MDT would remove the bridge to avoid safety and liability concerns.

Site 24BL1541 Vincent Pefaur Farmstead. For Site 24BL1541, design of the Improved Two-Lane Alternative could be modified to introduce two sets of reverse curves (four curves

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total) and route the highway around the property. While the introduction of reverse curves could be designed to meet MDT standards, the design may confuse motorists because curves would be introduced into an otherwise straight roadway. Therefore, for safety reasons, this design option was not prudent. For the four-lane alternatives, to avoid the site would require two sets of reverse curves (four curves total) and realignment north towards the railroad. Realigning the four-lane alternatives to the north towards the railroad also is not prudent because of the need to maintain the railroad offset for safety.

Under Section 106 of the NHPA, to mitigate adverse effects to historic resources for the Preferred Alternative, MDT and FHWA developed a Memorandum of Agreement (MOA) with the SHPO for the effects on 24BL1541, the Vincent Pefaur Homestead, resulting from the preferred alternative. MDT and FHWA will carry out the stipulations of the MOA, which includes Historic American Building Survey (HABS)-level documentation of the Vincent Pefaur Homestead and near the site the installation of an historical marker that describes the history and significance of agriculture to Blaine County (see Appendix F for the MOA). MDT has a Programmatic Agreement (PA) in place that outlines mitigation requirements for historic bridges. If MDT were to remove either or both of the historic bridges in the corridor, it would do so in accordance with the stipulations outlined in the PA.

4.3.2 Air Quality

No-Build and Build Alternatives

This proposed project is located in an unclassified/attainment area of Montana for air quality as defined under 40 CFR 81.327. As such, this proposed project is not covered under the U.S. Environmental Protection Agency's "Final Rule" of September 15, 1997 on air quality conformity. Therefore, both the No-Build Alternative and the Build Alternatives would comply with Section 176(c) of the Clean Air Act (53 U.S.C. 7521 (a)) as amended and would not require detailed assessment of potential exceedances of federal standards for air pollutants.

In general, the main pollutants of concern in Montana for transportation projects are carbon monoxide (CO) and particulate matter less than 10 microns in diameter (PM₁₀). Vehicle exhaust is a source of carbon monoxide and tailpipe emissions and fugitive dust (e.g. road dust) are sources of particulate matter. The proposed project is located along the rural, northern plains area, which is arid and windy and therefore conducive to pollutant dispersal. Violations of the PM₁₀ standards occur in Montana's narrow valleys, which often cause temperature inversions and trap pollutants in cold air along valley floors. Montana's PM₁₀ non-attainment areas are almost exclusively on the west side of the continental divide, with the exception of Lame Deer, located in a small valley in southeast Montana. Exceedances of the CO standards occur exclusively in the urban areas of Billings, Missoula and Great Falls; however Great Falls and Billings have recently been classified as maintenance areas. None of the conditions that cause violations of CO or PM₁₀ apply to the study area.

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Over the analysis period for this project (to year 2027), the pollutant levels from vehicle emissions are expected to go down based on the replacement of the older vehicles with newer, cleaner burning vehicles. Therefore, if all other factors are held constant, the air quality would improve in the future.

As discussed in Chapter 1, the average annual daily traffic (AADT) in the corridor was 2,330-2,890 in 2002 and is predicted to increase to 3,700-3,820 AADT in 2027. All alternatives are expected to achieve peak hour Level of Service (LOS) of "B" or "A" in the year 2027 (see Section 4.1.3, Traffic Operations). This high level of service is associated with uncongested driving conditions with little to no delay or vehicle idling time. Similarly, the average annual daily traffic volumes are expected to remain relatively low even through the year 2027. These forecasts of both AADT and LOS, the climate conditions, and the reduction in vehicle emissions represent conditions that would not cause degradation of regional or local air quality that may result in violation of CAA standards. In addition, the air quality impacts would be similar among all the alternatives because the traffic volumes, traffic level of service and emissions would be the same.

Mitigation

No permanent mitigation is required for any alternative. Air quality during construction is discussed in Section 4.4, Construction Impacts.

4.3.3 Noise

According to the Federal Aid Policy Guide, *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (23 CFR 772), the proposed project is classified as a Type I Project, which is defined as "any project that has the potential to increase noise levels at adjacent receivers." For Type I projects, all viable alternatives under consideration must be analyzed for traffic noise impacts.

Therefore, a detailed noise analysis was undertaken for this study. The methodology and results of the noise analysis are documented in the *US 2 Havre to Fort Belknap Traffic Noise Study* (Big Sky Acoustics, 2003). The following section is a summary of the study.

To identify potential noise impacts at the receptors in the corridor, the FHWA Traffic Noise Model (TNM) version 2.0 computer program was used to predict existing and future noise levels for all alternatives. According to MDT policy, traffic noise impacts for activities in Category B (residences, mobile homes, apartments, nursing homes, churches, hotels, parks, and campgrounds) occur in two situations:

1. If predicted Leq(h) traffic noise levels "approach or exceed" the 67 dBA in the project design year (2027) for the build alternatives, or

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2. If the predicted Leq(h) noise levels in the design year for the build alternatives “substantially exceed” the noise levels in the present year (2002) of the project for the No-Build Alternative.

For Category B uses MDT defines “approach” as 1 dBA less than the NAC of 67 dBA and “substantially exceed” as 13 dBA. Therefore, the traffic noise impact criteria is 66 dBA or greater in the design year of a project, or 13 dBA greater than the present year noise levels.

To identify potential noise impacts, traffic noise levels at 114 receptor locations were modeled for all alternatives. A summary of predicted noise levels at these receptors and receptor locations are shown in Appendix G. The sites that would exceed the NAC criteria are summarized in Table 4.17.

As summarized in Table 4.17, the traffic noise impact criteria would be met or exceeded by each alternative, including the No-Build Alternative, in the Design Year (2027). In general, the impacted receptors are located in the rural areas of the US 2 corridor and are not grouped together. Most of the traffic noise impacts are predicted at receptors that are located within 36 m (118 ft) of the centerline of the build alternatives on the south side of the road. As discussed in Section 4.2.8, Right-of-Way and Relocation of Utilities, some receptors fall within the proposed right-of-way but outside the construction (cut and fill) limits and may need to be relocated due to right-of-way acquisition or may also be preserved through right-of-way minimization. In cases where the existing structure falls within the construction limits of the proposed roadway, physical impacts may necessitate relocation or acquisition. Although noise levels at the relocated receptors were calculated, it was assumed that the buildings would be removed, and these structures were not counted as part of the total number of impacted receptors⁵.

MDT noise policy described in *Traffic Noise Analysis and Abatement: Policy and Procedure Manual* (MDT, 2001) implements the requirements of the federal noise policy (23CFR772) for noise abatement. In the event of property acquisition by MDT due to right-of-way or construction requirements, MDT will pay full fair market value for the property. Noise impacts do not affect the fair market value of properties in any way.

⁵ During final design, right-of-way minimization will be considered for all receptors that are within the proposed right-of-way but outside the cut and fill limits. If it is determined that these receptors can be avoided, the noise data is available (as shown in Table 4.17) to determine potential impacts and mitigation measures.

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Table 4.17 Summary of Noise Sensitive Receptors That Meet or Exceed NAC Criteria

Receptor	Description of Receptor	Distance to Centerline		2002 Leq(h) (dBA)	Design Year - 2027 Leq(h) (dBA)					
		Existing/No-Build	Build		Existing	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
HV-L:R8	Single-family residence south of US 2	38 m (124.7 ft)	29 m (95 ft)	61	62	<u>67*</u>	<u>67*</u>	<u>67*</u>	<u>67*</u>	<u>66</u>
L:R4	Single-family residence south of US 2	39 m (128 ft)	28 m (51.9 ft)	62	63	65	65	<u>66</u>	<u>67*</u>	
CH-Z:R4	Single-family residence south of US 2	56 m (183.7 m)	33 m (108.3 ft)	57	59	<u>67</u>	<u>67</u>	<u>68</u>	<u>66</u>	
Z:R1	Single-family residence south of US 2	28 m (91.9 ft)	20 m (65.6 ft)	63	65	<u>68*</u>	<u>69*</u>	<u>69</u>	<u>71</u>	
Z-HM:R3	Single-family residence south of US 2	33 m (108.3 ft)	21 m (68.9 ft)	62	65	<u>68*</u>	<u>69*</u>	<u>69</u>	<u>70</u>	
Z-HM:R4	Single-family residence south of US 2	44 m (144.4 ft)	34 m (111.5 ft)	62	65	64	65	<u>67</u>	<u>66</u>	
Z-HM:R5	Single-family residence south of US 2	44 m (144.4 ft)	36 m (118.1 ft)	62	64	<u>67</u>	<u>66</u>	<u>66</u>	<u>66</u>	
HM:M1	McGuire's Motel north of US 2	19 m (62.3 ft)	29 m (95 ft)	<u>66</u>	<u>68</u>	<u>68*</u>	<u>68*</u>	<u>68*</u>	<u>68*</u>	<u>68*</u>
HM:R13	Single-family residence north of US 2	25 m (82 ft)	25 m (82 ft)	64	<u>66</u>	<u>68*</u>	<u>68*</u>	<u>70*</u>	<u>69</u>	
Number of receptors where noise levels meet or exceed impact criteria:				1	2	7	7	9	9	
Number of receptors possibly relocated or acquired due to right-of-way and/or roadway construction:				0	0	5	5	5	6	
Total impacted receptors (minus relocated receptors):				1	2	2	2	4	3	

Legend:

XX Bold italic underline type indicates that the Leq(h) meets or exceeds the NAC criteria**XX*** Bold italic underline type with an asterisk indicates that the receptor may be relocated or acquired due to right-of-way acquisition**XX** Shading indicates that the receptor would likely be relocated or acquired because it is within the construction (cut and fill) limits

Source: Big Sky Acoustics, LLC, 2003. US 2 – Havre to Fort Belknap Traffic Noise Study

No-Build Alternative

The predicted traffic noise levels meet the impact criteria (66 dBA) in the present year of the project (2002) at only one receptor (HM:M1).

The predicted traffic noise levels would increase between 1 and 3 dBA from the present year (2002) to design year (2027) at all receptors along the project corridor. These increases are predicted for the No-Build Alternative due to increased traffic volumes forecasted along the corridor. As a result, one additional receptor would meet the impact criteria in the design year. As shown in Table 4.17, the two receptors predicted to meet or exceed the impact criteria are McGuire's Motel (HM:M1) and a single family residence (HM:R13). At McGuire's Motel, the noise level meets or exceeds the impact criterion for Category B for both the present and design years. The model predicted a noise level of 66 dBA for 2002 and 68 dBA for 2027. The predicted noise level at the single-family residence (HM:R13) was below the impact criterion for the present year but would meet the impact criterion for the design year.

Improved Two-Lane Alternative

Results of noise modeling for the Improved Two-Lane Alternative indicated that seven receptors along the corridor would be impacted. Five of these receptors, four single-family residences (HV-L:R8, Z:R1, Z-HM:R3, HM:R13) and McGuire's Motel (HM:M1), may be relocated or acquired due to right-of-way acquisition and/or physical impacts. As such, the receptors are subtracted from the total number of impacted receptors. The remaining two receptors are single-family residences that would meet or exceed the impact criterion (66 dBA) in the design year 2027 if the Improved Two-Lane Alternative is implemented. These include two residences on the south side of US 2, as summarized in Table 4.17.

No receptors have predicted noise levels in the design year that substantially exceed (13 dBA increase) the noise levels in the present year of the project. For the Improved Two-Lane Alternative, the increase in predicted noise levels at all receptors along the corridor would range from 1 to 10 dBA.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Results of noise modeling for the Improved Two-Lane with Passing Lanes Alternative are similar to the Improved Two-Lane Alternative. The same two receptors would be impacted, and both would meet or exceed the impact criterion (66 dBA) in the design year 2027 if the Improved Two-Lane with Passing Lanes Alternative is implemented. As summarized in Table 4.17, the predicted noise levels at one receptor (Z-HM:R5) would be 1 dBA lower than with the Improved Two-Lane Alternative.

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No receptors have predicted noise levels in the design year that substantially exceed (13 dBA increase) the noise levels in the present year of the project. For the Improved Two-Lane with Passing Lanes Alternative, the increase in predicted noise levels at all receptors along the corridor would range from 1 to 10 dBA.

Four-Lane Undivided Alternative

Results of noise modeling for the Four-Lane Undivided Alternative indicate that four receptors would be impacted. These include the same two receptors impacted by both two-lane alternatives plus two additional single-family residences (L:R4, Z-HM:R4). All four would meet or exceed the impact criterion (66 dBA) in the design year 2027 if the improved Four-Lane Undivided Alternative is implemented. As shown in Table 4.17, the predicted noise levels at the impacted receptors would generally increase between 1 and 3 dBA as compared with either of the two-lane alternatives.

No receptors have predicted noise levels in the design year that substantially exceed (13 dBA increase) the noise levels in the present year of the project. For the Four-Lane Undivided Alternative, the increase in predicted noise levels at all receptors along the corridor would range from 1 to 11 dBA.

Four-Lane Divided Alternative

Results of noise modeling for the Four-Lane Divided Alternative indicate that three receptors would be impacted. These include the same receptors impacted by the Undivided Four-Lane Alternative minus one single-family residence (L:R4). This residence may be relocated due to right-of-way acquisition, and as such is subtracted from the total number of impacted receptors. The remaining three receptors would meet or exceed the impact criterion (66 dBA) in the design year 2027 if the Four-Lane Divided Alternative is implemented. As shown in Table 4.17, a comparison of the four build alternatives does not indicate that predicted noise levels would generally increase by implementing the divided four-lane alternative. At two of the three receptors, the predicted noise level would be slightly lower than or equal to the level of the other build alternatives.

No receptors have predicted noise levels in the design year that substantially exceed (13 dBA increase) the noise levels in the present year of the project for the No-Build Alternative. For the Four-Lane Divided Alternative, the increase in predicted noise levels at all receptors along the corridor would range from 1 to 9 dBA.

Mitigation

When traffic noise impacts are predicted, possible abatement measures for the mitigation of highway traffic noise need to be considered, and the measures need to be assessed to determine if they are reasonable and feasible. Possible abatement measures include modifying the proposed build alternative designs, constructing noise barriers or berms, and

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implementing traffic management measures, such as reducing the speed limit on the highway or restricting the access of certain vehicle types. Of these mitigation measures, barriers typically provide the highest level of noise reduction.

According to MDT's *Traffic Noise Analysis and Abatement: Policy and Procedure Manual* (June 2001), any abatement measure used to reduce the traffic noise at a receptor must first be considered reasonable and feasible. The Noise Abatement Checklist included in MDT's Policy helps determine if an abatement measure would be considered reasonable and feasible. At receptors where traffic noise impacts for US 2 are predicted, noise abatement measures were evaluated.

To determine if a mitigation measure is feasible, it must meet two criteria:

- The measure must provide a minimum 6-dBA reduction in noise levels at residences located closest to the highway, and
- The measure must not represent a safety hazard to vehicles traveling on the highway or to the residents of the homes.

To determine if a mitigation measure is reasonable involves more subjective factors, including:

- The comparison of the noise levels associated with the No-Build Alternative to those associated with the build alternatives
- The cost of the abatement per residence
- The timing of development
- The opinion and acceptance of impacted residents regarding the noise abatement measure.

The following potential abatement measures were assessed to determine if they would be reasonable and feasible.

Design Modifications. Shifting the alignments of the proposed US 2 build alternatives may be a feasible abatement measure. If a minimum distance of approximately 45 m (148 ft) could be provided between the centerline of a build alternative and a noise-sensitive receptor, then traffic noise impacts could be avoided. For all impacted receptors except two, shifting the alignment is not feasible because it results in other impacts such as insufficient clearance from the railroad (needed for safety) or impacts to other structures (residences or an electrical substation).

An alignment shift may be feasible at two residential receptors: HV-L:R8 and HM:R13 (see Appendix G). Receptor HV-L:R8 is located south of US 2. An alignment shift to the north may be feasible at HV-L:R8 because the residence is located on a bench above the railroad.

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Shifting the alignment to the south near Receptor HM:R13 may also be feasible. Additional design analysis would be needed to identify if there would be other impacts associated with an alignment shift at these locations. Both alignment shifts will be evaluated in a more detailed design phase of the project to determine if these potential mitigation measures are feasible and reasonable.

Barriers and Berms. A barrier is most effective when it is continuous and solid and blocks the direct line-of-sight between the roadway and a receptor. Barriers can be constructed using built-up dirt to create a berm or by building a wall using concrete, concrete block, wood, or metal panels. Although it may be used for visual screening, vegetation, such as trees and shrubs, is not considered effective as barrier material since sound passes readily through vegetation. Since an earthen berm typically has a very large base for support and may also require additional right-of-way to accommodate construction, berms may not be considered feasible for the US 2 project in most locations. A barrier wall, however, may be a feasible option to provide noise reduction. To be effective, the barrier wall must be continuous and solid with no gaps, holes, or openings, including between the bottom edge of the barrier wall and the ground surface.

MDT uses a cost effectiveness index (CEI) to determine if a barrier is reasonable. The CEI is a guideline for determining the reasonableness of constructing barriers, which incorporates the number of residences that would be benefited by the barrier, total noise reduction provided by the barrier, and total cost of barrier materials and construction. MDT defines a benefited residence as a residence located in the row of homes located closest to the highway (i.e., first row homes) that will experience a minimum 6-dBA reduction in traffic noise levels. According to MDT policy, a CEI that exceeds \$4,200 is not considered reasonable for barrier construction. The CEI is calculated with the assumption that the barrier would be constructed in MDT right-of-way and as such is not affected by the land values of the associated residences.

Because most of the US 2 impacted residences are located in the rural areas of the US 2 corridor, and there are not a significant number of driveways or cross roads that would restrict the location of a barrier near impacted receptors, barriers were considered as abatement measures. First row homes were all approximately the same distance from the centerline. To achieve the required 6-dBA noise reduction for these receptors, a barrier would need to be a minimum of 80 m (262 ft) long and 2.5 m (8 ft) high and located such that the impacted receptor is situated near the center of the barrier length. A 2.5 m (8 ft) high barrier is generally not effective in reducing noise from truck stacks, as the truck stacks would be higher than the wall. In this case, the primary source of noise is tire noise due to the high speeds in the corridor. Therefore, a 2.5 m (8 ft) high barrier was the optimum height to achieve the required 6 dBA noise reduction while minimizing cost.

At the time of this barrier analysis, the most current data available on the cost of noise barriers were found in FHWA's April 2000 report entitled *Summary of Noise Barriers Constructed by December 31, 1998*. This report summarized the cost of noise barriers by

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state. Based on this document, the average barrier cost for western states is \$164 per square meter in 1998 dollars. A state specific cost for Montana was unavailable, as Montana has never constructed a noise wall. Using these data, an approximate cost in 2003 dollars would be \$221 per square meter, and the CEI for a 200 square meter barrier would be \$7,367, which exceeds MDT's criteria. Therefore, barriers along US 2 would not be considered reasonable.

In October 2003, FHWA released a report entitled *Summary of Noise Barriers Constructed by December 31, 2001*. Again, no data specific to Montana was available, but the approximate cost for western states would be \$250 per square meter. The increased construction cost would result in a higher CEI, which would further exceed MDT's criteria. Therefore, barriers along US 2 would still not be considered reasonable in light of newly released data.

Traffic Management. Restricting certain vehicle types, like heavy trucks, from US 2, limiting the time of day that certain vehicles may use the highway and/or reducing the speed limit on US 2 are not feasible mitigation measures. US 2 is classified as a rural Non-Interstate NHS highway. One of NHS's main functions is to provide efficient transportation routes for commercial transport. Travel by domestic and international freight carriers might be inhibited through restrictions on vehicle types and speeds on the highway, which would be contrary to the purpose and need for the project. Therefore, traffic management is not a feasible or reasonable noise abatement measure.

4.3.4 Water Resources and Water Quality

Effects on ground water resources would be negligible and are not discussed in this section because (1) excavation and disturbance would not directly affect ground water, and (2) no significant water use would be required that may affect ground water levels. Because all public water supplies in the project area are from ground water sources, no effects would be anticipated to public water supplies. Due to the conceptual level of design, impacts to individual wells in the project area were not identified; these impacts will be addressed during final design.

None of the build alternatives are likely to adversely affect 303(d) List impaired water bodies. The four impaired water bodies listed by MDEQ on the 303(d) List in the project area are affected primarily by flow alteration, organic and non-organic pollution, and bank destabilization from agricultural activities, including irrigated crop production and range land activities. Road and/or bridge construction are not considered probable sources causing impaired water quality for any of the 303(d) Listed waters. For the Milk River, drinking water use is impaired, but surface water is not currently a source of drinking water in the project area, and highway-related activities would not contribute substantially to water quality impairment from mercury and metals contamination, which is likely related to agricultural pollutants. Drinking water is a probable impaired use for Lodge Creek but, again, Lodge Creek is not currently a drinking water source nor are highway activities a likely contributor to impairment. For Battle Creek, Little Box Elder Creek, and Lodge

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Creek, aquatic life support and fisheries are impaired or probably impaired. Impacts to aquatic resources would be minimal from all alternatives and are detailed in Section 4.3.7.2, Aquatic Resources.

Although impacts to surface waters are not expected to substantially affect water quality, some permanent impacts would occur due to increased runoff attributed to increased impervious surface area and in-stream disturbance from replacement of structures. Although the structure at Battle Creek would not be replaced for either of the two-lane alternatives (including the Preferred Alternative), a new structure would be added for either of the four-lane alternatives to accommodate additional travel lanes. For the four-lane alternatives, removal of riparian vegetation at Battle Creek could exacerbate riparian degradation and siltation of the creek. Because bridge design is too preliminary to address revegetation at this stage, impacts are difficult to predict but will likely be mitigated through design to have minimal long-term water quality impacts (see mitigation). Other impacts to water quality from soil erosion are likely to occur only during construction and are discussed in Section 4.4, Construction Impacts.

Impervious Surfaces

Each of the build alternatives would increase the amount of impervious (paved) roadway surface area and may result in increased volumes of storm water runoff and associated increases in erosion and pollutant loads. Because the watershed is sparsely developed, impervious surface cover is not a major concern for water quality, which is supported by the 303(d) List assessments. The total increase in impervious surface is shown in Table 4.18 for each alternative. (Although slope and grade impact erosion potential, the project area is relatively flat and, therefore, differences among alternatives with regard to slopes were not quantified.) Impervious areas are calculated with the assumption that the existing roadway will be removed in areas that are realigned and that the proposed improvements detailed in Chapter 2 comprise the entire area of impervious surface. Even though the amount of increased impervious surface area is substantially greater for the four-lane alternatives as compared to the two-lane alternatives, it is minor in context of the watershed area, which is large and only sporadically developed.

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Table 4.18 Estimated Impervious Surface Areas

Roadway Segment	Alternatives				
	No-Build (Existing Roadway)	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Havre East Suburban	3.6 ha (8.8 ac)	5.7 ha (14.1 ac)	6.1 ha (15.0 ac)	6.8 ha (16.7 ac)	6.8 ha (16.9 ac)
Havre East Rural	12.7 ha (31.5 ac)	17.4 ha (43.0 ac)	19.1 ha (47.2 ac)	27.4 ha (67.6 ac)	30.7 ha (75.8 ac)
Lohman	12.2 ha (30.2 ac)	18.4 ha (45.4 ac)	20.2 ha (50.0 ac)	28.9 ha (71.3 ac)	32.5 ha (80.3 ac)
Chinook Urban	2.8 ha (7.0 ac)	3.3 ha (8.1 ac)	3.5 ha (8.6 ac)	5.1 ha (12.5 ac)	6.1 ha (15.0 ac)
Zurich	12.8 ha (31.8 ac)	19.5 ha (48.3 ac)	21.6 ha (53.3 ac)	30.3 ha (75.0 ac)	34.7 ha (85.7 ac)
Harlem West	14.2 ha (35.0 ac)	19.9 ha (49.1 ac)	21.6 ha (53.5 ac)	31.0 ha (76.6 ac)	34.9 ha (86.2 ac)
Harlem to MT Highway 66	10.2 ha (25.1 ac)	15.3 ha (37.9 ac)	15.3 ha (37.9 ac)	19.6 ha (48.5 ac)	20.5 ha (50.7 ac)
Total¹	68.5 ha (169.4 ac)	99.5 ha (245.9 ac)	107.4 ha (265.5 ac)	149.0 ha (368.2 ac)	166.1 ha (410.5 ac)
Additional Area of Impervious Surface	0	31.0 ha (76.5 ac)	38.9 ac (96.1 ac)	80.5 ha (198.8 ac)	97.6 ha (241.1 ac)

¹Totals may not equal exact sum of subtotals due to rounding.

Bridge/Culvert Construction or Replacement

No new stream crossings are proposed under any of the build alternatives. However, depending on the alternative, most bridges would be replaced, and therefore each of the alternatives would require in-channel construction that may increase erosion and interrupt flow. If work is performed in compliance with water quality permits, most impacts should be temporary, and long-term impacts would be minimal.

No-Build Alternative

There would be minimal water quality impacts resulting from the No-Build Alternative. There would be no increase in impervious surfaces, soil disturbance from construction activities, or disturbance of waterways from the placement of structures. Existing roadway maintenance activities would continue. These activities include the application of herbicides, mowing, and winter maintenance, such as snowplowing and the application of sand, salt, and chemical deicers for deicing. These maintenance activities have the potential to introduce sediment, materials, and chemicals into streams.

Improved Two-Lane Alternative

Impervious surfaces along the corridor would increase 45 percent over existing conditions, with the greatest increases in rural areas where existing impervious surfaces are inconsequential. Estimated increases are detailed in Table 4.18 for each of the roadway sections. The increase in impervious surface would have a negligible effect on water quality because of the size of the overall watershed areas and the limited amount of existing impervious cover within the watershed. Bridges would be replaced over the following creeks and rivers: Little Box Elder Creek, Clear Creek, Red Rock Creek (Coulee), Lodge Creek, Fifteen Mile Creek, and the Milk River near Fort Belknap. Bridge construction is not likely to permanently affect water quality because work would be done in accordance with permits, no new crossings are proposed, and sedimentation is not a significant concern for these water bodies. Impacts from bridge replacements are further discussed in Section 4.3.11, Water Body Modifications.

Existing roadway maintenance activities, as described above for the No-Build Alternative, would continue. These activities have the potential to introduce sediment, materials, and chemicals into streams.

Avoidance of public water supplies will be coordinated during final design. If public water supplies cannot be avoided, they will be relocated by MDT. MDT will coordinate with local property owners to determine locations of private ground water wells during final design. If impacts to private ground water wells cannot be avoided, they will be relocated by MDT.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Impervious surfaces along the corridor would increase 57 percent over existing conditions, with the greatest increases in rural areas where existing impervious surfaces are minimal. Estimated increases are detailed in Table 4.18 for each of the roadway sections. The increase in impervious surface would have a negligible effect on water quality because of the size of the overall watershed area and the limited amount of existing impervious cover within the watershed. Bridges would be replaced over the same water bodies as described under the Improved Two-Lane Alternative, and impacts would be similar. Impacts from bridge replacements are further discussed in Section 4.3.11, Water Body Modifications. Impacts from roadway maintenance activities would be the same as described for the Improved Two-Lane Alternative. Avoidance of public water supplies and private ground water wells will be coordinated during final design, as described in the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

Impervious surfaces along the corridor would increase 117 percent over existing conditions, with the greatest increases in rural areas where existing impervious surfaces are inconsequential. Estimated increases are detailed in Table 4.18 for each of the roadway sections. The increase in impervious surface would have a negligible effect on water quality

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because of the size of the overall watershed area and the limited amount of existing impervious cover within the watershed. Bridges would be replaced over the same water bodies as described under the Improved Two-Lane Alternative but would also include new bridges at Battle Creek and the Milk River east of Lohman. The existing Battle Creek bridge would not be replaced as part of this project because it was replaced in 1999 and currently meets MDT standards. However, an additional bridge would be required for this alternative to accommodate the additional travel lanes. An additional bridge would also be required adjacent to the existing Milk River bridge east of Lohman to accommodate the additional travel lanes.

Except for the Battle Creek and Milk River bridges discussed above, impacts from bridge replacements would be similar to the Improved Two-Lane Alternative and are further discussed in Section 4.3.11, Water Body Modifications. Impacts from roadway maintenance activities would be similar to that described for the Improved Two-Lane Alternative. However, the additional travel lanes would require more snowplowing and more sand, salt, and magnesium chloride chemical deicers for deicing, resulting in the potential introduction of a greater quantity of sediment and materials into streams. Avoidance of public water supplies and private ground water wells will be coordinated during final design, as described in the Improved Two-Lane Alternative.

Four-Lane Divided Alternative

Impervious surfaces along the corridor would increase 142 percent over existing conditions, with the greatest increases in rural areas where existing impervious surfaces are inconsequential. Estimated increases are detailed in Table 4.18 for each of the roadway sections. The increase in impervious surface would have a negligible effect on water quality because of the size of the overall watershed area and the limited amount of existing impervious cover within the watershed. Bridges would be replaced over the same water bodies as described under the Four-Lane Undivided Alternative, and impacts would be similar. Impacts from bridge replacements are further discussed in Section 4.3.11, Water Body Modifications. Impacts from roadway maintenance activities would be the same as described for the Four-Lane Undivided Alternative. Avoidance of public water supplies and private ground water wells will be coordinated during final design, as described in the Improved Two-Lane Alternative.

Mitigation

Any build alternative would be constructed in compliance with conditions of water quality permits and MDT BMPs. MDT will follow BMPs for winter maintenance operations to reduce the potential for water quality impacts resulting from maintenance activities. BMPs include increased use of chemical deicers and decreased use of sand. BMPs also include post-winter sand removal from the roadway with mechanized pick-up brooms. Coordination with MDEQ regarding TMDL development for impaired water bodies will be conducted during final design. In addition, the applicability of sediment traps and vegetative filters near

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streams and wetlands will be considered during final design. MDT will continue consultation with MFWP on issues including riparian habitat enhancement and wetland development and river modifications at bridge crossings. MDT will also coordinate with MFWP to obtain a SPA 124 permit under the Montana Stream Protection Act, for projects that may affect the bed or banks of any stream in Montana. This consultation will include consideration for revegetation of stream banks during final design.

If private and public water supply ground water wells are within the final right-of-way, they would be relocated in accordance with MDT procedures. Construction mitigation is discussed in Section 4.4.

4.3.5 Wetlands

A total of 22 jurisdictional wetlands; 23 potential “Talent waters” jurisdictional wetland areas, ditches, and canals; and 24 non-jurisdictional wetland areas, ditches, and canals would be affected by the project, primarily as a result of the replacement of structures crossing rivers, creeks, coulees and other drainages (see Section 3.3.5 for a description of jurisdictional and non-jurisdictional wetlands).

A jurisdictional determination request containing the information presented in the EIS was submitted to the COE. The COE responded that final jurisdiction will be determined after the EIS is finalized. The analysis in the EIS therefore assumes that the COE regulates all wetlands identified as jurisdictional or as potential “Talent waters” jurisdictional areas, ditches, and canals. (Refer to Appendix B, MDT letter dated September 10, 2004 and COE letter dated September 20, 2004.)

Refer to Appendix H for a summary of impacts and avoidance or minimization measures for each wetland by alternative. Separate tables in Appendix H are provided for jurisdictional wetlands; potential “Talent waters” jurisdictional wetland areas, ditches, and canals; and non-jurisdictional wetland areas, ditches, and canals. Refer to Appendix A for locations of these wetlands.

Table 4.19 provides a summary of wetland impacts, greater than or equal to 0.04 ha (0.1 ac), for jurisdictional and non-jurisdictional wetlands by alternative. The impact calculations presented below were determined on the basis of conceptual design and are therefore preliminary estimates. Final impacts and further avoidance, minimization, and mitigation will be determined during final design.

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Table 4.19 Total Jurisdictional and Non-Jurisdictional Wetland Impacts

	Total Wetland Area in Project Area	Alternatives				
		No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Jurisdictional Wetlands						
Total Area ¹	32.0 ha (79.5 ac)	0	2.7 ha (5.9 ac)	2.8 ha (6.4 ac)	3.3 ha (7.9 ac)	3.9 ha (9.7 ac)
Percent of Total Area ²	100%	0%	8.4 %	8.8 %	10.3 %	12.2 %
Potential “Talent Waters” Jurisdictional Wetland Areas, Ditches, and Canals³						
Total Area ¹	10.3 ha (25.3 ac)	0	0.6 ha (1.5 ac)	0.7 ha (1.8 ac)	1.1 ha (2.7 ac)	2.1 ha (5.0 ac)
Percent of Total Area ²	100%	0%	6.2%	7.2%	10.9%	20.7%
Non-Jurisdictional Wetland Areas, Ditches, and Canals						
Total Area ¹	26.9 ha (65.7 ac)	0	2.7 ha (7.0 ac)	2.7 ha (7.0 ac)	3.1 ha (7.9 ac)	4.3 ha (10.6 ac)
Percent of Total Area ²	100%	0%	10.0%	10.0%	11.5%	16.0 %

Note: Impacts less than 0.04 ha (0.1 ac) are not included. Impacts were determined on the basis of conceptual design and may be refined during final design.

¹ The conversion from hectares to acres is not exact due to rounding for wetlands with small impact areas. For further detail on wetland impacts and rounding, please see the Biological Resources Report (DEA, December 2003).

² Percent of total is calculated for hectares.

³ These wetland areas, ditches, and canals are connected to other jurisdictional wetlands or waters of the U.S.; however, it is currently unknown whether they discharge into jurisdictional wetlands or waters. Final determination will be made during final design.

Source: David Evans and Associates, Inc., December 19, 2003. *US 2, Havre to Fort Belknap Biological Resources Report*. Please note that Total Area impacts for jurisdictional wetlands differ from the *Biological Resources Report* due to changes in wetland impacts at Wetland Qx as a result of the Milk River Bridge replacement project. Due to rounding, this difference is apparent in the two-lane alternatives but not in the four-lane alternatives in this table.

Each of the jurisdictional wetlands; potential “Talent waters” jurisdictional wetland areas, ditches, and canals; and non-jurisdictional wetland areas, ditches, and canals is evaluated for wetland functions and values according to the MDT Montana Wetland Assessment Form. Table 4.20 represents the total impacts, greater than or equal to 0.04 ha (0.1 ac), to these wetlands by MDT wetland category under each alternative. Wetland categories are explained in Section 3.3.5, Wetlands under “Functional Value Assessment.”

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Table 4.20 Impacts to Jurisdictional and Non-Jurisdictional Wetlands by Functional Category

MDT Classification	Wetland and Impacts	Alternative			
		No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided
Jurisdictional Wetlands					
Category III	Wetlands Impacted	None	C, F, H, L, N, Qx, Q, V, Px, W, X, Z, Bx, Rx and Tx	C, F, H, L, N, Qx, Q, V, Px, W, X, Z, Bx, Rx and Tx	C, F, H, L, N, Qx, P, Q, V, Px, W, X, Y, Z, Ax, Bx, Rx and Tx
	Area Impacted	0	2.5 ha (5.7 ac)	2.6 ha (6.2 ac)	3.1 ha (7.6 ac)
Category IV	Wetlands Impacted	None	R and S	R and S	R and S
	Area Impacted	0	0.1 ha (0.2 ac)	0.1 ha (0.2 ac)	0.1 ha (0.3 ac)
Total Impact to Jurisdictional Wetlands ^{1, 2}		0	2.6 ha (5.9 ac)	2.7 ha (6.4 ac)	3.2 ha (7.9 ac)
Potential "Talent Waters" Jurisdictional Wetland Areas, Ditches, and Canals					
Category IV	Wetlands Impacted	None	NJVVV, NJB, NJF, NJM, NJQ, and NJZZ	NJVVV, NJB, NJF, NJM, NJQ, NJUU, and NJZZ	G, NJVVV, NJB, NJF, NJM, NJQ, NJUU, NJZZ, and NJYY
	Impacts	0	0.6 ha (1.5 ac)	0.7 ha (1.8 ac)	1.1 ha (2.7 ac)
Total Impact to Potential "Talent Waters" Jurisdictional Wetlands		0	0.6 ha (1.5 ac)	0.7 ha (1.8 ac)	1.1 ha (2.7 ac)
					2.1 ha (5.0 ac)

Table 4.20 Impacts to Jurisdictional and Non-Jurisdictional Wetlands by Functional Category (continued)

MDT Classification	Wetland and Impacts	Alternative				
		No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lanes (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Non-Jurisdictional Wetland Areas, Ditches, and Canals						
Category III	Wetlands Impacted	None	Dx	Dx	Dx	Dx
	Impacts	0	1.3 ha (3.2 ac)	1.3 ha (3.2 ac)	1.6 ha (4.0 ac)	2.3 ha (5.7 ac)
Category IV	Wetlands Impacted	None	Fx, Gx, NJR, NJU, NJX, NJBBB, NJFF, and NJJJ	Fx, Gx, NJR, NJU, NJX, NJBBB, NJFF, and NJJJ	Fx, Gx, Hx, NJU, NJX, NJBBB, NJFF, and NJJJ	Fx, Gx, Hx, NJU, NJX, NJBBB, NJFF, NJJJ, NJHHH, and NJRR
	Impacts	0	1.4 ha (3.8 ac)	1.4 ha (3.8 ac)	1.5 ha (3.9 ac)	2.0 ha (4.9 ac)
Total Impact to Non-Jurisdictional Wetland Areas, Ditches, and Canals¹		0	2.7 ha (7.0 ac)	2.7 ha (7.0 ac)	3.1 ha (7.9 ac)	4.3 ha (10.6 ac)

Note: Impacts were determined on the basis of conceptual design and may be refined during final design.

¹ The conversion from hectares to acres is not exact due to rounding for wetlands with small impact areas. For further detail on wetland impacts and rounding, please see the Biological Resources Report (DEA, December 2003)..

² Please note that totals do not match Table 4.19, due to rounding differences when Wetland impacts are summed separately for Class III and Class IV wetlands.

Source: David Evans and Associates, Inc., December 19, 2003. US 2, Havre to Fort Belknap *Biological Resources Report*. Please note that Area Impacted totals differ from the *Biological Resources Report* due to changes in wetland impacts at Wetland Qx as a result of the Milk River Bridge replacement project. Due to rounding, this difference is apparent in the two-lane alternatives but not in the four-lane alternatives in this table.

No-Build Alternative

The No-Build Alternative would have no impact on wetlands.

Improved Two-Lane Alternative

Based on conceptual design, the Improved Two-Lane Alternative would impact 2.7 ha (5.9 ac) of jurisdictional wetlands, which is 8.4 percent of the corridor jurisdictional wetland area. Of the 17 jurisdictional wetlands with impacts greater than or equal to 0.04 ha (0.1 ac), 15 are Category III wetlands and two are Category IV wetlands.

Based on conceptual design, under this alternative, 0.6 ha (1.5 ac) of potential "Talent waters" jurisdictional wetland areas, ditches, and canals would be impacted; 2.7 ha (7.0 ac) of non-jurisdictional wetland areas, ditches, and canals would be impacted.

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Indirect impacts from the proposed project that are common to wetlands under all of the build alternatives may include reduction in flood storage, reduction in food material and habitat for wetland dependent wildlife species, degradation of water quality and an increase in non-native plant species.

During periods of heavy rainfall, wetlands serve as flood storage areas, where water can spread out without damage to developed uplands. The potential filling of wetlands in the project area may increase on-site and off-site flooding in and beyond the project area. Wetlands also produce the basic food material used by many fish and other aquatic life in the project area. Some of these wetlands also serve as nursery grounds for fish, rookery areas for birds and habitat for certain species of wildlife, for all or part of their life. Alteration or a reduction in the number of wetlands may reduce the amount of food and habitat that is available for these species.

Potential dredging and filling of wetlands in the project area may also degrade the quality of water during and after construction, and may reduce the populations of fish and wildlife. Because the existing highway would be widened, impervious surface area would increase. An increase in the impervious surface area may decrease ground water recharge within the watershed and may reduce the water flow into these wetlands.

The construction of roads may also disrupt habitat continuity, driving out more sensitive, interior plant species, and providing habitat for hardier opportunistic edge and non-native plant species in wetland areas. However, the jurisdictional and non-jurisdictional wetlands in the project area are currently adjacent to the existing road and already experience some level of noxious weed invasion.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Based on conceptual design, the Improved Two-Lane with Passing Lanes Alternative would impact 2.8 ha (6.4 ac) of jurisdictional wetlands, which is 8.8 percent of the corridor jurisdictional wetland area. Of the 17 jurisdictional wetlands with impacts greater than or equal to 0.04 ha (0.1 ac), 15 are Category III wetlands and two are Category IV wetlands.

Based on conceptual design, under this alternative, 0.7 ha (1.8 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals would be impacted; 2.7 ha (7.0 ac) of non-jurisdictional wetland areas, ditches, and canals would be impacted.

The indirect impacts under this alternative would be the same as those discussed under the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

Based on conceptual design, the Four-Lane Undivided Alternative would impact 3.3 ha (7.9 ac) of jurisdictional wetlands, which is 10.3 percent of the corridor jurisdictional wetland

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area. Of the 20 jurisdictional wetlands with impacts greater than or equal to 0.04 ha (0.1 ac), 18 are Category III wetlands and two are Category IV wetlands.

Based on conceptual design, under this alternative, 1.1 ha (2.7 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals would be impacted; 3.1 ha (7.9 ac) of non-jurisdictional wetland areas, ditches, and canals would be impacted.

The indirect impacts under this alternative would be the same as those discussed under the Improved Two-Lane Alternative.

Four-Lane Divided Alternative

Based on conceptual design, the Four-Lane Divided Alternative would impact 3.9 ha (9.7 ac) of jurisdictional wetlands, which is 12.2 percent of the corridor jurisdictional wetland area. Of the 21 jurisdictional wetlands with impacts greater than or equal to 0.04 ha (0.1 ac), 18 are Category III wetlands and three are Category IV wetlands.

Based on conceptual design, under this alternative, 2.1 ha (5.0 ac) of potential “Talent waters” jurisdictional wetland areas, ditches, and canals would be impacted; 4.3 ha (10.6 ac) of non-jurisdictional wetland areas, ditches, and canals would be impacted.

The indirect impacts under this alternative would be the same as those discussed under the Improved Two-Lane Alternative.

Avoidance and Minimization

Impacts to wetland resources would be minimized through the design process by keeping a majority of the alignment for the reconstruction of US 2 near the existing road. The portions of the proposed alignment that would deviate from the existing roadway are located in areas that do not contain a large amount of wetlands. Where practicable, the alignment was shifted away from wetland areas to avoid or minimize impacts. Impacts to wetlands could not be completely avoided in order to meet a desirable minimum safe distance of 46 m (150 ft) from the railroad at intersecting roadways. The project used the minimum safe distance between the highway and the adjacent railroad, and the minimum safe right-of-way width for each alternative, to minimize impacts to wetlands. Design measures to minimize impacts or avoid wetlands were incorporated wherever practicable and are noted in Tables H-1, H-2, and H-3 in Appendix H along with a brief description of the resulting wetland impact.

Specific avoidance and minimization measures are discussed below for the jurisdictional wetlands (for specific information on avoidance and minimization measures for potential “Talent waters” jurisdictional wetland areas, ditches, and canals and for non-jurisdictional wetland areas, ditches, and canals, refer to *US 2, Havre to Fort Belknap Biological Resources Report* (December 19, 2003) and *Addendum* (September 2004). Jurisdictional Wetland Areas B, A, I, Sx, Ox and Nx would be completely avoided by all four of the build

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alternatives. These wetlands were avoided either because the proposed alignment is on the existing road prism and the wetlands are located outside of the project area (Wetlands A, B, Nx and Ox,), or because the alignment would shift to the south in these locations (Wetlands I and Sx) to avoid the wetland and to maintain a desirable distance between railroad crossings and roadway for traffic safety. Wetlands B, A, Ox, and Nx are Category III wetlands and Wetlands I and Sx are Category IV wetlands.

Wetland C (Little Box Elder Creek), Wetland L (Clear Creek), Wetland Qx (Milk River), Wetland R (Red Rock Creek (Coulee)), Wetland V (Unnamed Creek), Wetland Px (Lodge Creek), Wetland X (Battle Creek), Wetland Rx (Fifteen Mile Creek), and Wetland Tx (Milk River) cannot be avoided because the existing highway crosses these water bodies and there is riparian/wetland vegetation on both sides of the road. These wetlands are Category III wetlands, except for Wetland R which is a Category IV wetland, and represent most of the creek or river crossings in the project area. The project uses a minimum safe distance between the highway and railroad crossings to minimize impacts to these wetlands (except for Wetland Tx). Wetland Tx is an area of the corridor where the railroad alignment is not close to the highway, therefore to minimize impacts to this wetland the proposed highway alignment was kept near the existing alignment. Wetland V would be affected to a lesser extent under the Four-Lane Divided alternative, which is slightly realigned to travel through Chinook. For this wetland, the greatest impacts result from the Four-Lane Undivided Alternative.

Wetland Ax is a riparian wetland immediately adjacent to the south side of the highway associated with the Milk River, and cannot be avoided by any of the four alternatives. Wetland Ax is a Category III wetland. The railroad offset criteria would be further reduced in the area of Wetland Ax to minimize impacts, but the impact cannot be completely avoided due to the proximity of the wetland to the existing road.

Wetlands D and E are located primarily on the northern side of US 2 and are associated with unnamed drainages or ground water from the Milk River. Wetland D is a Category III wetland and Wetland E is a Category IV wetland. A portion of these wetlands cross under US 2 and water collects in topographically low areas under the road. These wetland areas cannot be avoided during construction because of the proximity of the wetlands to the existing road. Impacts would be minimized, however, because the alignment would shift to the south to minimize impacts to these wetlands and to maintain a desirable distance between railroad crossings and roadway for traffic safety. The greatest impact results from the Four-Lane Divided Alternative.

Wetland W is an unnamed drainage located primarily on the southern side of the road, but also crosses under the highway and railroad. This is a Category III wetland. This drainage is connected to the Milk River, but is mostly used for irrigation and does not contain an abundance of riparian vegetation. This wetland cannot be avoided because of the proximity of the wetland to the existing road. The project uses a minimum safe distance between the highway and railroad crossing to minimize impacts to this wetland.

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Wetlands F, H, N, P, Q, S, Y, Z, and Bx are located primarily on the southern side of the highway. These wetlands cannot be avoided because of the proximity of the wetlands to the road. The project uses a minimum safe distance between the highway and railroad crossings to minimize impacts to these wetlands. The offset criteria would be further reduced in the area of Wetlands P, Q, and Bx to minimize impacts to these wetlands. The greatest impact results from the Four-Lane Divided Alternative. Wetland S is a Category IV wetland and the remaining wetlands are Category III wetlands.

A COE 404 permit will be required. MDT will comply with the conditions of the 404 permit. The wetland replacement ratio and wetland mitigation site will be identified in consultation with the COE. MDT is currently investigating a potential mitigation site (for MDT Project STPS 325-1(2)0, CN 4478). The potential wetland mitigation site is approximately 65 ha (160 ac) in size, and is located within the existing project watershed northeast of Chinook.

Mitigation

During final design, additional design measures to reduce impacts to jurisdictional wetlands P, Q, V, Y, Z and Ax will be investigated. Such measures may include steepening side slopes.

MDT will incorporate a Storm Water Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs) into construction projects. MDT will comply with the conditions of the COE 404 permit. Temporary impacts to wetlands will be restored in accordance with MDT standard specifications or permit conditions.

Unavoidable wetland losses will be mitigated with replacement wetlands. The goal of wetland mitigation is to replace the functions and values of lost wetlands in areas adjacent to or as close as possible to the area of wetland loss. A wetland mitigation plan will be developed for the COE 404 permit prior to construction. At that time, coordination and consultation will be conducted with the Montana Interagency Wetlands Group and other appropriate agencies. This would include consultation with MFWP on issues including riparian habitat enhancement and wetland development at bridge crossings, as required to obtain a SPA 124 permit under the Montana Stream Protection Act, for projects that may affect the bed or banks of any stream in Montana.

4.3.6 Vegetation

A field survey of vegetation was conducted September 10 through September 17, 2002 in an area approximately 37 m (120 ft) on either side of the existing centerline, to reflect the largest area of impact of any project alternative.

Impacts to vegetation species are addressed qualitatively in terms of direct and indirect impacts. Direct impacts refer to temporary and permanent impacts caused by construction

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within a narrowly defined area around the project site. Indirect impacts are impacts that occur later in time or farther in distance from construction. An example of an indirect impact could be erosion.

A wider paved shoulder width is not likely to substantially increase the number of noxious weeds currently growing in the highway right-of-way. The current amount of weeds associated with the roadway is minimal when compared to weeds introduced by grazing and agriculture activities.

No-Build Alternative

The No-Build Alternative would have no impact to vegetation, since no physical reconstruction activities would occur.

Improved Two-Lane Alternative

The vegetation and habitat that would be impacted by both permanent and temporary disturbance is a small portion of plant communities found in the project corridor. Most of the direct impacts outside the “footprint” of this alternative are considered temporary since the area of impact would be revegetated after construction. These temporary impacts would vary by plant community.

To improve the distance between the highway and the railroad at high priority railroad crossings over one-third of the proposed alignment would lie south of the existing alignment (see Chapter 2, Alternatives, and Table 4.1, Railroad Offsets at Public Roads). In those areas where the highway is realigned south of the existing alignment, the old roadway surface and much of the embankment would be removed and revegetated for consistency with the surrounding area. In many cases, the revegetated area would be part of the improved clear zone to the north of the new highway.

The indirect impact to vegetation is difficult to predict. Impacts from erosion and sedimentation are associated with areas of exposed soil and may occur during and immediately after construction on steep slopes where vegetation would be difficult to reestablish. Impacts from sedimentation may also occur in areas immediately downgradient of these slopes.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The impacts to vegetation would be similar to the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

The impacts to vegetation would be similar to the Improved Two-Lane Alternative. However, the overall vegetation impacts for this alternative would be greater than either of

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the two-lane alternatives because US 2 would have a total paved roadway section width of 19.2 m (64 ft) as compared to 12 m (40 ft) for the both two-lane alternatives. Therefore, a greater amount of land would be disturbed by this alternative than by either of the two-lane alternatives.

Although portions of the proposed new highway alignment would overlap the existing highway, the old roadway surface would be removed and reconstructed in those areas to provide the correct profile for the new alignment. In those areas where the proposed highway would lie south of the existing highway, the old roadway surface and embankment would be removed and revegetated as in the both two-lane alternatives.

Four-Lane Divided Alternative

The impacts to vegetation would be similar to the other build alternatives. However, the overall vegetation impacts for this alternative would be greater than the other alternatives because US 2 would have a total roadway section width of 30.2 m (100 ft). Therefore, a greater amount of land would be disturbed.

Mitigation

Because the impact to vegetation is not expected to be substantial, no special mitigation beyond common BMPs will be required for the proposed project. Clearing and grubbing of vegetation outside the construction area will be limited to that needed to construct the project. All disturbed areas will be revegetated with desirable species as soon as practical.

MDT is responsible for maintaining the right-of-way in the project area. Mitigation for noxious weeds generally includes spraying, which usually occurs in the summer months before the plants have gone to seed and involves using a chemical weed killer to eradicate the weeds.

4.3.7 Wildlife and Aquatic Species

Impacts to terrestrial and aquatic species, including Montana State Species of Special Concern, are evaluated in terms of overall impacts from construction of the proposed project and impacts from each alternative. Impact analysis of threatened and endangered species as defined by Section 7 (c) of the Endangered Species Act is presented in Section 4.3.8.

4.3.7.1 Terrestrial Resources

No-Build Alternative

The No-Build Alternative would not impact any terrestrial Montana State Species of Special Concern or general terrestrial wildlife species or their habitats.

Improved Two-Lane Alternative

Montana Species of Special Concern

Swift fox. Swift fox have been documented approximately 24 km (15 mi) north of Zurich and 40 km (25 mi) northeast of Havre, near the Canadian border. None were observed during site visits. The proposed project area consists primarily of farmland with small, fragmented pockets of native rangeland. It is unlikely that swift fox would utilize farmland areas adjacent to the highway as potential habitat, and the habitat range of the nearest documented swift fox would not extend into the project area. Therefore, the proposed project would have no effect on swift fox.

Northern leopard frog No leopard frogs have been documented in the project area and none were found during field visits. Potential habitat for the species may exist in the project area in jurisdictional wetlands P, Q, Y, Z, and Nx and in potentially jurisdictional wetlands Kx and Lx. The total impacts to these locations under the Improved Two-Lane Alternative would be approximately 0.5 ha (1.2 ac). Therefore, the proposed project may affect northern leopard frog individuals (should they be present) or habitat but is not likely to contribute to a trend toward Federal listing or loss of viability of the species.

Sage grouse. No sage grouse were observed during the field visit, and it is unlikely that the species would be found in the project area. The project area does not contain the significant amounts of sagebrush habitat necessary to maintain a sage grouse population. Therefore, the proposed project would have no effect on sage grouse.

Urban and Rural Wildlife

Species such as squirrel, skunk, voles, shrew, mice, raccoons and rats, deer, coyote, bobcat, rabbit, porcupine, badger, raptors, foxes, ground squirrels, and other open forest and grassland animals most likely use habitat in the project area. However, the proposed project would be constructed adjacent to the existing highway where disturbance is currently high, and there is an abundance of suitable riparian habitat outside the project area. Therefore, the proposed project may affect urban and rural wildlife should they be present but is not likely to contribute to a trend toward Federal listing or loss of viability of these species.

Bat Species

Habitat for little brown myotis and big brown bat may be found in riparian areas of the Little Box Elder Creek, Clear Creek, Milk River, Red Rock Creek (Coulee), Lodge Creek, Battle Creek, Fifteen Mile Creek, and Thirty Mile Creek in the project area. No impacts would be expected at Battle Creek as no bridge replacement would occur at that location. The other areas would be only minimally impacted by the proposed project, and there is substantial bat habitat available in the area outside the project impact area. Therefore, the proposed project may affect little brown myotis and big brown bat individuals or their habitat should they be

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present but is not likely to contribute to a trend toward Federal listing or loss of viability of these species.

Amphibians and Reptiles

Impacts may occur to western chorus frog habitat that may be found in jurisdictional wetlands P, Q, Y, Z, and Nx and potentially jurisdictional wetlands Kx and Lx in the project area. The total impacts to these habitat locations under the Improved Two-Lane Alternative would be approximately 0.5 ha (1.2 ac). The proposed project may affect western chorus frog individuals or habitat should they be present, but because the impact would be minimal and there is suitable habitat present outside the project area, the impact is not likely to contribute to a trend toward Federal listing or loss of viability of the species.

Habitat for tiger salamander may be found near the smaller creeks in the project area such as Little Box Elder Creek, Clear Creek, Red Rock Creek (Coulee), and Fifteen Mile Creek. These areas may be impacted during construction, but again, there is suitable habitat available outside the project area. Therefore, the proposed project may impact tiger salamander individuals or habitat should they be present, but is not likely to contribute to a trend toward Federal listing or loss of viability of the species.

Because snake species such as racers, gopher snakes, western terrestrial garter snakes, plains garter snakes, and western rattlesnakes are found in a variety of uncultivated upland areas, such as those found in the project area, the proposed project may impact individuals or habitat should they be present but is not likely to contribute to a trend toward Federal listing or loss of viability of snake species.

Direct impacts to terrestrial species that may occur as a result of the Two-Lane Alternative include loss of potential wildlife habitat. The total riparian habitat loss for the Improved Two-Lane Alternative would be approximately 1.0 ha (2.1 ac)⁶. The remaining habitat within the project footprint is rangeland and prairie fragmented by agriculture and rural development. While not considered prime habitat for most species because of disturbance, these areas are still utilized by deer, migratory birds, and general urban and rural wildlife species. A portion of both riparian and rangeland/fragmented prairie habitat would be lost as a result of the proposed project. However, this loss would be minimal compared to the availability of similar habitat in the project area.

The indirect effects to terrestrial species from the Improved Two-Lane Alternative are interrelated and may include (1) habitat fragmentation and alteration, (2) increased stormwater runoff, and (3) increased mortality from automobiles. The presence of a new road may fragment suitable habitat, causing wildlife to shift home ranges and alter their movement pattern, reproductive behavior, escape response, and physiological state.

⁶ The conversion from hectares to acres is not exact due to upward rounding for wetlands with small impact areas. For further detail on wetland impacts and rounding, please see the Biological Resources Report (DEA, December 2003).

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In some areas, wildlife would have a slightly wider (4.8 m (16 ft)) distance to cross the highway due to adding shoulders. However, all habitat areas for terrestrial species that would potentially be impacted are in locations that have been altered previously by the roadway or adjacent development, thereby limiting the use of these areas to wildlife. Additionally, fragmentation of wildlife habitat occurred during the initial construction of US 2, the railroad, rural residential development, and agricultural expansion. Therefore, the proposed project would not adversely affect terrestrial species or their habitat in the project corridor.

The Improved Two-Lane Alternative would have approximately 99.5 ha (245.9 ac) of impervious surface area, an increase of 31.0 ha (76.5 ac) over the existing conditions. Stormwater runoff would increase as a result of additional areas of impervious surface from the wider roadway. Increases in heavy metals, gasoline additives, and hydrocarbons from vehicles would most likely accumulate directly adjacent to the road and may enter the creeks and rivers adjacent to the roadway in the project area. Impacts to water quality from increased impervious cover would be minimal (see Section 4.3.4, Water Resources and Water Quality).

As stated in Section 3.1.2, Safety, 43 percent of all crashes along the corridor occurred with a wild animal. There are no obvious animal-related accident clusters along the project corridor. Deer and other wildlife frequently cross the road, shifting from cover and forage areas along the Milk River to forage in the agricultural fields adjacent to the river. There are no concentrated wildlife crossings in the project area. The relatively flat topography and open fields surrounding the majority of the highway makes it difficult to build infrastructure (e.g., wildlife fencing and crossing) that would be effective in creating distinct wildlife crossings using underpasses or bridges. The area with the highest percentage of accidents that are wild animal related is the Harlem West segment. This is a 14.5 km (9 mi) segment that does not contain any bridge structures; therefore there is no opportunity to provide wildlife passage under a bridge. In other segments with bridges at major drainages, the opportunity to provide a wide enough span to enable movement of wildlife along the drainage will be investigated during final design and in consultation with MFWP. The use of fencing to direct wildlife to these drainage crossings was not considered appropriate in general for this corridor because, as mentioned, the topography is relatively flat and the wildlife is not concentrated in any specific area but is scattered throughout this rural corridor. The designated speed limit would remain the same, and the wider road width may decrease fatalities because the driver would have more area in which to maneuver around the animal. The project is not anticipated to increase wildlife fatalities.

Migratory Birds

If active cliff swallow nests were present at the time of replacement of existing bridges, there would be an impact to cliff swallows. Based on the restrictions on destruction or disturbance to nests under the MBTA, there would be no impact to cliff swallows if their nests were not active during the replacement of the existing bridges. Because the impact to migratory birds

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(if present) would be minimal and temporary during construction, and there is suitable habitat present outside the project area, the proposed project is not likely to contribute to a trend toward Federal listing or loss of viability of migratory birds.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The impacts to Montana Species of Special Concern, urban and rural wildlife, bat species, amphibians and reptiles, and migratory birds from this alternative would be similar to the Improved Two-Lane Alternative. Impacts to potential northern leopard frog habitat (jurisdictional wetlands P, Q, Y, Z, and Nx, and potentially jurisdictional wetlands Kx and Lx) would be approximately 0.5 ha (1.2 ac). A total of approximately 1.0 ha (2.1 ac)⁷ of riparian habitat would be lost under this alternative. The proposed improvements would result in a wider roadway for wildlife to cross. For most of the corridor it is similar to the Improved Two-Lane Alternative. In the locations of the intermittent passing lane the roadway would be 8.4 m (22 ft) wider. The Improved Two-Lane with Passing Lanes Alternative would have approximately 107.4 ha (265.5 ac) of impervious surface area, an increase of 38.9 ha (96.1 ac) over the existing conditions, but impacts to water quality would be minimal (see Section 4.3.4, Water Resources and Water Quality).

Four-Lane Undivided Alternative

The impacts to Montana Species of Special Concern, urban and rural wildlife, bat species, amphibians and reptiles, and migratory birds from this alternative would be similar to the Improved Two-Lane Alternative. A greater amount of land would be disturbed for the wider road, bridges, and culverts under this alternative. However, most of the area along the highway is currently disturbed by agricultural practices and is not prime habitat for terrestrial species. Wildlife would have a wider distance, with an additional 12 m (40 ft), to cross when moving across the road, which could potentially increase habitat fragmentation. Wildlife habitat is already fragmented in the project area, however, due to the highway, rural residential development, and agricultural practices. Impacts to northern leopard frog and western chorus frog habitat (jurisdictional wetlands P, Q, Y, Z, and Nx, and potentially jurisdictional wetlands Kx and Lx) would be approximately 0.7 ha (1.8 ac)⁸. A total of approximately 1.2 ha (2.9 ac)⁹ of riparian habitat would be lost under this alternative. The Four-Lane Undivided Alternative would have approximately 149.0 ha (368.2 ac) of impervious surface area, an increase of 80.5 ha (198.8 ac) over the existing conditions, but impacts to water quality would be minimal (see Section 4.3.4, Water Resources and Water Quality).

⁷ *ibid.*

⁸ *ibid.*

⁹ *ibid.*

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Four-Lane Divided Alternative

The impacts to Montana Species of Special Concern, urban and rural wildlife, bat species, amphibians and reptiles, and migratory birds from this alternative would be similar to the Four-Lane Undivided Alternative, except wildlife would have the widest roadway, with an additional 22 m (76 ft), to cross of any of the alternatives. Impacts to northern leopard frog and western chorus frog habitat (jurisdictional wetlands P, Q, Y, Z, and Nx, and potentially jurisdictional wetlands Kx and Lx) would be approximately 0.9 ha (2.4 ac)¹⁰. A total of approximately 1.4 ha (3.3 ac)¹¹ of riparian habitat would be lost under this alternative. The Four-Lane Divided Alternative would have approximately 166.1 ha (410.5 ac) of impervious surface area, an increase of 97.6 ha (241.1 ac) over the existing conditions, but impacts to water quality would be minimal (see Section 4.3.4, Water Resources and Water Quality).

Mitigation

Bridges will be rechecked for cliff swallow nesting activity closer to the start of construction. If bridges are to be removed during the cliff swallow nesting period, cliff swallow nests will be removed prior to the nesting period and efforts will be undertaken to ensure that new nests are not established prior to removal of the old structure. Closer to the start of construction, further consultation and, if necessary, migratory bird permit approval will be coordinated with USFWS.

The opportunity to reduce wild animal crashes by facilitating wildlife movement at major bridge locations will be investigated during final design. MDT will also continue to consult with MFWP on this issue during final design.

4.3.7.2 Aquatic Species

No-Build Alternative

The No-Build Alternative would not impact any aquatic Montana State Species of Special Concern or other aquatic species.

Improved Two-Lane Alternative

Construction in the Milk River, Red Rock Creek (Coulee), and Lodge Creek during spawning periods for MTNHP-listed sauger and pearl dace and game species walleye could adversely affect these species. However, if construction occurred outside the spawning periods, these species would not likely be permanently affected. No other sensitive fish species (i.e., the northern redbelly/finescale dace hybrid fish species) spawn in the project area. Therefore, if individual northern redbelly/finescale dace were present they could be

¹⁰ *ibid.*

¹¹ *ibid.*

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impacted, but loss of isolated individuals would not permanently affect any of these species. Other impacts to aquatic species that may occur as a result of the Improved Two-Lane Alternative are primarily related to permanent removal of riparian habitat and indirect habitat effects from increased stormwater runoff. Because the project would involve removing riparian vegetation, there would be long-term impacts to rivers or creeks. Loss of riparian vegetation would occur at the crossings of the Milk River, Little Box Elder Creek, Clear Creek, Red Rock Creek (Coulee), Lodge Creek, and Fifteen Mile Creek. The total riparian habitat loss for the Improved Two-Lane Alternative would be approximately 1.0 ha (2.1 ac).¹² Impacts from loss of riparian habitat would be minor because there would be an abundance of riparian areas remaining throughout the corridor. Likewise, although impervious cover would increase 31.0 ha (76.5 ac) over the existing conditions, the impact to aquatic habitat would be minor because the amount of impervious surface within the watershed is minimal.

Impacts to aquatic species and their habitat are not likely to contribute to a trend toward Federal listing or loss of viability of these species.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

The impacts to aquatic Montana Species of Special Concern and other aquatic species from this alternative would be similar to the Improved Two-Lane Alternative because this alternative involves constructing structures over waterways and increasing paved area. The total riparian habitat loss for the Improved Two-Lane with Passing Lanes Alternative would be approximately 1.0 ha (2.1 ac)¹³. The Improved Two-Lane with Passing Lanes Alternative would have approximately 107.4 ha (265.5 ac) of impervious surface area, an increase of 38.9 ha (96.1 ac) over the existing conditions.

Four-Lane Undivided Alternative

The impacts to aquatic Montana Species of Special Concern and other aquatic species from this alternative would be similar to the Improved Two-Lane Alternative because this alternative involves constructing structures over waterways and increasing paved area. The total riparian habitat loss for the Four-Lane Undivided Alternative would be approximately 1.2 ha (2.9 ac)¹⁴. The Four-Lane Undivided Alternative would have approximately 149.0 ha (368.2 ac) of impervious surface area, an increase of 80.5 ha (198.8 ac) over the existing conditions.

¹² *ibid.*

¹³ *ibid.*

¹⁴ *ibid.*

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Four-Lane Divided Alternative

The impacts to aquatic Montana Species of Special Concern and other aquatic species from this alternative would be similar to the Improved Two-Lane Alternative because this alternative involves constructing structures over waterways and increasing paved area. The total riparian habitat loss for the Four-Lane Divided Alternative would be approximately 1.4 ha (3.3 ac)¹⁵. The Four-Lane Divided Alternative would have approximately 166.1 ha (410.5 ac) of impervious surface area, an increase of 97.6 ha (241.1 ac) over the existing conditions.

Mitigation

The following describes mitigation measures that would be applied throughout the project area for any build alternative selected. Mitigation during construction is described in Section 4.4.

- A Montana Stream Protection Act Permit (SPA 124) will be required for the project. Contractors will follow the SPA 124 permit requirements for the project. Coordination with MFWP for the SPA 124 permit will address requirements for in-stream work to address potential aquatic species impacts.
- In consultation with MFWP, the opportunity to facilitate wildlife movement at major drainages will be considered by MDT in the design of the bridge replacements.
- Clear Creek Bridge will be replaced with a structure capable of fish passage. The structure will be sized appropriately based on hydraulic requirements.
- Fish passage will be provided at Red Rock Creek (Coulee).
- If a four-lane alternative is implemented, requiring a new bridge over the Milk River at RP 397.8 east of Lohman, MDT will undertake discussions with MFWP concerning future fishing access at this location.

4.3.8 Threatened and Endangered Species

Procedures outlined by the USFWS were followed in completing the impact analysis for all threatened and endangered species that may occur in the vicinity of the project. The USFWS, in a letter dated April 6, 2004 (refer to Appendix B), concurred with the determinations presented.

No-Build Alternative

The No-Build Alternative would not impact any threatened and endangered species in the project area.

¹⁵ *ibid.*

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Improved Two-Lane Alternative

Bald eagles. Wintering activity and transient eagles in the spring and fall occur on the Milk River, which bisects the existing US 2 twice in the project area (Rosgaard, 2003 personal communication). No nests are documented within 96 km (60 mi) of the project site and no documented roosts or perch sites are present in the project area.

Because wintering and transient eagles have been documented along the Milk River in the project area, pile driving during bridge replacement or increased noise during construction may displace wintering and transient bald eagles should they be present. Fall and winter irrigation work would occur in areas near the Milk River in the project area. However, this work would be localized and there is substantial suitable alternate wintering, perching and foraging sites along the Milk River for bald eagles to use. Therefore, no construction timing restrictions are suggested for bald eagles. Permanent loss of 1.1 ha (2.2 ac) of riparian habitat would occur as a result of this alternative, which could affect roosting sites or indirectly affect aquatic prey sources. Given the large amount of remaining riparian areas, the impacts from loss of riparian areas is negligible.

Other indirect effects that could impact aquatic prey species include water quality impacts from erosion due to construction impacts or increased stormwater runoff from increased impervious surface associated with the wider highway. These impacts to water quality would be minimal and therefore would not result in a reduction of aquatic prey species for the bald eagle. Increases to habitat fragmentation for the bald eagle are not likely to occur because the proposed improvements are along an existing corridor. The project may affect, but is not likely to adversely affect bald eagles or their critical habitat.

Black-footed ferrets. The nearest documented black-footed ferret is located approximately 160 km (100 mi) southeast of the project area. Potential habitat may exist in prairie dog colonies located approximately 3.2 km (2 mi) north of US 2 between Zurich and Harlem, (Rosgaard, 2003 personal communication), and at least 3.2 km (2 mi) north of Harlem on BLM land (FaunaWest Wildlife Consultants, 1999). However, no black-footed ferrets have been documented in these areas and there have been no reintroductions in the project vicinity. Most of the potentially suitable prairie habitat in the project area is fragmented by cultivated farmland and therefore would not be large enough to accommodate a ferret population. MFWP anticipates no impacts to black-footed ferrets from the proposed project (Rosgaard, 2003 personal communication). Therefore, the proposed project would have no effect on black-footed ferrets.

Black-tailed prairie dogs have been documented approximately 3.2 km (2 mi) north of US 2 between Zurich and Harlem, (Rosgaard, 2003 personal communication), and at least 3.2 km (2 mi) north of Harlem on BLM land (FaunaWest Wildlife Consultants, 1999). Both of the documented areas closest to the project area are located north of the railroad. No construction would occur north of the railroad. The potential habitat located to the south of US 2 consists of agricultural land and residential development with some pockets of prairie

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grassland, but fragmentation by farmland renders these areas too small to maintain a prairie dog colony. The prairie dog colonies observed in Montana occupied an area of at least 3.2 ha (8 ac) (Fauna West Wildlife Consultants, 1999). No black-tailed prairie dog colonies were found during field visits and none are documented in the project vicinity. MFWP anticipates no impacts to black-tailed prairie dogs from the proposed project (Rosgaard, 2003 personal communication). Given the above information, the proposed project would have no effect on black-tailed prairie dogs.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Bald eagles. The impacts to bald eagles from this alternative would be similar to the Improved Two-Lane Alternative. Approximately 1.0 ha (2.1 ac)¹⁶ of riparian habitat would be lost under this alternative. The project may affect but is not likely to adversely affect bald eagles or their critical habitat.

Black-footed ferrets. The impacts to black-footed ferrets from this alternative would be similar to the Improved Two-Lane Alternative. The proposed project would have no effect on black-footed ferrets.

Black-tailed prairie dogs. The impacts to black-tailed prairie dogs from this alternative would be similar to the Improved Two-Lane Alternative. The proposed project would have no effect on black-tailed prairie dogs.

Four-Lane Undivided Alternative

Bald eagles. The impacts to bald eagles from this alternative would be similar to the Improved Two-Lane Alternative. Approximately 1.2 ha (2.9 ac)¹⁷ of riparian habitat would be lost under this alternative. The project may affect but is not likely to adversely affect bald eagles or their critical habitat.

Black-footed ferrets. The impacts to black-footed ferrets from this alternative would be similar to the Improved Two-Lane Alternative. The proposed project would have no effect on black-footed ferrets.

Black-tailed prairie dogs. The impacts to black-tailed prairie dogs from this alternative would be similar to the Improved Two-Lane Alternative. The proposed project would have no effect on black-tailed prairie dogs.

¹⁶ The conversion from hectares to acres is not exact due to upward rounding for wetlands with small impact areas. For further detail on wetland impacts and rounding, please see the Biological Resources Report (DEA, December 2003).

¹⁷ *ibid.*

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Four-Lane Divided Alternative

Bald eagles. The impacts to bald eagles from this alternative would be similar to the Improved Two-Lane Alternative. Approximately 1.4 ha (3.3 ac)¹⁸ of riparian habitat would be lost under this alternative. The project may affect but is not likely to adversely affect bald eagles or their critical habitat.

Black-footed ferrets. The impacts to black-footed ferrets from this alternative would be similar to the Improved Two-Lane Alternative. The proposed project would have no effect on black-footed ferrets.

Black-tailed prairie dogs. The impacts to black-tailed prairie dogs from this alternative would be similar to the Improved Two-Lane Alternative. The proposed project would have no effect on black-tailed prairie dogs.

Mitigation

No mitigation for any alternative. Construction mitigation is discussed in Section 4.4.

4.3.9 Floodplains

Impacts to the 100-year floodplain can occur in two forms: (1) directly through changes to the flood-carrying capacity (conveyance) of the floodplain (e.g., filling, bridges, piers) or (2) directly through an increase in the total volume of water arriving at and being conveyed by the floodplain due to an increase in impervious surface area. Flood insurance rate maps (FIRM) from FEMA were used to identify impacts to 100-year floodplains within the study area. Impacts were determined based on the additional length of paved highway encroaching into the floodplain under each alternative.

The roughly parallel alignment of US 2 to the Milk River creates longitudinal floodplain crossings throughout the project corridor. In addition, US 2 has transverse floodplain crossings at three unnamed tributaries (between RP 383 and RP 393 east of Havre), Davey Coulee Creek (RP 393), and Clear Creek (RP 396).

The existing highway and BNSF Railway routes lie within the floodplain through a large part of the project corridor. These two routes have hindered the ability of the Milk River to freely access its floodplain, and in some cases, the railroad and highway embankments form new manmade edges of the floodplain. Any proposed highway alignment adjacent to or following the existing alignment would perpetuate this situation and would have numerous longitudinal floodplain encroachments.

¹⁸ *ibid.*

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However, any alternative alignment that would avoid longitudinal encroachments into the floodplain must lie far north or south of the existing highway alignment, due to the width of the floodplain. As discussed in Chapter 2, Alternatives, such an alignment would create redundant and additional infrastructure and would not eliminate the existing floodplain encroachment, as the existing highway would remain in place to provide local access to communities and residents. The existing railroad alignment would remain in the floodplain as well.

Thus, in addition to the redundant and additional infrastructure that would be constructed with a new alignment outside of the floodplain, the existing railroad and highway encroachment would continue to impact Milk River access to its floodplain. A new alignment outside of the floodplain would also create far greater physical and resource impacts than an alignment that generally follows the existing highway. The proposed alignment lies on or immediately south of the existing alignment; for reasons discussed above, it is the only reasonable alignment, and there is no practicable alternative to longitudinal encroachment into the Milk River floodplain.

Widening of US 2 would cause direct impact to six of the 100-year floodplains in the study area; each of these floodplains is already impacted by the existing alignment. In addition, fill needed to accommodate additional lanes could potentially impact the 100-year flood surface elevations both upstream and downstream of the project area. This type of impact is expected to be minimal because the amount of fill added to 100-year floodplains would not be substantial relative to the total volume each 100-year floodplain embodies. Additionally, the increase in total water volume in the floodplain due to an increase in impervious surface area would be minimal for all alternatives; the increase in impervious surface from the proposed wider roadways would be negligible in comparison to the size of the floodplain, which is 3,000 to 5,000 m (9,840 to 16,400 ft) wide throughout the majority of the project corridor. Therefore, the implementation of any of the proposed alternatives would not affect the carrying capacity of the rivers and would not increase the flood risk.

Impacts to the natural and beneficial floodplain values of fish, wildlife, plants, agriculture, water quality maintenance, and ground water recharge are discussed in other sections of this EIS: Wildlife, Vegetation, Farmlands, and Water Quality and Water Resources. Because the proposed alternatives would lie on or near the existing alignment, they would not significantly alter the existing landscape and would therefore have little to no impact on open space, natural beauty, or outdoor recreation. As discussed earlier, the amount of additional fill and impervious surface in the floodplain would be minimal in comparison to the size of the floodplain and would therefore have little impact on opportunities for scientific study, forestry, or the natural ability of the floodplain to moderate floods.

Based on the current level of analysis, none of the encroachments would be considered a significant encroachment that would impact emergency vehicles or recreation, constitute a significant risk, or adversely impact natural and beneficial floodplain values. Any base

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floodplain development supported by the alternatives would be minimal and would not be incompatible floodplain development.

A quantitative assessment including a location hydraulic study of specific direct floodplain impacts will be undertaken during final design of the preferred alternative. Water surface profiles, using hydraulic modeling software, will be generated for each existing and proposed structure during the design phase of the project. For approximately a third of the project corridor, the drainage crosses under the highway and then passes under the railroad that parallels the highway. In some cases, the railroad crossing may be undersized and could create a constriction in flow downstream of the highway crossing. This would cause backwater and in some cases could inundate the highway. The hydraulics of the railroad crossings should be analyzed during final design along with the crossings under the highway to determine if any railroad crossings are undersized and should be used for tail water conditions on highway culverts. In compliance with Montana statutes, structures would be designed to ensure that the increase in water surface elevation from the base flood elevation is less than 0.15 m (0.5 ft). The proposed project will be in compliance with EO 11988, Floodplain Management, which requires federal agencies to avoid direct or indirect support of floodplain development where there is a practicable alternative.

The following section identifies the difference among alternatives.

No-Build Alternative

Under the No-Build Alternative, existing transverse encroachments into the floodplains of three unnamed Milk River tributaries, Davey Coulee Creek, and Clear Creek would remain the same. The existing highway lies within or adjacent to the Milk River floodplain for a large part of the project corridor, and in some cases, the existing highway and railroad embankments form edges of the floodplain. The existing highway pavement encroaches longitudinally 20.0 km (12.4 mi) into the Milk River floodplain, and the width of this encroachment extends up to 13 m (43 ft). These existing longitudinal encroachments would not change under this alternative.

The Conceptual Hydraulics Report identified two sites in the project area that are prone to flooding. The bridge at the north fork of Battle Creek (RP 410) and the Davey Coulee Creek Bridge (RP 393.5) both experienced heavy flooding in 1986. The Davey Coulee Creek bridge would continue to be susceptible to flooding. However, the Battle Creek bridge was replaced in 1999, and the new bridge was designed in accordance with MDT Hydraulics design procedures, 23 CFR 650, and local floodplain regulations.

The existing highway encroaches transversely into the Red Rock Creek (Coulee) floodway west of Chinook and the Lodge Creek floodway east of Chinook. These encroachments would not change under this alternative.

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Improved Two-Lane Alternative

As in the existing condition, five floodplains (three unnamed Milk River tributaries, Davey Coulee Creek, and Clear Creek) would experience transverse encroachments under this alternative. There would be no additional transverse encroachments; however, there would be increased width of these existing encroachments due to wider shoulders and a southerly shift in the highway alignment in many locations.

Additional longitudinal impacts would occur throughout the Milk River floodplain along the north and south sides of US 2. The existing and proposed alignments lie within or adjacent to the Milk River floodplain for a large part of the project corridor. In some cases, the existing highway and railroad embankments form edges of the floodplain. The proposed alternative alignment would lie on or immediately south of the existing alignment and would require embankment and roadway surface expansion. This expansion would result in an additional 8.9 km (5.6 mi) of longitudinal encroachments into the Milk River floodplain. The south edge of pavement was used to determine the amount of encroachment, and the additional longitudinal impacts would extend up to 26 m (85 ft) in width beyond the existing edge of pavement. This alternative would require the least amount of widening into the floodplain and increase in longitudinal encroachments of the build alternatives. The overall encroachment into the floodplain would be minimal compared to the size of the floodplain.

No additional transverse encroachments of floodways would occur; however, at the existing transverse crossings of the Red Creek Creek (Coulee) and Lodge Creek floodways, the width of the existing encroachments would be increased due to wider shoulders and a southerly shift in the highway alignment.

The Red Rock Creek (Coulee) floodway expands in width south of US 2 (see Figure 3.2). The wider shoulders and southerly alignment shift of this alternative would create not only a wider transverse encroachment into the floodway but would also increase the length of highway passing through the floodway.

The Lodge Creek floodway constricts to the width of the creek bed as it crosses US 2 and the railroad. It expands in width immediately north of the railroad and south of US 2, beyond the railroad and highway embankments (see Figure 3.2). The south highway embankment defines the edge of the Lodge Creek floodway in this area. Because of the wider shoulders and southerly alignment shift, this proposed alternative would expand into the wider floodway area south of the existing US 2 embankment. This would create not only a wider transverse encroachment into the floodway but would also greatly increase the length of highway passing through the floodway.

The Davey Coulee Creek bridge location, which is prone to flooding, would be improved. The replacement crossing at this location would provide an opportunity for hydraulic analysis and design to address the existing flooding conditions.

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These encroachments would not adversely affect the floodplains where bridges or culverts are required, provided that the structures are sized such that the increase in water surface elevation from the base flood elevation is 0.15 m (0.5 ft) or less.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

Transverse floodplain impacts would be the same as the Improved Two-Lane Alternative.

Longitudinal floodplain impacts would be similar to the Improved Two-Lane Alternative, with the proposed alternative requiring embankment and roadway surface expansion to the south. This expansion would result in an additional 9.9 km (6.2 mi) of encroachments into the Milk River floodplain beyond the existing conditions. The south edge of pavement was used to determine the amount of encroachment, and the additional longitudinal impacts would range up to 30 m (98 ft) in width beyond the existing edge of pavement. The overall encroachment into the floodplain is minimal compared to the size of the floodplain.

Floodway impacts would be the same as the Improved Two-Lane Alternative. Also, the opportunity to address existing flood prone areas is the same as the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

Transverse floodplain impacts would be the same as the Improved Two-Lane Alternative, except the width of existing encroachments would be increased to accommodate two additional travel lanes and wider shoulders.

Longitudinal floodplain impacts would be similar to the Improved Two-Lane Alternative, however, this alternative would require greater embankment and roadway surface expansion than either of the two-lane alternatives. This expansion would result in an additional 11.2 km (7.0 mi) of encroachments into the Milk River floodplain beyond the existing conditions. The south edge of pavement was used to determine the amount of encroachment, and the additional longitudinal impacts would extend up to 30 m (98 ft) in width beyond the existing edge of pavement. The overall encroachment into the floodplain is minimal compared to the size of the floodplain.

Floodway impacts would be the same as the Improved Two-Lane Alternative, except the width of existing encroachments would be increased to accommodate two additional travel lanes and wider shoulders. The opportunity to address flooding issues at Davey Coulee Creek is the same as the Improved Two-Lane Alternative. Hydraulic analysis and design would be undertaken during final design to address the existing flooding conditions.

Four-Lane Divided Alternative

Transverse floodplain impacts would be the same as the Four-Lane Undivided Alternative.

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Longitudinal floodplain impacts would be similar to the Improved Two-Lane Alternative, however, this alternative would require greater embankment and roadway surface expansion than any of the other build alternatives. This expansion would result in an additional 17.9 km (11.1 mi) of encroachments into the Milk River floodplain beyond the existing conditions. The south edge of pavement was used to determine the amount of encroachment, and the additional longitudinal impacts would range up to 32 m (105 ft) in width beyond the existing edge of pavement. The overall encroachment into the floodplain is minimal compared to the size of the floodplain.

Impacts to the Red Rock Creek (Coulee) floodway would be greater than the Four-Lane Undivided Alternative. The highway alignment would shift farther south in this alternative because of the offset from the railroad at Indiana Street in Chinook. Because the floodway widens as it extends south, this alternative would increase the length of the highway crossing the floodway. Floodway impacts at the Lodge Creek floodway would be the same as the Four-Lane Undivided Alternative. The opportunity to address existing flood prone areas is the same as the Four-Lane Undivided Alternative.

Mitigation

Hill County and Blaine County Floodplain Development Permits will be required for the floodplain encroachment throughout the corridor prior to construction. Hill County and Blaine County will administer the Floodplain Development Permits. To minimize impacts, design of this project will be in compliance with Federal-Aid Highway Program Manual (FHPM) 6-7-3-2 "Location and Hydraulic Design of Encroachments on Flood Plains" (also referenced as 23 CFR 650A) and Executive Order 11988, Floodplain Management.

4.3.10 Wild and Scenic Rivers

No-Build and Build Alternatives

The Milk River and its tributaries are not designated as National Wild and Scenic Rivers per the Wild and Scenic Rivers Act of 1968. There would, therefore, be no impacts to wild and scenic rivers under the No-Build Alternative or build alternatives.

4.3.11 Water Body Modifications

Potential water body modifications resulting from proposed improvements are typically determined by proposed bridge designs for each alternative. Due to the conceptual level of design of the build alternatives, bridge replacements have not been designed. Bridge engineering, revegetation of stream banks, and analysis of resulting water body modifications will be conducted during final design.

No-Build Alternative

There are 32 existing water body crossings in the project corridor. There would be no impacts because there would be no changes to these crossings and no stream modifications. Existing bridges and culverts would continue to be maintained.

Build Alternatives

Most of the existing bridges in the corridor would be replaced. The two exceptions are the Milk River bridge east of Lohman, which was replaced in June 2004 due to a November 2003 accident, and the Battle Creek bridge, which was replaced in 1999 and currently meets MDT standards. The impacts to the Milk River east of Lohman and Battle Creek would differ by alternative. No impacts would be expected from either of the two-lane alternatives as the existing bridges would not be replaced. An additional bridge would be required at these locations for either of the four-lane alternatives to accommodate the additional travel lanes. The impacts that would occur due to the bridge replacements at the remaining 30 locations would be similar for all four alternatives.

Types of water body modifications that may occur as a result of bridge replacements include impoundment and channel alterations from realignment, deepening or erosion. Although final design for water crossings has not been determined, new structures would be designed to minimize disturbance to stream hydrology, banks and channel reshaping.

Mitigation

All work will be performed in accordance with state and federal guidelines regarding water quality and permit conditions. These include the applicable regulations under the Federal Clean Water Act of 1972, as amended (i.e., 404 Permit) and specific permit requirements from the Montana SPA 124 Permit; Floodplain and Roadway Management Act, Section 402/MPDES permit; and the utilization of the current BMPs.

MDT will continue consultation with MFWP on issues including riparian habitat enhancement and wetland development and river modifications at bridge crossings, as required to obtain a SPA 124 permit under the Montana Stream Protection Act, for projects that may affect the bed or banks of any stream in Montana. Structures will be designed to minimize disruption of stream hydrology or permanent alterations of stream banks. Revegetation of stream banks will be considered during final bridge design.

Bridge spans will be designed following FHWA, MDT, and 23 CFR 650A guidelines and requirements. Bridge openings will be designed to span active channels and minimize floodplain impacts. Further, bridge openings will be designed to minimize scour and avoid sediment deposition above stream crossings. Culverts will be designed to accommodate fish passage at all crossings with known fisheries species as documented by MFWP.

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4.3.12 Hazardous Materials

An initial site assessment for hazardous materials/substances was performed in December 2002 and described in the Initial Site Assessment (ISA) in February 2004. The ISA reviewed environmental databases available from the Montana Natural Resource Information System (NRIS), MDEQ, and MDT geotechnical and environmental files. Impacts to hazardous materials sites have been determined qualitatively on the basis of the location of these sites in relation to the area of ground disturbance required for each alternative. If excavation were required near a known hazardous materials site, additional soil testing would be required to identify the extent of potential contamination.

No-Build Alternative

There would be no impacts to hazardous materials sites under the No-Build Alternative. Existing hazardous materials sites would not be expected to change.

Improved Two-Lane Alternative

The Improved Two-Lane Alternative could potentially impact the Diamond Asphalt Refinery east of Chinook, which is a CECRA site. Construction of this alternative would affect this site and could potentially impact soils and ground water at the site. The Fifteen Mile Creek bridge, which would require replacement, may be painted with lead-containing paint. Most of the other bridges are constructed with treated timber and would require replacement.

Other sources of hazardous materials in the corridor that may be impacted are sites associated with inactive rail loading sites, industrial sites, electrical substations and transformers, and abandoned and active farmsteads.

This alternative could potentially impact known abandoned USTs or LUSTs near Lohman, Chinook, east of Chinook, and Harlem. While several contaminated soil sites are evident, a number of other sites may exist that are not readily evident, and could be impacted. In Lohman, two USTs could be impacted by the proposed right-of-way. In Chinook, there are 11 sites adjacent to US 2, some of which may be contaminating the soil and ground water in the existing right-of-way, and therefore, there could be impacts associated with the reconstruction of US 2. East of Chinook, at least two known LUST and UST sites at the Diamond Asphalt Refinery would be impacted by the proposed roadway alignment. In Harlem, two known LUST sites could be impacted by proposed right-of-way and thus impacted by construction.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

This alternative would have the same hazardous materials site impacts described for the Improved Two-Lane Alternative.

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Four-Lane Undivided Alternative

This alternative would have similar impacts to hazardous materials sites as the Improved Two-Lane Alternative. In addition, eleven known LUST/UST/AST sites adjacent to the existing MDT right-of-way in Chinook could experience more extensive impacts because of the proposed roadway alignment and wider roadway section through Chinook in this alternative.

The abandoned Diamond Asphalt Refinery site is located east of Chinook (northeast of Lodge Creek). The proposed alignment in this alternative would cross a fenced tar/sludge pit on the site. The pits on this site seep contaminants into ground water, and construction activities would further disturb the hazardous materials on this site and potentially contaminate soils and ground water.

Four-Lane Divided Alternative

This alternative would have the same hazardous materials site impacts described for the Four-Lane Undivided Alternative. However, this alternative has a wider typical section, and therefore, it has the potential for greater ground disturbance resulting in additional impacts.

Mitigation

Storage tanks. Active underground/above-ground storage tanks impacted by the preferred alternative will be moved to locations away from the right-of-way. Inactive petroleum storage tanks will be closed according to applicable regulations. Soils contaminated by LUSTs will be monitored for the presence of contaminants. Likely mitigation for soils contaminated with petroleum or oils includes direct disposal or an on-site application (land farming). Disposal of contaminated soils will be handled in compliance with applicable federal, state, and local regulations. Tank removal permits will be obtained from MDEQ, and all work will be undertaken in accordance with the permit conditions. Ground water should not be impacted if storage tanks within the corridor are properly closed and removed in accordance with regulations.

Soil/ground water contamination If the chosen alternative includes excavation north of the existing right-of-way, additional investigation and soil testing will occur to identify potential contamination associated with railroad loading facilities. Additional investigation will also be needed if the chosen alternative includes the removal and/or excavation across existing or abandoned farmsteads. Impacted electrical substations and transformers will be surveyed for releases of PCB-contaminates. Disposal of contaminated soils will be handled in compliance with applicable federal, state, and local regulations. Because investigations will be conducted to determine the extent and characteristics of any contamination before construction began, potential impacts to ground water sources will be minimized.

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Soils or ground water at the sites of bridges featuring potential lead-containing paints or treated timbers should not be impacted if disposal of these materials is handled in accordance with regulations. Industrial sites containing hazardous materials, including the Diamond Asphalt Refinery, require soil testing. A remediation/reclamation plan will be developed, if needed, in consultation with MDEQ and the counties.

Asbestos. Prior to the demolition of buildings, an asbestos survey will be undertaken. All structures slated for relocation or demolition will be inspected for asbestos by a state-licensed inspector. A National Emissions Standards for Hazardous Air Pollutants (NESHAP) Demolition/Renovation Notification form will be filed with MDEQ for all relocated or demolished structures.

4.3.13 Visual Resources

Specific visual characteristics of each landscape unit (LU) in the corridor were recorded during field surveys and map reviews, as described in Section 3.3.13, Visual Resources. Within each LU, the types of viewers were identified and described regarding the location and general characteristics of the people who will see the completed project. Four types of viewers would generally be affected by the US 2 project: (1) residents (local traffic), who are the primary viewers; (2) travelers passing through the area on the highway (regional traffic); (3) commercial/agricultural traffic; and (4) recreational users (e.g., touring bicyclists or sightseers).

The visual impacts of a project vary by location and by user group because they are dependent on the viewers' expectations and degree of sensitivity. For example, residents living in proximity to the project area are more aware of the visual features of their surroundings and are more sensitive to changes than travelers to and from the area might be. Visual resources were not identified as a major concern for local residents that participated in public involvement activities for this project. (See Appendix J, Public Involvement, for a summary of public comments.) Nonetheless, community landscape features were incorporated into all of the build alternatives to minimize visual disruption (see Section 2.7, Context Sensitive Design Elements).

Generally, both two-lane alternatives would have a lesser visual impact than the four-lane alternatives. The four-lane alternatives would result in the removal of structures that define urban areas in the corridor. In the case of all alternatives, however, the proposed action expands an existing facility that has already created a visual impact to the area and is part of the existing landscape in the project area (i.e., the impact of expansion of this facility is far less than construction of a new facility in a rural area). Additionally, context-sensitive designs may improve community connectivity and improve the aesthetics of transition areas, improving the visual character of the project's urban areas.

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No-Build Alternative

The existing alignment affects the visual character of the area, as the highway is the primary transportation system serving local communities. Another major transportation element, the BNSF Railway, parallels the highway throughout most of the project corridor. Retaining the existing US 2 alignment without major improvements would not change the existing visual conditions in the project corridor.

Improved Two-Lane Alternative

The LUs in the project area alternate between sparsely populated community centers and rural open space areas. With the exception of LU2 near Havre, which contains the only topographical relief encountered along the project corridor, the open space or rural areas are generally flat, expansive areas of riparian grasses or agricultural crops bisected by the existing US 2 highway, BNSF Railway track, and overhead power lines. In these flat rural areas, widening the roadway to 12 m (40 ft) and adding wider shoulders and clear zones would be barely perceptible to viewers and would not have negative visual impacts under this alternative. In the one rural LU rolling topography between RP 386.5 and RP 388.2, cut and fill slopes, in their raw constructed state, would be negative foreground visual elements due to the high color contrast and loss of vegetative texture and would have a minor adverse impact to visual quality for the tourist/recreational user group as well as residents (local traffic).

For the non-rural areas, visual impacts would also be minor. In the largely vacant communities of Lohman and Zurich, there are few, if any, identifiable community features. In Zurich, there would be no impacts to structures. In Lohman, impacted structures are south of US 2 and south of the historic town north of the railroad. In Havre, multiple lanes already exist, and the alternative would simply provide a better transition from the existing four-lane to existing two-lane roads. In Chinook and Fort Belknap, this alternative would generally remain within the parameters of the existing roadway, resulting in no major loss of visual quality. To accommodate turn lanes and acceleration/deceleration lanes in the Harlem area, the highway would be widened. This area currently has many structures and other dominant features of a built environment; adding turn lanes here and improving the configuration of the MT Secondary 241 (Lincoln Road) intersection would be visually compatible with existing conditions and would have little impact. In all of these communities, there would be landscape treatments, entry features, and improved pedestrian amenities, which would have positive visual impacts for all users.

Improved Two-Lane with Passing Lanes Alternative (Preferred Alternative)

This alternative would widen the roadway to 12 m (40 ft), increasing the shoulder width, but would also incorporate an intermittent 3.6 m (12 ft) passing lane in certain locations in the project corridor. Where passing lanes would occur, the road width would be 15.6 m (52 ft).

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Visual quality impacts would be similar to the Improved Two-Lane Alternative.

Four-Lane Undivided Alternative

This alternative would widen the roadway to 19.2 m (64 ft) in rural segments of the project corridor. There would be no median dividing opposing travel lanes.

Visual quality impacts would be as described in both two-lane alternatives for the rural areas, Zurich, and Lohman.

In the Havre Transitional Area, the four-lane configuration with center turn lane would extend to RP 385.2. This widening would be fairly visually compatible with existing conditions and would have only slight visual impacts. As in both two-lane alternatives, all user groups would experience positive visual impacts through the use of landscaping and entry treatments in Havre.

In Chinook, the highway would expand beyond the existing south curb line to accommodate the extra lanes with some parking. This would lessen Chinook's visual quality as roadway pavement expands and building setbacks shrink. Further, the loss of structures in Chinook would change the built environment in this area resulting in the loss of community streetscape and community visual identity. Most user groups would probably consider this a substantial negative visual impact. These may be offset by some positive visual impacts for all users resulting from pedestrian improvements and landscape treatments along the highway west of Montana Street and east of Illinois Street to identify the urban limits of town.

The paved width in Harlem would increase to four travel lanes plus a center turn lane. In Fort Belknap, the alternative would generally remain within the bounds of the existing roadway. In both communities, the roadway improvements would be visually compatible with existing conditions and would have only slight visual impacts. As with Havre and Chinook, there would be landscape treatments, entry features, and improved pedestrian amenities, which would have positive visual impacts for all users.

Four-Lane Divided Alternative

This alternative would widen the roadway to 30.2 m (100 ft) in the rural segments of the project corridor. An 11 m (36 ft) wide median would separate the opposing travel lanes.

Visual quality impacts would be as described in the two-lane alternatives in the rural corridor, Zurich, and Lohman.

In Chinook, the roadway alignment would shift south approximately 23 m (75 ft) to provide an increased offset from the railroad at the Indiana Street intersection. This shift southward and the widening to a four-lane section with a two-way center left-turn lane and parking

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lanes would result in the removal of more buildings than in the Four-Lane Undivided Alternative, resulting in a loss of community streetscape and community visual identity. As with the Four-Lane Undivided Alternative, these negative visual impacts may be offset by the positive visual impacts for all users resulting from pedestrian improvements and landscape entry features. In addition, this alternative would incorporate a landscaped area with trees and lawn on both sides of the highway in Chinook, further improving the visual quality.

The visual changes and impacts in Harlem and Fort Belknap would be the same as in the Four-Lane Undivided Alternative.

Mitigation

Road Cut and Fill Slopes. Existing vegetation will be retained wherever possible. Revegetation will be implemented as necessary to blend into surroundings. Slopes will be treated and graded to allow optimum revegetation.

Bridges. All bridges will meet hydraulic design requirements; however, a bridge type that is as low to the water and horizontal in design-line as possible will minimize all visual impacts.

4.3.14 Section 4(f) and Section 6(f) Properties

Section 4(f)

Section 4(f) of the 1966 Department of Transportation Act, which is codified at 49 U.S.C. § 303, and FHWA regulations found at 23 C.F.R. § 771.135, prohibits FHWA from approving the use of land from a significant publicly owned public park, recreation area, or wildlife or waterfowl refuge, or any significant historic site, unless a determination is made that there is no feasible and prudent alternative to the use of land from the property, and the action includes all possible planning to minimize harm to the property.

Each of the public agencies that owns property in the corridor was surveyed to determine if they had resources on their properties that might meet the definitions of Section 4(f)-protected properties. The BLM and DNRC responded that they do not have present or planned Section 4(f) uses on their properties (refer to Appendix B, Agency Correspondence). There is a bike path in Chinook along US 2 that was built through the Montana Community Transportation Enhancement Program (CTEP), but the primary purpose of this facility is transportation not recreation (see Appendix B, Agency Correspondence); FHWA guidance for 4(f) excludes bike paths used primarily for transportation. Lions Memorial Park on Main Street in Harlem and Centennial Park on Indiana Street in Chinook are public parks, but neither is impacted by any of the alternatives, and therefore, Section 4(f) is not applicable. Blaine County Fairgrounds in Chinook is impacted by the four-lane alternatives. However, there is no impact to the recreation facilities or areas by these alternatives, therefore there is

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no Section 4(f) use. These properties are discussed in detail in Appendix I, Section 4(f) Evaluation.

There are no wildlife or waterfowl refuges within the corridor. There are several NRHP-listed or eligible historic properties in the corridor that are impacted and, therefore, Section 4(f) applies to these properties. One additional historic property is also being treated as a Section 4(f) resource because it has not been formally evaluated for NRHP eligibility since it is covered under a Programmatic Agreement among SHPO, ACHP, FHWA, and MDT. These properties are discussed in detail in Appendix I, Section 4(f) Evaluation.

Section 6(f)

Section 6(f) resources are those acquired through the use of Land and Water Conservation Funds (LWCF). The LWCF (Public Law 88-578) was enacted by Congress to provide money to federal, state, and local governments to purchase lands for maintaining or enhancing recreational opportunities, clean water, wildlife habitat, scenic resources, historic sites, and wilderness areas (Land and Water Conservation Fund, 2003; U.S. Forest Service, 2003).

No Section 6(f) lands have been identified in the project area by MFWP, which administers this program in Montana. (See Appendix B; MFWP letter dated January 7, 2003.)

Mitigation

For the preferred alternative, mitigation for the adverse effect on one NRHP-eligible site was developed in consultation with the SHPO. MDT and FHWA developed a Memorandum of Agreement (MOA) with the SHPO for the effects on 24BL1541, the Vincent Pefaur Homestead. MDT and FHWA will carry out the stipulations of the MOA, which includes Historic American Building Survey (HABS)-level documentation of the Vincent Pefaur Homestead and the installation of an historical marker near the site. See Appendix I, Section 4(f) Evaluation, for a detailed analysis and mitigation.

4.4 Construction Impacts

The following discussion addresses potential temporary construction impacts as a result of the build alternatives and identifies mitigation measures to avoid, reduce, or eliminate adverse impacts. These measures would be incorporated into final construction plans and may include phasing or sequencing of construction to further minimize impacts to residents and the traveling public.

Final construction methods would be addressed during development of the final construction plans. The sequencing of construction packages and construction time frame would also be addressed during development of final design plans.

No-Build Alternative

There would be no construction impacts associated with the No-Build Alternative. Construction impacts for the build alternatives are discussed in greater detail below.

Impacts Common to Build Alternatives

New roadway construction and reconstruction of existing roadways present the potential for dust, noise, runoff, and visual impacts. The build alternatives also present the potential for exposure to or accidental spill of hazardous materials, such as oil and gasoline from construction vehicles. In addition, construction associated with widening of existing roadways presents the potential for increased travel delays during construction, traffic congestion, temporary restricted access to residences and businesses, and visual intrusions to motorists and residents.

Transportation Conditions

Access

Access to properties, including businesses and parking areas, along the corridor may be impacted by particular construction activities. Temporary access would be provided for the properties; however, driveways may be restricted in the location of allowable traffic movements.

Mitigation Mitigation for construction impacts will include early notification of property and business owners, on a property-by-property basis, of construction activities in order to address potential construction impacts to property access and business operations.

Traffic Operations

Traffic traveling the corridor would experience impacts during construction of the roadway within the existing pavement area due to temporary lane closures, delays, short-term travel on unpaved surfaces, and reduced travel speeds. Two lanes of traffic would be maintained throughout the majority of the construction period; however, the highway may be temporarily open to only one lane at some points during construction. Traffic diversions and construction equipment and activities close to the travel lanes would also affect speeds and traffic operations within the construction zone.

Construction of a four-lane alternative would have less impact on traffic operations than either of the two-lane alternatives. Two of the lanes could be constructed outside of the existing pavement area without requiring a major diversion of traffic.

Mitigation Mitigation for construction impacts will include construction phasing devised to maintain two lanes of traffic and uninterrupted side road access along the corridor to the

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greatest extent possible. MDT will coordinate with emergency service providers and schools to solicit input into the construction traffic management plan and to provide ongoing information during construction.

Pedestrians and Bicyclists

Pedestrians in Chinook would experience short-term impacts during construction of the roadway through town. Sidewalks may be temporarily closed, and pedestrians crossing US 2 at Indiana Street may be inconvenienced or diverted to nearby locations for a short time during construction.

Bicyclists along the corridor would experience short-term impacts from possible degradation of the roadway surface during construction.

Mitigation. Mitigation for construction impacts will include maintenance of sidewalks and pavement to the extent possible and additional pedestrian signage during construction.

Social and Economic Conditions

Land Use

Construction easements for grading, irrigation relocations, fencing relocations, access road improvements, temporary access, or temporary construction staging would be needed from property owners along the corridor. While the property owners would retain ownership of these areas, their use of these areas during construction would be restricted by particular construction activities. Upon completion of the roadway project, the property owners would have unrestricted use of these areas again.

Mitigation. Mitigation for construction impacts will include early notification of property owners, on a property-by-property basis, of construction activities in order to address potential construction impacts. Easements will be obtained according to 49 CFR, Part 24, *Uniform Relocation Assistance and Real Property Acquisition Policies Act* of 1970, as amended to provide just compensation for and rehabilitation of temporary construction easements.

Farmlands

Temporary construction disturbance includes farmland that would experience temporary modification but would be returned to preconstruction conditions after construction of the project. These types of disturbances are temporary in nature and therefore would not permanently convert farmland to other uses.

Mitigation. No mitigation is required.

Farm Operations

Farm operations could be temporarily impacted by construction. Impacts would likely include disruptions to farm parcel accesses from road closures, detours, and presence of construction equipment; conflicts with construction equipment and farm equipment traveling through the corridor; disruptions to land uses because of temporary construction easements; and temporary disruption of irrigation systems.

Mitigation. Mitigation will include early coordination with farmers to address potential impacts during roadway reconstruction and scheduling of construction, where feasible, to minimize disruption to farming activities.

Irrigation

Irrigation facilities may be temporarily impacted during reconstruction of the highway.

Mitigation Mitigation will include early coordination with irrigation districts and ditch companies to address potential impacts to irrigation activities during roadway reconstruction and irrigation ditch relocations. Reasonable measures will be taken to avoid disruption of irrigation activities during construction, such as scheduling interruptions to a facility when it is not being used.

Economic Conditions

Construction of a build alternative would result in large but temporary economic benefits to the corridor communities. The construction work would directly create jobs and income for construction workers, including on-site laborers, specialists, engineers, and managers. Construction would also create indirect jobs in industries that supply highway construction manufacturers with materials and off-site construction industry jobs such as administrative, clerical and managerial workers. Supply industry jobs include those supported in stone and clay mining and quarrying, petroleum refining, lumber, concrete and cement products, and miscellaneous professional services. Construction would induce new job creation within the general economy. Induced jobs are jobs supported throughout the economy when highway construction industry employees spend their wages. Expenditures by these workers on various goods and services stimulate demand for additional employees in many industries, resulting in jobs being supported throughout the general economy.

The IMPLAN input-output model was used to estimate direct, indirect, and induced job and income impacts associated with construction of each alternative. Table 4.21 shows that these benefits increase with the cost of the alternative, ranging from 1,144 to 1,451 total jobs and \$30.4 million to \$38.5 million in annual labor income. These impacts would generally last for the construction period only – four years for the two-lane alternatives and five years for the four-lane alternatives.

Table 4.21 Annual Impacts of Construction on New Jobs and Income

	No-Build	Improved Two-Lane	Improved Two-Lane with Passing Lane (Preferred Alternative)	Four-Lane Undivided	Four-Lane Divided
Direct jobs	0	759	805	852	963
Indirect jobs	0	221	235	248	281
Induced jobs	0	164	174	184	208
Total	0	1,144	1,214	1,284	1,451
Total labor income	0	\$30.4 million	\$32.2 million	\$34.1 million	\$38.5 million

Local residents would fill only a portion of these new jobs. Many skilled and semi-skilled construction workers in the corridor communities would likely be able to find work on the construction project. More specialized trades and services may come from Great Falls or other larger cities. A portion of the new indirect jobs would also occur in the corridor communities, as local suppliers would provide materials like fuel, concrete, and fill. Similarly, the new induced jobs would occur locally to the extent that wages earned from the construction would be spent on local goods and services.

Mitigation. No mitigation for any alternative.

Right-of-Way and Relocation of Utilities

Construction easements for grading, temporary access, or temporary construction staging would be needed from property owners along the corridor. While the property owners would retain ownership of these areas, their use of these areas during construction would be restricted by particular construction activities. Upon completion of the roadway project, the property owners would have unrestricted use of these areas again.

Local communities may experience temporary disruption to utility service for water, sanitary, electric, and gas service.

Mitigation. Mitigation for construction impacts will include early notification of property owners, on a property-by-property basis, of construction activities in order to address potential construction impacts. Easements will be obtained according to 49 CFR, Part 24, *Uniform Relocation Assistance and Real Property Acquisition Policies Act* of 1970, as amended to provide just compensation for and rehabilitation of temporary construction easements.

Right-of-way for utility lines will be obtained prior to construction and may include additional buffers within utility right-of-way to allow for the placement of utilities at the top

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of slopes. Temporary disruptions to services will be minimized through coordination with local utility providers.

Environmental Conditions

Cultural Resources

Impacts to cultural resources during construction would include visual impacts to historic resources from the temporary presence of construction equipment, noise, and fugitive dust. Additionally, access to historic properties might be affected during the construction period from roadway closures, detours, or construction easements. These impacts would be temporary.

It is also possible that previously unidentified archaeological resources could be discovered during construction.

Mitigation If cultural material is unexpectedly encountered during ground-disturbing activities in the corridor, construction will cease immediately, and the Montana SHPO and a qualified archaeologist will be consulted to evaluate the significance of the cultural artifacts.

Air Quality

Impacts to air quality related to construction would be limited to short-term increases in fugitive dust and mobile source emissions.

Fugitive dust is airborne particulate matter that cannot reasonably be captured through a control device. Trucks and other earth-moving vehicles operating around the construction sites would generate construction-related fugitive dust. The dust would be due primarily to particulate matter re-suspended by vehicle movement over paved and unpaved roads and other surfaces, dirt tracked onto paved surfaces from unpaved areas at access points, and material blown from uncovered haul trucks.

Generally, the distance that particulate matter drift from their source depends on their size, emission height, and wind speed. Small particles (30 to 100 microns) can travel several hundred feet before settling to the ground, depending on wind speed. Most fugitive dust, however, is made up of relatively large particles (i.e., particles greater than 100 microns on diameter). These particles are responsible for the reduced visibility often associated with highway construction. Given their relatively large size, these particles tend to settle within 6 to 9 m (20 to 30 ft) of their source.

Carbon monoxide (CO) is the principal pollutant of concern when considering localized air quality impacts of motor vehicles. Because CO emissions from motor vehicles increase with decreasing vehicle speed, disruption of traffic during construction is likely to result in short-term, elevated CO concentrations.

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Mitigation Mitigation will include compliance with the Montana Administrative Rule to control emission of airborne particulate matter, implementation of measures identified by MDEQ permit, and the use of BMPs (e.g., frequent use of water or other wetting agent to keep particulate matter down).

Noise

FHWA Technical Advisory T6160.2 contains requirements for the evaluation of highway construction noise. If there is a possibility that construction noise will be a sensitive and contentious issue, MDT must comply with the above mentioned noise directive. While the impact of highway construction noise does not appear to be substantial in this case, consideration was given to construction noise during project development. Based on public comments received throughout the NEPA process, it does not appear that construction noise will be a sensitive or contentious issue. Of the more than 500 comments received and recorded in the Issues Tracking Database, for the US 2 – Havre to Fort Belknap EIS, none pertained to construction noise.

Mitigation At or near major settlements, construction hours could be limited to daylight hours to avoid noise impacts at night. Contractors will adhere to local ordinances to minimize noise impacts during construction. Advance notice of construction will be provided to area businesses and residences to minimize impacts on community activities.

Water Resources and Water Quality

Disturbed areas created during construction are the main source of land and water erosion. Erosion can be caused by soil disturbance, clearing of vegetation, borrow pits, and construction staging activities. Spilled fuels or other hazardous materials may also cause impacts to water quality during construction. Stormwater runoff presents the potential for violations of water quality standards within the project area.

Mitigation MDT will prepare a Storm Water Pollution Prevention Plan (SWPPP) that includes the identification of BMPs to control erosion and stormwater runoff. There will be no unnecessary operation of equipment within the channels of any creeks or rivers in the project area.

Wetlands

Temporary impacts to wetlands can occur due to physical disturbance from constructing the highway.

Mitigation A COE 404 permit will be required. MDT will comply with the conditions of the permit. MDT will incorporate a SWPPP and BMPs into construction projects. Temporary impacts to wetlands will be restored in accordance with MDT standard specification or permit conditions.

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Vegetation

Short-term construction impacts would occur along the highway, including temporary habitat and vegetation loss. These temporary impacts would vary by species type, depending on their recovery rates. Temporarily impacted lands from construction activities have an increased susceptibility to noxious weed invasion. The ultimate recovery of vegetation depends on the management of the area after construction. Other temporary direct impacts include the modification of vegetation communities from fuel spills and soil compaction as a result of construction access and activities.

Mitigation MDT will re-establish a permanent desirable vegetation community over all landform surface areas disturbed by construction within the right-of-way or within the project construction limits, as defined during final design.

To reduce the spread of noxious weeds during construction, the Contractor should clean equipment and trucks of contaminated soil or noxious weed seeds before moving from noxious weed infested areas to areas free of noxious weeds. The Contractor will revegetate disturbed areas using desirable vegetation. The contractor will also be responsible for re-establishing vegetation in staging areas outside the construction limits.

Wildlife

Terrestrial Species. Noise produced by construction equipment on the proposed project would occur with varying intensity and duration during the phases of construction. However, because of the different phases of construction, no single location would experience a long-term period of construction noise. Wildlife populations found in these areas are likely to be accustomed to periodic noise intrusions, due to highway traffic, agricultural equipment, and noise from local residents. Some brief displacement of wildlife populations may occur during construction regardless of the alternative chosen. Noise from construction may displace wildlife temporarily, but the animals would likely return after construction is completed. Therefore, the construction impacts on these species would be minimal.

Mitigation No mitigation necessary for any alternative.

Migratory Birds. Under any of the build alternatives, cliff swallows could be impacted by bridge removals if active nests are present.

Mitigation Bridges will be rechecked for cliff swallow nesting activity closer to the start of construction. If bridges are to be removed during the cliff swallow nesting period, cliff swallow nests will be removed prior to the nesting period, and efforts will be undertaken to ensure that new nests are not established prior to removal of the old structure. Closer to the start of construction, further consultation and, if necessary, migratory bird permit approval will be coordinated with USFWS.

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Aquatic Species. Short-term impacts may occur during the bridge/culvert replacement/construction phase of this project due to the in-stream work that would be necessary. There would be an increase in localized noise levels in the vicinity of the project area during construction, which may temporarily disturb fish species.

In-water work and de-watering during bridge/culvert construction could result in fish mortality, especially to juvenile fish should they be present. Loss of riparian vegetation during construction may occur at the crossings of the Milk River, Little Box Elder Creek, Clear Creek, Red Rock Creek (Coulee), Lodge Creek, Battle Creek (only for Four-Lane Alternatives), and Fifteen Mile Creek. Some of these areas adjacent to the creeks and rivers are also designated as wetlands (see Section 3.3.5, Wetlands, of this report). The COE would evaluate impacts to the riparian wetland areas during the 404 permitting process to determine the mitigation measures necessary to compensate for the loss of vegetation.

Mitigation. The following measures will be implemented to minimize temporary impacts to aquatic species from construction:

- A COE 404 permit and SPA 124 permit will be required, and MDT will follow permit conditions.
- MDT will incorporate a Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs) into construction projects.
- Clearing and grubbing of vegetation outside the construction area will be limited to that needed to complete the project. All disturbed construction easements will be revegetated as soon as practicable.
- See mitigation for Air Quality construction impacts for information on dust control.
- Storage and use of fuel, petroleum products or deleterious materials will be done according to MDT standard specifications or as otherwise permitted.
- Alteration or disturbance of the bank and bank vegetation at Clear Creek, Red Rock Creek (Coulee), and the Milk River will be limited to that necessary to construct the project. All disturbed areas will be protected from erosion using BMPs. Banks will be revegetated with desirable species.

Threatened and Endangered Species

Bald eagles. Foraging/transient eagles have been documented in the project area. Therefore, foraging eagles, should they be present, may avoid this area due to pile driving during bridge replacement or increased noise during construction. Bald eagles may also avoid areas near the Milk River in the project area during fall and winter irrigation work occurring there. However, this work would be localized, and there is substantial suitable alternate wintering, perching and foraging sites along the Milk River for bald eagles to use.

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Mitigation. If power lines are constructed or modified during construction they will be raptor-proofed in accordance with MDT policies. Location of active bald eagle nesting trees, if any, will be verified by a biologist close to the start of construction, and, if needed, appropriate measures will be coordinated with USFWS.

Floodplains

Temporary construction disturbance includes areas of floodplain that would experience temporary modification of functions, but would be returned to their preconstruction condition after construction of the project. These types of disturbances are temporary in nature and therefore would not permanently alter the natural and beneficial values of floodplain areas in the project corridor.

Mitigation. Hill County and Blaine County Floodplain Development Permits will be required for the floodplain encroachment throughout the corridor prior to construction. Hill County and Blaine County will administer the Floodplain Development Permits.

Water Body Modifications

Temporary construction disturbance includes water bodies that would experience temporary impacts but would be returned to their preconstruction condition after construction of the project. These types of disturbances are temporary in nature and would not permanently alter the natural condition of the water body.

Mitigation. Disturbed stream banks will be revegetated to reduce erosion. The construction contractor will be required to follow all state and federal guidelines regarding water quality levels. These include the applicable regulations under the Federal Clean Water Act of 1977 (e.g. 404 Permit) and specific permit requirements from the Montana SPA 124 Permit; Floodplain and Roadway Management Act, Section 402/MPDES permit and SWPPP; any other laws or regulations that may apply to the project; and the utilization of the current BMPs.

Hazardous Materials

Construction staging areas could disturb contaminated soils near to but not within the final alignment. Generally, ground disturbance from staging activities is shallow and would not be expected to have substantial effects on hazardous materials sites. The hazardous materials impacts and mitigation associated with constructing highway improvements are the same as discussed in Section 4.3.12, Hazardous Materials.

Mitigation. The construction contractor will be required to comply with permit requirements for storage of fuel, petroleum products or deleterious materials and for management of unintended hazardous materials releases.

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Visual Resources

Some activities or elements present during the actual construction phase of the project would have visual impacts. For instance, removal of existing vegetation from road slopes would be a large visual impact. New cut and fill slopes would be highly visible to users. Immediate revegetation with shrubs, grasses, and groundcovers would “green up” construction-impacted areas in roughly five years. Construction equipment, whether working or parked, would be very visible to users.

Stockpiles of materials, such as crushed rock, soil, or culverts, would impact visual quality of the area as well. Due to the relatively level topography throughout the project corridor, large stockpiles would be visible through the middle ground in many locations. Dust raised by heavy equipment would also be visible to many highway users if not abated.

Mitigation See vegetation and air quality mitigation.

4.5 Cumulative Impacts

Cumulative effects are those impacts that result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Generally, significant cumulative impacts result when (1) resources are vulnerable to cumulative effects (e.g., wetlands), (2) the same type of impact is occurring from multiple projects (e.g., multiple road construction projects), (3) effects have been historically significant for a resource (e.g., a non-attainment area for air quality), or (4) other analyses have identified cumulative effects as a concern in the project area.

For this project, cumulative effect analysis considered impacts of the proposed project build alternatives in combination with other past, present, and future transportation improvements, development projects, or land use practices affecting the environment. Types of activities assessed that could potentially result in cumulative impacts include:

- Transportation improvements (local, state, and federal);
- Development plans (private and public);
- Agricultural practices; and
- Railroad operations.

The time frame established for reasonably foreseeable future actions for this analysis was 2027, twenty years from the predicted opening date for this project. The twenty-year time period is a typical period used for analysis in transportation projects and the preparation of long-range transportation plans.

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4.5.1 Other Past and Ongoing/Pending Actions Within or Near the Project Area

MDT, affected agencies, BNSF, and local governments in the corridor were requested to identify other ongoing, pending, or potential future projects. These actions or projects within or near the project area are summarized below. These projects are expected to occur independently of proposed improvements to US 2 between Havre and Fort Belknap. In addition, past actions are described and assessed for their contribution to cumulative impacts.

Ongoing/Pending Actions

Historical Development of the Project Area

The St. Paul, Minneapolis and Manitoba Railroad (renamed the Great Northern Railway in 1890) was constructed across Hill and Blaine Counties in 1887. Numerous towns were developed along the railroad, including Havre, Lohman, Chinook, Zurich, and Harlem. In 1888, the Fort Belknap Agency was moved to its present location.

Development of the area for agriculture is the primary historical activity affecting resources in the project area. To entice settlers to the area and make the railroad profitable, the Great Northern Railway advertised the Milk River valley as the only portion of Montana that could be farmed without irrigation. This proved to be false, and by the mid-1890s, most of the dry land farmers in the valley had left, with the exception of those involved in the construction of canals.

During the 1910s, population in the area began to increase as a result of the development of dry farming and the Enlarged Homestead Act of 1909, which required homesteaders to show proof of land cultivation and improvement. It was during this period that more people lived in Blaine County than at any other time. The drought of 1917-1920, the depression of 1920-1924, and the drought and depression in the 1930s severely impacted local agriculture and resulted in the departure of many homesteaders.

In the 1930s, the Works Progress Administration nearly finished paving US 2 on its original alignment, largely north of the railroad in the project area. In 1946, the project area segment of US 2 was rebuilt to its present alignment south of the railroad. Today, the region continues to support both irrigated and dry land farming. Population densities outside of Havre and Fort Belknap continue to decrease, and the trend is toward larger but fewer farms.

All planned projects within the project area are state or federally funded. No capital improvements program is in place for either Hill or Blaine Counties, and no major private development or public capital improvement projects are planned in Blaine County. In Hill County, private development is currently being planned adjacent to the project corridor, south of US 2 and east of the Havre urban limits. Isolated residential or commercial projects, such as minor construction or development, will likely continue to occur in both counties over the next few years. Agricultural practices of the past and present are assumed to

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continue to occur in the future. BNSF Railway operations have changed in recent years as a result of consolidation of grain elevator facilities. No changes to the existing railroad service, routes, or facilities are anticipated within the reasonably foreseeable future. Recent past, current, and future transportation and development projects are described below.

Transportation Projects on US 2 within Project Limits

Milk River Bridge Replacement NH 1-7(35)398; MDT. On November 18, 2003, the Milk River bridge on US 2 east of Lohman was damaged in an accident. A temporary replacement bridge was opened to traffic on December 4, 2003. A permanent replacement bridge was constructed and opened to traffic in June 2004. The location and horizontal alignment of the bridge was coordinated with the alternatives proposed in the US 2 Havre to Fort Belknap EIS. The new bridge is two lanes and has been designed on an alignment consistent with all alternatives. Therefore, the design of the replacement bridge was not a predetermining factor in any decision on US 2.

Guardrail Safety Improvements, NH 0002(394); MDT. MDT is currently upgrading all blunt-end bridge guardrails on US 2 as part of a district-wide safety project.

US 2 Bypass of Harlem. In the 1960s, MDT reconstructed US 2 to bypass the town of Harlem. US 2 previously followed Central and Lincoln Avenues through Harlem. US 2 now lies southwest of Harlem on a bypass between Central and Lincoln Avenues. As a result of community dissent over the bypass and an ensuing lawsuit against the Transportation Commission, MCA 60-2-211 now requires consent of the governing body of an incorporated municipality prior to construction of a highway bypass of a municipality. In Harlem, businesses have been established next to the highway bypass; however, some residents feel that the bypass was detrimental to businesses within Harlem, as it took traffic out of central Harlem and diverted it to a higher-speed roadway on the edge of town.

Development Projects in Immediate Project Vicinity

Montana Air National Guard Training Range EIS; Air National Guard. The Air National Guard is developing an air-to-ground munitions training range in Phillips County east of the Fort Belknap Indian Reservation, and east of the project study area. The 120th Fighter Wing, based in Great Falls, needs a training range closer to its base in order to reduce transit time to the range and to allow pilots to make the most efficient use of available training time. A Record of Decision was issued May 13, 2002, selecting a preferred site in Blaine County west of the Fort Belknap Indian Reservation, and no significant environmental impacts were identified. However, this site is no longer a viable site for the range, and other alternatives in Phillips County are being considered. A supplemental environmental study will likely be conducted.

Grain Shipping Facility Consolidation. The BNSF Railway has modified its operations in recent years, consolidating grain facility service to several large grain facilities that can

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accommodate 110-car trains and closing smaller facilities. In the project corridor, the grain storage facilities in Chinook are no longer serviced by the railroad and handle only smaller volumes of specialty grains such as lentils and peas. Havre and Harlem house the only grain storage facilities serviced by the railroad in the project corridor. Some business leaders in the study region expect this consolidation to continue, possibly resulting in just a single elevator between Shelby and Malta (at Havre). BNSF officials have suggested that no additional elevator consolidation will occur in the near future (ICF Consulting, 2003b).

Transportation Projects in Immediate Project Vicinity

Junction US 2 – North, STPS 325-1(2)0; MDT. MDT proposes to reconstruct Elloam Road (MT Secondary 325) from its junction with US 2 north 19.8 km (12.4 mi), and create a safer connection between Elloam Road and US 2. The project will improve the roadway to secondary highway standards and relocate the intersection with US 2 to improve safety and operational problems experienced in the current location. The existing intersection with US 2 is located 0.8 km (0.5 mi) east of Chinook, immediately east of the Lodge Creek bridge, and crosses three railroad tracks adjacent to US 2. The intersection is frequently blocked by idle trains. The primary safety problems result from lack of adequate storage length on Elloam Road between the railroad and US 2, and several rear-end accidents involving vehicles turning onto Elloam Road from US 2.

Alternatives proposed for the reconstruction include four alignments. Alternative A would relocate the US 2/Elloam Road connection approximately 2 km (1.3 mi) east. Alternative B would reconstruct the existing roadway but not the US 2/Elloam Road intersection. Alternative C would construct a bypass road immediately north of and parallel to US 2 between Elloam Road and Indiana Street in Chinook. Alternative D would realign Elloam Road to connect with Indiana Street north of Chinook.

The current MDT-recommended alternative is Alternative A, based on floodplain and wetland impacts, construction costs, and the need to relocate the US 2/Elloam Road connection due to the safety and operational concerns discussed above. The existing intersection of US 2 and Elloam Road would be closed. Funding for this project has not yet been allocated.

US 2 – Havre, NH 1-6(28)382; MDT. MDT plans to reconstruct US 2 through Havre from RP 381.40 west of the city limit to RP 383.66 at the western limit of the US 2 Havre to Fort Belknap project. The existing paved roadway section through Havre ranges between 19 m (63 ft) and 22 m (71 ft) and consists of four travel lanes and various combinations of parking lanes and center turn lanes. The existing curb and gutter will generally remain in place, and roadway widths will not change. Upgraded traffic signals, Americans with Disabilities Act (ADA)-compliant sidewalk ramps and improvements, and streetscaping and beautification measures are proposed. The project will also provide increased drainage capacity along US 2 in Havre. Construction is estimated to begin in 2007.

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14th Ave Signal – Havre, NH 1-6(50)383; MDT. This project will install a traffic signal on US 2 at the intersection with 14th Avenue in Havre, at RP 383.0. This project is currently under construction.

40 km North of Havre – North, STPS 233-1(8)22; MDT. MDT is reconstructing 14.6 km (9.1 mi) of MT Secondary 233, north of Havre. This road connects Havre with the Port of Willow Creek on the Canadian border and with the north-south Canadian Highway 21, which leads north to Maple Creek, Saskatchewan. This reconstruction is paving the last remaining gravel section of MT Secondary 233 between Havre and the U.S./Canadian border. The adjoining Canadian Highway 21 is fully paved.

Fort Belknap – East, F 1-7(9)430; MDT. This project was let to construction on August 22, 1991 and completed in 1994. It entailed a full reconstruction of 16.4 miles, beginning approximately one-half mile east of the intersection of US 2 with MT Highway 66. The roadway was improved to a 9.8 m (32 ft) paved top, and the subgrade was built wide enough to accommodate a future 12 m (40 ft) paved top. A bridge 12 m (40 ft) in width was constructed over White Bear Creek, approximately 5.6 km (3.5 mi) from the east end of the project. The project also included construction of 2.9 km (1.8 mi) of a bike path from the intersection of US 2 with MT Highway 66 south on MT Highway 66.

Milk River Bridge, rural road, 7 km west of Harlem, BR 9003(37); MDT. This bridge lies 10.5 km (6.5 mi) south of US 2 on a rural road; the road does not intersect US 2. The bridge lies on the jurisdictional boundary between Blaine County and the Fort Belknap Reservation. The existing one-lane bridge will be replaced with a two-lane bridge downstream of its current location to improve the horizontal alignment of the bridge and approaches; construction is scheduled for late 2005.

Milk River Bridge, CR 103, 14.5 km east of Harlem, BR 9003(32); MDT. This bridge lies 5.5 km (3.5 mi) north of US 2, near the town of Savoy, on County Road 103; CR 103 does not intersect US 2. The existing one-lane bridge, known locally as the Savoy Bridge, will be replaced with a two-lane bridge. The new bridge will be built upstream of its current location to improve the horizontal alignment of the bridge and approaches. This bridge also straddles the jurisdictional boundary between Blaine County and the Fort Belknap Reservation. Construction is scheduled for late 2005.

Fort Belknap Indian Reservation Transportation Improvements; MDT and Fort Belknap Indian Reservation Several transportation improvement projects are proposed for the Fort Belknap Indian Reservation between fiscal year 2003 and fiscal year 2005, according to the 2004 STIP. These projects include bridge replacements; road reconstruction, sealing, and overlay; and construction of 10.9 km (6.7 mi) of new roadway.

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Other Transportation and Planning Projects on US 2

In addition to the projects discussed above, there are numerous projects planned on US 2 outside of the project vicinity. These projects were assessed to determine if they would contribute to cumulative impacts throughout the US 2 corridor. Combined, improvements (including this EIS) are planned or have been constructed for 54 percent of the US 2 corridor in Montana, as described below. Two-lane improvements, including safety, bridge replacement, repaving, and reconstruction projects are planned or were constructed for 45 percent of the corridor, and four-lane improvements are planned or were constructed for 2 percent of the corridor. The US 2, Havre to Fort Belknap project represents 7 percent of the US 2 corridor in Montana.

US 2 Highway Improvement Projects, Montana Statewide Transportation Improvement Programs 2002-2004, 2003-2005, and 2004-2006; MDT. Table 4.22 summarizes projects for US 2 throughout Montana that are listed in the Montana Statewide Transportation Improvement Programs (STIP) for the years 2002-2004, 2003-2005, and 2004-2006, not including the US 2 – Havre and 14th Avenue Signal-Havre projects discussed previously. Roadway improvements range from overlays, safety improvements, and bridge replacement to two-lane reconstruction in rural areas and four-lane reconstruction in urban areas. These projects, along with the US 2 – Havre and US 2 Havre to Fort Belknap projects, represent approximately 310 km (192 mi) of improvements to the 1,072 km (667 mi) of US 2 in Montana (29 percent of the length of US 2).

Recent US 2 Highway Improvement Projects; MDT. US 2 highway improvements for the five years (1997-2001) prior to the start date of this project were identified. Since 1997, MDT has repaved or reconstructed 268 km (166 mi) of the US 2 corridor.

US 2, US 85 to West of US 52, Williams, Mountrail, and Ward Counties, North Dakota EIS; North Dakota Department of Transportation. The North Dakota Department of Transportation plans to improve US Highway 2 from the junction of US 85, located north of Williston, North Dakota, to the junction of US 52, located northwest of Minot, North Dakota. The project spans approximately 161 km (100 mi) and is located in Williams, Mountrail, and Ward counties of North Dakota. The existing highway is a two-lane highway. The Record of Decision was signed in February 2004. The selected alternative is a four-lane highway that will be constructed by selectively providing two additional lanes north or south of, and parallel to, the existing two-lane highway.

Roosevelt County/Fort Peck Indian Reservation Corridor; FHWA. FHWA conducted a study in 2003 on transportation improvements and economic initiatives in the Fort Peck Indian Reservation. US 2 runs along the southern edge of the reservation. The study determined the types of transportation infrastructure improvements needed to support and capture the full range of economic benefits associated with proposed economic development initiatives on the reservation. Current proposed initiatives include the irrigation, energy, manufacturing, and tourism sectors. The study found that local access to US 2 needs to be

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improved throughout the reservation. The study also found that businesses in the area are at a competitive disadvantage because of the distance to market for sending and receiving shipments; however, improving US 2 to a continuous four-lane highway would only marginally affect shipping costs (FHWA, 2003a).

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Table 4.22 US 2 Highway Improvement Projects, Montana STIP 2002-2004, 2003-2005, and 2004-2006

Project Name	MDT#	CN#	Project Limits	Project Description	Project Status
Rock Scaling – West of Libby	NH 1-1(69\8)21	4489	US 2, RP 20.5	Spot improvement	2004 construction
Signal Upgrade – Libby	NH 1-1(69)32	4576	US 2, RP 31.8	Signal upgrade	2004 construction
Swamp Creek – East – Channel	NH 1-1(65)45	1027	US 2, RP 45.0	reconstruction	2003-2007 construction
Swamp Creek – East	NH 1-1(35)45	1027	US 2, RP 45.0 to RP 57.2, 19.63 km (12.20 mi)	reconstruction	2003-2007 construction
2000 – Slope Flatten – 10 km W Kalispell	STPHS 1-2(110)113	4708	US 2, RP 111.3 to RP 112.2, 1.45 km (0.9 mi)	Safety improvements	2003-2007 construction
Ashley Cr Strs – SW Kalispell	BR 1-2(113)114	4773	US 2, RP 110.0 to RP 119.6, 15.5 km (9.6 mi)	Replacement of two bridges over Ashley Creek, road reconstruction	2003-2007 construction
US 2/MT 35 Overhead Sign – Kalispell	STPP 1-2(116)123	4601	US 2, RP 122.6	signing	Currently under construction
2001 – Access Control – Kalispell NE	STPHS 1-2(118)123	5003	US 2, RP 122.9 to RP 123.0, 0.16 km (0.1 mi)	Safety improvements	2003-2007 construction
Signal – US 2 / Rose Crossing	STPP 1-2 (112)126	4782	US 2, RP 125.6	Installation of traffic signal at the intersection of US 2 and Rose Crossing north of Kalispell	Currently under construction
Signal – US 2/Birch Grove Rd.	STPP 1-2 (114)128	4904	US 2, RP 128.3	Installation of traffic signal at the intersection of US 2 and Birch Grove Rd. north of Kalispell	Currently under construction
Columbia Falls – East and West	NH 1-2(129)134	5450	US 2, RP 133.92 to RP 134.92, 1.6 km (1.0 mi)	Overlay, four lanes	2005 construction
Columbia Heights – East	NH 1-2(68)138 F	1290	US 2, RP 138.3 to RP 140.9, 4.18 km (2.60 mi)	Reconstruction, bridge replacement	Currently under construction

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Table 4.22 US 2 Highway Improvement Projects, Montana STIP 2002-2004, 2003-2005, and 2004-2006 (continued)

Project Name	MDT#	CN#	Project Limits	Project Description	Project Status
Columbia Heights - Hungry Horse	NH 1-2(39)138	1290	US 2, RP 138.3 to RP 142.7, 7.08 km, (4.40 mi)	Road reconstruction, four and five lane section curb/gutter, sidewalk, drainage structures, wetland construction, park/ride facility, river access parking area, traffic signal, retaining wall, new bridge	2003-2007 construction
Hungry Horse – West Glacier	SFCN-STPHS 1-2(105)142	4271	US 2, RP 142.39 to RP 153.39, 17.70 km (11.00 mi)	Overlay, seal and cover	Currently under construction
Signal – Main St. – Hungry Horse	NH 1-2(117)143	5044	US 2, RP 142.96	Signal spot improvement	Currently under construction
Glacier National Park Southeast	NH 1-2(122)181	5069	US 2, RP 180.5 to RP 184.1, 5.79 km (3.60 mi)	Overlay	2004 construction
2000 – Guardrail – Marias Pass	STPHS 1-3(46)199	4744	US 2, RP 199.0	Safety improvement	2003-2007 construction
Two Medicine River Bridge	BR 1-3 (42) 210	3886	US 2, RP 210.0 to RP 211.6, 2.5 km (1.6 mi)	Bridge replacement and reconstruction, two lanes	2003-2007 construction
Meriwether – East/ Browning – Cut Bank	NH 1-3(36)234 F	0594	RP 233.98 to RP 247.05, 21.03 km (13.07 mi)	Road reconstruction	2004 construction
Cut Bank - West	NH 1-3(40)247	1310	US 2, RP 246.8 to RP 254.81, 12.89 km (8.01 mi)	Road and bridge reconstruction	2005 construction
Shelby - West	NH 1-4(23)271	4816	US 2, RP 271.0 to RP 278.08, 11.39 km (7.08 mi)	Preventive maintenance overlay	Construction completed 2003
Chester - Liberty County Line	NH 1-5(6)321	2414	US 2, RP 321.41 to RP 332.62, 17.9 km (11.1 mi)	Overlay with safety improvements	Currently under construction
Hill County Line - East	NH 1-6(46)333	2414	US 2, RP 332.615 to RP 341.907, 15.4 km (9.5 mi)	Overlay, two lanes	Currently under construction
Dodson - East	NH 1-8 (26) 454 F	1516	US 2, RP 454.15 to RP 458.61, 7.17 km (4.46 mi)	Road and bridge reconstruction, installation of curb/gutter, two lanes	2005 construction
US 2 - Saco	NH-STPE 1-8(25)499	1515	US 2, RP 498.84 to RP 499.84, 1.61 km (1.00 mi)	Reconstruction, two lanes, and bridge reconstruction	Currently under construction

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Table 4.22 US 2 Highway Improvement Projects, Montana STIP 2002-2004, 2003-2005, and 2004-2006 (continued)

Project Name	MDT#	CN#	Project Limits	Project Description	Project Status
Nashua - East and West	NH 1-9(39) 555	2144	US 2, RP 554.66 to 564.86, 16.41 km (10 mi)	Road and bridge reconstruction, two 3.6 m travel lanes, two 2.8 m shoulders	2005 construction
Oswego - East and West	NH 1-9(38) 573	2147	US 2, RP 573.03 to RP 581.90, 14.27 km (8.9 mi)	Reconstruction, two lanes	2003-2007 construction
Brockton, East	NH 1-10 (46) 626	4058	US 2, RP 626.15 to RP 639.64, 21.71 km (13.49 mi)	Road and bridge reconstruction, two lanes	2003-2007 construction
Big Muddy Creek - East	NH 1-10 (49) 639	4334	US 2, RP 639.48 to RP 644.35, 7.84 km (4.87 mi)	Road reconstruction, two lanes	2003-2007 construction
Culbertson -East	NH 1-10(52)644	5149	US 2, RP 644.24 to RP 648.07, 6.16 km (3.83 mi)	Preliminary engineering activities for resurfacing	2004 construction
Bainville E&W	NH 1-10 (29) 656	2145	US 2, RP 656.3 to RP 667.1, 17.4 km (10.8 mi)	Road reconstruction, bridge replacement, replacement of an at-grade RR crossing, relocate utilities, two lanes	2006 construction

Source: Montana Department of Transportation, 2002-2004 STIP, 2003-2005 STIP, and 2004-2006 STIP

4.5.2 Impacts

The majority of resources subject to cumulative impacts would be affected primarily by projects in the immediate vicinity or within the Milk River watershed. Transportation and social conditions, however, were assessed for cumulative impacts resulting from projects occurring on US 2 throughout the state.

Transportation and Safety

There would be beneficial cumulative impacts to vehicle and pedestrian safety in the project area. Other proposed or recently implemented transportation improvements include new and upgraded traffic signals, wider turn lanes, and ADA sidewalk improvements in Havre; wider bridges with safer approaches on the rural roadway system; a wider and safer Milk River bridge on US 2; and a safer intersection at US 2 and Elloam Road. These actions, along with proposed improvements for this project, would cumulatively improve safety for vehicles traveling in the project area and for pedestrians in local communities.

Montana 2001 Senate Bill 3, as codified in MCA 60-2-133, directs that MDT construct a four-lane highway along US 2 in Montana to bring economic development to the Hi-Line. MCA 60-2-133 directs that federal funding must be used for the construction of the four-lane highway, and that this funding cannot require matching state funds. Using the costs estimated by the economic analysis for the entire length of US 2 in Montana (Cambridge Systematics, 2004), reconstruction of US 2 as an improved two-lane with passing lanes across Montana would cost approximately \$510 million, and four-lane undivided reconstruction would cost approximately \$1.3 billion, in present value terms. Federal funds are needed to cover the cost difference between an improved two-lane facility and a four-lane facility. Therefore, approximately \$790 million in federal funds not requiring a state match would be needed to construct a four-lane highway.

In contrast, under the Transportation Efficiency Act for the 21st Century (TEA 21), the State of Montana received federal highway funding generally ranging from \$250 million to \$280 million per year to be applied to all highway projects throughout the state, and the funding for a four-lane US 2 would need to be in addition to this typical federal funding. The two-lane projects currently planned along US 2 provide much-needed improvements to the highway. If these projects were placed on hold while federal funding is sought for a four-lane highway in the corridor, safety and operational improvements could be delayed, resulting in an adverse impact to local communities and regional travelers.

Although traffic operations and safety will improve as a result of projects in the immediate vicinity and STIP projects identified on US 2 outside of the study area, traffic volumes and traffic patterns are not anticipated to substantially change as a result of these projects. The traffic growth rate used by MDT for the Havre to Fort Belknap corridor through the design year 2027 is between 1 and 2 percent per year; this rate is higher than the predicted

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population and employment growth rates and would likely account for corridor traffic impacts resulting from any recent and foreseeable development.

In addition to these projects identified along or near US 2 in Montana, the transportation impacts associated with the US 2, US 85 to West of US 52, North Dakota project were reviewed. The Final EIS for the project did not identify any traffic volumes or traffic impacts associated with the transportation improvements. Therefore, the North Dakota project on US 2 is not expected to contribute to any increase over the 2027 traffic volumes projected for this project.

The traffic impacts of MCA 60-2-133 were assessed as well. Although the construction of a four-lane facility is directed by MCA 60-2-133, there is no obligated funding, and potential funding sources are limited to federal funds. As identified earlier for this analysis, reasonably foreseeable actions were identified as those likely to occur within 20 years of the project (2027). Typically, roadway reconstruction projects are planned with a 20-year design life. After 20 years, they are expected to require additional improvements or reconstruction. Of those projects constructed on US 2 since 1997 and planned for US 2 in the 2004-2006 STIP (not including this EIS), 486 km (302 mi) are two-lane reconstruction projects. These segments of US 2, which represent 45 percent of the US 2 corridor in Montana, are not expected to need additional improvements for 20 years after their construction date. Therefore, consideration of four-lane improvements to these segments of US 2 would not be anticipated earlier than 20 years beyond the construction date if nominated or implemented through the typical state funding process. Therefore, for the purposes of this cumulative impact analysis, the completion of a four-lane highway on US 2 across Montana, although it may occur within the future, was assumed to occur past the time-frame identified for this analysis.

Socioeconomic Conditions and Land Use

Hill and Blaine Counties, excluding the Fort Belknap Reservation, have seen population decline between 1990 and 2000. The Fort Belknap Reservation has experienced a 21 percent growth rate during the same time period. Current population projections through 2025 predict yearly a growth rate of less than 1 percent for the 25-year period between 2000 and 2025 for both counties (NPA Data Services, 2002a). There are no indications that any of the planned projects in the area would result in substantial population growth beyond that currently predicted. There would be a temporary benefit to the local economies during construction, but the projects are not expected to result in substantial long-term employment or economic growth in the area. The only project with long-term economic potential is the development of the Air National Guard training range, which would employ between six and twelve individuals but would not have a substantial effect on the local economy or employment.

The *US 2, Havre to Fort Belknap EIS, Existing Economic Conditions Report* (ICF Consulting, 2003b) examined economic conditions in the project area and the potential for

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regional economic impacts as a result of transportation improvements to US 2. The report reviewed both current economic initiatives and past failed initiatives in six broad sectors: tourism, agriculture, manufacturing, energy, government, and retail/services.

The report found that most initiatives have a high reliance on the highway system, and that many initiatives have a need for highway safety and operational improvements. Specifically, the tourism, agriculture, and manufacturing sectors have a high need for safety and/or operational improvements on US 2 to maintain their viability in the region, but are not expected to expand as a result of such improvements. To that end, the numerous projects planned for or recently constructed on 54 percent of the length of US 2 in Montana will support regional economic viability through their safety and traffic operations improvements.

The economic study found that the potential for economic growth as a result of major capacity improvements to US 2, such as additional travel lanes, is low for all business sectors. The past and planned two-lane projects along 45 percent of US 2 in Montana would therefore be consistent with the economic needs of business sectors in the US 2 corridor.

The relocation of Elloam Road east of Chinook and the bridge replacements east and west of Harlem may have minor impacts on farmlands. Land affected by the air training range is used for agriculture or grazing, and these uses would be allowed to continue except for within the 0.6 km² (1 mi²) target area in the center of the range. Cumulative impacts of the US 2 Havre to Fort Belknap project in combination with the Elloam Road and bridge replacement projects would not result in significant impacts to farmlands in the project area. Cumulative impacts are not anticipated to irrigation facilities in the area.

Streetscape improvements proposed in the US 2-Havre project coupled with community entry features, streetscape improvements, and a signage theme proposed in the US 2 Havre to Fort Belknap alternatives could result in beneficial but minor cumulative improvement of community identity in the corridor. These improvements could create small positive impacts to the tourism sector as tourists respond to the stronger community and corridor identity when driving through the area. Paving the last remaining section of MT Secondary 233 between the Canadian border and Havre could result in an increased number of Canadians travelling to Havre for shopping and services, creating small positive impacts to the retail/services sector.

Present and planned projects may cumulatively improve emergency and law enforcement service operations through new and improved traffic signals, wider shoulder and bridges, additional travel and/or turn lanes, and the relocation of the Elloam Road intersection to an area not often blocked by stopped trains.

Watershed Impacts

In addition to the projects in or near the project area listed above, five other projects are planned on US 2 within the Milk River watershed. These projects, listed in Table 4.23 above, are the following:

- Chester - Liberty County Line
- Hill County Line - East
- Dodson - East
- US 2 Saco
- Nashua - East and West

Other past, present and reasonably foreseeable future actions occurring in the Milk River watershed that may affect natural resources in the watershed include agricultural practices and railway operations as discussed in the previous section on historical development of the project area. It is assumed that current agricultural and railway operations will continue in the future.

Wildlife. Past agriculture practices have affected land use patterns and have resulted in natural wildlife habitats being altered by agricultural land use patterns and development. These current land use patterns are expected to continue into the future. Due to these agricultural land use patterns, additional habitat area that would be impacted by the roadway widening in the proposed alternatives is negligible. Wildlife in the Milk River watershed area also may be impacted by construction noise and activity resulting from ongoing projects. However, these projects generally occur adjacent to an existing roadway, and more suitable habitat usually exists in the areas outside the project areas.

Similar to the impacts caused by roads, the adjacent railroad and proposed air training facility produce noise levels loud enough to impact wildlife and may contribute to wildlife collision fatalities, wildlife habitat fragmentation, pollution, and habitat loss. Agricultural practices using farming equipment loud enough to affect general wildlife species and pesticides and herbicides that may affect potential wildlife habitat would continue year-round in the project area. The proposed project, when combined with these past, present and future actions, would contribute incrementally to an overall impact on terrestrial resources, but the proposed project's contribution to cumulative effects is not likely to be significant.

Water Resources, Riparian Habitat, and Aquatic Species. The combined effect of the bridge replacements in the Milk River watershed could contribute to construction debris and disturbance to banks and channels, resulting in increased sedimentation in creeks and rivers. Continued railroad operations contribute to noise disturbance above rivers and creeks in the project area, possibly contributing to fisheries avoidance in the area. In addition, railroads may contribute to contaminants into the water system by spills directly over the waterway or

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into the ground water. Continued farming practices release fertilizers into the creeks and rivers in the project area. Agricultural pesticides entering streams and rivers in runoff, as well as through atmospheric deposition, may bioaccumulate in fish and other aquatic organisms. The combined effects of these actions create the potential for an overall adverse effect on water quality in the Milk River watershed.

Continued livestock grazing practices near streambank and riparian areas contribute to the delayed recovery of the plant community and riparian ecosystem and could possibly add to streambank erosion from cattle trampling. Overgrazing of riparian areas by livestock reduces streamside vegetation, preventing runoff filtration, increasing stream temperatures, and eliminating food and cover for fish and wildlife. As vegetation is reduced, sloughing and erosion can destroy streambanks. Streambank destabilization and erosion then cause downstream sedimentation. Sedimentation reduces stream capacity, resulting in decreased water supply, irrigation water supply, flood control, hydropower production, water quality, and impairment of aquatic life and wetland habitat.

The Milk River and Battle Creek are impaired water bodies, and therefore vulnerable to potential cumulative effects of incremental actions. For these water bodies, activities contributing to degraded water quality are primarily associated with long-term agricultural-related practices rather than short-term construction-related sedimentation and erosion. The US 2 Havre to Fort Belknap project does not affect agricultural practices in the corridor nor would it likely contribute to metal or mercury contamination and is therefore not expected to contribute to significant water quality impacts to the Milk River or Battle Creek.

Threatened and Endangered Species. Foreseeable future actions include the proposed transportation projects within the project limits and the proposed Montana Air National Guard Training Range near Fort Belknap. Other past and continuing actions include agricultural and railroad activities.

The proposed transportation projects could have temporary impacts on wintering bald eagles in these project areas. During the construction periods for these projects, construction noise and activities may cause the bald eagles to avoid these project areas because there is ample suitable habitat away from the road.

None of these transportation projects would impact nests or known roost sites, or eliminate an abundance of riparian habitat along the Milk River. The *Montana Air National Guard Training Range EIS* concluded that there would be no impacts to bald eagles as a result of the development or operation of the air training facility. This document is being supplemented by a new environmental study; information on impacts to bald eagles as a result of the new proposed site is not yet available.

The past agricultural practices using farming equipment loud enough to be heard by bald eagles would continue in the project area. In addition, the adjacent railroad operations

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produce noise levels loud enough to be experienced by bald eagles, and these operations are expected to continue. Continued farming practices would release fertilizers into the creeks and rivers in the project area, contributing to water quality impacts, which could impact bald eagle prey species in the project area. The current conditions, intermittent increases in noise levels, farming and train activity, and water quality impacts have not substantially discouraged eagles from frequenting the project area. Since the proposed transportation project construction impacts are temporary and do not contribute substantially to increased noise or habitat destruction that would adversely impact the eagle, there are no significant cumulative impacts to the bald eagle.

Wetlands. Past agricultural development and land use patterns have resulted in the loss of wetlands in the area. Nationally, conversion of wetland to cropland for agricultural purposes is believed to be the primary reason for wetland loss, although there is some disagreement. Because agriculture is the primary land use in the study area, it seems likely that agriculture is the primary reason for the loss of wetlands in the region. These current land use patterns are expected to continue into the future. Some wetlands in the Milk River watershed would most likely be affected by planned projects. Effects would include direct effects of loss of wetlands and indirect effects of contamination, sedimentation, and reduced function. However, all of the proposed projects in the project area are at least partially federally funded and subject to regulations protecting and mitigating effects on wetlands. All federal projects in the area would require COE 404 permits for disturbance to wetlands. The COE would assess potential cumulative impacts of wetland deterioration during the permit process as well. Wetlands that are impacted as a result of an individual federal project, including federal highway projects, would be mitigated on an individual project basis; therefore, the cumulative effects would not be significant.

Floodplains. Past actions such as locating the BNSF Railway and US 2 in the Milk River floodplain have compromised the ability of the Milk River to access its floodplain and migrate freely. In some cases, the railroad and highway embankments form new manmade edges of the floodplain. These past actions coupled with the proposed improvements of US 2 would continue these conditions. In addition, the Elloam Road relocation and bridge reconstructions, along with the wider cross sections proposed in the US 2 Havre to Fort Belknap alternatives, would add fill to the 100-year floodplain in the project area. Overall development of the 100-year floodplain is currently minimal and none of the proposed projects would substantially increase fill. Although there are cumulative impacts of these combined actions, they are not considered significant. In addition, due to the wide floodplain, available flood storage, and limited existing or planned development of the 100-year floodplain in this area, the incremental impacts of floodplain development are negligible from these proposed projects.

4.5.3 Mitigation

No mitigation necessary for any alternative.

4.6 Relationship between short-term environmental impacts and long-term productivity

Short-term impacts are anticipated during the construction of the proposed improvements. These impacts are described in Section 4.4, Construction Impacts. Short-term impacts associated with construction include potential for increased travel delays during construction, traffic congestion, temporary restricted access to residences and businesses, and environmental impacts such as increased fugitive dust emissions, disruption of vegetation, water resources, and wildlife areas, increased noise, and visual intrusions to motorists and residents. Mitigation measures and proven BMPs would be employed to minimize short-term environmental impacts.

The maintenance and enhancement of long-term productivity of the environmental resources of an area is based on a number of different factors, including transportation systems. The need for present and future transportation improvements is programmed and analyzed as part of the compilation of the Montana Statewide Transportation Improvement Programs. These plans take into account the requirements for long-term productivity of the transportation system. In addition, the improvement of the aging transportation infrastructure contributes to the maintenance and enhancement of long-term productivity of the communities in the project area and would outweigh the short-term impacts.

4.7 Irreversible & irretrievable commitment of resources

Irreversible commitments are those that cannot be reversed (i.e., the resource is permanently lost or consumed). Irreversible commitments that would result from the construction and operation of proposed highway improvements along US 2 include consumption of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous materials. These resources are not in short supply and therefore, their use will not have an adverse effect upon continued availability of these resources.

Irreversible commitments can also be those that are only lost for a period of time but are unlikely to revert to their former use. For example, if the US 2 highway facility is no longer needed in the future, the land could be converted to another use. However, it is unlikely that this would occur, therefore the resource commitments of habitat, wetlands, farmlands, and land use would likely also be irreversible since they would not be expected to ever revert to former uses. The loss of cultural resources is irreversible and the expenditure of state and federal funds in these transportation improvements would be irreversible.

The irreversible and irretrievable commitment of these resources is offset by the benefits associated with the proposed transportation improvements. These benefits include improved safety, reduced roadway deficiencies, improved traffic operations and an efficient highway to support economic vitality of the local communities.

5.0 Permits

The permits and approvals listed below will be required for the preferred alternative and must be obtained prior to any construction:

- Section 402/Montana Pollutant Discharge Elimination System (MPDES) authorization from MDEQ Permitting and Compliance Division. The MPDES permit requires a storm water pollution prevention plan that includes a temporary erosion and sediment control plan. The erosion and sediment control plan identifies BMPs, as well as site-specific measures to minimize erosion and prevent eroded sediment from leaving the work zone.
- CWA Section 404 permit from the U.S. Army Corps of Engineers for any activities that may result in the discharge or placement of dredged or fill materials in waters of the U.S., including wetlands.
- SPA 124 Permit from the MFWP-Fisheries Division. The SPA permit is required for projects that may affect the bed or banks of any stream in Montana or its tributaries.
- Short-Term Water Quality Standard for Turbidity related to construction activity (318 Authorization) from the MDEQ-Water Quality Bureau for any activities that may cause unavoidable violations of state surface water quality standards for turbidity, total dissolved solids or temperature.
- Underground Storage Tank/Piping Removal from the MDEQ, including prior local Fire Official approval from the relevant jurisdiction.
- MBTA (Depredation Permit) from the U.S. Fish and Wildlife Service (if the project will result in the taking of active migratory bird nests or migratory birds).
- Montana Floodplain and Floodway Management Act (Floodplain Development Permit) from Hill and Blaine Counties.

In addition to these permits, MDT and FHWA will comply with the stipulations in the Memorandum of Agreement between the FHWA, MDT, and SHPO for the one site with an adverse effect under Section 106.

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6.0 List of Preparers

Table 6.1 lists the responsibilities, education, and experience of the people who prepared and reviewed this Environmental Impact Statement (EIS). David Evans and Associates, Inc. is the primary consultant responsible for the preliminary roadway design, environmental studies, and EIS preparation with the assistance of sub-contractors including Ethnoscience, Inc., Big Sky Acoustics, LLC, Terracon, and ICF Consulting, Inc.

The table also lists the Federal Highway Administration (FHWA) and Montana Department of Transportation (MDT) personnel who are responsible for project oversight and review.

Table 6.1 List of Preparers

Name and Title	EIS Responsibility	Education	Experience
Federal Highway Administration			
Darrin Grenfell, P.E.– S.C. <i>Operations Engineer</i>	Lead Agency	B.S. Civil Engineering	Over 12 years experience in highway engineering, environmental review, contract administration, and project management.
Montana Department of Transportation			
Karl M. Helvik, P.E. <i>Consultant Design</i>	Project Management	B.S. Agricultural Engineering	Over 24 years experience in highway and transportation design, project management, and environmental compliance.
Mick Johnson <i>District Administration, Great Falls District</i>	Project Management	B.S. Business Administration	20 years in Transportation with 10 years experience as a District Administrator.
Doug Wilmot <i>District Construction, Great Falls District</i>	Advisory, Public Involvement	B.S. Civil Engineering	Over 15 years experience in transportation construction engineering.

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Table 6.1 List of Preparers (continued)

Name and Title	EIS Responsibility	Education	Experience
David Evans and Associates, Inc.			
Debra Perkins-Smith, AICP <i>Vice President, Environmental Manager</i>	Project Management, Public Involvement, Alternatives Development and Evaluation, Project Documentation	Master of Urban and Regional Planning B.A. Government	Over 22 years experience in transportation, environmental planning and public involvement programs.
Joseph Hart, P.E. <i>Vice President, Traffic Engineering Manager</i>	Project Management, Public Involvement, Traffic Analysis, Alternatives Development	M.S. Civil Engineering B.S. Civil Engineering	Over 25 years experience in traffic engineering, transportation planning, transit systems analysis, alternatives assessment and environmental studies.
Steve Long, P.E. <i>Vice President, Transportation Engineering Manager</i>	Roadway Design, Alternatives Development	B.S. Civil Engineering	Over 18 years experience in all phases of transportation projects from environmental compliance and planning through preparing final construction documents and providing construction management.
Kip Coulter, P.E. <i>Vice President of Structural Engineering</i>	Bridge Design	B.S. Civil Engineering	30 years of experience in transportation and structural engineering.
Jane Board, AICP <i>Senior Associate, Senior Planner</i>	Technical Review	M.S. Regional Planning B.S. Natural Resource Planning	Over 23 years of experience in managing and coordinating special studies for NEPA documentation and transportation planning projects.
Mandy Whorton <i>Senior Environmental Planner</i>	Cultural and Natural Resources, Alternatives Evaluation	Master of Natural Resource Management B.A. Political Science	Over 10 years experience in NEPA documentation and natural and cultural resource management.
Kathy Schultheis, ASLA <i>Senior Landscape Architect</i>	Public Involvement, Context Sensitive Design, Landscape Design	B.S. Landscape Architecture	Over 20 years experience in landscape master planning, site planning and design, environmental assessments, comprehensive planning, and project management.
Martha Wiley <i>Senior Environmental Planner, Environmental Planning and Natural Resource Group Manager</i>	Biological Resources, Wetlands	M.A. Geography B.A. Geography	Over 23 years experience with environmental planning, federal and state environmental regulations in Montana, Idaho, Washington and California.

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Table 6.1 List of Preparers (continued)

Name and Title	EIS Responsibility	Education	Experience
David Evans and Associates, Inc. (continued)			
Colleen Kirby Roberts <i>Planner</i>	Public Involvement, Alternatives Development, Project Documentation	B.A. Art History	Over 5 years experience in architecture, urban, transportation, and environmental planning.
Stacy Tschor, P.E. <i>Senior Transportation Engineer</i>	Traffic Analysis	M.S. Civil Engineering, Transportation Concentration B.S. Civil Engineering B.S. Architectural Engineering	Over 8 years experience in traffic engineering and transportation planning.
Deanna Butterbaugh, P.E. <i>Senior Transportation Engineer</i>	Roadway Design, Alternatives Development	B.S. Civil Engineering	Over 18 years experience providing project engineering and management services for a variety of rural highway, urban roadway and civil engineering projects.
Sue Platte <i>Biologist</i>	Biological Resources, Wetlands	B.S. Biology	Over 6 years of experience as a biologist. Management of wildlife surveys projects and impact assessment projects.
Saundra Dowling, AICP <i>Planner</i>	Cultural and Socioeconomic Resource Documentation	Master of Urban and Regional Planning B.A. Journalism	Over 10 years of experience in providing planning, communication, public involvement and documentation services for a variety of public projects.
Laura Meyer <i>Environmental Planner</i>	Natural Resource Documentation	Master of Urban and Regional Planning B.A. Geography	Over 5 years of experience in impact analysis and documentation for multidisciplinary transportation, land use, and environmental projects.
Chad Ricklefs <i>Planner</i>	Natural Resources, Biological Resources, and Wetlands	Master of Urban and Regional Planning B.A. Political Science and Environmental Conservation	2 years experience in environmental and urban planning, including public involvement programs.
Rich Garcia <i>Planner, GIS Analyst</i>	Geographic Information Systems	B.A. Geography	Over 5 years experience in GIS analysis and environmental planning.

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Table 6.1 List of Preparers (continued)

Name and Title	EIS Responsibility	Education	Experience
Ethnoscience, Inc.			
Lynelle Peterson <i>Senior Archaeologist</i>	Cultural Resource Investigation and Documentation	M.A. Anthropology B.A. Psychology	20 years experience in archaeology and cultural resource management.
Blain Fandrich, <i>Senior Historian</i>	Cultural Resource Investigation and Documentation	M.A. History, Library Science B.A. Anthropology	15 years experience in history, archaeology and cultural resource management.
Big Sky Acoustics, LLC			
Sean Connolly <i>President</i>	Noise Analysis	Master of Mechanical Engineering B.S. Mechanical Engineering	20 years experience providing consulting services for noise assessment and acoustical design.
Terracon			
Daniel Nebel, P.G. <i>Associate Principal, Engineering Geologist</i>	Hazardous Waste and Water Quality	B.S. Geology	30 years experience providing consulting engineering and environmental geology services in Montana and surrounding region.
John Pool, P.E. <i>Senior Geotechnical Engineer</i>	Geotechnical evaluation	M.S. Civil Engineering B.S. Civil Engineering	Over 26 years of technical engineering experience, including geotechnical investigation for highway reconstruction/rehabilitation, foundation systems, monitoring systems, and dams and improvements.
ICF Consulting, Inc.			
Sergio Ostria <i>Senior Vice President</i>	Economic analysis	M.A. Economics	Over 16 years experience in transportation economics, transportation and environmental planning and policy analysis.
Jeff Ang-Olson <i>Project Manager</i>	Economic analysis	Master of City Planning M.S. Transportation Engineering	8 years experience in transportation, land use and environmental planning.
Sakina Khan <i>Senior Associate</i>	Economic analysis	Master of City Planning	Over 4 years experience in transportation and economic development analysis, and urban/regional planning.

7.0 Distribution List

7.1 Federal Agencies

**U.S. Department of Agriculture
Natural Resources and Conservation Service**
Dave White, State Conservationist
Federal Building, Room 443
10 East Babcock Street
Bozeman, MT 59715-4704

**U.S. Department of the Interior
Bureau of Land Management**
Marty Ott, State Director
5001 Southgate Drive
P.O. Box 36800
Billings, MT 59107

**U.S. Department of the Army
Corps of Engineers**
Allan Steinle, State Program Manager
Helena Regulatory Office
10 West 15th Street, Suite 2200
Helena, MT 59626-0014

**U.S. Department of the Interior
Office of Environmental Policy and
Compliance, Denver Region**
Robert F. Stewart, Regional Environmental
Officer
P.O. Box 25007 (D-108)
Denver Federal Center
Denver, CO 80225-0007

**U.S. Department of the Interior
Office of Environmental Policy and
Compliance**
Ethel Smith, Director
Main Interior Building, MS 2340
1849 C Street, NW
Washington, D.C. 20240

U.S. Environmental Protection Agency
Mr. John Wardell, Director
Region VIII, Montana Operations Office
Baucus Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

U.S. Fish and Wildlife Service
Mark Wilson, Field Supervisor
Montana Field Office
100 North Park, Suite 320
Helena, MT 59601

**U.S. Department of the Interior
Bureau of Indian Affairs**
Richard J. Stefanic, Environmental
Scientist
316 N. 26th St.
Billings, MT 59101

Cleo Hamilton, BIA Superintendent
RR1, Box 66
Harlem, MT 59526

U.S. Senators and Representatives

Senator Max Baucus (D)
511 Hart Senate Office Building
Washington, DC 20510

Senator Conrad Burns (R)
187 Dirksen Senate Office Building
Washington, DC 20510

Congressman Denny Rehberg (R)
516 Cannon House Office Building
Washington, DC 20515

7.2 State Agencies

Montana Department of Fish, Wildlife, & Parks

Jim Satterfield, Regional Supervisor
Route 1-4210
Glasgow, MT 59230

Department of Natural Resources & Conservation

Clive Rooney, Area Manager
Northeastern Land Office
P.O. Box 1021, 613 NE Main Street
Lewistown, MT 59457-1021

Department of Environmental Quality

Jan Sensibaugh, Director
Lee Metcalf Building
1520 East 6th Avenue
P.O. Box 200901
Helena, MT 59620-0901

State Historic Preservation Office

Mark Baumler, State Historic Preservation Officer
1410 Eighth Avenue
P.O. Box 201202
Helena, MT 59620

Office of the Governor

Judy Martz
State Capitol
Helena, MT 59620-0801

Montana Transportation Commission

Chairperson Shiell Anderson
748 Highway 89 North
Livingston, MT 59047

Dan Rice (District 3)
511 Central Ave. West
Great Falls, MT 59404

State Legislature

State Representative (D-90), Hill County
Bob Bergren
1132 26th Avenue West
Havre, MT 59501-8609

State Senator (R-48), Daniels, Valley and Phillips Counties
Sam Kitzenberg
130 Bonnie Street, Apt. 1
Glasgow, MT 59230-2101

State Representative (D-91), Blaine and Hill Counties
John Musgrove
810 10th Street
Havre, MT 59501-4127

State Senator (D-45) Hill, Liberty, and Chouteau Counties
Jon Tester
709 Son Lane
Big Sandy, MT 59520-8443

State Representative (D-92), Phillips, Blaine, Hill and Chouteau Counties
Jonathan Windy Boy
RR1 Box 544
Box Elder, MT 59521-2101

State Senator (D-46), Phillips, Blaine, Hill and Chouteau Counties
Ken Hansen
P.O. Box 686
Harlem, MT 59526-0686



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7.3 Local Agencies

Fort Belknap Indian Community Council

President Darrell Martin
RR1, Box 66
Harlem, MT 59526

Blaine County Commission

Chairman Don K. Swenson
400 Ohio Street
Chinook, MT 59523

Hill County Commission

Chairman Pat Conway
315 4th Street
Havre, MT 59501

Havre Mayor's Office

Mayor Robert E. Rice
P.O. Box 321
Havre, MT 59501

Chinook Mayor's Office

Mayor Bill Oehmcke
P.O. Box 1177
Chinook, MT 59523

Harlem Mayor's Office

Mayor Jason Gibson
P.O. Box 579
Harlem, MT 59526

Hill County Electric Cooperative

Robert Pleninger, Supervisor,
Right-of-Way
P.O. Box 2330
Havre, MT 59501

Northwestern Energy

Mike Hanson, CEO
40 East Broadway
Butte, MT 59701

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7.4 Public Copies

Copies of this Final Environmental Impact Statement (EIS) will be available at the following Montana locations:

Havre: Hill County Commissioners' Office/Clerk and Recorder's Office
315 4th Street, Havre

Havre-Hill County Library
402 3rd Street, Havre

Montana Department of Transportation Office
1671 Highway 2 West, Havre

Chinook: Blaine County Commissioners' Office/Clerk and Recorder's Office
400 Ohio Street, Chinook

Blaine County Library
94 4th Street, Chinook

Sweet Memorial Nursing Home
Highway 2 West, Chinook

Harlem: Harlem City Hall
10 1st Avenue SW, Harlem

Harlem Public Library
37 1st Avenue SE, Harlem

Little Rockies Senior and Retirement Center
116 South Main Street, Harlem

Fort Belknap: Fort Belknap College Administration Building
First Street, Fort Belknap

Fort Belknap Indian Community Council
Main Street, Fort Belknap

Helena: Montana Department of Transportation
2701 Prospect Avenue, Helena

Federal Highway Administration
2880 Skyway Drive, Helena

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This Final EIS will also be available at the following State Depository Libraries in the US 2 corridor and the state capitol in Montana:

Helena: Montana State Library
1515 East 6th Avenue, Helena

Havre: Montana State University – Northern Library
300 West 11th Street, Havre

Glasgow: Glasgow City–County Library
408 3rd Avenue South, Glasgow

Kalispell: Flathead County Library
247 1st Avenue East, Kalispell

Libby: Lincoln County Public Library
220 West 6th Street, Libby

This document is also available in pdf format on the MDT website at:
www.mdt.state.mt.us/environmental/eis-ea/

All individuals and groups on the project mailing list will receive a notice announcing the availability of this document.

Copies of the this document can also be requested by contacting:

Karl Helvik
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P.O. Box 201001
Helena, MT 59620-1001
406-444-5446
khelvik@state.mt.us

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8.0 Comments and Coordination

The procedures for preparing an Environmental Impact Statement (EIS) emphasize cooperative consultation among agencies and the early and continued involvement of the public in the project area. This chapter documents specific elements of the public and agency involvement process.

8.1 Agencies with Jurisdiction

Agencies were contacted to identify issues and comments relating to the proposed project.

Agencies with jurisdiction and/or permitting authority

Advisory Council on Historic Preservation (cultural resources)

Fort Belknap Indian Community Council (governance on Fort Belknap Indian Reservation)

Blaine County (floodplain development)

Hill County (floodplain development)

Montana Department of Environmental Quality (hazardous materials, MPDES permit, water quality)

Montana Department of Fish, Wildlife, and Parks (Montana Species of Special Concern, game species, Stream Protection Act permits, and Section 6(f))

Montana Department of Natural Resources and Conservation (property owner, agriculture)

Montana Department of Transportation (project proponent)

Montana State Historic Preservation Office (cultural resources)

U.S. Army – Corps of Engineers (404 permits)

U.S. Department of Agriculture – Natural Resources and Conservation Service (farmlands)

U.S. Department of the Interior – Bureau of Indian Affairs (Indian lands (Fort Belknap Reservation))

U.S. Department of the Interior – Bureau of Land Management (property owner)

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U.S. Department of the Interior, Office of Environmental Policy and Compliance (Section 4(f) review)

U.S. Department of Transportation – Federal Highway Administration (project proponent)

U.S. Environmental Protection Agency (EIS review)

U.S. Fish and Wildlife Service (threatened and endangered species, and migratory birds)

Cooperating Agencies

Agencies with jurisdiction within the project's study area were contacted and invited to participate in this EIS as cooperating agencies. The following agencies have indicated their commitment as cooperating agencies:

Montana Department of Environmental Quality

Montana Department of Natural Resources and Conservation

Fort Belknap Indian Community Council

U.S. Army – Corps of Engineers

U.S. Department of the Interior – Bureau of Indian Affairs

U.S. Fish and Wildlife Service

Please see Appendix B for letter responses from the agencies.

8.2 Other Agencies and Groups

In addition to agencies with jurisdiction and/or permitting authority, the following agencies and groups were contacted to gather information and comments about the project.

Alfalfa Valley Irrigation District

Adventure Cycling Association (Missoula)

Blaine County Commission

Blaine County Sanitarian

September 2004

Burlington Northern Santa Fe Railway

Chinook – Mayor

Chinook Chamber of Commerce

Fort Belknap Irrigation District

Harlem – Mayor

Harlem Irrigation District

Havre – Mayor

Havre Chamber of Commerce

Highway 2 Association

Hill County Commission

Hill County Planning Department

Hill County Water District

Hill and Blaine County emergency response personnel

Matheson Ditch Company

Montana Motor Carriers Association

Montana Natural Heritage Program

Paradise Valley Irrigation District

Zurich Irrigation District

8.3 Agency Consultation

Agencies with jurisdiction and/or permitting authority were sent information packets in October 2003 documenting project status and alternatives.

September 2004

An agency field review meeting was held in the project corridor on October 30, 2003. Attendees included representatives of the following agencies: Montana Department of Fish, Wildlife, and Parks; Montana Department of Natural Resources and Conservation; U.S. Army – Corps of Engineers; U.S. Department of Agriculture – Natural Resources and Conservation Service; U.S. Department of the Interior – Bureau of Indian Affairs; U.S. Department of the Interior – Bureau of Land Management; U.S. Environmental Protection Agency; and U.S. Fish and Wildlife Service.

Project staff presented information on the project background, purpose and need, and alternatives and summarized information on environmental impacts. Following the meeting, the group toured the corridor.

Cooperating and reviewing agencies were provided the opportunity to review and comment on the Preliminary Draft EIS and the Draft EIS. Agency letters containing comments on the Draft EIS are included in Appendix B. Appendix K, which contains all the DEIS comments received by MDT and FHWA, also includes the agency comments and a response to their comments.

8.4 Public Involvement

The Notice of Intent for this project was published in the *Federal Register* August 7, 2002. Please see Appendix J for a copy of the document.

8.4.1 Citizens Advisory Committee

A Citizens Advisory Committee (CAC) was formed to provide advice to the US 2 project team on important local and regional issues along the US 2 project corridor. It includes representatives from a wide range of corridor interests: County Commissioners from Hill and Blaine counties, mayors of Havre, Chinook, and Harlem, four citizen representatives, and representatives from the Fort Belknap Indian Reservation, Havre Chamber of Commerce, Highway 2 Association, BNSF Railway, and the trucking industry.

The CAC was formed to accomplish the following primary goals:

- Provide advice to the project team;
- Act as a liaison between the project team and community;
- Identify key community issues;
- Provide input to the project's "Purpose and Need;"
- Help develop a vision and goals for corridor improvements; and
- Assist in identifying the range of transportation investments to be studied.

September 2004

Ten meetings, keyed to decision points in the process, were held. MDT, FHWA, and the project consultant David Evans and Associates, Inc. (DEA) participated in these meetings with the CAC members.

The following meetings were held:

Meeting Date	Meeting Topic
August 14, 2002	Project overview; identification of transportation needs and issues for the project corridor.
September 18, 2002	Identification of corridor opportunities and constraints; education on transportation planning and design.
September 30, 2002	Preparation and review of public meeting information and materials for September 30 – October 3, 2002 public meetings; discussion of existing economic conditions.
November 15, 2002	Review of alternatives development from November 12-14, 2002 community workshops.
January 23, 2003	Presentation of range of alternatives; screening criteria; initial alternatives screening.
May 5, 2003	Discussion and screening of alternatives to obtain input on alternatives carried forward for more detailed analysis; discussion of economic issues and related enhancements to US 2.
October 2, 2003	Review of preliminary results of evaluation of social, economic, and environmental impacts of alternatives; funding discussion.
November 24, 2003	Review of findings of <i>Existing Economic Conditions Report</i> ; discussion of results of <i>Benefit-Cost Analysis</i> .
April 15, 2004	Review of project status; review of major impacts of the proposed alternatives; request for CAC input on Preliminary Draft EIS; discussion of right-of-way acquisition process and project funding.
September 2, 2004	Summary of comments on the Draft EIS; MDT and FHWA selection of the preferred alternative to be presented in the FEIS.

8.4.2 Public Meetings

Three sets of public meetings and a set of community workshops were held in the project corridor. Each set of meetings and workshops was held in four locations: Havre, Chinook, Harlem, and Fort Belknap. The first set of public meetings was held to conduct public scoping. Community workshops were then held to develop alternatives with the public. The second set of public meetings solicited public input on alternatives evaluation and screening. The third set of public meetings was a series of public hearings on the Draft EIS, Draft Section 4(f) Evaluation, and Permit 404(b)(1) Evaluation.

September 2004

Public Meetings – Scoping: September 30 – October 3, 2002

The first set of public meetings occurred September 30 – October 3, 2002 with meetings held in Havre, Chinook, Harlem, and Fort Belknap. These meetings served to inform the public about the US 2 project, answer questions, and solicit input about the highway corridor. The meetings were held from 4:30 to 7:00 pm in an open house format. An introductory presentation was given at 6:00 pm followed by a group question and answer period. Most of the meeting time was spent in one-on-one informal information exchanges, giving everyone a chance to provide input. Public input provided details regarding existing roadway, traffic, and safety conditions in the corridor, driving characteristics, and possible improvements to consider.

Please refer to Appendix J for a copy of the meeting minutes and summary of public comments received at this meeting.

Community Workshops – Alternatives Development: November 12 – 14, 2002

A set of community workshops occurred November 12 – 14, 2002 with meetings again held in Havre, Chinook, Harlem, and Fort Belknap. Each meeting was a 2-1/2 hour interactive workshop. The purpose of the workshops was twofold: to confirm highway improvement objectives developed at the previous set of public meetings (see meeting minutes from September 30 – October 3, 2002 meetings in Appendix J) and to jointly develop a variety of solutions that satisfy these objectives. The meetings opened with consultant summaries of issues heard in the first series of public meetings; staff then gave a short course in highway design. The bulk of the meeting was then spent working in small groups to brainstorm potential solutions. The solutions were used to develop the alternatives concepts presented in Chapter 2 of this document.

Please refer to Appendix J for a copy of the meeting minutes and summary of public comments received at this meeting.

Public Meetings – Alternatives Screening: May 5 – 7, 2003

A second set of public meetings occurred May 5-7, 2003 with meetings held in Havre, Chinook, Harlem, and Fort Belknap. Each meeting was 2-1/2 hours. These meetings served to explain the initial range of alternatives developed and the screening process used to determine the most feasible alternatives to be carried forward for detailed study. The meetings opened with a presentation of the project purpose and need. Staff then described the range of initial alternatives that had been developed by the public and the project team and applied screening criteria to each alternative. The public gave input throughout the presentation.

Please refer to Appendix J for a copy of the meeting minutes and summary of public comments received at this meeting.

September 2004

Public Hearings: July 13 – 15, 2004

Public hearings were held July 13 – 15, 2004 in Havre, Chinook, Harlem, and Fort Belknap. Each meeting was 2 hours. The purpose of the hearings was to explain the information contained in the Draft EIS and to solicit comments from the public on the Draft EIS, the Draft Section 4(f) Evaluation, and the Permit 404(b)(1) Evaluation. The meetings began with a presentation of the project purpose and need and a summary of public involvement in the project. Staff then presented the alternatives and summarized their major impacts. The MDT and FHWA preferred alternatives were presented. The meeting was then opened to public comments for the remainder of the meeting time.

Please refer to Appendix K for meeting transcripts, public comments, and responses to comments received.

8.4.3 Small Group Meetings

Numerous small meetings have been held to address issues affecting specific user groups along the project corridor. To date, meetings have been held with Hill and Blaine County emergency response personnel; MDT roadway maintenance personnel; affected irrigation districts; Havre, Chinook, and Harlem school bus operators and coordinators; Burlington Northern Santa Fe Railway officials; and Chinook and Havre business owners adjacent to US 2.

8.4.4 Other Public Involvement and Information Techniques

Havre Chamber of Commerce Meeting

At the Havre Chamber of Commerce Annual Meeting in January 2003, project consultants David Evans and Associates, Inc. and ICF Consulting, Inc. presented the project status and information on the economic baseline and range of alternatives.

Montana Transportation Commission

Mick Johnson, MDT Great Falls District Administrator, reported on the project status at the Montana State Transportation Commission meeting on March 27, 2003.

Fort Belknap Community Council Presentation

MDT and project consultants David Evans and Associates, Inc. gave a presentation on the US 2, Havre to Fort Belknap project to the new members of the Fort Belknap Indian Community Council at their November 24, 2003 council meeting.

September 2004

Press Meeting

Project consultants David Evans and Associates, Inc. and ICF Consulting, Inc. summarized results of the *Existing Economic Conditions Report* and the *Benefit-Cost Analysis* for local newspapers at a press meeting on November 24, 2003.

Montana State Legislature Revenue and Transportation Committee Briefing

MDT Director Dave Galt and project consultants David Evans and Associates, Inc. presented information on project status and funding to the Revenue and Transportation Committee at their meeting on December 11, 2003.

Notice of Availability of Draft EIS

The notice announcing the availability of the Draft EIS was published in the *Federal Register* on June 25, 2004 and in the following newspapers: *Great Falls Tribune*, *Havre Daily News*, and *Blaine County Journal News Opinion*. In addition, all organizations and individuals on the project mailing list were sent notification of the availability of the Draft EIS. The notice identified the locations at which the Draft EIS could be reviewed and the contact information to request a copy of, or make comments on the Draft EIS.

Notice of Availability of Final EIS

The notice announcing the availability of the Final EIS was published in the *Federal Register* and local newspapers. The notice identified the locations at which the Final EIS could be reviewed and the contact information to request a copy of or make comments on the Final EIS.

Final EIS Availability

Copies of this Final EIS document are available for public review at the locations listed under Section 7.4, Public Copies in Chapter 7 of this EIS.

Newsletters

Five project newsletters have been distributed throughout the course of the project to inform the public about current activities. These newsletters are distributed to a comprehensive project mailing list of 900 landowners, businesses, organizations, agencies, and other interested individuals. Newsletters have been distributed at key points during the project.

Newsletter 1, September 2002: Announced start of project and first set of public meetings.

Newsletter 2, October 2002: Summarized scoping issues from first set of public meetings and announced community workshops.

September 2004

Newsletter 3, April 2003: Announced second set of public meetings; provided information on alternatives developed at community workshops.

Newsletter 4, August 2003: Summarized alternatives screening process from the second set of public meetings; provided information on build alternatives.

Newsletter 5, April 2004: Provided update on project status; notified that the Draft EIS would be issued for public review in summer 2004.

Press Releases

Press releases are issued at key points during the project to announce public meetings, workshops, and hearings and to summarize results of these meetings.

The following newspapers and radio stations are sent copies of all press releases:

Havre Daily News

Blaine County Journal News Opinion

Fort Belknap Community Newspaper

Great Falls Tribune

Radio Stations KOJM, KPQX, and KNMC in Havre

Radio Station KRYK in Chinook

Radio Station KGVA in Fort Belknap

Project Website

A project website, www.ushwy2.com, is being maintained throughout the duration of the project. MDT provides a link from their site to the project website. The site contains information about the project, project contacts, activities scheduled, and general project updates.

Public and Trucking Industry Surveys

MDT distributed two surveys as part of the public participation process for this project, one to the general public and one to the trucking industry.

September 2004

Public Survey. A public survey was distributed at the first series of public meetings. The purpose of the survey was to gather comments and perceptions from the public about the existing and future condition of US 2. Survey participation was voluntary with 27 total respondents.

Most respondents were concerned about safety on the highway. All respondents stated that safety improvements on US 2 would improve their quality of life. Desired improvements most often listed were wider shoulders, bicycle/pedestrian improvements, turn lanes, and additional travel lanes. When asked to describe their vision for the highway, additional desired improvements included passing opportunities, slow vehicle turnouts, bus and postal vehicle pullouts, climbing lanes, landscaping, and curb, gutter, sidewalk, and turn lanes in urban areas.

Trucking Survey. Surveys were distributed by direct mail to various trucking companies in the region and to four weigh stations in the state: Havre, Wibaux, Billings Moss Main, and Clear Water Junction. Both sets of surveys were completed in October 2002. Survey participation was voluntary with a total of 80 respondents.

Approximately one-third (34%) of the respondents use US 2 as their trucking route. The most frequented routes in the state were I-90, I-94, and US 87.

Desired improvements for this US 2 segment included wider shoulders (indicated by 53% of respondents), turn lanes (31%), and four lanes (23%). However, more than half the respondents (65%) stated they would not increase their use of US 2 due to improvements made on the study segment or the entire US 2 corridor.

8.5 Key Issues Raised by the Public

Please see Appendix J for a summary of public comments from the following meetings:

- Public Meeting Series #1, September 30 – October 3, 2002;
- Community Workshops, November 12 – 14, 2002; and
- Public Meeting Series #2, May 5 – 7, 2003.

Please see Appendix K for transcripts of public hearings held July 13 – 15, 2004, a list of comments received on the Draft EIS, and responses to the comments received.

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10.0 Glossary

Accident Rate - Number of accidents per vehicle mile traveled for a specified segment of a roadway.

Ambient Air - The outside air that we breathe at ground level.

Ambient Noise - The existing background noise level characteristic of an environment.

Arterial - Roads which carry traffic not carried by freeways to important traffic generators, such as airports or regional shopping centers.

Average Annual Daily Traffic (AADT) - The total volume of traffic on a segment of road in one year, divided by the number of days (365).

Baseline - The existing conditions in the project area which are used to assess potential changes as a result of the proposed alternatives.

Benefit-Cost Analysis - tool used to identify and quantify the benefits and costs that will accrue to society if a project is undertaken.

Best Management Practices (BMPs) - methods that have been determined to be the most effective and practical means of preventing or reducing pollution.

Bicycle Facility - New or improved lanes, paths, or shoulders for the use of bicyclists, traffic control devices, shelters and parking facilities for bicycles.

Bioaccumulate - To build up a large amount of a substance by ingesting small amounts over an extended period of time.

Biodiesel - Any liquid suitable as a diesel fuel substitute or diesel fuel additive or extender. Commonly made from oils of vegetables such as soybeans, rapeseed, and sunflowers or from animal tallow.

Capacity - The maximum number of vehicles that can reasonably be expected to pass over a lane or a roadway during a given time period under prevailing roadway and traffic conditions.

Census Data - Required by the U.S. Constitution, the U.S. Census is a complete enumeration of the population conducted every 10 years by the U.S. Census Bureau (the last one was completed in 2000).

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Clear Zone - An unobstructed area needed along highways to allow motorists to recover control of their vehicles if they run off the road. Width varies depending on design speed, alignment, and environmental factors.

Collectors - A road that funnels traffic from residential or rural areas to both principal and minor arterials.

Conformity - A process in which transportation plans and spending programs are reviewed to ensure they are consistent with federal clean air requirements; transportation projects collectively must not worsen air quality.

Connector - A road that collects traffic from and distributes traffic to local streets within neighborhoods or industrial districts. They are usually longer than local streets and carry low traffic volumes at low speeds. Connectors primarily serve access and local circulation functions and are not for through traffic. Traffic calming measures may be appropriate.

Context-Sensitive Design (CSD) - A collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSD is an approach that considers the total context within which a transportation improvement project will exist.

Controlled Access - Partial access restriction that gives preference to through traffic. Also provides for connections to selected public routes and to certain other adjacent locations where vehicles can enter or leave a roadway safely without interfering with through traffic.

Corridor - Land between two termini within which traffic, transit, land use, topography, environment, and other characteristics are evaluated for transportation purposes.

Cost Effectiveness Index (CEI) - A guideline for determining the reasonableness of constructing noise barriers.

Cumulative Effects - The combined environmental impacts that accrue over time and space from a series of similar or related individual actions, contaminants, or projects. Although each action may seem to have a negligible impact, the combined effect can be significant. Included are activities of the past, present, and reasonably foreseeable future; synonymous with cumulative impacts.

Design Criteria - Established state and national standards and procedures that guide the establishment of roadway layouts, alignments, geometry, and dimensions for specified types of roadways in certain defined conditions. The principal design criteria for roadways are traffic volume, design speed, the physical characteristics of vehicles, the classification of vehicles, and the percentage of various vehicle classification types that use the roadway.

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Design Speed - Speed selected to establish specific minimum boundaries for the geometric design elements for a particular section of highway.

Discount Rate - The rate at which future benefits and costs are reduced, because the value of future benefits and costs are worth less than those incurred immediately. A discount rate reflects the opportunity cost of capital, which is the before-tax rate of return to incremental private investment.

Environmental Impact Statement (EIS) - An EIS is a full disclosure, detailed report which, pursuant to Section 102(2)C of the National Environmental Policy Act (NEPA), establishes the need for the proposed actions, identifies alternatives with the potential to meet the identified need, analyzes the anticipated environmental consequences of identified alternatives, and discusses how adverse effects may be mitigated. An EIS is prepared in two stages: a draft statement which is made available to the public for review and a final statement which is revised on the basis of comments made to the draft statement.

Environmental Justice - This term stems from a Presidential Executive Order to promote equity for disadvantaged communities and promote the inclusion of racial and ethnic populations and low-income communities in decision-making. Local and regional transportation agencies must ensure that services and benefits, as well as burdens, are fairly distributed to avoid discrimination.

Ephemeral Stream - a stream that flows only during or immediately after periods of precipitation.

Erosion - The loosening and transportation of soil, chiefly by wind and running water.

Federal Highway Administration (FHWA) - U.S. Department of Transportation agency responsible for administering the federal highway aid program to individual states, and helping to plan, develop and coordinate construction of federally funded highway projects. FHWA also governs the safety of hazardous cargo on the nation's highways.

Federal Transit Administration (FTA) - U.S. Department of Transportation agency that provides financial and planning assistance to help plan, build and operate rail, bus and paratransit systems. The agency also assists in the development of local and regional traffic reduction programs.

Floodplain - Lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, with a 1 percent or greater chance of flooding in a given year.

Fugitive Dust - The dust released from activities associated with construction, manufacturing, or transportation.

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Functional Roadway Classification - The organization of roadways into a hierarchy based on the character of service provided. Typical classifications include arterial, local, and collection roadways.

Geographic Information System (GIS) - A computer-based system that links the geographic location of map features to text information or databases.

Geometric Design - Design that deals with the dimensions of a facility and the relationships of its features such as alignment, profile, grades, widths, sight distances, clearance, and slopes as distinguished from structural design which is concerned with thickness, composition of materials, and load-carrying capacity.

High Occupancy Vehicle (HOV) - A vehicle carrying two or more persons, including the driver. An HOV can be a bus, vanpool or carpool.

Highway (HWY) - An arterial roadway primarily designed for traffic movement and provides direct access to buildings and intersections. Characteristics of highways include: intersections at grade level and geometric design features controlling speed and the safe movement of traffic.

Hydrophytic Vegetation - Plants that grow in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (plants typically found in water habitats).

Impervious Surface - A hard surface that either prevents or retards the entry of water into the soil.

Intermittent Stream - A stream that flows only during certain times of the year. Seasonal flow in an intermittent stream usually lasts longer than 30 days per year.

Intermodal - The term "mode" is used to refer to a means of transportation, such as automobile, bus, train, ship, bicycle and walking. Intermodal refers specifically to the connections between modes.

Intermodal Surface Transportation Efficiency Act (ISTEA) - A \$155 billion, six-year transportation program signed into law on December 18, 1991. Known as ISTEA, the legislation allocates federal transportation funds to state and local governments for a variety of programs.

Jurisdictional Wetlands – Those wetlands that are regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act.

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Level of Service (LOS) - A rating system used by traffic engineers to determine a roadway's ability to provide adequate capacity for the volume of traffic (number of vehicles) using the road.

Limited Access Highway - A highway that has access to it restricted to designated points such as interchanges.

Longitudinal Encroachment - An action within a floodplain involving a crossing of the associated water body at less than 30 degrees.

Long Range Plan - Every state and MPO must develop a long range plan (LRP) for transportation improvements, including a bicycle and pedestrian element. The LRP usually looks 20 years ahead and is revised every five or six years.

Major Arterial - A road that primarily carries local and through traffic to and from destinations outside local communities. Connects cities and rural centers. Carries moderate-to-heavy volumes at moderate-to-high speeds.

Metropolitan Planning Organization (MPO) - A federally required planning body responsible for the transportation planning and project selection in its region.

Minor Arterial - A road that primarily connects collectors to higher order roadways. Carries moderate volumes at moderate speeds.

Mitigation - Actions or design features that reduce a project's impact on environmental resources. Mitigation actions will avoid, minimize and/or compensate for adverse effects on the environment.

Mitigation Measures - Specific design commitments made during the environmental evaluation and study process that serve to moderate or lessen impacts deriving from the proposed action. These measures may include planning and development commitments, environmental measures, right-of-way improvements, and agreements with resource or other agencies to effect construction or post construction action.

National Environmental Policy Act (NEPA) - Established by Congress in 1969, NEPA requires that Federal Agencies consider social, environmental and economic impacts when evaluating federal actions. This could include the preparation of categorical exclusions, environmental assessments (EAs), or environmental impact statement (EIS) for projects with the potential to result in significant effects on the environment.

National Highway System (NHS) - A nation-wide system of approximately 155,000 miles of major roads. The entire Interstate System is a component of the National Highway System, and includes a large percentage of urban and rural principal arterials, the defense-

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strategic highway network, and strategic highway connectors. NHS's purpose is to focus resources on roads that are most important to interstate travel and national defense, roads that connect other modes of transportation and roads essential for international commerce.

No-Build Alternative (also known as “No-Action Alternative”) - Option of maintaining the status quo by not building transportation improvements. Usually results in eventual deterioration of existing transportation conditions. Serves as a baseline for comparison of “Build” Alternatives.

Noise Abatement Measure - An action that reduces traffic noise impacts.

Noise-Sensitive Receptor - A location where noise can interrupt on-going activities which can result in community annoyance, especially in residential areas. Examples of noise-sensitive receptors include schools, libraries, hospitals, residences, retirement communities and nursing homes.

Non-Attainment Areas (NAA) - Cities, counties or states that do not meet federal standards for clean air for one or more pollutants.

Non-Jurisdictional Wetlands - Those wetlands that are not regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act.

Noxious weeds - Plant species that are generally aggressive, difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and are nonnative, new, or uncommon to the United States. These species are designated as noxious weeds by the Secretary of Agriculture or by the responsible State official.

On-Going Life-Cycle Costs - costs associated with periodic resurfacing and rehabilitation.

On-Going Maintenance Costs - Items such as minor pothole repair, bridge, railing and culvert repairs, signage, fences, speed enforcement, snow removal, and administrative costs associated with operating a roadway over the 20-year facility design lift.

Other Project Costs - Items such as performance bond costs, insurance, and legal fees not related to right-of-way acquisition or engineering costs.

Particulate Matter - Any material that exists as solid or liquid in the atmosphere that is less than 10 microns. Particulate matter may be in the form of ash, soot, dust, fog, fumes etc.

Perennial Stream - a stream that flows continuously during both wet and dry times.

Performance Measures - Indicators of how well the transportation system or specific transportation projects will improve transportation conditions.

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Period of Analysis - The number of years over which annual costs and benefits of a proposed project are calculated.

Pier - A support for a bridge span.

Pollutant - Unwanted chemicals or other materials found in the air. Pollutants can harm health, the environment and property. Many air pollutants occur as gases or vapors, but some are tiny solid particles such as dust, smoke or soot.

Project Construction Costs - The costs of materials and labor used in building a project, including context sensitive design elements and environmental impacts mitigation.

Project Period - The time required for construction of a project alternative.

Project Right-of-Way Costs - The costs associated with obtaining land for a construction project.

Public Hearing - A meeting designed to afford the public the fullest opportunity to express support of or opposition to a transportation project in an open forum at which a verbatim record (transcript) of the proceedings is kept.

Public Meeting - An announced meeting conducted by transportation officials designed to facilitate participation in the decision-making process and to assist the public in gaining an informed view of a proposed project at any level of the transportation project development process. Also, such a gathering may be referred to as a public information meeting or public open house.

Railroad Offset - the distance between the highway and the railroad that allows for safe rail and vehicular operations

Record of Decision (ROD) - A formal decision granted by the federal lead agency that provides a written record of the agency's decision on a Final Environmental Impact Statement (FEIS). The ROD documents any conditions or mitigation measures committed to in the FEIS.

Right-of-way - A term denoting land and/or property acquired for or devoted to transportation purposes.

Right-of-way Minimization - A mitigation measure aimed at minimizing/avoiding structure impacts, relocations, and property acquisition by reducing the buffer area required for maintenance and construction of the new highway.

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Riparian Area - The vegetated land near water bodies such as streams, rivers, wetlands and lakes that provides important benefits to wildlife and humans including clean water, reduced flooding and healthy habitat.

Rumble Strips - A textured or grooved pavement sometimes used on or along shoulders of highways to alert motorists who stray onto the shoulder.

Scoping - The process where the project parameters are determined. It is the act of determining the type and size of a project needed to address an identified transportation system need.

Statewide Transportation Improvement Program (STIP) - The STIP determines when and if transportation projects will be funded by the state. The STIP is developed through coordinated efforts of the Montana Department of Transportation (MDT), state and federal agencies, local and tribal governments, metropolitan planning organizations, public agencies, transportation providers, citizens, and other interested parties. Projects included in the STIP must be consistent with the long-range transportation plan.

StratBENCOST Model - model used to compare project costs to user benefits of transportation projects; used in benefit-cost analysis.

Study Area - A geographic area selected and defined at the outset of engineering or environmental evaluations, which is sufficiently adequate in size to address all pertinent project matters occurring within it.

Study (or Project) Limits - The physical end points of a proposed project or study, usually designated at geographic or municipal boundaries, at intersections, at roadway segments where cross sections change, or at the beginning or end of numbered state traffic routes.

Superfund - Formally known as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a program that outlines processes for cleaning up inactive hazardous waste sites.

Transect Interval - Lines on the ground surface where survey data are collected

Title VI - Refers to Title VI of the Federal Civil Rights Act of 1964, and requires that transportation planning and programming be nondiscriminatory on the basis of race, color and national origin. Integral to Title VI is the concept of environmental justice. (Also see "Environmental Justice.")

Transportation Enhancement Activities (TEA) - A TEA 21 funding category. Ten percent of Surface Transportation Program (STP) moneys must be set aside for projects that enhance the compatibility of transportation facilities with their surroundings. Examples of TEA

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projects include bicycle and pedestrian paths, restoration of rail depots or other historic transportation facilities, acquisition of scenic or open space lands next to travel corridors, and murals or other public art projects.

Transportation Equity Act for the 21st Century (TEA 21) - Passed by Congress in May 1998, this federal transportation legislation retains and expands many of the programs created in 1991 under the Intermodal Surface Transportation Efficiency Act (ISTEA). Reauthorizes federal surface transportation programs for six years (1998–2003) and significantly increases overall funding for transportation.

Transportation Improvement Program (TIP) - A short-term (covering three years) program of transportation projects that will be funded with all federal funds expected to flow to the region; the projects contained in the TIP are drawn from, and consistent with, the long-range transportation plan.

Transverse Encroachment - An action within a floodplain involving a crossing of the associated water body between 30 and 90 degrees.

Travel Demand Model - Used by transportation planners for simulating current travel conditions and for forecasting future travel patterns and conditions. Models help planners and policy-makers analyze the effectiveness and efficiency of alternative transportation investments in terms of mobility, accessibility, and environmental and equity impacts.

Travel Lane - A lane of a roadway allowing for turning movements as well as through traffic.

Tribal Government Consultation - A formal process between MPOs and federally recognized Indian tribes that calls for government-to-government consultation regarding transportation planning and programming efforts.

United States Department of Transportation (U.S. DOT) - The federal cabinet-level agency with responsibility for highways, mass transit, aviation and ports; it is headed by the Secretary of Transportation. The DOT includes the Federal Highway Administration and the Federal Transit Administration, among others.

Upland Area - Land located at a higher elevation than *riparian areas* that stays relatively dry.

Vehicle Miles Traveled (VMT) - One vehicle (whether a car carrying one passenger or a bus carrying 30 people) traveling one mile constitutes a vehicle mile.

Vehicle Operating Costs - costs of operating a vehicle, such as vehicle wear-and-tear and fuel consumption.

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Volatile Organic Compounds (VOCs) - Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, methylene chloride, and methyl chloroform.

Watershed - Geographic area in which all sources of water, including lakes, rivers, estuaries, wetlands and streams, as well as ground water, drain to a common surface water body.

Wetlands - Those areas that are inundated or saturated by surface water or ground water at a frequency or duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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**Final
Environmental Impact Statement
and Section 4(f) Evaluation**

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