CHAPTER 3.0

Affected Environment and Environmental Consequences

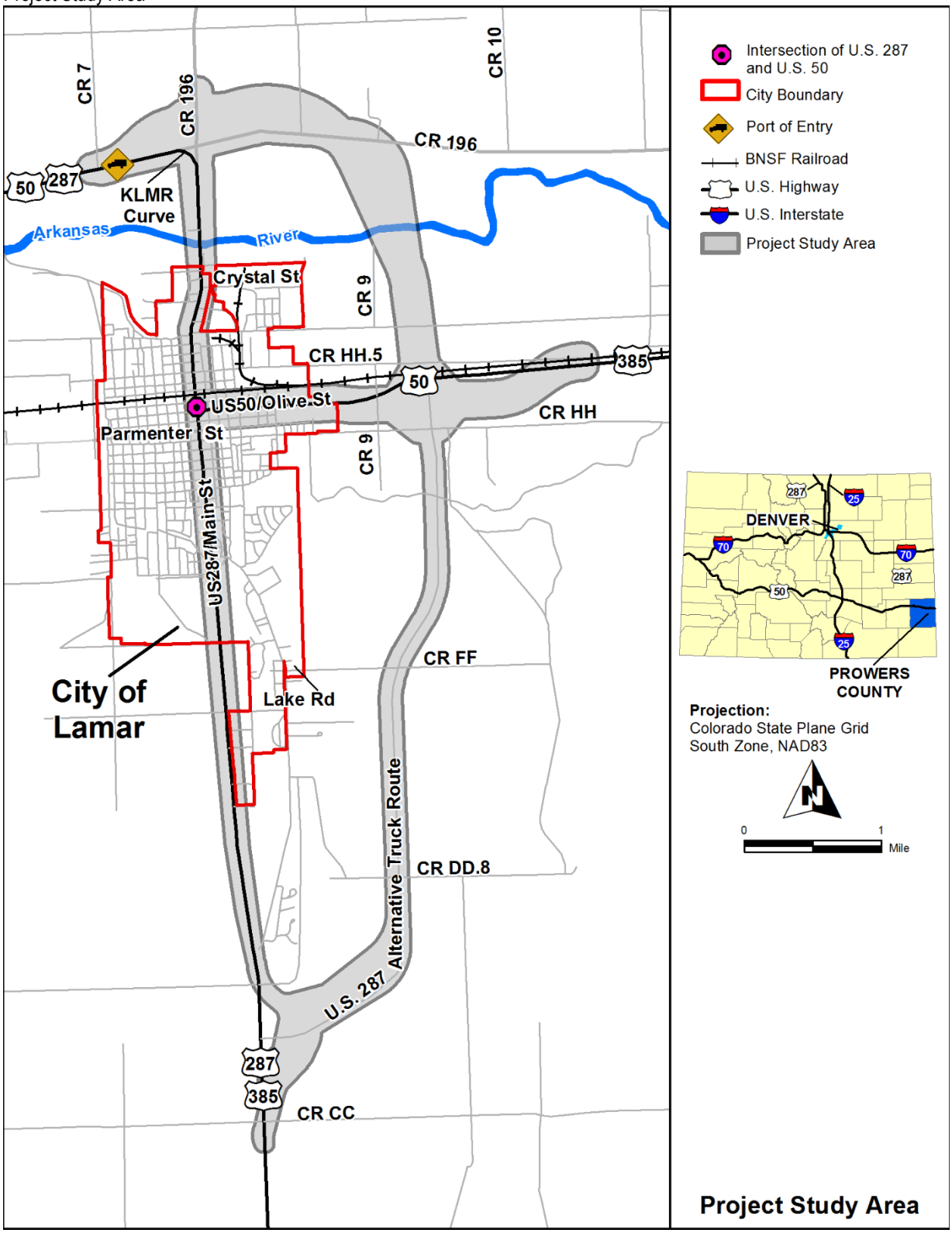
To facilitate a streamlined analysis, this section is organized into groups of related environmental resources. The section summarizes the existing environmental, social, and economic conditions of the study area and discloses the environmental impacts of the No Action Alternative and Proposed Action on these resources. This document follows the intent of NEPA by concentrating on the issues that are truly significant to the Proposed Action [40 CFR 1500.1(b)] and provides greater detail on those resources that would be most affected by the Proposed Action.

The western project limits begin at CR 7 along U.S. 50/U.S. 287, and the eastern project limits extend to approximately CR 10 along U.S. 50. The northern project limit is CR 196 and the southern project limit is CR CC. The project study area, illustrated in Figure 3-1, includes a) the existing U.S. 287 and U.S. 50 facilities within the project limits (called the existing alignment study area in this document) and b) a corridor approximately 1 mile east of Lamar that includes the existing gravel Alternative Truck Route and the projected footprint of the Proposed Action (called the reliever route study area). The study areas for some resources extend beyond the study area illustrated in Figure 3-1, based on individual resource characteristics. For example, analysis of environmental justice evaluates census tracts that extend outside the project study area. These variations are described in the resource sections that follow.

This chapter is organized into groups of related natural and human resources. Each resource section discusses the current conditions in the study area, the impacts of the No Action Alternative and the Proposed Action, and the mitigation commitments for impacts resulting from the Proposed Action. Section 3.10 provides a summary of the impacts and mitigation commitments. The resource discussions are supported by separate technical reports and appendices, when necessary. All technical reports can be found on the CD in the appendix to this document.

The impacts discussed in this chapter apply to construction and operation of the entire Proposed Action (the ultimate phase) unless the impacts of the interim phase and the ultimate phase are noted separately under a particular resource due to permitting or other analysis considerations. See Section 2.3, *Proposed Action* for additional details of the interim and ultimate configurations.

FIGURE 3-1
Project Study Area



3.1 Transportation

This section discloses potential impacts on the local and regional surface transportation network. Traffic conditions in the year 2035 were forecast using a travel demand model created for this project; no previously developed travel model exists for the City of Lamar, which is typical for cities and counties with smaller populations. The travel demand model includes information about vehicle trip origins and destinations, land use characteristics, and travel behavior to determine how trips are distributed throughout the City of Lamar and the surrounding road network. The model uses this information to forecast future traffic volumes in Lamar and the surrounding road network with and without the Proposed Action.

Current Conditions

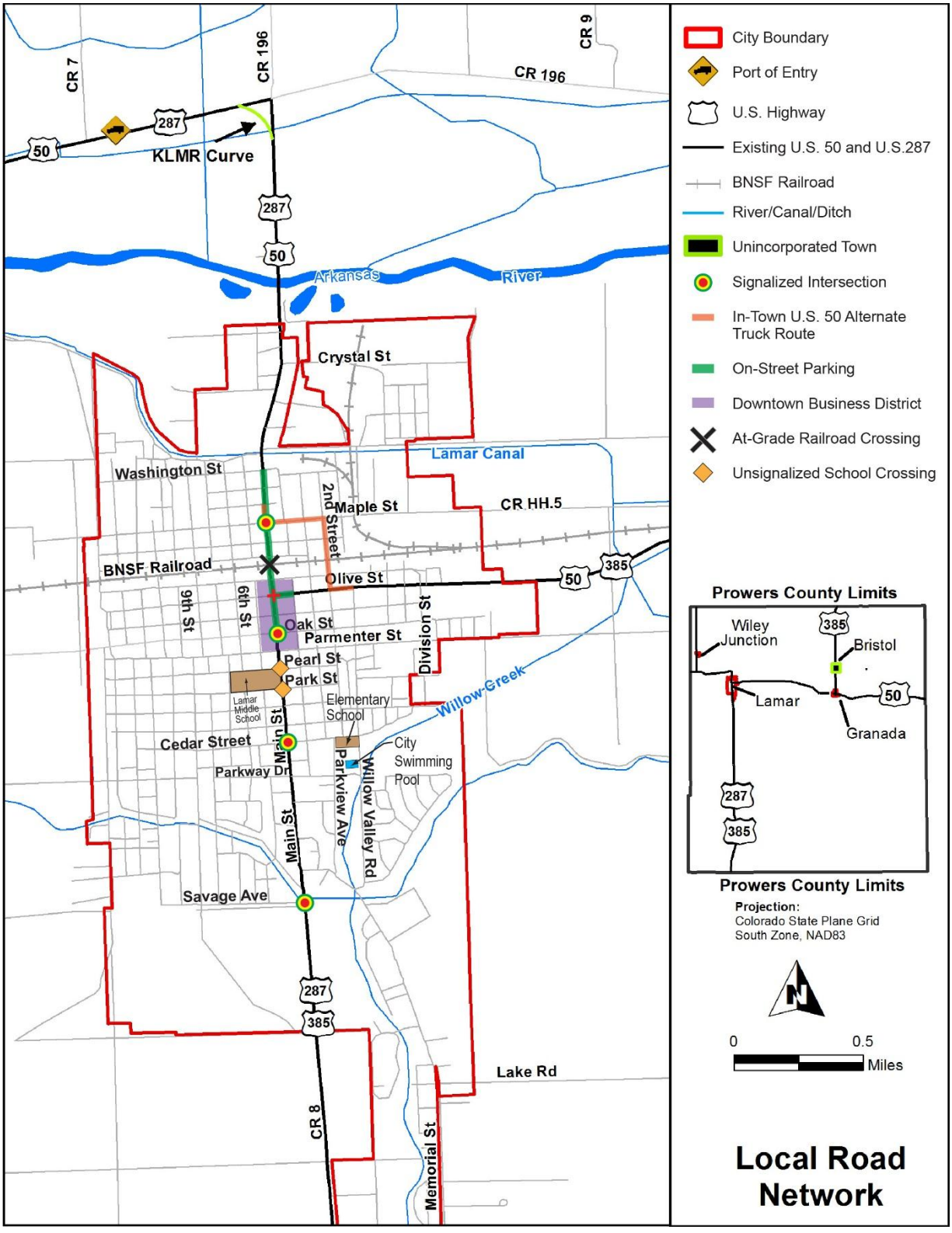
The primary transportation network in Prowers County consists of three U.S. highways and a system of county roads. U.S. 287 and U.S. 385 run north-south through the county, primarily along its western border, and U.S. 50 runs east-west through the northern portion of the county. As stated in Section 1.0, the Ports-to-Plains Trade Corridor resides on U.S. 287. This is an economic transportation corridor extending through America's heartland from Laredo, Texas to Alberta, Canada. U.S. 287 and U.S. 50 both serve regional and interstate traffic. These two highways share the same alignment from Wiley Junction, 7 miles west of Lamar, into downtown Lamar. At the intersection of U.S 287/Main Street and U.S. 50/Olive Street in Lamar, U.S. 50 departs from U.S. 287 when it turns east along Olive Street, and U.S. 287 continues south along Main Street (see Figure 3-2).

The existing gravel Alternative Truck Route, previously described in Section 2.0, begins at milepost 72.47 (CR CC) on U.S. 287, skirts around the southeast city limits of Lamar, and terminates at U.S. 50 due east of the city. It routes trucks away from southern Lamar but still routes them through the central and northern parts of the city. Several county and private roads have direct access from the existing gravel Alternative Truck Route. Currently, the existing gravel Alternative Truck Route is used primarily by local farming trucks. Commercial trucks have continued to use Main Street.

A system of county roads, generally on a half-mile grid system, also serves the outlying areas of Prowers County. CR 196, formerly State Highway (SH) 196, connects the communities of Wiley and Bristol, northwest and northeast of Lamar, respectively.

The local street network in Lamar (Figure 3-2) is a grid system centered on U.S. 287/Main Street and U.S. 50/Olive Street, which are the only four-lane roadways in the city. Lamar's central business district surrounds the intersection of these two roads. U.S. 287/Main Street, U.S. 50/Olive Street, and the surrounding street network provide access to numerous businesses, schools, and residences.

FIGURE 3-2
Local Road Network



Railroad and transit service complete the surface transportation network in the project area. Railroad tracks owned and maintained by BNSF Railway parallel U.S. 50 through the eastern part of the study area and intersect U.S. 287/Main Street at an at-grade (surface) crossing in downtown Lamar. The railroad provides passenger and freight rail service to the region. Approximately two passenger trains and 10 freight trains operate daily through the city. The Prowers Area Transit provides on-demand transit service in Prowers County and uses various parts of the transportation network.

Traffic volume counts in 2010 tallied 15,000 vehicles per day traveling on U.S. 287 south of the junction with U.S. 50. Traffic volumes on U.S. 50/U.S 287 north of Maple Street totaled 17,000 vehicles per day. As described in Section 1.2, traffic counts indicate a higher proportion of trucks traveling on U.S. 287 and U.S. 50 through Lamar—approximately 9 to 12 percent of total daily traffic—than is typical in many urban areas. This high percentage results from the regional and interstate traffic that U.S. 287 and U.S. 50 carry through the city and from the surrounding agricultural businesses.

A Port of Entry (see Figure 3-2) is located on U.S. 287/U.S. 50 north of Lamar. All commercial vehicles weighing over 26,000 pounds and traveling within 5 miles of a Port of Entry must pass through the Port of Entry for weighing and inspection unless they have a PrePass transponder that allows them to be pre-screened and bypass the facility.

Safety

As described in Section 1.2.1, the combination of local, regional, and interstate traffic traveling on U.S. 287 and U.S. 50 through Lamar creates safety issues for vehicles and pedestrians. Large trucks traveling in narrow travel lanes conflict with local traffic by passing within several feet of parked vehicles and creating safety concerns for vehicle passengers entering and exiting their cars. Trucks carrying hazardous materials introduce the risk of hazardous spills in an urban area surrounded by schools, residences, and commercial businesses. Trucks navigating the tight turns at the U.S. 287/Main Street and U.S. 50/Olive Street intersection cross into oncoming traffic lanes because of the tight turning radius, increasing the possibility for accidents. Pedestrians crossing U.S. 287/Main Street at the two designated, unsignalized school crossings are exposed to greater safety risks from the high truck traffic volume because trucks cannot stop as quickly as cars in an emergency. Additionally, although there is less pedestrian traffic along U.S. 50/Olive Street, only one traffic signal exists to help pedestrians cross the street.

Mobility

The routing of the U.S. highways through Lamar creates mobility issues for regional and interstate trips and for local vehicle trips and pedestrian trips, as described in Section 1.2.2. Approximately 84 percent of regional truck trips (truck trips originating outside of the region and traveling to destinations outside of the region) pass through Lamar without stopping, and approximately 30 percent of regional car trips pass through the city without stopping. Vehicles making these regional trips, also called through-traffic, must reduce speed from 65 mph outside of the Lamar city limits to 30 mph within the city limits. They must stop at multiple traffic signals while traveling through Lamar, and wait in long queues when trains cross U.S. 287/Main Street at the at-grade BNSF Railway crossing. Some trucks traveling on U.S. 50 navigate a paved, in-town alternate truck route for U.S. 50 to avoid the tight U.S. 287/Main Street and U.S. 50/Olive Street intersection. This paved route directs trucks from U.S. 50/Olive Street onto 2nd Street and Maple Street, to U.S 287/Main Street (see

Figure 3-2). These conditions reduce regional trip mobility and freight delivery efficiency, and cause delays as large trucks slowly return to desired speeds after signalized stops. Slow-moving queues of vehicles also impede mobility for pedestrians and vehicles crossing U.S. 287/Main Street and U.S. 50/Olive Street.

Impacts of No Action Alternative

The No Action Alternative would leave the existing transportation system unchanged. This alternative would not remove truck or car through-traffic from downtown Lamar and would not improve safety or mobility for vehicles or pedestrians. The existing gravel Alternative Truck Route would not be paved and would continue to terminate at U.S. 50.

Under the No Action Alternative, daily traffic volumes on U.S. 287/Main Street, south of the intersection with U.S. 50/Olive Street, are projected to grow from 15,000 in 2010 to 16,100 in 2035. Daily traffic volumes on U.S. 287/Main Street, north of the intersection with U.S. 50/Olive Street, are projected to grow from 17,000 in 2010 to 19,750 in 2035. Daily traffic volumes on U.S. 50/Olive Street, east of the intersection with U.S. 287/Main Street, are projected to grow from 5,600 in 2010 to 6,700 in 2035. Although both U.S. 287/Main Street and U.S. 50/Olive Street have adequate capacity to accommodate these traffic volumes, the increased traffic would increase existing mobility problems.

Regarding safety, more total crashes would be expected as traffic volumes increase by 2035. The mix of large trucks and passenger vehicles may contribute to crashes because of speed differences between passenger vehicles and large trucks, and because many drivers do not understand the operating characteristics of the large trucks. Mobility could be expected to degrade under the No Action Alternative as a result of growth in traffic volumes above current volumes and the increased likelihood of conflicts between through-traffic and local traffic.

Impacts of Proposed Action

The Proposed Action would expand the regional roadway network. It is expected to divert up to 84 percent of truck through-traffic and up to 30 percent of car through-traffic—trucks and cars that presently travel through the city without stopping—from Main Street and Olive Street in downtown Lamar to the U.S. 287 reliever route east of Lamar. Diverted traffic volumes on the reliever route would equal approximately 2,400 vehicles per day north of U.S. 50 and 1,400 vehicles per day south of U.S. 50 in year 2035. Traffic volumes on Main Street in the downtown business district would equal approximately 14,350 vehicles per day in year 2035 south of the intersection with Olive Street and 16,900 vehicles per day in year 2035 north of the intersection with Olive Street. Traffic volumes on Olive Street, east of the intersection with Main Street, would equal approximately 5,650 vehicles per day in 2035. These numbers are estimates, as it is likely that some through-traffic will travel into Lamar for convenience stops, while others that stop briefly in-town may decide to travel the reliever route and eliminate their stop.

Safety

Removing large truck traffic and automobile through-traffic from Main Street would reduce the number of traffic conflicts and improve safety conditions for local travelers and pedestrians on Main Street. The safety of parallel parking conditions would improve because fewer trucks would pass next to parked vehicles. Fewer trucks would need to navigate the

tight turns at the Main Street and Olive Street intersection in downtown Lamar, reducing accident potential at this intersection; and fewer trucks in downtown would reduce safety risks for pedestrians crossing Main Street and Olive Street at unsignalized intersections.

The lower traffic volumes on Main Street and Olive Street resulting from the rerouting of heavy trucks to the reliever route would be expected to improve the safety performance of those roads, as fewer crashes can be expected with lower traffic volumes. The rerouting of large trucks to the reliever route would also create a more homogeneous vehicle mix on Main Street and Olive Street, which would likely improve safety. A more uniform vehicle mix can improve safety because vehicles will travel at similar speeds and driver expectancy and understanding of the operating characteristics of the vehicles around them increases.

The Proposed Action would provide a new grade separated BNSF Railway railroad crossing at U.S. 287 and U.S. 50. This would reduce the number of trucks and hazardous material transports passing through the at-grade railroad crossing on Main Street—which would remain in place—and would improve safety conditions. The risk of hazardous spills near schools, homes, and commercial businesses would be lower with fewer hazardous materials carriers driving through the city.

The new reliever route would be designed and constructed to meet current AAHSTO design standards under both the interim and ultimate phases of construction.

Mobility

The diversion of many truck and car through-trips to the reliever route would improve local and regional mobility and freight delivery efficiency. Trucks and through-traffic traveling on the U.S. 287 reliever route would experience fast and reliable travel time. The reliever route would be a controlled-access highway, allowing travelers to avoid the 30 mph speed limit, traffic signals, pedestrian traffic, and BNSF Railway grade crossing that slow travel on Main Street in downtown Lamar.

Under the ultimate condition, which would provide a four-lane reliever route, all three reliever route interchanges would provide free flow movements for vehicles traveling on U.S. 287 and U.S. 50, with no stops required. The south and east interchanges would provide free flow for all vehicle movements. The north interchange would require stops for vehicles entering and exiting the reliever route from CR 196 and Main Street; however, a free flow right turn from eastbound U.S. 287/U.S. 50 to southbound Main Street may be provided at the north interchange.

Under the interim condition, which would provide a two-lane reliever route, the south, east, and north intersections would provide free flow movement for vehicles traveling on U.S. 287. Free flow movement between Main Street and the reliever route would not be provided under the interim condition. The east interchange would require stops for vehicles entering or exiting the reliever route from U.S. 50.

Local mobility on Main Street and Olive Street would improve because fewer trucks would be stopped at traffic signals, and local traffic would accordingly spend less time waiting for large trucks to return to desired speeds after each stop. Mobility for vehicles and pedestrians crossing Main Street would also improve because fewer slow-moving queues of vehicles would impede crossing movements. Additionally, the Proposed Action would make parallel parking on Main Street and Olive Street easier.

Although 2035 traffic volumes do not warrant construction of the ultimate four-lane configuration desired by CDOT and the Ports-to-Plains Alliance and analyzed in this EA, CDOT may increase capacity to four lanes in the future when traffic operations warrant expansion. Traffic projections for year 2035 show that the interim two-lane reliever route configuration and the associated interim interchange configurations would provide ample capacity to accommodate traffic volumes in 2035. For more information regarding predicted future traffic volumes, please refer to the *Summary of Data Collection, Travel Demand Forecasting Model Development, and Traffic Results for the U.S. 287 at Lamar Project* TM (CH2M HILL, 2003b), and the *Addendum to the Summary of Data Collection, Travel Demand Forecasting Model Development, and Traffic Results for the U.S. 287 at Lamar Project memo dated May 8, 2003* (CH2M HILL, 2012).

Access

Closures of private accesses and most local road accesses to the existing gravel Alternative Truck Route would occur. Access to private properties would be provided by the existing county road network via Lake Road, gated access at CR DD.8, and realignment of local roads in the vicinity of the existing intersection between U.S. 50 and the existing gravel Alternative Truck Route. Additionally, local road access would be provided from the new reliever route to Lake Road and to the city's planned future Crystal Street extension (see Figure 2-6). The Lake Road and Crystal Street intersections would be at-grade intersections with stop control for vehicles on Lake Road and Crystal Street. The closure of other accesses was anticipated by Prowers County and would be in accordance with the county's Notice of Non-Access issued to landowners and tenants in 1997.

State Highway System

CDOT is prohibited from adding new lane miles to the state highway system. In order to construct the 9.7 miles of new alignment for the reliever route, the agency must relinquish a similar length of highway on U.S. 50 and U.S. 287 to comply with current requirements. CDOT would relinquish U.S. 287 from milepost 72.47 at the southern limits of the project (CR CC), through the city, to milepost 80.14 at the northern project limits (CR 7), for a total of 7.67 miles. CDOT would relinquish U.S. 50 from milepost 432.89 at the northern project limits (CR 7) to milepost 437.09 at the proposed interchange due east of Lamar, for a total of 4.2 miles. U.S. 50 and U.S. 287 are coincident for 2.5 miles between CR 7 and the Main Street/Olive Street intersection. Therefore, the total mileage of relinquished state highway system would be 9.37 miles. Ownership of the relinquished roadways would be transferred to the city and/or county.

Upon approval by the Colorado Transportation Commission, a formal agreement in the form of an IGA will document the transfer of ownership of property from CDOT to the City of Lamar and/or Prowers County. The condition of the roadway and bridges will be assessed and, if necessary, modified to meet required county standards prior to the transfer. CDOT has discussed ownership of the roadways with the city and county since the start of this study, and is pursuing a resolution of support for the project and associated ownership negotiations with the city and the county.

Indirect Impacts

The Proposed Action is not expected to generate indirect impacts, such as changes in traffic volumes, in other parts of the roadway network in the City of Lamar or in Prowers County.

Construction Impacts

During construction, vehicles that currently use the existing gravel Alternative Truck Route may be routed onto existing U.S. 287/Main Street through Lamar, temporarily increasing truck and other through-traffic south of U.S. 50/Olive Street. Local trucks would have to use city streets during construction; no additional detour route is planned. Construction detours for local road closures would temporarily increase traffic volumes on adjacent local roads and cause some out of direction travel and inconvenience for local travelers.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, actions were taken to avoid and minimize impacts to the local and regional transportation system. As described in Section 2.0, local residents were involved in workshops and open houses to evaluate alternative corridors and interchange design options. Their input shaped the alternatives to meet local driver expectations. In response to public input, the concept for the south interchange was revised to a design similar to the Wiley Junction interchange west of Lamar. This interchange is familiar to local and regional travelers and meets residents' desire for continuous travel (that is, travel without stopping at a stop sign or traffic signal) when exiting U.S. 287 onto Main Street.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
High volume of truck traffic downtown fails to improve safety and mobility for local and regional travelers and pedestrians.	Improved safety conditions and mobility in Lamar for all travelers, including pedestrians and local travelers.	None required.
	The reliever route would increase the length of the state highway system.	CDOT will execute an IGA with the City of Lamar and/or Prowers County to establish the terms of CDOT transferring ownership of ROW, address timing of construction of improvements, formalize partnerships, establish conditions for future capacity improvements, and define who is responsible for maintenance of the existing Main Street and Olive Street alignments.
	Temporary detours and road and access closures during construction.	CDOT will create a detour plan for the construction phase, including advance signing to minimize out-of-direction travel. Access to private properties will be provided by the existing county road network via Lake Road, gated access at CR 8, and realignment of local roads in the vicinity of the existing intersection between U.S. 50 and the existing gravel Alternative Truck Route.
		CDOT will develop a public information plan to inform the public and affected businesses in advance of lane closures, detours, and construction activities to minimize traffic disruption.

3.2 Socioeconomics

This section discloses potential impacts on the local economy and important farmlands. The economic analysis focuses on impacts within both Lamar and Prowers County. The farmlands analysis considers impacts on farmlands within the reliever route study area.

3.2.1 Local Economy

Current Conditions

Lamar is an important regional source for goods and services related to farms and ranches, agribusiness, health care, education, communications, utilities, and commercial and retail activities within the rural region of southeast Colorado. This availability of services, coupled with the long distance to other cities with comparable resources, makes Lamar a regional destination. Lamar had 7,804 residents in 2010, accounting for 62 percent of the population in Prowers County. In contrast to Colorado's booming Front Range, the population of both Lamar and Prowers County has gradually decreased by approximately 1.3 percent annually since 2000 (U.S. Census Bureau, 2000; U.S. Census Bureau, 2010).

Prowers County's job economy is more diverse than other counties in southeastern Colorado, reflecting the county's position as a regional destination. The Prowers County economy is based largely on the agriculture, retail, and government sectors, as shown in Table 3-1; however, it is less reliant on jobs in government, services, and agriculture than other counties in southeastern Colorado. The Prowers County economy is more heavily affected by regional and national economic conditions than similar counties because of its position at the crossroads of two U.S. highways.

Government employers include the Prowers County school district, the city and county, Lamar Community College, CDOT, Colorado Parks and Wildlife (CPW), and the U.S. Department of Agriculture. Large retailers, such as Safeway and Walmart, along with Prowers County Medical Center, and non-profit social services, such as the Southeast Colorado Enterprise Fund and Southeastern Development Services, provide other employment opportunities. The retail sector employs more people in Prowers County than in other southeastern Colorado counties, as shown in Table 3-1, and is approximately 3 percent higher than the state average. Construction and manufacturing provide other sources of employment.

TABLE 3-1

Prowers County and Southeastern Colorado 2009 Employment by Industry Sector

Industry Sector	Prowers County	Southeast Colorado Counties* (Average)
Agriculture, Forestry, Fishing, Hunting	11%	16%
Mining	1%	2%
Utilities	1%	1%
Construction	4%	5%
Manufacturing	5%	2%
Wholesale Trade	2%	3%
Retail Trade	14%	9%
Transportation and Warehousing	2%	2%

TABLE 3-1

Prowers County and Southeastern Colorado 2009 Employment by Industry Sector

Industry Sector	Prowers County	Southeast Colorado Counties* (Average)
Information	1%	1%
Finance and Insurance	4%	3%
Real Estate, Rental, and Leasing	2%	2%
Professional and Technical Services	2%	2%
Company/Enterprise Management	0	0
Administrative and Waste Services	3%	5%
Educational Services	0	0
Health Care and Social Assistance	7%	5%
Arts, Entertainment, and Recreation	0	0
Accommodation and Food Services	7%	6%
Other Services	7%	6%
Government	25%	30%
Total	**100%**	**100%**

Source: Colorado Department of Local Affairs, 2009. *Colorado Jobs by Sector (NAICS Based) – Parameters*. https://dola.colorado.gov/demog_webapps/jsn_parameters.jsf. Accessed September 2011.
* Southeast Colorado counties include Baca, Bent, Cheyenne, Crowley, Kiowa, Kit Carson, Las Animas, and Lincoln.

Prowers County's population and employment are concentrated in Lamar. Agricultural lands surround the existing gravel Alternative Truck Route south of U.S. 50, and no population centers or commercial retailers occur between CR CC and CR 196 within the reliever route study area. The Lamar business district is centered on the intersection of U.S. 287/Main Street and U.S. 50/Olive Street downtown. A recent Memorandum of Understanding (MOU) between Lamar, the Colorado Department of Local Affairs, and the Colorado State University Extension led to building façade and signage improvements for many downtown buildings. The improvements were intended to create a more visually appealing environment downtown and help bolster economic activity.

Impacts of No Action Alternative

Under the No Action Alternative, local socioeconomic conditions would not change due to the transportation network. Main Street and Olive Street would continue to operate as travel corridors for two U.S. highways, and travel conditions in downtown Lamar would continue to be difficult for businesses and customers. Customers attempting to parallel park in front of Main Street or Olive Street businesses would continue to encounter safety risks with trucks passing close to parked cars. Local traffic would continue to experience delays waiting for large trucks to navigate the tight turns at the U.S. 287/Main Street and U.S. 50/Olive Street intersection and return to desired speeds after stopping at traffic signals. Population and employment would continue to be concentrated in Lamar with limited

Agricultural truck-oriented business

opportunities for additional economic growth along the county-owned existing gravel Alternative Truck Route due to the low traffic volumes on the existing gravel Alternative Truck Route.

Impacts of Proposed Action

The Proposed Action would provide an opportunity for the community to enhance the business environment in downtown Lamar by removing heavy truck traffic and other through-traffic, thereby improving travel and parking conditions for local traffic accessing businesses in Lamar. Additionally, the U.S. 287 and U.S. 50 intersection/interchange on the reliever route would be a hub for the Ports-to-Plains Trade Corridor, which could benefit the local economy.

It is estimated that the ROW required for project construction would result in the conversion of 385 acres of private land (refer to Section 3.3.7, *Right-of-Way*) from taxable to non-taxable status. This would affect property tax revenues in the county, which are used to fund libraries, roads, employee salaries, and county services such as fire, sheriff, transit, and social services (Prowers County, 2011). The conversion of acreage from farmland to ROW would result in an estimated 0.4 percent reduction in the total revenues to Prowers County. Overall, property tax impacts to local government from the Proposed Action are expected to be minimal.

The new reliever route would bisect property at several farm and ranch operations, separating homes and outbuildings from fields or rangeland. The provision of access between split properties would require coordination with individual property owners during final design to minimize impacts to agricultural operations. The Proposed Action would close or reroute local roads and existing accesses to the existing gravel Alternative Truck Route, causing changes in travel routes and some out of direction travel for farm and ranch operations. These impacts would be reduced by providing highway underpasses at Parmenter Street and CR HH.5 and accommodating local accesses at Lake Road and Crystal Street (see Figure 2-6).

As illustrated in Table 3-2, 4 percent of sales in Lamar come from businesses on U.S. 287/Main Street that are likely to be highly sensitive to changes in travel patterns, and approximately 2 percent of Lamar's sales come from businesses on U.S. 287/Main Street that are somewhat sensitive to changes in travel patterns. Consequently, 94 percent of the sales in Lamar are made by businesses that are relatively insensitive to changes in travel patterns or that are sensitive to changes in travel patterns but are not located on U.S. 287/Main Street. The data presented in Table 3-2 remain representative of current business conditions in Lamar, given the recent economic recession and decline in city and county population growth. The *U.S. 287 at Lamar: Economic Analysis* (CH2M HILL, 2003c) technical memorandum and addendum provide more detail on sales patterns and other impacts.

TABLE 3-2
At-Risk Annual Sales from Traffic-Dependent Businesses in Lamar

	Total Business Sales in Lamar (2002)	Percent of Total Lamar Business Sales
Highly Sensitive, Main Street Sales[a]	$16,887,013	4.0%
Somewhat Sensitive, Main Street Sales[b]	$8,008,109	1.9%
Sensitive, Non-Main Street Sales[c]	$48,309,499	11.5%
Mostly Insensitive[d]	$348,088,893	82.6%
Total Business Sales in Lamar	$421,293,514	100.0%

[a]Gas stations and convenience stores, hotels and motels, and eating and drinking establishments along Main Street.
[b]Retail along Main Street.
[c]Gas stations and convenience stores, hotels and motels, and eating and drinking establishments not located on Main Street.
[d]Other businesses.

Source: CH2M HILL, 2003c.

The Proposed Action may indirectly impact the city's economy by attracting new businesses or relocating existing businesses to Prowers County to be nearer their customers along the reliever route. The Proposed Action could indirectly affect existing highway-dependent businesses on Main Street—such as convenience stores, lodging, and restaurants—by diverting a portion of their customer base to the reliever route. Businesses that depend heavily on through-traffic could experience a loss in sales, and some of those businesses could close or relocate. The lack of other comparably sized cities within 100 miles of Lamar would minimize the effects to highway-dependent businesses; travelers needing gas, food, or other services would be likely to stop in Lamar because no other large cities are nearby. From a regional economic perspective, this may provide new opportunities for businesses to locate along the reliever route by providing an alternative location to the Main Street corridor.

Any reduced sales at highway-dependent businesses in Lamar would likely be offset by an improved business climate for destination businesses resulting from the reduction in trucks and other through-traffic on Main Street. Additionally, unobstructed views of Lamar from the north and east interchanges and from central segments of the reliever route would provide travelers visual information about the proximity of local businesses in Lamar. Other measures, such as the provision of visible signage along the reliever route to identify the Lamar business district, the designation of Main Street and Olive Street as business routes for U.S. 287 and U.S. 50, or local restrictions on the amount of development allowed at the reliever route interchanges, could also help minimize adverse impacts on Lamar businesses.

The project could result in changes in sales tax revenue to local governments. Prowers County sales taxes fund capital acquisitions, debt payment, and tax relief efforts (Prowers County, 2011). Lamar's sales taxes fund the library, the capital improvement fund, street improvements, and a portion of the General Fund, which pays for employee salaries and city services such as police, fire, and parks and recreation services (City of Lamar, 2012a). Sales taxes from Main Street businesses represented approximately 12 percent of the City of Lamar's total revenue and 4 percent of the revenue collected by Prowers County in 2006 and 2007 (Prowers County, 2006; City of Lamar, 2007). Given the recent economic recession and decline in city and county population between 2000 and 2010, recent budgets have shown

negative or little increase in sales tax or other general fund revenues, and the 2006 and 2007 budgets remain representative of current conditions. It is expected that some decrease in sales and tax revenues at highway-dependent businesses in Lamar would occur, due to the diversion of through-traffic to the reliever route. New or relocated highway-oriented businesses would likely establish along the reliever route in Prowers County, increasing the county's sales and tax revenues. City of Lamar restrictions on the amount of development allowed at the reliever route interchanges or annexation of prime development sites—a stated goal in the 2004 *City of Lamar Comprehensive Plan* (HNTB, 2004) (Comprehensive Plan)—would minimize the migration of sales and tax revenues from Lamar to Prowers County.

The Port of Entry relocation by the Department of Revenue would likely require acquisition of land along the new reliever route for the relocated facility. Indirect effects on property tax revenues would likely occur from the conversion of private property to public use for the Port of Entry. However, the land acquisition and resulting tax revenue reduction would be almost negligible in the context of overall Prowers County tax revenues.

Construction of the Proposed Action would have a temporary benefit to employment, sales tax revenues, and overall economic activity in the project area during the construction period. New jobs could be created in Lamar in businesses and industries that provide goods and services used during construction and by construction workers.

Mitigation of Proposed Action

Avoidance and Minimization. The design of the reliever route interchanges would provide unobstructed views of Lamar from the north and east interchanges and from central segments of the reliever route, giving travelers visual information about the proximity of local businesses in Lamar and making them more likely to stop at those businesses. The reliever route would be an access-controlled facility, which would limit the opportunity for business migration to the few locations where local access is provided. The provision of visible signage along the reliever route to identify the Lamar business district would be considered during final design.

The City of Lamar could consider working with Prowers County to restrict the amount of development allowed at the reliever route interchanges, minimizing adverse impacts on Lamar businesses and the migration of sales and tax revenues from Lamar to Prowers County; or to annex prime development areas—a stated goal in the Comprehensive Plan—to ensure orderly growth of the city and minimize the migration of sales and tax revenues to the county.

The provision of highway underpasses at Parmenter Street and CR HH.5 and accommodating local accesses at Lake Road and Crystal Street would minimize impacts to farm and ranch operations from local road and access closures and rerouting. Coordination with impacted property owners during final design regarding access between split properties would minimize impacts on agricultural operations. The use of the existing gravel Alternative Truck Route alignment would minimize ROW acquisition and would minimize the amount of land converted to non-taxable status.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
Access to businesses in downtown Lamar would continue to deteriorate	Highway-dependent businesses in downtown Lamar may suffer financially or relocate out of downtown Lamar.	• CDOT will implement access controls on its ROW along the new alignment. • Main Street and Olive Street will be designated as "Business Route U.S. 287" and "Business Route U.S. 50." • CDOT will provide way finding signage at the new intersections/interchanges and on the reliever route to clearly identify the reliever route and to identify access to the business district in downtown Lamar.
	Splitting of farm and ranch operations.	• CDOT will coordinate with property owners during final design to provide access between split properties for vehicles, equipment, and livestock.

3.2.2 Farmlands

Under the Federal Farmland Protection Policy Act of 1981, the U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS) classifies agricultural land according to its soil quality and irrigation status. The NRCS defines farmlands as follows, per United States Code Part 657.5.

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and that is available for these uses. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. The NRCS also classifies land as prime farmland if certain conditions are present; e.g., if the land is irrigated or protected from flooding.

Unique farmland is land other than prime farmland that is used to produce specific high-value food and fiber crops. It can economically produce sustained high yields of these specialized crops when treated and managed according to acceptable farming practices.

Farmland of statewide importance is defined as land important for the production of food, feed, fiber, forage, and oil seed crops, and includes those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.

Farmland of local importance is land that has not been identified as having national or statewide importance yet may have local significance for the production of food, feed, fiber, forage, and oilseed crops.

Current Conditions

Prowers County is predominately an agricultural area. The reliever route study area contains 407 acres of farmland of statewide importance and 1,170 acres of farmland that is considered prime if certain conditions are present (see Table 3-3 and Figure 3-3). No unique farmlands or

farmlands of local importance exist in the study area. It is important to note that the existing gravel Alternative Truck Route and highways are included in calculations of prime farmlands and farmlands of statewide importance because the NRCS source data do not remove transportation infrastructure or any other human-made development from its acreage totals (see Figure 3-3). As such, the acreage of farmlands differs from the acreage of agricultural lands in Section 3.3.7, *Right-of-Way*.

Prime farmlands and farmlands of statewide importance primarily occur along the Arkansas River and toward the southern end of the reliever route study area. The Comprehensive Plan, published by the city and Prowers County in 2004, discourages "continuation of agricultural uses" in the Joint Planning Area that surrounds Lamar and the reliever route study area . If the Comprehensive Plan goals are carried out, farmland conversion to urban uses would occur within the reliever route study area.

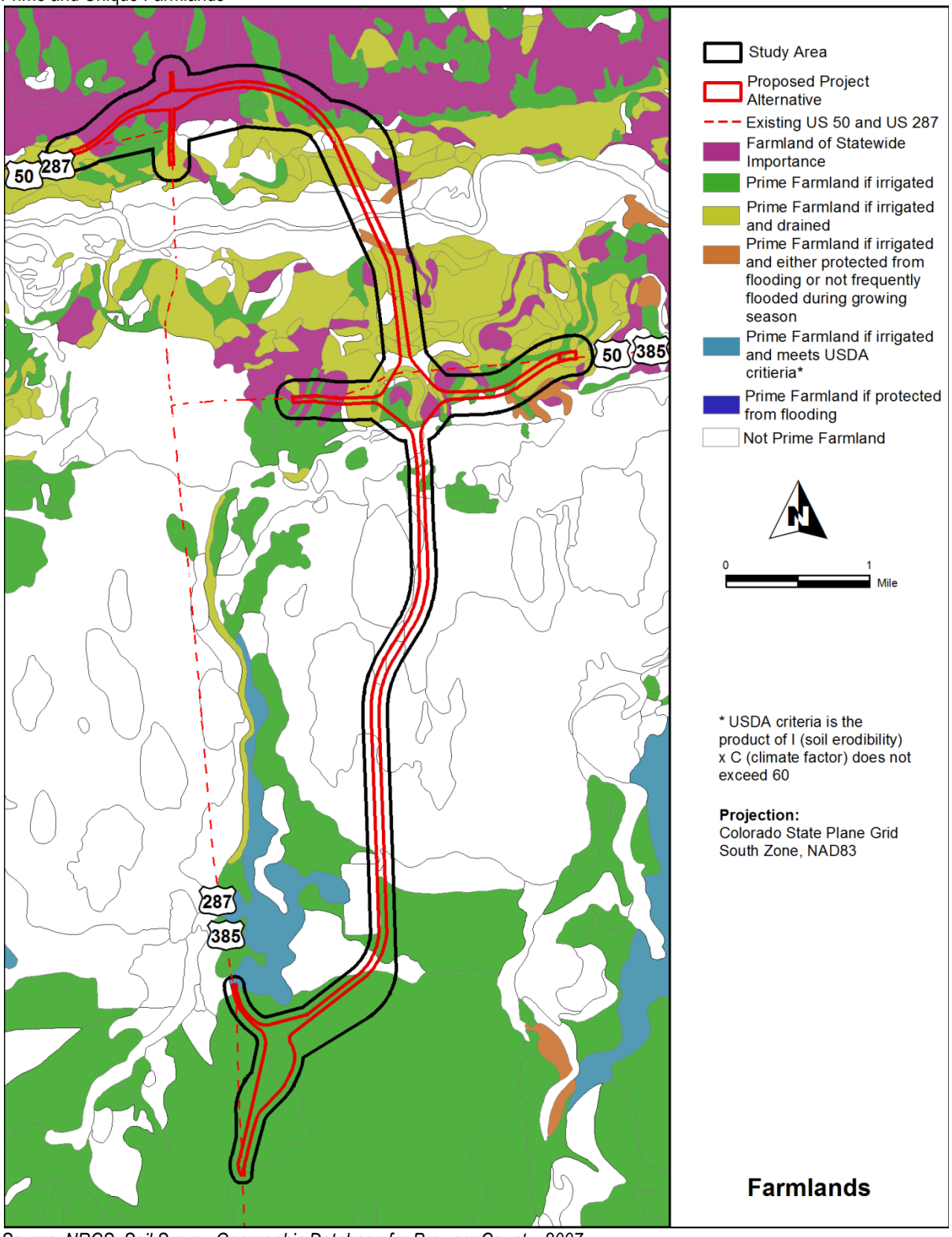
TABLE 3-3
Farmland Acreage in the Study Area

Farmland Type	Acres in Reliever Route Study Area	Acres Impacted by Proposed Action Footprint	Percentage of Total Impacted Acres
Prime Farmlands (if certain conditions are present)[1]	1,170	285	56%
Farmland of Statewide Importance	407	79	15%
Not Prime Farmland	621	146	29%
Total Acres	2,198	510	100%

Source: NRCS, 2007.

[1] The NRCS defines land as prime farmland if it is a) irrigated; b) irrigated and drained; c) protected from flooding or not frequently flooded during the growing season; and d) irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60.

FIGURE 3-3
Prime and Unique Farmlands



Source: NRCS. Soil Survey Geographic Database for Prowers County, 2007.

Impacts of No Action Alternative

The No Action Alternative does not require additional ROW and would not directly impact prime farmlands or farmlands of statewide importance in the study area. Without the roadway improvements provided by the Proposed Action, development identified in the Comprehensive Plan would be less likely to occur, and less conversion of prime and important farmland to urban uses would occur. Please see Section 3.3.1, *Land Use* for additional information about the future planning of this area.

Impacts of Proposed Action

As shown in Table 3-3, the Proposed Action would result in the direct conversion of 79 acres of farmland of statewide importance and 285 acres of farmland that is considered prime if certain conditions are present. Figure 3-3 illustrates the prime and unique farmlands that would be converted to a transportation facility under the Proposed Action.

In accordance with the Farmland Protection Policy Act, the farmland conversion impact rating was calculated using NRCS Form CPA 106. As stated in the Act [7 CFR 658.4(c)(2)], "Sites receiving a total score of less than 160 [on the CPA 106 form] need not be given further consideration for protection and no additional sites need to be evaluated." The conversion impact rating for the Proposed Action is 56 (see Appendix A); therefore, mitigation and further coordination with the NRCS are not required.

Indirect effects to farmlands would likely include conversion of farmlands to urban uses adjacent to the reliever route and its interchanges. As discussed in Section 3.2.1, *Local Economy*, highway-dependent businesses would likely locate adjacent to the reliever route to serve truck and through-traffic, and, consistent with the goals of the Comprehensive Plan, would convert farmlands to developed uses in these areas.

Additionally, the Port of Entry relocation by the Department of Revenue would likely require acquisition of land along the new reliever route for the relocated facility. Depending on its location, the new facility could result in the conversion of important farmland to public use, which would be considered an indirect effect of the Proposed Action. The land required would likely be similar in amount to the property upon which the Port of Entry currently operates (approximately 11 acres).

Changes to the Arkansas River floodplain would result in 35 new acres of land along the Arkansas River being in the 100-year floodplain. None of the land adjacent to the river or floodplain is prime or important farmland and, therefore, no impacts to farmlands would occur due to floodplain changes.

Construction of the Proposed Action would result in temporary impacts to farmlands around the reliever route and in areas of construction staging. Disturbed lands would be restored to their prior condition after construction is complete.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, actions were taken to avoid and minimize impacts to important farmlands. The Proposed Action would follow the existing gravel Alternative Truck Route south of U.S. 50, minimizing the need for acquisition and conversion of farmlands to a transportation use.

Mitigation. Mitigation for farmland conversion resulting from the Proposed Action is not required per federal regulations. Please refer to Section 3.3.7, *Right-of-Way* for a discussion of mitigation for ROW acquisitions.

3.3 Community

This section discloses potential impacts on community resources including land use, social resources, parks and recreation resources, noise, air quality, visual resources, ROW, and Environmental Justice. Community resources in Lamar, as shown on Figure 3-4, are evaluated to determine the effect of a transportation action on the community and its quality of life.

The analyses of land use, community facilities, parks and recreation resources, noise, visual resources, and ROW considered impacts on resources in and immediately surrounding the study area. Air quality analyses are conducted at a regional level and accordingly considered air quality impacts in Lamar and surrounding portions of Prowers County. The environmental justice analysis considers impacts on minority populations within the census blocks that overlap the study area and on low-income populations within the census block groups that overlap the study area.

Land uses in central Lamar

3.3.1 Land Use

Current Conditions

The City of Lamar and Prowers County used a joint planning process to concurrently adopt the Comprehensive Plan and the Prowers County Master Plan in early 2004. Because this project's study area lies completely within the City of Lamar and the Lamar Joint Planning Area (a 3-mile buffer around the present municipal boundaries), and given the shared process the city and county used to develop their plans, this analysis focuses on land uses described in the Comprehensive Plan. Existing and proposed land uses in the study area are the same in the city and county plans.

The Comprehensive Plan incorporates the U.S. 287 reliever route into its analysis and future plans. The Comprehensive Plan and EA project teams met and shared information during development of alternatives for both studies. The Comprehensive Plan assumes construction of the Proposed Action, and its planning framework reflects the proposed reliever route alignment, as shown in Table 3-4.

Existing land uses surrounding the existing U.S. 287/U.S. 50 alignment at the northern end of the city include dispersed development patterns of mostly rural residential or light industrial uses. Within the Lamar city limits, the study area bisects the downtown business district, which contains both retail and office uses. Through central and southern Lamar, land uses change to single-family residential neighborhoods interspersed with civic uses. Toward the southern end of the city, land-use patterns return to dispersed development, with rural residential and light industrial uses.

FIGURE 3-4
Community Resources

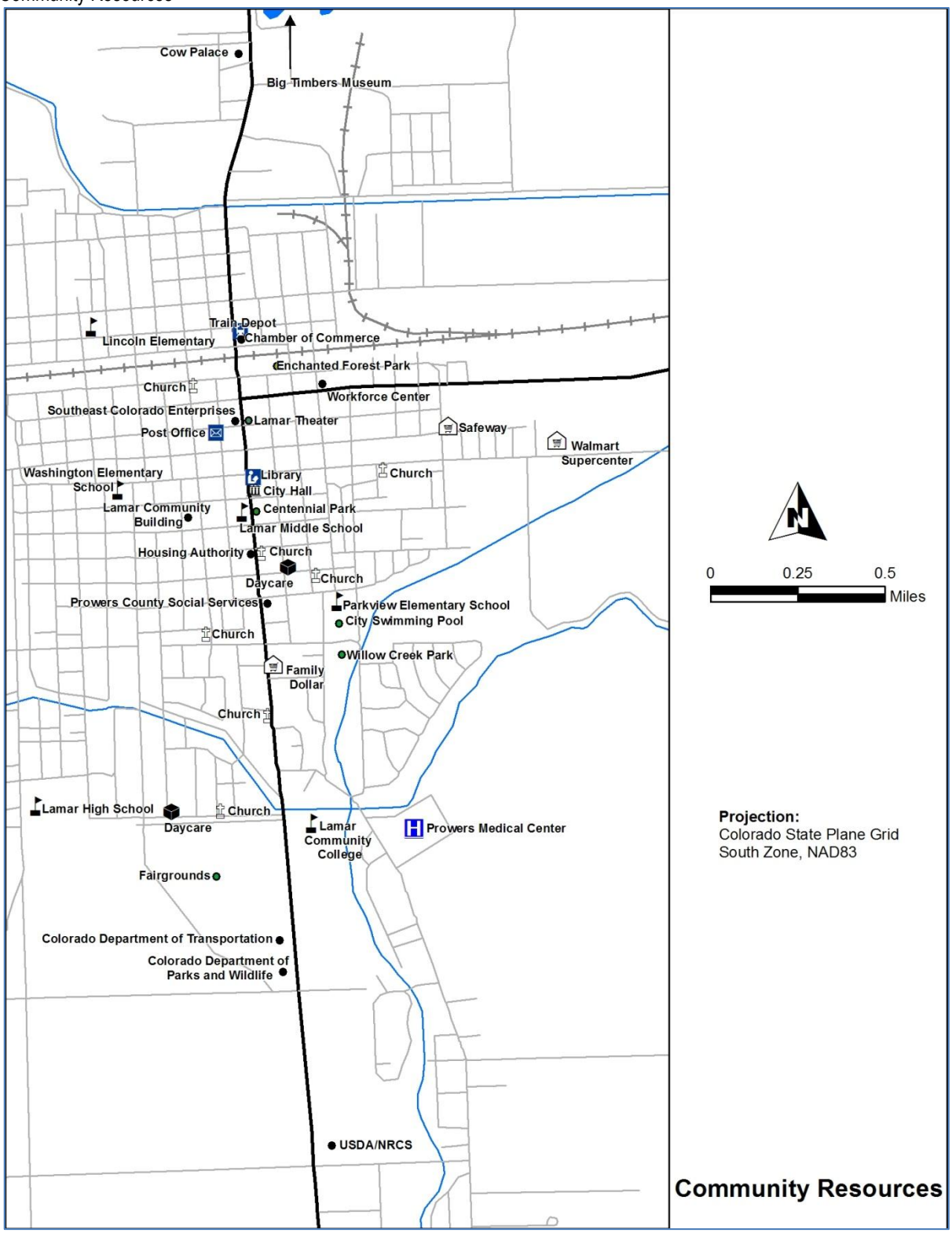


TABLE 3-4
Land Uses Approved in the Comprehensive Plan

Location	Current Land Use	Future Land Use
South interchange	Grazing, very low-density rural residential	Primary gateway; commercial
South interchange to U.S. 50	Grazing, feedlot, agricultural, very low-density rural residential	Suburban-density residential (3+ homes/acre) west of new alignment; light industrial east of new alignment
East interchange	Agricultural, low-density rural residential	Primary gateway; commercial
U.S. 50 to Arkansas River	Agricultural	Low-density residential (one home per 2 acres)
Arkansas River to north interchange	Agricultural	Low-density residential (one home per 2 acres)
North interchange	Agricultural, very low-density rural residential	Primary gateway; light industrial
West of north interchange	Agricultural, commercial, light industrial	Low-density residential (one home per 2 acres)

Source: HNTB, 2004.

Land use surrounding the reliever route study area is principally agricultural, devoted either to croplands or livestock grazing. Land uses approved in the Comprehensive Plan for the reliever route study area include changes from primarily agricultural to residential, commercial, and light industrial, as summarized in Table 3-4. In addition, the Comprehensive Plan discourages agricultural uses in the Joint Planning Area and recommends annexation of prime development sites to ensure orderly and compatible growth of the city. For information on ROW impacts by land use category, please see Table 3-7 in Section 3.3.7, *Right-of-Way*.

Impacts of No Action Alternative

The No Action Alternative would hinder the development of planned future land uses within the reliever route study area. The Comprehensive Plan assumes implementation of the Proposed Action and establishes its planning framework accordingly. The No Action Alternative would not construct a reliever route east of Lamar, and land uses in the reliever route study area would be unlikely to change from their current use. The No Action Alternative would not be consistent with future land use plans that identify changes from primarily agricultural to residential, commercial, and light industrial and would compromise the ability of the city to achieve objectives set forth in the Comprehensive Plan.

Impacts of Proposed Action

The Proposed Action would convert existing land used primarily for agricultural operations to a transportation use within the reliever route footprint.

The Proposed Action would indirectly result in land use changes from agricultural to commercial or other uses in the vicinity of the reliever route, particularly surrounding the proposed interchanges. These land use changes would be consistent with future land use plans set forth in the Comprehensive Plan, and would allow the community to achieve the plan's objectives. Highway-dependent businesses would be likely to establish around interchanges to serve travelers on the reliever route. The Department of Revenue would

relocate the Port of Entry to a different site adjacent to the reliever route (see Figure 2-6). The ease of access from the reliever route would allow the city to promote adjacent sites for industrial, commercial, and light industrial use, as defined in the Comprehensive Plan.

Construction of the Proposed Action would temporarily change land uses around the reliever route and in areas of construction staging to a transportation use. These properties would be restored to their prior condition after construction is complete, resulting in no permanent effects on land use in these areas.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, CDOT's project team coordinated with the consultant developing the Lamar and Prowers County comprehensive and master plans to identify the Proposed Action and regional features, and ensure coordination among the U.S. 287 at Lamar Reliever Route EA, the City of Lamar Comprehensive Plan, and the Prowers County Master Plan. The Proposed Action would follow the existing gravel Alternative Truck Route south of U.S. 50, minimizing impacts to existing and future land use in this location.

Mitigation. The Proposed Action is consistent with the Comprehensive Plan, and no mitigation measures are necessary.

3.3.2 Social Resources

Current Conditions

Using U.S. 287/Main Street and U.S. 50/Olive Street to delineate four geographic quadrants in Lamar, residential neighborhoods are located in the northwest, southwest, and southeast quadrants, while the northeast quadrant is largely commercial and industrial. The central business district, which includes many local government offices, is centered squarely on the intersection of the two highways. Most of the recently constructed homes in the community are located on the southeast end of the city, while rural residences are scattered around the perimeter of Lamar in low-density developments. Agricultural lands surround the existing, gravel Alternative Truck Route, and no defined neighborhoods exist in the reliever route study area between CR CC and CR 196.

A majority of Lamar's community facilities are located on U.S. 287/Main Street, as illustrated in Figure 3-4. Two of Lamar's five schools (Lamar Middle School and Parkview Elementary) generate pedestrian traffic across U.S. 287/Main Street at two unsignalized crossings. The heavy truck traffic passing through these crossings presents safety risks to children and their families because trucks cannot stop quickly in an emergency. The Big Timbers Museum, located at the intersection of U.S. 287/U.S. 50 and CR 196, north of the area shown in Figure 3-4, is an important community resource providing history on Lamar and Prowers County.

The relatively large volume of truck traffic traveling on U.S. 287/Main Street and U.S. 50/Olive Street through Lamar creates safety and mobility concerns for city residents, as described in Chapter 1, *Purpose and Need*, and in Section 3.1, *Transportation*. Noise levels adjacent to U.S. 287 are not considered high based on CDOT noise impact guidelines (see Section 3.3.4, *Noise*); however, trucks generate more noise than cars, particularly when stopping and starting at traffic signals. Trucks also produce diesel exhaust that nearby

pedestrians and vehicle occupants can smell, although no air quality pollutants exceed national standards in Lamar.

Impacts of No Action Alternative

The No Action Alternative would retain the current mix of vehicle traffic through the center of Lamar. Pedestrians at the Lamar Middle School and Parkview Elementary School crossings would continue to experience safety risks from heavy truck traffic; residents and users of schools and community facilities would continue to hear truck noise and smell exhaust from diesel vehicles; and hazardous materials carriers would continue to travel through the center of the city. Access to community resources within downtown Lamar would remain challenging because through-traffic would persist on the city's two main thoroughfares, U.S. 287/Main Street and U.S. 50/Olive Street.

Impacts of Proposed Action

The removal of many trucks and most hazardous materials carriers from the center of the city would benefit neighborhoods in Lamar by improving safety and mobility for vehicles and pedestrians on Main Street and Olive Street. Students attending Lamar Middle School and Parkview Elementary would experience improved safety at the two unsignalized school crossings. The improved east-west mobility across Main Street would also improve community cohesion by making connections between neighborhoods and facilities on each side of Main Street easier. Access to community resources within downtown Lamar would improve for pedestrian and local vehicular traffic because through-traffic would utilize the reliever route.

The diversion of truck traffic to the reliever route also would enhance general environmental conditions at community facilities on Main Street by reducing vehicle noise and diesel exhaust. The reliever route itself would not impact community cohesion because no established neighborhoods or community facilities exist in the vicinity of the reliever route, except for the Big Timbers Museum. The diversion of truck traffic to the reliever route would improve community cohesion in-town, allowing easier connections between neighborhoods and community facilities that straddle U.S. 287/Main Street. The north interchange of the reliever route would avoid the Big Timbers Museum, resulting in no impacts to this community resource.

Mitigation of Proposed Action

There would be no adverse impacts on neighborhoods, community facilities, or community cohesion as a result of the Proposed Action; therefore, no avoidance, minimization, or mitigation measures are necessary.

3.3.3 Parks and Recreation

Current Conditions

Several of Lamar's community parks are located along the existing U.S. 287/Main Street corridor, illustrated in Figure 3-4. No parks are located along U.S. 50/Olive Street in Lamar or within the reliever route study area. Centennial Park, located on the east side of U.S. 287/Main Street across from the Lamar Middle School, is a small, 1-acre park that has no officially programmed uses or constructed park facilities. Two unsignalized pedestrian

crossings of U.S. 287/Main Street are located at the north and south ends of the park, at Pearl Street and Park Street (see Figure 3-2). The heavy truck traffic passing through these crossings presents safety risks to park users because trucks cannot stop quickly in an emergency.

The Prowers County Fairgrounds encompasses about 120 acres and is located on the west side of U.S. 287/Main Street at the south end of the city. The Fairgrounds' ball fields are located immediately adjacent to U.S. 287/Main Street. Willow Creek Park is Lamar's primary city park and is located two blocks east of U.S. 287/Main Street between Parkview Drive and Memorial Drive. This 30-acre park includes an outdoor pool and extensive picnic and recreation facilities. The Enchanted Forest Park is located at the Amtrak station on Beech Street and contains a walking path. The Lamar Community Building, located at South 6th Street and West Park Street, houses the city's recreation department and serves as a venue for local events. Planning is under way for a multi-use trail that would encircle Lamar; however, the specific location and funding have not been identified at this time.

Section 6(f) of the Land and Water Conservation Fund Act (36 CFR 59) protects recreational lands planned, acquired, or developed with Land and Water Conservation Funds. Three recreation facilities in Lamar were developed with grants from the Land and Water Conservation Fund; however, these would not be affected because the Proposed Action would be constructed within the reliever route study area, outside of Lamar. No facilities in the reliever route study area were developed with grants from the Land and Water Conservation Fund. Therefore, a Section 6(f) evaluation is not required.

Impacts of No Action Alternative

The No Action Alternative would not directly affect any parks or recreation resources. The No Action Alternative would retain the current mix of vehicle traffic through the center of Lamar. Users of parks and recreation facilities on U.S. 287/Main Street would continue to hear truck noise and smell exhaust from diesel vehicles. Local access to parks for pedestrians and vehicles would remain difficult due to roadway congestion.

Impacts of Proposed Action

The Proposed Action would not directly affect or have a use of any parks or their lands. The Proposed Action would indirectly benefit most parks and recreation facilities in Lamar by improving local access for pedestrians and vehicle occupants by removing many trucks from the center of the city. The Proposed Action also would enhance general environmental conditions for users of Centennial Park and the ball fields at the Fairgrounds by reducing vehicle noise and diesel exhaust. CDOT would coordinate with city and county planning officials regarding planned future parks and recreational facilities to avoid conflicts with the Proposed Action at the time of construction.

Mitigation of Proposed Action

The Proposed Action would not adversely affect parks or recreation resources; therefore, no avoidance, minimization, or mitigation measures are necessary.

3.3.4 Noise

The noise impact analysis conducted for this project followed the CDOT *Noise Analysis and Abatement Guidelines* (CDOT, 2011b). These guidelines establish "noise abatement criteria (NAC)," which represent the maximum noise impact thresholds that various land uses can be exposed to before considering noise reduction or abatement measures. The NAC for different activity categories are shown in Table 3-5.

The method used to describe noise levels along highways is the equivalent level (L_{eq}), which is the average noise level over a given time period. The time period used for highway noise analysis is 1 hour. All noise levels described in this analysis are hourly L_{eq}.

CDOT guidelines require that noise mitigation must be considered for any receptor for which predicted traffic noise levels, using design-year (2035) traffic volumes and roadway conditions, meet or exceed the CDOT NAC (e.g., 66 decibels for Category B and C receptors) as shown in Table 3-5. The guidelines also state that noise mitigation must be considered for any receptors where predicted noise levels for design-year conditions increase by 10 decibels or more above existing levels.

TABLE 3-5
CDOT Noise Abatement Criteria

Activity Category	Leq [1,2] (decibels)	Description
A	56 (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	66 (Exterior)	Residential.
C	66 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D	51 (Interior)	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	71 (Exterior)	Hotels, motels, offices, restaurants, bars, and other developed lands, properties, or activities not included in A–D or F.
F	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	---	Undeveloped lands that are not permitted.

[1]Hourly A-weighted equivalent level for the noisiest hour of the day in the design year.
[2]CDOT noise impact analyses use "approach criteria," which are 1 decibel less than the FHWA Leq values.
Source: CDOT. 2011b. *Noise Analysis and Abatement Guidelines.* March 23.

The noise analysis includes an assessment of the existing, No Action, and Proposed Action noise levels and assesses impacts based on the CDOT NAC. The original noise analysis compared existing traffic noise levels (year 2002) to traffic noise levels for design year 2025. The complete analysis is documented in the *Noise Analysis, U.S. 287 at Lamar Environmental Assessment* TM (Hankard, 2003). The noise analysis was updated by CDOT in 2012 to reflect the extended planning horizon and 2035 design year. A field survey conducted in April 2012

indicated that the locations of sensitive noise receptors, such as residences, remain the same as those analyzed in 2003.

Current Conditions

Existing (year 2011 traffic volumes) noise levels were modeled at 48 representative, noise-sensitive locations in and near the study area, including residences, parks, schools, motels, and the Big Timbers Museum.

The noise model results show that estimated existing noise levels range between 43 and 70 A-weighted decibel (dBA). The loudest estimated existing peak-hour noise levels were identified near the U.S. 287 and CR 196 intersection, at two locations along U.S. 50/Olive Street in downtown Lamar, and downtown along U.S. 287/Main Street.

Estimated existing noise levels at the representative receptors located near the intersection of U.S. 287 and the existing gravel Alternative Truck Route and the intersection of U.S. 50 and the existing gravel Alternative Truck Route are between 50 and 56 dBA and 43 and 56 dBA, respectively. Estimated existing noise levels at the representative receptors located near the existing north intersection are between 50 and 67 dBA. Estimated existing noise levels along the reliever route alignment vary between 43 and 60 dBA. Estimated existing noise levels at representative receptors located along U.S. 287/Main Street through the city vary between 55 and 62 dBA. Estimated existing noise levels at representative receptors located along U.S. 50/Olive Street in the City of Lamar range between 54 and 70 dBA. The *Noise Analysis, U.S. 287 at Lamar Environmental Assessment* TM (Hankard, 2003) provides maps showing the locations of the modeled receptors, and the *Addendum to the Technical Memorandum "U.S. 287 at Lamar: Noise Analysis" dated July 2003* (CH2M HILL, 2013) provides noise levels for the receptors.

Impacts of No Action Alternative

Under the No Action Alternative, traffic volumes would continue to increase in and near downtown Lamar by design year 2035. The analysis predicted that noise levels would increase up to 2 dBA by design year 2035. The locations in Lamar predicted to have the loudest noise levels—65 to 70 decibel (dB)—include residences near KLMR curve, residences and a motel adjacent to U.S. 50/Main Street west of Division Street, and Centennial Park. Noise levels would stay the same or increase by imperceptible amounts (1 dB or less) at receptors along the existing gravel Alternative Truck Route and north to CR 196, where substantial increases in traffic volumes would not be anticipated. See the *Addendum to the Technical Memorandum "U.S. 287 at Lamar: Noise Analysis" dated July 2003* (CH2M HILL, 2013) for a table of impacts to specific representative noise receptors.

Impacts of Proposed Action

Under the Proposed Action, some traffic, including most trucks, would shift from downtown Lamar to the new reliever route by design year 2035. The loudest predicted future noise levels along the reliever route would be 65 dBA and the largest increase over existing levels would be up to 5 dBA.

Predicted noise levels at the representative receptors located near the proposed south interchange would be between 47 and 55 dBA, a change from existing levels that varies between a reduction of 9 dBA and an increase of up to 5 dBA. Predicted noise levels at the

representative receptors located near the proposed east interchange would be between 45 and 48 dBA, a change from existing levels that varies between a reduction of 9 dBA and an increase of up to 5 dBA. Predicted noise levels at the representative receptors located near the proposed north interchange would be between 52 and 65 dBA, a change from existing levels that varies between a reduction of 10 dBA and an increase of up to 3 dBA. Predicted noise levels along the rest of the reliever route alignment would vary between 42 and 58dBA, an increase over existing levels that ranges between a reduction of 2 and an increase of up to 4 dBA. Reductions would occur because the reliever route would shift traffic away from some receptors. No receptors show an increase in noise levels greater than or equal to 10 dBA or exceed the CDOT NAC.

In downtown Lamar, noise levels under the Proposed Action are predicted to be lower in comparison to the existing noise levels and No Action in design year 2035. This is because traffic volumes on Main Street and Olive Street, especially heavy truck traffic, are expected to be lower under the Proposed Action than under the No Action. Predicted noise levels at representative receptors located along Main Street through the City of Lamar would be between 56 and 65 dBA. Changes in noise levels along Main Street would experience an increase of up to 4 dBA. Predicted noise levels at representative receptors located along Olive Street in the City of Lamar would range between 52 and 65 dBA. Changes in noise levels along Olive Street would be reduced up to 5 dBA below existing levels. No receptors show an increase in noise levels greater or equal to 10 dBA or exceed the CDOT NAC.

A detailed table of impacts to specific representative noise receptors can be found in the *Addendum to the Technical Memorandum "U.S. 287 at Lamar: Noise Analysis" dated July 2003* (CH2M HILL, 2013).

During construction, noise from diesel-powered equipment would range from 80 to 95 dBA at a distance of 50 feet. Impact equipment such as rock drills and pile drivers can generate louder noise levels. These levels of noise would be present at residences adjacent to the new reliever route and interchanges, and at the Big Timbers Museum, on an intermittent basis as different phases of construction begin and end. A city-adopted noise ordinance is in place, but it does not establish noise thresholds relating to construction noise. CDOT will not need to obtain a permit from the city for construction purposes relating to noise.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, the south interchange was shifted approximately 600 feet to the east to minimize noise impacts to the residence along U.S. 287 north of CR CC (see Figure 2-7).

Mitigation. The Proposed Action would not result in absolute noise levels that exceed CDOT NAC or relative noise levels that increase by 10 dB or more. Therefore, no mitigation measures are necessary.

3.3.5 Air Quality

The Clean Air Act (CAA), which was last amended in 1990, requires the Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (NAAQS) necessary to protect public health and welfare. The following seven criteria pollutants are regulated by the EPA under the CAA (EPA, 2009):

- Carbon monoxide
- Lead
- Nitrogen oxides
- Particulate matter equal to or less than 10 microns in diameter (PM_{10})
- Particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$)
- Ground-level ozone
- Sulfur dioxide

The NAAQS established by the EPA are atmospheric concentration limits for these seven pollutants. When ambient air concentrations of a criteria pollutant are below the NAAQS, an area is designated as in attainment. If ambient air concentrations for criteria pollutants are above the NAAQS, the area is designated as in nonattainment. An area previously designated in nonattainment, which receives no NAAQS violations over an extended period, may be redesignated as a maintenance area.

Current Conditions

The Lamar area and Prowers County are in attainment for all pollutants, except PM_{10}. In 1990, the Lamar area was designated as nonattainment for PM_{10}. However, in November 2001, after years of demonstrating compliance with the NAAQS, the Colorado Air Quality Control Commission adopted redesignation plans for the Lamar PM_{10} nonattainment area. As such, the area is now designated as a maintenance area and is subject to a maintenance plan to ensure that the PM_{10} concentrations remain in compliance with NAAQS (Colorado Department of Public Health and Environment [CDPHE], 2001). Proposed transportation projects located in a maintenance area are subject to conformity requirements that demonstrate that the project will not cause or contribute to a violation of the NAAQS. Table 3-6 shows monitoring data from 2004 - 2011 in Lamar (EPA, 2012a; Colorado Climate Center, 2012).

TABLE 3-6
Ambient PM_{10} Concentration Levels Measured from 2004 to 2011

		Maximum Concentration								
Monitoring Location	**Parameter**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**NAAQS**
100 N. 2nd Ave.	24-Hour Average ($\mu g/m^3$)	80	116	136	93	123	233 [a]	136	113	150
104 E. Parmenter St.	24-Hour Average ($\mu g/m^3$)	93	108	116	58	86	118	95	122	150
Annual Precipitation	Average Rainfall (inches)	23	16	26	14	11	14	11	13	

Notes:
$\mu g/m^3$ = micrograms per cubic meter
[a] The 24-hour PM_{10} NAAQS was exceeded twice in 2009 at this monitor
Source: Colorado Climate Center, 2012; EPA, 2012a.

Fugitive dust from naturally semi-arid conditions, re-entrained roadway dust, and agricultural operations dominate the PM_{10} emissions in the region. Motor vehicle exhaust, primarily from vehicles using diesel fuel such as trucks and agricultural equipment, contributed approximately 0.4 percent (56 tons/day) of the total PM_{10} emissions (12,700 tons/day) in the Lamar area at the time the Lamar maintenance plan was adopted (CDPHE, 2001). Historical PM_{10} exceedances of the NAAQS in the Lamar area have been associated with low precipitation and unusually high winds (CDPHE, 2003).

Other pollutants of concern include vehicle emissions of toxic pollutants (referred to as mobile source air toxics or MSATs) and greenhouse gases (GHGs). The EPA has not set standards for allowable levels of toxic pollutants or GHGs. MSATs are a subset of 188 air toxics defined in the CAA that are emitted from on-road vehicles and off-road vehicles and equipment. Some toxics are present in the fuel and are emitted either when fuel evaporates or as a result of incomplete combustion of the fuel. Other MSATs are formed during the combustion process, and are present as an impurity in the fuel or occur as a result of engine wear. A Colorado Executive Order (D 004 08) prescribes specific goals for reducing and reporting GHG emissions statewide and directs the CDPHE to develop and implement a process for identifying and evaluating the benefits and impediments to measures that reduce GHG tailpipe emissions from cars and light trucks. The CDPHE has not established specific guidelines for reducing GHG emissions.

Impacts of No Action Alternative

Under the No Action Alternative, vehicle traffic would continue to increase and contribute to regional PM_{10} concentrations, although these concentrations would remain at 1 percent or less of total PM_{10} emissions in the area. Fugitive dust would continue to be generated from the existing gravel Alternative Truck Route on the east side of Lamar. In addition, diesel trucks would continue to emit PM_{10} while idling at stop conditions within the city; however, concentrations would remain in compliance with the NAAQS.

Impacts of Proposed Action

PM_{10} Impacts

Diesel-powered trucks are known emitters of PM_{10}. The EPA specified in 40 CFR 93.123(b)(1) that highway and transit projects that involve a significant increase in levels of diesel vehicle

traffic create "air quality concerns." A comparison of total daily vehicle miles traveled (VMT) and diesel VMT within Lamar and the area surrounding the proposed reliever route is shown in Table 3-7. The Proposed Action would result in a higher number of VMT than the No Action Alternative, and the Proposed Action scenario would result in a 1.6 percent increase in diesel vehicles in the region in year 2035 as compared to the No Action Alternative. Main Street in Lamar would experience an 84 percent decrease in diesel-powered trucks, which under the Proposed Action are anticipated to re-route to the reliever route. Due to the small increase in diesel VMT, the Proposed Action would result in a small increase in PM_{10} emissions when compared to the No Action Alternative. However, the overall PM_{10} emissions of free-flow vehicles traveling at higher speeds on the reliever route would be lower than the current PM_{10} emissions of vehicles traveling through town at lower speeds and starting and stopping at traffic signals. Furthermore, PM_{10} emissions from diesel vehicles are expected to decrease significantly over the next 50 years due to EPA regulations and innovations in fuel efficiency (FHWA, 2009). Consequently, the forecasted emissions for the Proposed Action in 2035 would actually be less than current emissions.

TABLE 3-7
Daily Vehicle Miles Traveled in Lamar

Scenario	Total VMT	Diesel VMT	Percent VMT Increase
Existing 2010	81,900	9,700	N/A
No Build 2035	96,200	11,400	17%
Build 2035	98,200	11,600	20%

Source: CH2M HILL, 2012.

During construction, it is anticipated that the project would cause a temporary increase in PM_{10} emissions from diesel-fueled construction equipment as well as dust from earth-moving activities. However, the Colorado State Implementation Plan does not identify construction-related fugitive PM_{10} as a contributor to the particulate problem; therefore, the fugitive PM_{10} emissions associated with highway project construction would not result in an air quality concern, as defined by EPA. Construction activities may create fugitive dust emissions on a temporary basis, but would be minimized by BMPs. The Proposed Action would ultimately result in an air quality benefit by paving a heavily traveled gravel road and reducing fugitive dust.

Conformity Statement

CAA Section 176(c)(1)(B) states that federally supported transportation projects must not "cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area." To meet statutory requirements, the final rule requires projects in areas that are in nonattainment or maintenance to conduct a conformity analysis if determined to be a project of air quality concern. The Proposed Action is not anticipated to create any new violations or increase the frequency of an existing violation of the PM_{10} standard; therefore, the Proposed Action is not a project of air quality concern, and a conformity analysis is not required.

The proposed project is included in the *Southeast Transportation Planning Region 2035 Regional Transportation Plan* (RTP) (CDOT, 2008). The RTP meets the conformity requirements identified by federal and state regulations for PM_{10}.

Mobile Source Air Toxics Impacts

EPA identified seven priority MSATs for which FHWA released guidance to assist in the analysis of impacts resulting from proposed transportation projects. Nonetheless, air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited (FHWA, 2009).

However, because the estimated regional VMT under the Proposed Action is nearly the same as the No Action Alternative (varying by less than 2 percent as shown in Table 3-7), it is expected that no appreciable difference in overall MSAT emissions would occur in 2035 as a result of the Proposed Action.

For both the No Action Alternative and the Proposed Action, emissions would be lower than present levels in the design year as a result of EPA's national control programs, which are projected to significantly reduce MSAT emissions over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOBILE6.2 model forecasts a combined 72 percent reduction in the total annual emission rate for the priority MSATs from 1999 to 2050, while VMTs are projected to increase by 145 percent (FHWA, 2009). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future than they are today.

Incomplete or Unavailable Information for Project-specific MSAT Health Impacts Analysis[1]

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

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. The agency is the lead authority for administering CAA and its amendments, and has specific statutory obligations with respect to hazardous air pollutants and MSATs. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. It maintains the Integrated Risk Information System, which is a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects. Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

[1] Derived from Appendix C – Prototype Language for Compliance with 40 CFR 1502.22 (FHWA, 2009).

Other organizations are also active in the research and analyses of the human health effects of MSATs, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* (FHWA, 2009). Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, 2007) or in the future as vehicle emissions substantially decrease (HEI, 2009).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (that is, 70-year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's Draft Motor Vehicle Emissions Simulator (MOVES) 2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in a National Cooperative Highway Research Program study (EPA, 2012b). This study documents poor model performance at 10 sites across the country – three where intensive monitoring was conducted and an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with NAAQS for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

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

Mitigation of Proposed Action

Avoidance and Minimization. The Proposed Action would reduce exhaust emissions associated with idling vehicle engines by providing free flow of traffic at all major

interchange movements on the reliever route rather than signal-controlled movements requiring stops.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
No impacts due to construction. The unpaved truck reliever route would continue to contribute to particulates and dust.	Fugitive dust emissions during construction.	• CDOT will implement BMPs to control fugitive dust emissions: – Covering trucks hauling soil and other fine materials – Stabilizing and covering stock pile areas – Revegetating areas exposed for long periods – Washing construction equipment to minimize offsite tracking of mud and debris – Limiting construction-related vehicle speeds while off road – Street sweeping – Scheduling construction to minimize dust impacts • CDOT will obtain an Air Pollution Emission Notice (APEN) permit from the CDPHE Air Pollution Control Division, which includes a fugitive dust control plan.
No impacts due to construction. The unpaved truck reliever route would continue to contribute to particulates and dust.	Increased PM_{10} emissions during construction.	• CDOT will develop construction equipment idling and start-up plan for reduction of non-working idling equipment and work site combustion engines.

3.3.6 Visual Resources

Current Conditions

The reliever route study area traverses a sparsely populated rural area near Lamar and intersects the existing alignments of U.S. 50, CR 196, and BNSF Railway tracks. The topography surrounding Lamar is level, with long, broad views of the open prairie, farmland, and agricultural businesses. Because of the flat topography in the area, views of the highways are limited to within a few miles on either side of the alignment. The study area does not include viewsheds to important scenic vistas or visual resources that require preservation.

Most of the residences in the study area are located close to the existing U.S. 287 and U.S. 50 corridors and railroad tracks. Several commercial and industrial businesses, including highway-dependent businesses such as truck stops, are located along existing U.S. 50 and CR 196. Expansive views in the city are generally limited to the extent of a city block because of the screening created by mature trees and buildings. However, U.S. 287/Main Street and U.S.50/Olive Street do offer pedestrians and motorists views that extend for several blocks. Notable views in the city include the downtown business district, city hall, and the train

station. A recent MOU between Lamar, the Colorado Department of Local Affairs, and the Colorado State University Extension led to improvements to building façades and visually appealing sign concepts for 20 downtown buildings.

Throughout project planning, community leaders expressed the desire for unobstructed visibility of Lamar from any features of the new reliever route. Their objective is to ensure vehicle occupants on the reliever route would be aware of Lamar and its amenities.

Impacts of No Action Alternative

The No Action Alternative would not affect visual resources because no additional transportation facilities would be constructed, and changes to current land uses would not take place.

Impacts of Proposed Action

The Proposed Action would introduce new transportation infrastructure through a sparsely populated rural area and create a new crossing of the Arkansas River. The Proposed Action would be primarily at-grade, except for the interchanges, the railroad crossing near the east interchange, and the Arkansas River crossing, and would not impair views or visual resources. Views for occupants of some homes near the east interchange would be altered and would include highway interchange features such as bridge structures. Highway lighting would likely occur at interchanges and other access points, which would introduce new light sources into a largely rural, unlit area. CDOT would develop a lighting plan during the final design and steps would be taken to illuminate only the necessary areas and minimize light trespass.

Building in Lamar

Travelers on the new reliever route would have unobstructed views of Lamar from the north and east interchanges, and from central segments of the mainline. Travelers would also have views of the new wind farms being constructed in the east. The south interchange would be too far from Lamar for motorists to see more than the city's water tower and the Lamar Golf Course, or to observe the change in vegetation from prairie grasses to community trees.

Residents within city limits would experience less truck traffic, which would minimize interruption of views for pedestrian and vehicular traffic along Main Street and Olive Street.

Temporary impacts would occur during the construction phase of the project. Soil and vegetation disturbances would be visible in the immediate vicinity but would be re-planted after construction is complete and would not generate long term impacts. Construction staging areas would store construction equipment during non-construction hours, but screening of construction equipment could occur where possible. Nighttime construction activities along the reliever route would require lighting, but the reliever route passes through sparsely populated farm and rangeland. Therefore, the night lighting is not anticipated to impact residents.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, actions were taken to avoid and minimize impacts to visual resources. One criterion used to select interchange concepts was to maintain visibility into the city. Accordingly, the Proposed Action meets the community leaders' objective to provide unobstructed views of Lamar from the east and north interchanges as well as from segments of the mainline.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Introduces new highway infrastructure and lighting, including elevated structures, to sparsely populated rural area.	• Disturbed areas on the new alignment will be revegetated with native vegetation per consultation with city and county officials. • CDOT will coordinate with the City of Lamar and Prowers County regarding aesthetics of the Proposed Action.
	Introduces new highway lighting into a currently unlit rural area.	• Develop lighting plan during final design that illuminates necessary areas only and incorporates fixtures that are fully shielded and aimed downward to minimize light trespass.
	Removes vegetation during construction of highway improvements.	• Landscape roadway shoulders with grasses and create naturalized areas that take advantage of local runoff to allow native vegetation, including trees and shrubs, to establish.

3.3.7 Right-of-Way

ROW is the land used for a road and its maintenance. This section identifies property acquisitions and relocations that could result from construction of the Proposed Action. The ROW analysis examines both full and partial acquisitions, residential relocations or business displacements, and the relocation needs of these impacted residences and businesses. Typically, permanent acquisitions are made for infrastructure. However, easements may also be obtained to provide access for maintenance of the highway and its associated facilities.

The ROW acquisitions discussed in this section are estimates, based on preliminary design. Actual ROW acquisitions will be determined during final design.

Current Conditions

Most of the property in the reliever route study area is privately owned. Many of the parcels are large acreages used for farming and ranching. Smaller parcels containing residences and businesses are located adjacent to U.S. 50 in the vicinity of its intersection with the existing gravel Alternative Truck Route and adjacent to the existing U.S. 287/U.S.50 alignment at the north end of the study area.

The reliever route study area includes several publicly owned parcels as well. The City of Lamar owns a large parcel along the existing gravel Alternative Truck Route, a parcel on Willow Creek south of U.S. 50, and the Big Timbers Museum. Prowers County owns the existing gravel Alternative Truck Route. The current ROW width of the existing gravel Alternative Truck Route is approximately 200 feet. The Colorado State Land Board owns a parcel of state school land adjacent to the existing gravel Alternative Truck Route, and the Motor Carrier Services Division of the Colorado Department of Revenue owns the Port of Entry at the north end of the study area.

Impacts of No Action Alternative

The No Action Alternative would not require additional ROW or result in the displacement of businesses or residents. The Port of Entry would remain in its current location on U.S. 287/U.S. 50 north of Lamar.

Impacts of Proposed Action

The Proposed Action would require a 300-foot-wide ROW to construct the reliever route highway and shoulders. The ROW requirements would be wider at the three interchanges. Implementing the Proposed Action would require acquisition of 529.14 acres of property, comprising 385.30 acres of privately owned land and 143.84 publicly owned acres, including the county-owned, existing gravel Alternative Truck Route (see Table 3-8). Of the 385.30 acres acquired from private owners, most is non-irrigated agricultural land used for livestock grazing. Details about individual parcel impacts can be found in the *Addendum to the Technical Memorandum "Summary of Right-of-Way Impacts for the U.S. 287 at Lamar Project" dated September 25, 2003* (CH2M HILL, 2007a), which is still representative of current conditions in the reliever route study area.

TABLE 3-8
Right-of-Way Impacts

Acquisitions	Full	Ownerships	Acreage	Partial	Ownerships	Acreage	Total
Public*	5	1	11.43	3	2	7.12	18.54
Agriculture	1	1	72.13	50	28	267.89	340.02
Commercial	3	3	9.31	8	7	13.00	22.31
Residential	0	--	--	10	10	22.97	22.97
Total	9	5	92.86	71	47	310.98	403.84

**Excludes the 125.30 acres of the Prowers County existing gravel Alternative Truck Route.*
Source: CH2M HILL, 2007a.

Privately Owned Parcels

The Proposed Action reliever route would require full acquisition of four parcels from four private property owners and partial acquisition of 68 parcels from 45 private property owners. The Proposed Action would require relocation of one residence and three businesses, including an equipment rental and sales shop, a body shop, and a gun and pawn shop. The residence identified for relocation is located on a property with three other residences. The other three residences would not be impacted, so the property is considered a partial acquisition instead of a full acquisition. The reliever route would bisect 20 properties, resulting in a piece of property that is severed from the rest of the parcel. Further analysis is required to determine whether the remaining portions of property remain economically viable parcels or whether CDOT would need to acquire the remaining portions of those parcels.

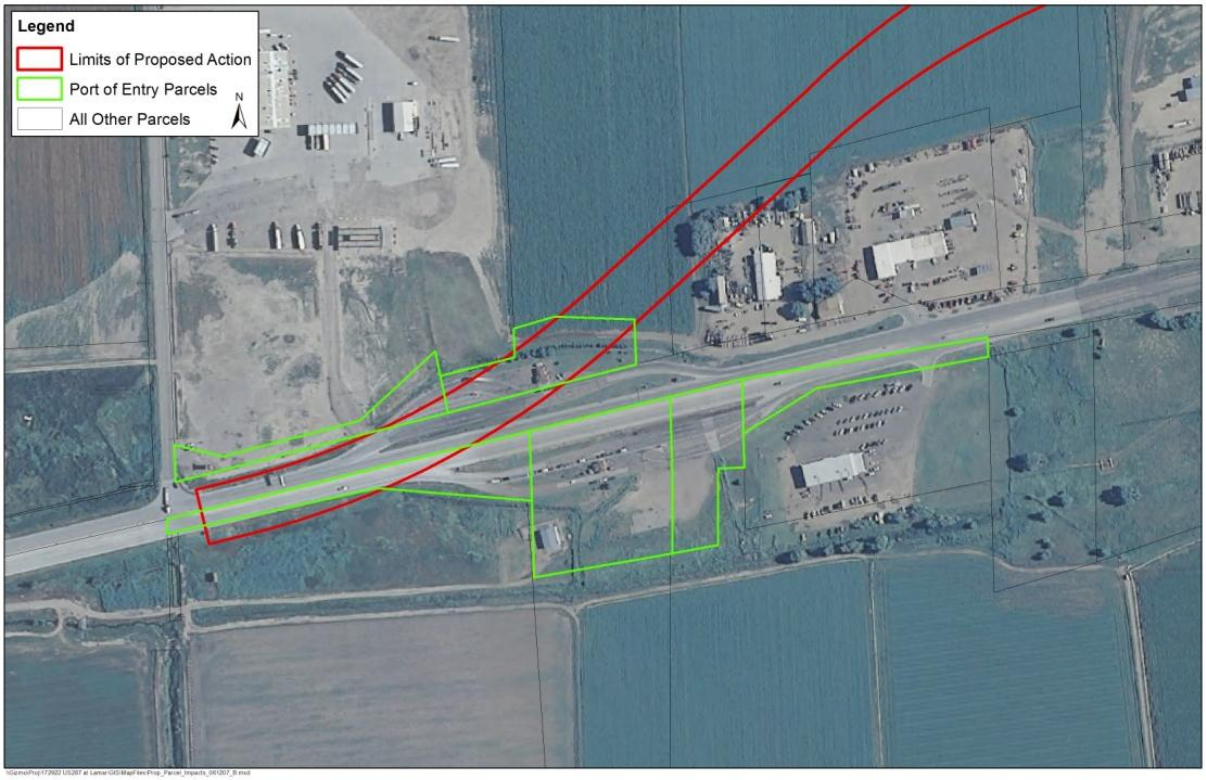
Publicly Owned Parcels

The Proposed Action reliever route would require full acquisition of five parcels from one public property owner (Department of Revenue) and partial acquisition of three parcels from two public property owners (City of Lamar and State Land Board). The Proposed Action would require 5.77 acres from portions of two parcels owned by the City of Lamar, one along Willow Creek south of U.S. 50 and one along the west side of the existing gravel Alternative Truck Route. No ROW would be acquired at the city-owned Big Timbers Museum property, and neither the museum building nor its operations would be affected.

The Colorado State Land Board owns one parcel that would be affected on the east side of the existing gravel Alternative Truck Route. Approximately 1.35 acres of the State Land Board parcel would be required for ROW. The State Land Board leases this property to a private individual for agricultural purposes. In cases of partial acquisitions, the State Land Board usually upholds the lease but reduces the lease to the amount of remaining acreage.

The Proposed Action would fully acquire the five parcels, totaling 11.43 acres, from the Colorado Department of Revenue at the Port of Entry on U.S. 287/U.S. 50 west of the KLMR curve. The Proposed Action would shift the highway alignment north and would impact the buildings, the scales, and the ramps on the north side of U.S. 287/U.S. 50, as illustrated in Figure 3-5. The entrance ramp on the south side of U.S. 287/U.S. 50 would also be directly impacted by the Proposed Action. The ROW impacts would eliminate the ability of the Port of Entry to function in its current configuration. CDOT will execute an IGA with the Colorado Department of Revenue to detail the relocation of the Port of Entry facilities. The Port of Entry facility would be relocated by the Department of Revenue along the proposed reliever route.

FIGURE 3-5
Impacts to Port of Entry



Prowers County would transfer ownership of the existing gravel Alternative Truck Route, totaling 125.30 acres, to CDOT ownership for the Proposed Action reliever route. In exchange, CDOT would relinquish existing segments of U.S. 287 and U.S. 50 and would transfer the associated ownership to Prowers County and the City of Lamar through an IGA. CDOT would relinquish U.S. 287 from milepost 72.47 at the southern limits of the project (CR CC), through the city, to milepost 80.14 at the northern project limits (CR 7), for a total of 7.67 miles. CDOT would relinquish U.S. 50 from milepost 432.89 at the northern project limits (CR 7) to milepost 437.09 at the proposed interchange due east of Lamar, for a total of 4.2 miles. U.S. 50 and U.S. 287 are coincident for 2.5 miles between CR 7 and the Main Street/Olive Street intersection. Therefore, the total mileage of relinquished state highway system would be 9.37 miles. Ownership of the relinquished roadways would likely be transferred through a land exchange between CDOT and the city and/or county. No financial transaction or financial compensation is expected to occur. Transfer of titles from one public agency to the other would occur, as denoted in an IGA that would be implemented between CDOT and the city and county.

Access

In addition to property acquisition, the Proposed Action would require the closure of accesses to the existing gravel Alternative Truck Route. Prowers County issued a Notice of Non-Access in November 1997 to landowners and tenants with accesses to the existing gravel Alternative Truck Route, in anticipation of such access closures. The Proposed Action would be in accordance with this Notice of Non-Access.

Construction

During construction, CDOT may need to acquire temporary construction easements that would be larger than the permanent acquisition footprint. Property owners would retain ownership of these areas, but use of these areas during construction would be restricted. Upon project completion, property owners would again have unrestricted use of these areas.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, actions were taken to avoid and minimize ROW impacts. The Proposed Action would follow the existing gravel Alternative Truck Route south of U.S. 50, minimizing acquisition of private property in this location. The north interchange was shifted to avoid the majority of the building structures that surround the current intersection of U.S. 287/U.S. 50 with CR 196, near the KLMR curve.

Actual ROW acquisitions will be determined during final design, and opportunities to further minimize ROW needs for the project will be explored.

Mitigation. For any person(s) whose real property interests may be impacted by this project, the acquisition of those property interests will comply fully with the Uniform Relocation Assistance and Real Property acquisition Policies Act of 1970, as amended (Uniform Act). The Uniform Act is a federally mandated program that applies to all acquisitions of real property or displacements of persons resulting from federal or federally assisted programs or projects. It was created to provide for and ensure the fair and equitable treatment of all such persons. To further ensure that the provisions contained within this act are applied "uniformly," CDOT requires Uniform Act compliance on any project for which it has oversight responsibility regardless of the funding source. Additionally, the Fifth Amendment of the U.S. Constitution provides that private property may not be taken for a public use without payment of "just compensation." All impacted owners will be provided notification of the acquiring agency's intent to acquire an interest in their property including a written offer letter of just compensation specifically describing those property interests. A ROW specialist will be assigned to each property owner to assist them with this process (CDOT, 2008).

In certain situations, it may also be necessary to acquire improvements that are located within a proposed acquisition parcel. In those instances where the improvements are occupied, it becomes necessary to "relocate" those individuals from the subject property (residential or business) to a replacement site. The Uniform Act provides for numerous benefits to these individuals to assist them both financially and with advisory services related to relocating their residence or business operation. Although the benefits available under the [Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, (Uniform Act)] are far too numerous and complex to discuss in detail in this document, they are available to both owner occupants and tenants of either residential or business properties. In some situations, only personal property must be moved from the real property, and this is also covered under the relocation program. As soon as feasible, any person scheduled to be displaced shall be furnished with a general written description of the displacing agency's relocation program that provides, at a minimum, detailed information related to eligibility requirements, advisory services and assistance, payments, and the appeal process. It shall also provide notification that the displaced person(s) will not be required to move without at least 90 days advance written notice. For residential relocatees, this notice cannot be provided until a written offer to acquire the subject property has been presented, and at least one

comparable replacement dwelling has been made available. Relocation benefits will be provided to all eligible persons regardless of race, color, religion, sex, or national origin. Benefits under the [Uniform] Act, to which each eligible owner or tenant may be entitled, will be determined on an individual basis and explained to them in detail by an assigned ROW Specialist (CDOT, 2008).

Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Acquire 385.30 acres of private property, including one residence and three businesses.	• All property acquisition and relocation shall comply fully with the federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
	Acquire 125.30 acres of county land and 5.77 acres of city land.	• CDOT will develop an IGA with Prowers County and the City of Lamar detailing the land exchange regarding the relinquishment of the existing gravel Alternative Truck Route and portions of U.S. 287 and U.S. 50. Transfer of titles from one public agency to the other will occur, as denoted in the IGA.
	Acquire 1.35 acres of State Land Board land.	• All property acquisition and relocation shall comply fully with the federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
	Acquire 11.43 acres of land from the Port of Entry.	• CDOT will execute an IGA with the Colorado Department of Revenue to detail the relocation of the Port of Entry facilities.

3.3.8 Environmental Justice

As stated in Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (*1994), "Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Environmental justice issues occur when minority and/or low-income populations bear a disproportionate impact of a proposed action when compared to non-minority and/or non-low-income populations. There are three fundamental environmental justice principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects (including social and economic effects) on minority and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations (FHWA, 2000).

To determine whether a project will have a disproportionately high and adverse effect on minority and low-income populations, the analysis must first evaluate whether impacts from the project would be predominantly borne by minority and low-income populations. It must then factor in offsetting benefits and proposed mitigation to determine whether impacts to these populations are disproportionately high and adverse.

The analysis that follows has been prepared in accordance with *FHWA Guidance on Environmental Justice and NEPA* (FHWA, 2011), and Section 9.15 of CDOT's *National Environmental Policy Act Manual* (CDOT, 2011c).

Current Conditions

The study area for environmental justice (shown in Figure 3-6) encompasses a 0.5-mile radius around the project footprint and the existing U.S. 287 and U.S. 50 alignments, which includes Lamar. The study area was selected because most of the environmental effects resulting from the Proposed Action are expected to occur within this area.

Minority populations are described by race and ethnicity using data from the 2010 U.S. Census at the census block level. As defined in FHWA Order 6640.23 (FHWA, 1998), a minority is a person who is Black, Hispanic, Asian American, American Indian, or Alaska Native. Minority populations are compared to county statistics and identified in census blocks where the percentage exceeds that of Prowers County (37 percent). Census blocks where minority populations exceed 37 percent are shown in Figure 3-6.

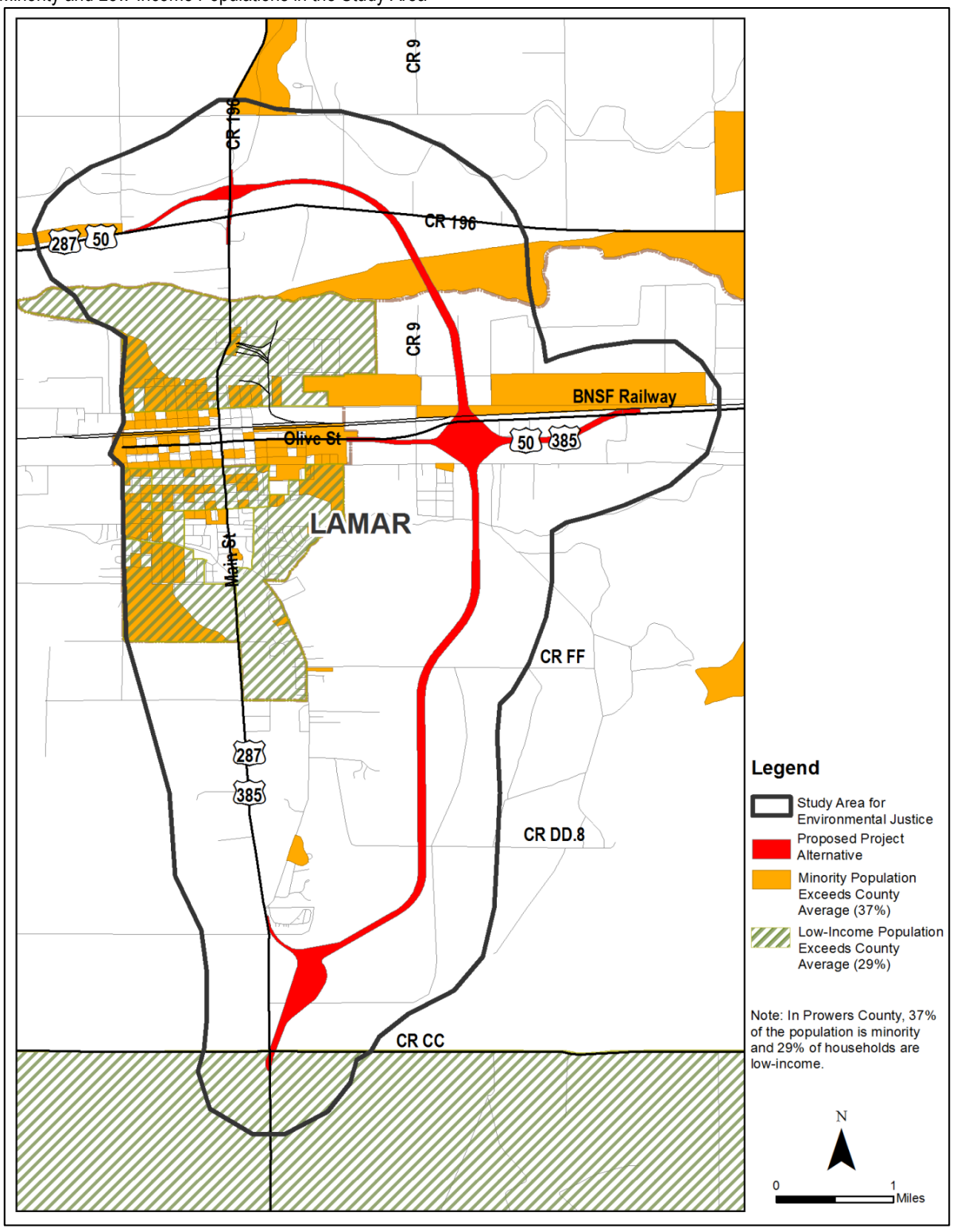
CDOT's environmental justice guidelines (CDOT, 2004) recommend defining low income using a combination of the U.S. Census average household size data and the income limits set annually by the U.S. Department of Housing and Urban Development for identifying housing needs. The analysis uses income limits set at 30 percent of the Area Median Income and adjusts them for household size within the study area (the average household size in Prowers County is 2.48). Applying this methodology, low income is defined for this analysis as households earning less than $20,000 per year.

The census block group is the smallest geographical unit for which income data are reported by the U.S. Census Bureau. Low-income populations are compared to county statistics and identified in census block groups where the percentage of low-income households exceeds that of Prowers County (29 percent). Census block groups where the percentage of low-income households exceeds 29 percent are shown in Figure 3-6.

It is important to note that population within the study area is concentrated in Lamar. Approximately 12 residences are scattered along the existing gravel Alternative Truck Route between CR CC and CR 196, but none of these are located in census blocks or block groups where minority or low-income populations have been identified.

During the EA process, CDOT sponsored five public meetings in several locations, including the Lamar community building and a local church; newspaper ads and invitations included key information in Spanish.

FIGURE 3-6
Minority and Low-Income Populations in the Study Area



Impacts of No Action Alternative

Under the No Action Alternative, displacement of minority and/or low-income residents, businesses, and employees is expected to be none or minimal. Congestion and high volumes of truck traffic downtown would persist, affecting the overall population, including minority and low-income residents in and around downtown Lamar. Residents along the county-owned truck-reliever route would continue to be affected by fugitive dust generated by the gravel roadway.

The effects of the No Action Alternative would not be borne by any particular segment of the population, and both minority and low-income and non-minority and non-low-income populations would be affected to the same extent. Therefore, the No Action Alternative would not cause disproportionately high and adverse effects on any minority or low-income populations.

Impacts of Proposed Action

The Proposed Action would not result in adverse effects to minority or low-income neighborhoods, community facilities, or community cohesion. Direct, construction-related impacts such as noise, fugitive dust, detours, and travel delays would be concentrated along the new reliever route between CR CC and CR 196, where no established neighborhoods exist and minority and low-income populations do not exceed county averages. Residents along the reliever route would benefit from the reduction in fugitive dust that would result from paving the existing gravel roadway.

The Proposed Action would require relocation of one residence and three businesses (a gun and pawn shop, a machine shop, and a cattle feedlot). The residence identified for relocation is not located in census blocks or block groups where minority or low-income populations have been identified.

In August 2007, the owners of the three businesses that would be relocated as part of the Proposed Action were surveyed regarding business operations, the reliance of their business on highway travelers, and to gather information on minority or low-income employees or owners to support the environmental justice analysis (CH2M HILL, 2007b). These businesses are all still in operation at the same location in 2012. The owners of two of these businesses chose not to respond to questions regarding minority ownership and employment (together these two businesses employ six persons). The third business chose not to respond to questions regarding minority employment, and it is not minority-owned; the business employs six persons. None of the businesses identified for relocation provides services that are of unique importance to minority or low-income communities. Further discussion on property acquisition and business relocation is provided in Section 3.2.1, *Local Economy,* and Section3.3.7, *Right-of-Way*.

The removal of many trucks and most hazardous materials carriers from the center of the city would benefit neighborhoods in Lamar by improving safety and mobility for vehicles and pedestrians on Main Street. Students attending Lamar Middle School and Parkview Elementary would experience improved safety at the unsignalized school crossings. The improved mobility across Main Street would also improve community cohesion by making connections between neighborhoods and facilities on each side of Main Street easier. The benefits of improved local travel and local safety would be realized in both minority and low-

income and non-minority/non-low-income neighborhoods along Main Street and Olive Street in the City of Lamar.

The Proposed Action would provide an opportunity for the community to enhance the business environment in downtown Lamar by removing heavy truck traffic and other through-traffic, improving travel and parking conditions for local traffic accessing businesses in Lamar. Additionally, U.S. 287 and U.S. 50 intersection/interchange on the reliever route would be a hub for the Ports-to-Plains Trade Corridor, which could benefit the local economy. These potential benefits would be distributed throughout the general population including minority and low-income segments of the population.

The Proposed Action could indirectly affect existing highway-dependent businesses on Main Street—such as convenience stores, lodging, and restaurants—by diverting a portion of their customer base to the reliever route. Businesses that depend heavily on through-traffic could experience a loss in sales, and some of those businesses could close. Some businesses may relocate out of downtown Lamar to be nearer their customers along the reliever route in Prowers County. However, the avoidance, minimization, and mitigation measures described in Section 3.2.1, *Local Economy*, would reduce the severity of these impacts, and any reduced sales at highway-dependent businesses in Lamar would likely be offset by an improved business climate for destination businesses resulting from the reduction in trucks and other through-traffic on Main Street.

Based on the above discussion, the Proposed Action will not result in disproportionately high and adverse effects on minority and/or low-income populations in accordance with the provisions of EO 12898 and FHWA Order 6640.23. No further environmental justice analysis is required.

Mitigation of Proposed Action

Because the Proposed Action would not cause disproportionately high and adverse effects on any minority or low-income populations, no mitigation measures specific to environmental justice are needed.

3.4 Water Resources

This section discloses potential impacts to irrigation facilities, floodplains, water quality of surface waters and ground water, and wetlands.

The project area is located in the Arkansas River basin. The Arkansas River flows from west to east through the north end of the study area. One of its tributaries, Willow Creek, flows south to north through the study area, generally paralleling the existing U.S. 287 alignment in the south half of the study area before turning east to parallel the existing U.S. 50 alignment east of Lamar. Willow Creek has been channelized north of the BNSF Railway railroad tracks and U.S. 50. Multiple irrigation facilities carry water from the Arkansas River and its tributaries to farmland in the study area. Groundwater is the primary source of drinking and irrigation water for Lamar and Prowers County. Two water treatment plants northeast of the study area supply water for municipal and industrial use within the study area.

3.4.1 Irrigation

Current Conditions

Irrigation facilities are necessary to sustain many farming operations in semi-arid southeastern Colorado. Seven irrigation canals and ditches are located in the study area, as shown in Figure 3-7. All of the irrigation facilities in the study area are privately owned and serve farms and ranches in and near Lamar. Several ditches provide suitable habitat for the state threatened Arkansas darter (see Section 3.5.1). The Fort Bent and Hyde canals are eligible for the National Register of Historic Places (NRHP) (see Section 3.6.1).

The Fort Bent Canal crosses U.S. 287 immediately south of the city, while the Lamar Canal crosses U.S. 287 immediately north of the city and then crosses U.S. 50 just east of the city. An unnamed ditch spurs off of the Lamar Canal, crosses the reliever route study area, and continues north of U.S. 50 as it continues east. The Hyde Canal spurs off of the Arkansas River north of the city and heads northeast, crossing the reliever route study area. The Vista Del Rio Ditch crosses under U.S. 287 in the vicinity of the Port of Entry and parallels CR 196 for approximately 2.5 miles where it then crosses under CR 196 and joins the Hyde Canal. The Markham Arroyo enters the study area from the north, crossing the reliever route study area and existing CR 196, and joins the Hyde Canal. The Amity Canal crosses CR 196 in the northern portion of the reliever route study area.

Irrigation Canal in the Study Area

The ditches and canals receive their water from the Arkansas River, nearby creeks, surface seeps, irrigation return flow, and surface water runoff. Water quality varies in these water bodies depending on the water source and time of year. Higher flow rates are maintained during the growing season. The Lamar Canal is reported to carry water throughout the year, while the Hyde and Fort Bent canals are typically dry during parts of the winter (Smith Environmental, Inc., 2002).

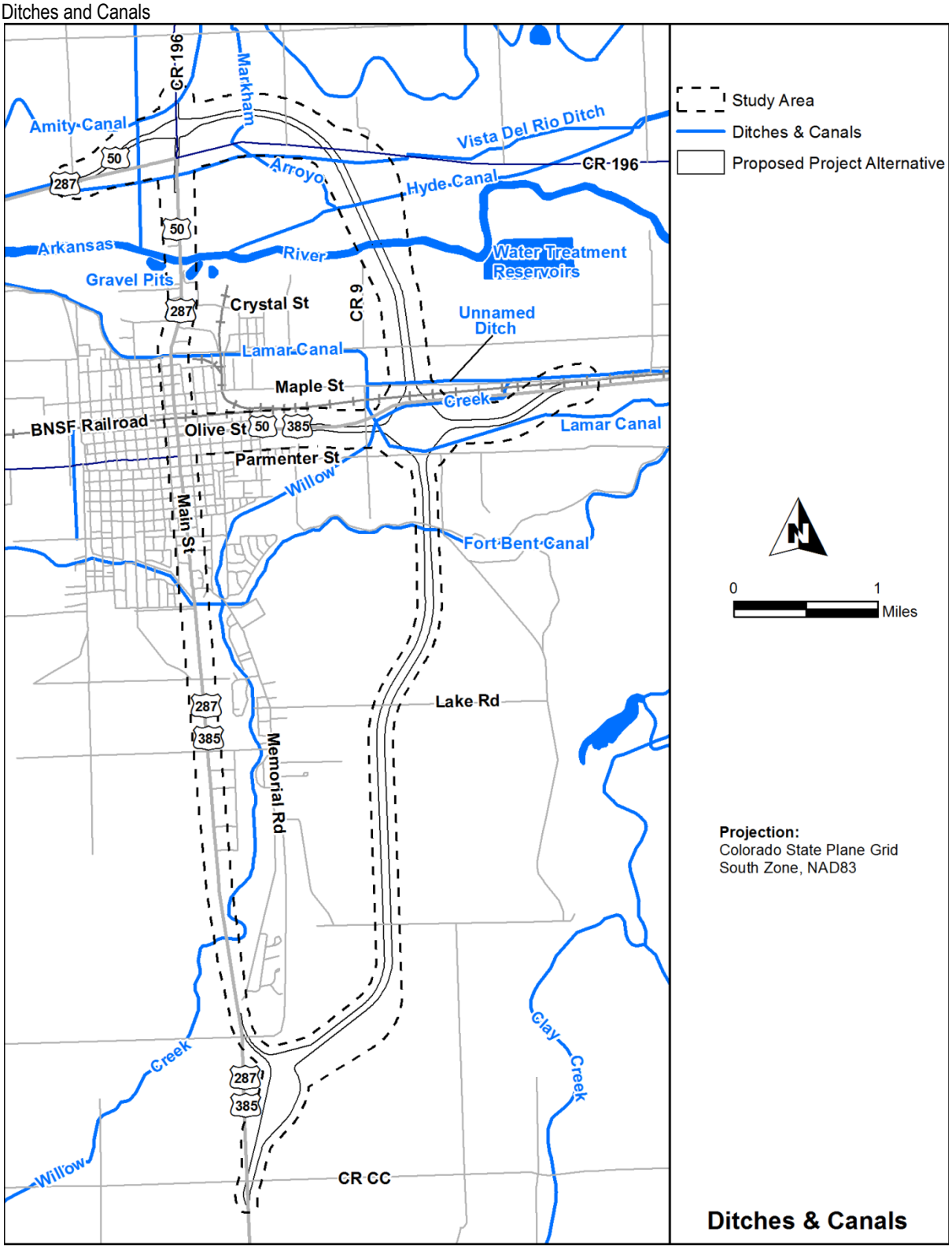
Impacts of No Action Alternative

The No Action Alternative would not include construction in or near the ditches or canals in the study area and would not impact irrigation facilities or affect system conveyance or delivery.

Impacts of Proposed Action

The Proposed Action would require new crossings of Hyde Canal, Vista del Rio Ditch, Markham Arroyo, and the unnamed ditch. Constructing the reliever route also would expand existing crossings of the Fort Bent Canal and Lamar Canal south of U.S. 50. The north interchange would avoid impacts on the Amity Canal. In all cases, the project would include structures to cross the irrigation facilities, preserve conveyance capabilities, and allow continued delivery. The type and character of the structures may include box culverts, pipes, or small bridge structures, and these design decisions would be made during final design.

FIGURE 3-7
Ditches and Canals



Access to and travel along the canals would be maintained for ditch riders. During construction of the irrigation crossings, water delivery could be temporarily interrupted. Section 3.4.5, *Wetlands and Riparian Areas*, describes impacts to wetland fringes and riparian habitat along the irrigation canals.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, the north interchange was positioned to avoid encroaching on the Amity Canal. Opportunities to minimize impacts to ditches and canals will be researched and considered during final design.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Potential for interrupted water delivery during construction.	• CDOT will coordinate with affected ditch companies to provide alternate conveyance systems or stage construction to avoid and/or minimize interrupting water delivery.
	Construct new crossings of Hyde Canal, Vista del Rio Ditch, Markham Arroyo, and the unnamed ditch and expand existing crossings of Fort Bent Canal and Lamar Canal south of U.S. 50.	• CDOT will design and construct structures to cross irrigation facilities, preserve conveyance capability, and allow uninterrupted delivery. • Permanent access to and travel along the canals will be maintained for ditch riders. • CDOT will coordinate design development with ditch companies to ensure compatibility with their system requirements.

3.4.2 Floodplains

Current Conditions

The project study area crosses two waterways for which the Federal Emergency Management Agency (FEMA) has delineated regulatory floodplains: the Arkansas River and its tributary Willow Creek. Any changes to these floodplains from the Proposed Action that would result in a rise of greater than 1 foot over base flood elevation (BFE) would have to be mitigated.

The Arkansas River flows from west to east through the study area. The existing U.S. 287/U.S. 50 roadway crosses the Arkansas River just north of the city limits. This bridge generally conveys the 100-year flow. The Arkansas River has a long history of large floods throughout the last century, including in 1965 when a U.S. Geological Survey (USGS) gauge at the city recorded a flow rate of 72,800 cubic feet per second (cfs), which translated into a flood depth of approximately 19 feet, 14 feet above the normal 5- foot depth.

Willow Creek flows generally southwest to northeast and passes through portions of the city. Between its crossings under existing U.S. 287 south of Lamar and U.S. 50 east of the city, Willow Creek is intersected by approximately 20 small bridges and culverts. Through the reliever route study area, Willow Creek has undergone substantial improvements, which are discussed later in this section. The flood history of Willow Creek is not well documented.

In addition to the regulatory floodplains, a regulatory floodway has been designated for a portion of Willow Creek within the city. The floodway is that portion of the floodplain that conveys the majority of the flow, where the flood hazard is the greatest, and where the water depths and velocities are the highest. The reliever route study area does not encroach on the floodway, and the floodway does not impact the existing U.S. 287 or U.S. 50 alignments. No other regulatory floodways exist within the reliever route study area.

The available floodplain data come from a 1982 FEMA Flood Insurance Study (FIS) that produced both a Flood Insurance Rate Map (FIRM) delineating the Arkansas River and Willow Creek floodplains and a Flood Boundary and Floodway Map delineating the Willow Creek floodway within the city limits. In older floodplain studies, FEMA separated the floodplain and floodway delineations into separate maps. The floodplain outside the city limits is shown on a county FIRM that does not include the city floodplain information. Because the reliever route study area crosses both city and county lands, both the city and county maps were used when considering impacts to floodplains. Figure 3-8 shows the existing regulatory floodplain limits in the area.

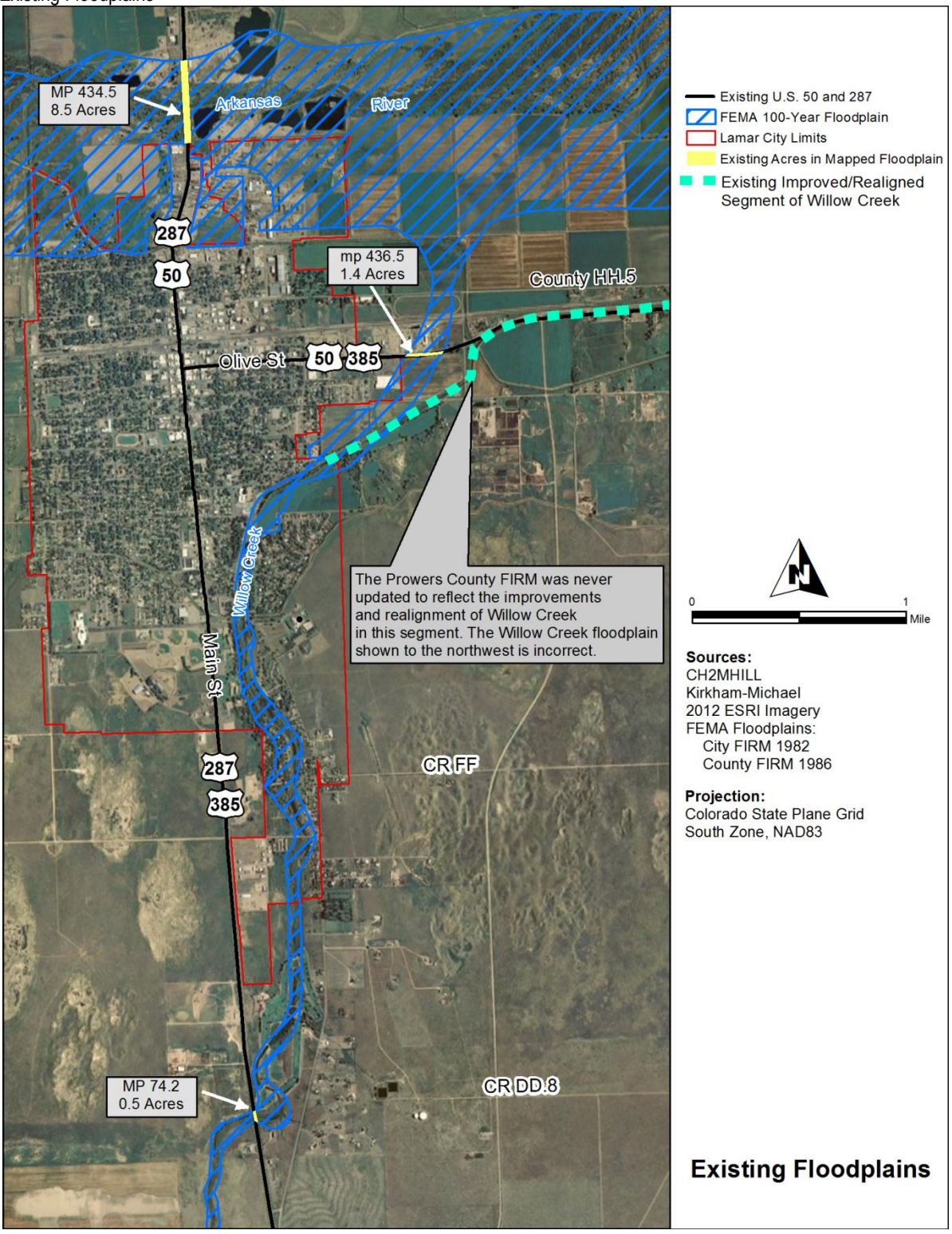
Several flood control improvements were constructed along Willow Creek prior to the published date of the 1982 FIS. These improvements included a levee along the north bank of the creek that helps prevent floods from flowing north into the city; channel excavation; and channel re-grading/realignment. There are no available records that indicate whether the Willow Creek levee is provisionally accredited by FEMA. Although these improvements were completed by the city, much of the improved creek area is east of the city limits. The Willow Creek improvements east of Lamar are not reflected in the county FIRMs. As a result, the Willow Creek floodplain is not correctly shown on the available county FIRM. Figure 3-8 shows the existing alignment of Willow Creek. Despite these improvements, the existing conditions model created as part of this EA indicated the existing Willow Creek channel is not capable of containing the 100-year flood.

The 1982 FIS published a peak 100-year flow rate within this reach of Willow Creek of 12,800 cfs, and a peak 100-year flow rate of 40,000 cfs for the Arkansas River at Lamar. FEMA is currently in the process of updating both the FIRMs and FIS in a county-wide Prowers County flood study. The preliminary FIRMs for the Arkansas River and Willow Creek floodplains in the reliever route area are not expected to be available until 2013. The updated FIRM should reflect the Willow Creek improvements and revise the delineation of the Willow Creek floodplain in the reliever route area. It is also likely the new FEMA study will revise the limits of the Arkansas River floodplain and designate a regulatory floodway.

Impacts of No Action Alternative

Under the No Action Alternative, the existing crossings of the Arkansas River and Willow Creek would remain in place, and no impacts to the Arkansas River or Willow Creek floodplains would occur. The existing U.S. 287/U.S. 50 Arkansas River Bridge would remain in the floodplain at its current location, as would the U.S. 287 crossing of Willow Creek south of the city and the U.S. 50 crossing east of Lamar (see Figure 3-8 for existing floodplain acreage).

FIGURE 3-8
Existing Floodplains



When infrastructure projects affect floodplain boundaries, floodplain map revisions occur to document the revised boundaries. Because the No Action Alternative would not affect floodplain boundaries, it would not provide an opportunity to resolve the inconsistency in the Willow Creek floodplain delineation between the effective FEMA data and the existing conditions.

Impacts of Proposed Action

Arkansas River Floodplain. The Arkansas River floodplain is nearly 1-mile wide at the location of the proposed bridge. Given the width of the floodplain and limitations of bridge span lengths, the Proposed Action would require placement of fill within the Arkansas River floodplain for roadway approaches to the new bridges over the river. The Proposed Action would result in 33 acres of the new alignment within Arkansas River floodplain. New impervious surface area would increase stormwater runoff into the river as well, as described in Section 3.4.3. FEMA floodplain regulations allow fill to be placed within the limits of the regulatory floodplain provided the resulting fill does not encroach on a designated floodway or cause a rise in the water surface elevations greater than 1 foot. The Arkansas River does not have a designated floodway in this location. Hydraulic analysis of the conceptual design indicates the rise in water surface elevation would be less than 1 foot, as described below and shown in Table 3-9.

TABLE 3-9
Comparison of Arkansas River 100-Year Base Flood Elevations

Location along Arkansas River	100-Year Discharge[1] (cubic feet per second)	Existing Conditions and No Action Water Surface Elevation (feet)	Proposed Action Water Surface Elevation (feet)	Computed Difference (feet)
4,900 feet downstream of proposed bridge (model Section 8)	40,000	3,598.01	3,598.01	0.00
3,300 feet downstream of proposed bridge (model Section 9.1)	40,000	3,601.67	3,601.67	0.00
Immediately downstream of proposed U.S. 287 bridge	40,000	3,606.30	3,606.56	0.26
Immediately upstream of proposed U.S. 287 bridge	40,000	3,606.48	3,607.03	0.55
1,500 feet upstream of proposed bridge (model Section 9.5)	40,000	3,607.99	3,608.21	0.22
2,750 feet upstream of proposed bridge (model Section 10, FEMA Section A)	40,000	3,609.33	3,609.39	0.06
5,400 feet upstream; immediately downstream of abandoned railroad bridge remnants (Model Section 30)	40,000	3,611.43	3,611.44	0.01

Notes:

1. 100-year discharge based on FEMA effective model.

Source: Kirkham Michael, 2004. *Arkansas River Crossing at Lamar, Colorado for the Proposed US 287 Bypass: 100-Year Flows and Water Surface Elevations*. June 15.

If, during the final design, it is found that the project would cause greater than a 1-foot rise in the BFE or if a regulatory floodway has been designated by the new FEMA study, then a Conditional Letter of Map Revision (CLOMR) application would be submitted to FEMA. Figure 3-9 shows the location of the reliever route in relation to the existing FEMA Arkansas River floodplain.

As shown in Table 3-9, the proposed bridges would result in a slight rise in the BFE upstream of the bridge in the immediate vicinity of the proposed crossing. The maximum increase in flood elevations would be 0.55 foot, well within the allowable limits (less than 1-foot rise in flood elevation) for encroachment into a regulatory floodplain where no floodway is designated. Table 3-9 also shows that the effects of the bridges on the flood elevations would diminish farther upstream. At 5,400 feet upstream of the proposed bridges, the water surface elevations with and without the proposed structure would differ by less than 0.1 foot. This indicates that the proposed U.S. 287 bridges would have a negligible effect on the flood elevations on the Arkansas River beyond approximately 1 mile upstream.

The floodplain limits would be affected by the proposed bridge structures and would correspond to the increase in flood elevations immediately upstream of the bridges. Within the area of the increase in flood elevations, no structures or new properties not previously within the floodplain would be affected. The increase in flood elevations would only affect undeveloped and agricultural land immediately adjacent to the existing floodplain. The effects consist of a small increased area of very shallow flooding up to a maximum depth of approximately half a foot. The increase in flood elevations would be less during the interim phase because only one of the bridges would be in place, carrying a single two-lane roadway across the Arkansas River.

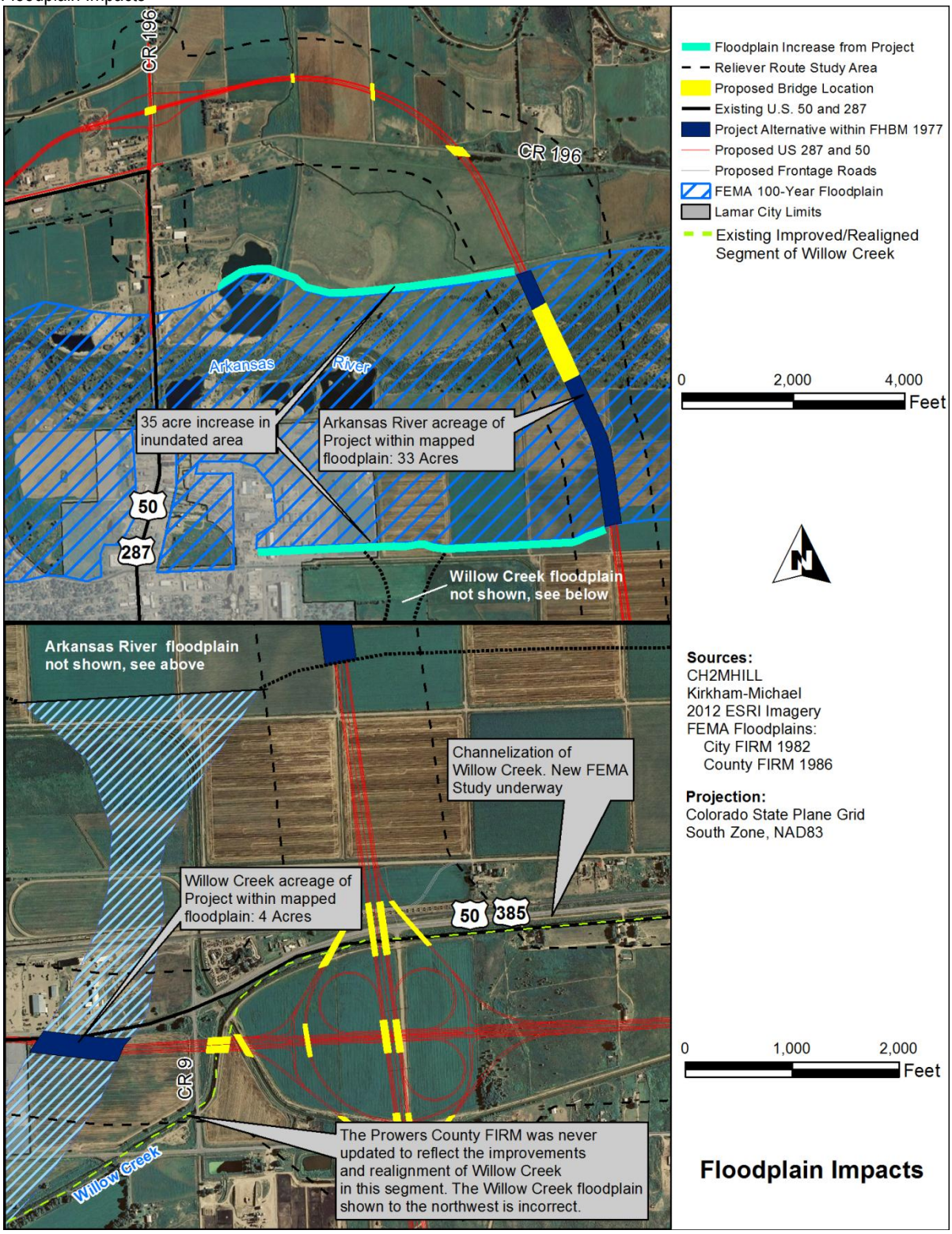
The existing U.S. 287 bridge over the Arkansas River would remain in place and would convert to City of Lamar ownership and maintenance. No impacts to the Arkansas River floodplain would occur in the location of the existing bridge.

Willow Creek Floodplain. The Proposed Action would cross Willow Creek at four locations: the realigned U.S. 50 crossing, the U.S. 287 mainline crossing, and the northbound on-ramp and the southbound off-ramp of the east interchange. The Proposed Action would result in 4 acres of the new alignment within Arkansas River floodplain. Figure 3-9 shows the location of the reliever route in relation to the existing FEMA Willow Creek floodplain.

The Willow Creek structures for the U.S. 287 mainline and ramps are proposed to be bridges. These structures would be multi-purpose, spanning the creek, the adjacent BNSF Railway tracks, and the realigned portion of CR HH.5. These structures would not impact Willow Creek or its floodplain at these crossing locations. They would be designed to convey the 100-year flow rate with no rise in the water surface elevations and, therefore, would have no effect on the Willow Creek floodplain.

The Willow Creek structure for the realigned U.S. 50 crossing may consist of either a bridge or a box culvert. Specific decisions about the structure type would be made during final design; however, the structure would be designed to pass the 100-year flow rate of 12,800 cfs without an increase in water surface elevation. Therefore, this structure would have no impact on the Willow Creek floodplain.

FIGURE 3-9
Floodplain Impacts



A CLOMR application would be submitted to FEMA to address and resolve the inconsistency in the mapped regulatory floodplain limits along Willow Creek, thereby providing a more accurate delineation of the floodplain through the project study area. During final design, surveyed channel cross-sections would be obtained to extend the hydraulic model developed during the 1982 FIRM study downstream through the project area. The resulting floodplain delineation would provide the community a better, more accurate tool for regulating development along the Willow Creek floodplain in the future. The revised floodplain delineation would also likely result in removing some property from the regulatory floodplain for Willow Creek that is presently included, especially for the agricultural land north of U.S. 50.

Mitigation of Proposed Action

Avoidance and Minimization. Several steps were taken to avoid and minimize floodplain impacts resulting from the Proposed Action. The new Arkansas River bridge was sited in the best location to minimize effects on the 100-year floodplain limits and flood elevations. The conceptual design follows applicable FEMA guidelines for limiting BFE changes due to bridges, roadway embankment fills, and hydraulic structures. Impacts to the Willow Creek floodplain were avoided by reducing the number of structures where practicable, and making sure the design will convey the 100-year flow rate. During final design, opportunities to minimize fill in the Arkansas River and its banks and to minimize number and size of bridge piers will be studied and considered.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Constructing and operating the new alignment and river/stream crossings would disturb the Arkansas River floodplain and result in a minor rise in the Arkansas River BFE. New structures would be constructed in or adjacent to the Willow Creek floodplain.	• Survey cross-sections of the Arkansas River to refine the FEMA effective model and proposed conditions models produced for this study. • Design new bridges/structures to have capacity for the 100-year flow rate and provide the required freeboard to meet design criteria and regulatory requirements. • Design new bridges to reduce the number and size of piers required in the floodplain, thereby minimizing impacts to the stream channel and adjacent riparian areas. • Obtain from FEMA a CLOMR for Willow Creek during preliminary engineering to resolve inconsistency in mapped regulatory floodplain limits, and a Letter of Map Revision (LOMR) after construction is complete. • During final design, evaluate whether permanent water quality features and BMPs, consistent with the guidelines set by the CDOT New Development and Redevelopment Program, can be provided along Willow Creek in the project to enhance flood control.

3.4.3 Surface Water

Current Conditions

Surface waters surrounding the study area consist of the Arkansas River, Willow Creek (a tributary of the Arkansas River), and irrigation ditches, as previously described in Section 3.4.1. A pair of water treatment reservoirs northeast of the study area supplies municipal and industrial demands. The banks of the Arkansas River north of Lamar are dotted with gravel pits and feedlots (see Figure 3-7). Much of the land around Lamar in the Arkansas River watershed is used for agricultural production and, therefore, is subject to application of fertilizers, pesticides and herbicides, and other chemicals. As a result of these industrial and agricultural practices, the Arkansas River in the study area and to the east has high salinity. In addition, the segment of the Arkansas River within the study area has been determined to be impaired due to levels of dissolved selenium and dissolved uranium, and has been listed on the 303(d) list for these parameters. These two parameters are frequently found in waterways throughout Colorado due to naturally occurring sources, specifically from groundwater and/or exposed geologic sources. This segment of the Arkansas River is classified by the state as Class 2 Warm Water Aquatic Life, Class E Recreation, Domestic Water Supply, and Agriculture.

Water Quality Classes

Class 2 Warm Water Aquatic surface waters are not capable of supporting a wide variety of biota due to physical habitat, water flows or levels, or uncorrectable water quality conditions.

Class E Recreation surface waters are used for primary contact recreation or have been used for such activities since November 28, 1975.

Low flows of less than 100 cfs generally occur from October through April and high flows of greater than 100 cfs generally occur from May through September. This seasonal trend is driven by both high runoff and also controlled releases from upstream reservoirs. Streamflow plays an important role in water quality. The level of dissolved solids generally increases as the flow rate decreases. Willow Creek is typically not as saline as the Arkansas River.

The city owns surface water rights in the Fort Bent Ditch Company, the Lamar Canal Company, and the Lower Arkansas Water Management Association. Two storage tanks, with an 8 million gallon storage capacity, are located southeast of Lamar. A water treatment facility, located to the northeast, was constructed in 2010. The wastewater system pumps wastewater into treatment lagoons, which following treatment, infiltrates back into the groundwater system.

The Bureau of Reclamation is planning the New Arkansas Valley Conduit (AVC) project, which would provide a pipeline to convey cleaner drinking water to the area in and around Lamar. The conduit, once constructed, would provide higher-quality drinking water to municipal entities in the Arkansas River Valley, east of Pueblo Reservoir.

In more heavily developed areas, stormwater runoff from impervious surfaces also contributes to water quality degradation. Impervious surfaces are hard surfaces such as asphalt, concrete, rooftops, and highly compacted soils. These surfaces prevent rainwater from entering into the soil and force it instead to travel along the ground, carrying with it pollutants that are then discharged directly to a water body. In Prowers County, stormwater runoff is less of a concern because development is sparse, and agricultural practices are the

primary contributors to surface water pollution. However, CDOT does perform winter snow removal on its roadways in Prowers County. This winter maintenance includes a mixture of sand/salt, Ice Slicer™ (sodium chloride), and liquid anti-icing or de-icing agents (magnesium chloride). These maintenance activities can have an impact on the quality of stormwater runoff.

Impacts of No Action Alternative

The No Action Alternative would not generate additional impervious surface or involve construction in or near surface water in the study area. Therefore, no impacts to surface water or water quality beyond the current condition would occur. No new water quality treatment features, such as detention ponds or swales, would be constructed. Stormwater runoff from U.S. 287 and U.S. 50 would continue to discharge directly into receiving waters, without treatment for pollutants or sediment. Water flow in the Arkansas River could change from accumulating and releasing water from reservoirs as a result of the AVC project. These changes in flow could in turn affect water quality and aquatic life.

Impacts of Proposed Action

The Proposed Action would construct or modify eight water crossings and would construct new impervious roadway surfaces. The largest water crossing would be a 1,400-foot bridge over the Arkansas River. Other crossings of Willow Creek and irrigation canals and ditches would consist of small bridges, box culverts, or concrete pipes. Details of all crossings would be developed during final design. Bridges and culverts have the potential to change hydraulics in the watercourses and affect water quality downstream by concentrating deck runoff, increasing scour, and accumulating debris.

The Proposed Action would construct nearly 10 miles of new roadway. Although the interim phase of the reliever route would be only two lanes, the route would ultimately be expanded to four lanes. The interim two-lane reliever route would result in approximately 50 acres of new impervious surface area and the ultimate four-lane reliever route would result in approximately 90 acres of new impervious surface from the current condition. CDOT would perform winter snow removal on the reliever route. The new impervious surface would increase the annual stormwater runoff volume to about 64 acre-feet for the interim phase and about 114 acre-feet for the ultimate condition. This is a conservative estimate assuming average precipitation of 15.2 inches (National Weather Service data for Lamar, Colorado) and that all precipitation falling on the impervious area results in runoff.

Roadway projects impact surface water bodies due to construction activities and increased pollutant loadings in the roadway runoff. Levels of pollutants in roadway runoff are influenced by many factors such as meteorological, hydrological, and geological conditions and land use practices. The quantity of flow is characterized by amount, frequency, intensity, duration, and pattern of precipitation. Increased traffic volumes, congestion, and impervious roadway surfaces lead to an increase in highway pollutant levels in stormwater runoff. Infrequent precipitation also results in buildup of higher pollutant concentrations.

Without treatment, the runoff and winter maintenance activities would increase sediment loading and concentrations of a variety of metals and petroleum-based contaminants discharging into surface waters. Table 3-10 lists the potential pollutants and the sources of those pollutants that could increase as a result from roadway runoff. As part of the design

process, the water quality impacts will be modeled to determine appropriate permanent water quality BMPs. Based on this modeling evaluation, water quality BMPs will be included as part of the final design even though the area is not located within a regulated Municipal Separate Storm Sewer System (MS4) area.

TABLE 3-10
Sources of Pollutants in Roadway Runoff

Source	Pollutants
Leaks, spills, accidents	Oil, gasoline, diesel, grease, VOCs, chemicals, and other potentially hazardous materials
Vehicle traffic	Oils, grease, gasoline, diesel, benzene and derivatives, aromatic hydrocarbons, coolants, rust (iron), heavy metals (lead, zinc, iron, chromium, cadmium, nickel, copper), rubber, and asbestos
Winter sanding	Sediment
Deicing	Calcium, sodium, magnesium, and chloride
Landscape maintenance	Herbicides, pesticides, fertilizers, BOD, alkali, metals, sulfur, and aluminum sulfate
Adhesives	Phenols, formaldehydes, asbestos, benzene, and naphthalene
Cleaners	Metals, acids, alkali, and chromium
Painting	VOCs, metals, phenolics, and mineral spirits

Source: CDOT, 2008.
BOD = biological oxygen demand; VOC = volatile organic compound

The Proposed Action would not impact the water storage tanks, water treatment facility, or wastewater treatment facility.

During construction, soils would be exposed, increasing the risk of erosion and reduced water quality from construction stormwater runoff. Due to the disturbance of earth and the increase in erosion, there is the potential for the stormwater runoff to contain higher levels of dissolved selenium and dissolved uranium. Additionally, any groundwater dewatering activities could also potentially contribute to the dissolved selenium and dissolved uranium levels. BMPs will be implemented to avoid impaired water quality during construction, including, but not limited to, silt fencing, check dams, and diversion ditches. As part of the design process the water quality impacts will be modeled to determine appropriate permanent water quality BMPs. Based on this modeling evaluation, water quality BMPs will be included as part of the final design even though the area is not located within a regulated MS4 area.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, the Arkansas River bridge was located at an optimal perpendicular crossing to minimize the structure's length, thereby reducing deck size and reducing scour. During the final design process, engineers will examine ways to minimize the numbers and size of bridge piers and fill located within the floodplain.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures of the Proposed Action
Stormwater runoff from U.S. 287 and U.S. 50 would continue to be untreated prior to returning to water bodies.	Water crossings could concentrate deck runoff, increase scour, accumulate debris, and cause other similar water quality impacts.	• Design bridge features to provide maximum water quality protection, including size and location of piers and abutments, and design to minimize scour. These mitigation features will be designed to minimize impact on aquatic habitat. • Treat stormwater runoff from bridge deck using BMPs prior to discharging to adjacent water bodies.
	Increase impervious surfaces.	• Follow CDOT's *Specification for Road and Bridge Construction* to implement temporary and permanent water quality BMPs. • During final design, develop permanent water quality BMPs such as detention ponds or swales to treat runoff before entering surface waters or wetlands, consistent with the guidelines set by the CDOT New Development and Redevelopment Program, to be constructed concurrent with the Proposed Action. The water quality impacts will be modeled to determine the appropriate permanent water quality BMPs.
	New and modified crossings of eight water bodies.	• Obtain a Section 404 permit as necessary from United States Army Corps of Engineers (USACE) for proposed bridges and wetland impacts associated with waters of the United States. • Submit a Pre-Construction Notification Letter to the USACE during final design to document the design of the proposed bridge and roadway approaches.
	Stormwater runoff from construction activities.	• During construction, implement BMPs to protect water quality, including installing silt fences, maintaining sufficient distance between soils stockpiles and water bodies, and similar actions. • Obtain Colorado Discharge Permit System (CDPS) permit from CDPHE for stormwater discharges associated with construction activities. The CDPS will require the development of a Stormwater Management Plan, to be implemented for the duration of construction.

3.4.4 Groundwater

Current Conditions

Groundwater is the primary source of drinking water and irrigation for Lamar and Prowers County. The region is underlain by a crystalline rock minor aquifer that is permeable only where it is fractured, and generally yields relatively small amounts of water to wells. Twenty-seven groundwater wells exist southeast of Lamar, supplying drinking water from the Clay Creek Alluvial well field (City of Lamar, 2012b). Well depths vary between 10 and 208 feet (USGS, 2012). Turbidity, or the clarity of water, is not an issue for drinking water (City of Lamar, 2011). Finished water pipelines exist throughout the study area.

Impacts of No Action Alternative

The No Action Alternative would not include construction near groundwater wells and would have no effect on the underlying aquifer, groundwater supply, or groundwater quality in the study area.

Impacts of Proposed Action

The Proposed Action is not expected to impact groundwater wells or the underlying aquifer. No wells are located within the Proposed Action reliever route study area, and the construction depth for the roadway and bridges would not be great enough to affect the aquifer. Finished water pipelines do exist in the Proposed Action footprint. CDOT and project engineers would work with city officials in Lamar to prevent impacts to drinking water pipelines.

Mitigation of Proposed Action

Avoidance and Minimization. The Proposed Action is not anticipated to cause impacts to groundwater, and no avoidance and minimization measures are necessary.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Water lines exist within the Proposed Action footprint.	Project engineers will work with Lamar city officials to prevent impacts to utility lines.

3.4.5 Wetlands and Waters of the United States

The term wetlands and other waters of the United States is defined and regulated under Section 404 of the Clean Water Act (CWA). This act defines jurisdictional waters of the United States to include all surface waters such as navigable waters and their tributaries, interstate waters and their tributaries, wetlands adjacent to these waters, and all impoundments of these waters. Wetlands subject to Section 404 regulations include those that are bordering, contiguous, and neighboring to other waters of the United States. The USACE regulates and administers the Section 404 Program through a permitting process that regulates placement of dredged or fill material into waters of the United States. Enforcement of the CWA and Section 404 is the responsibility of the EPA.

Isolated non-jurisdictional wetlands that lack a connection to waters of the United States as defined under Section 404 are considered under Executive Order (EO) 11990, "Protection of Wetlands," which requires federal agencies to avoid and minimize loss of wetlands. FHWA is responsible for compliance with EO 11990. Additional guidance to avoid and minimize impacts to wetlands is identified in FHWA Technical Advisory T 6640.8A.

Regardless of jurisdictional status of a waterway, Senate Bill 40 (33-5-101-107, Colorado Revised Statute 1973 as amended) applies. Senate Bill 40 requires any agency of the state to obtain wildlife certification from the CPW when the agency plans construction in "...any stream or its bank or tributaries..." In this case, CDOT will consult with CPW to ensure the

project considers impacts to aquatic systems, and minimizes or avoids those impacts where practicable.

Wetlands are areas that are periodically or permanently inundated by surface water or groundwater and support vegetation adapted for life in saturated soil. They also provide protection of other areas from wave action and erosion; storage areas for storm water and floodwater; natural recharge areas where groundwater and surface water are interconnected; and natural water filtration and purification functions.

Current Conditions

Several hydrologic features exist within the project area, including five canals, two smaller natural drainage features, two unnamed irrigation ditches, three pond areas, one sub-irrigated open meadow, and the Arkansas River. The five canals consist of Fort Bent Canal, Lamar Canal, Hyde Canal, Vista Del Rio Ditch, and Amity Canal. The two natural drainage features include Willow Creek and Markham Arroyo. Many small private lateral irrigation ditches also exist throughout the project area; they provide water for agricultural purposes, and feed several small ponds scattered throughout the project area.

A detailed survey of wetland and potential waters of the United States (U.S) delineation was conducted, and a Functional Assessment of Colorado Wetlands (FACWet) analysis was completed of all features previously surveyed (2002 and 2003), as well as any additional areas encountered in the field (Pinyon Environmental, Inc. [Pinyon], 2013). A complete wetland delineation report is included in Appendix B - Technical Memoranda. All features surveyed were considered potentially jurisdictional, but no jurisdictional determinations have been completed by USACE.

The majority of water features are characterized as channelized and maintained streambeds, which have varying sizes of wetland fringes. Some of the banks along the water features are stabilized with concrete rip-rap. Flow rates are managed in Lamar Canal, Willow Creek, Hyde Canal, and Vista Del Rio Ditch because they mainly provide irrigation water to nearby farmlands. The Arkansas River and Markham Arroyo in the study area are characterized as higher-functioning water features that support more abundant wetland and riparian fringes as determined by the FACWet field analysis (Pinyon, 2013).

Most of the wetlands are characterized as Palustrine Emergent (PEM) wetlands except for those found along Willow Creek and Amity Canal, which are characterized as Palustrine Scrub-Shrub (PSS) as defined in Cowardin et al. (1979). Vegetation commonly observed in the PEM wetlands includes scratchgrass (*Muhlenbergia asperifolia*), reed canarygrass (*Phalaris arundinacea*), watercress (*Nasturium officinale*), cattail (*Typha latifolia),* curly dock (*Rumex crispus*), saltgrass (*Distichlis spicata*), barnyard grass (*Echinochloa crus-gali*), and common threesquare (*Schoenoplectus pungens)*. Vegetation observed in the PSS wetland areas along Willow Creek and Amity Canal is dominated by sandbar willow (*Salix exigua*).

The Arkansas River is the largest water body in the project area. The wetland areas associated with the Arkansas River are located on sand bars within the channel. The area along the Arkansas River riparian zone appears to have been treated with a broad-spectrum herbicide and then burned prior to the October and December 2012 site visits, presumably in an effort to control tamarisk (*Tamarisk ramosissima*), an invasive/noxious weed. The formerly forested fringe wetlands transition to large cottonwoods (*Populus deltoides*) in the upland riparian

areas. The area immediately adjacent to the Arkansas River is largely comprised of dead coyote willow and tamarisk snags, and is not considered a wetland due to a lack of wetland soil characteristics (Pinyon, 2013).

A FACWet functional assessment of the wetlands and water features was completed to examine the ecological health and function of the wetland areas (Pinyon, 2013). The wetland and water features had an average composite Functional Capacity Index (FCI) score of 0.71 (range 0.66 to 0.85), which ranks as "functioning." The Arkansas River ranked highest with a composite FCI score of 0.85, representing a "fairly natural" system. The main stressor affecting the FCI score was the presence of tamarisk, which is listed as a noxious weed on the Colorado Noxious Weeds Watch List (Colorado Department of Agriculture, 2012a). The primary function of this wetland is short- and long-term water storage, support of characteristic fish/aquatic habitat, and nutrient/toxicant removal.

Segments of the Vista del Rio Ditch and the Hyde Canal ranked second and third highest with a composite FCI score of 0.74 and 0.73, respectively, corresponding to a "functioning" system. The stressors affecting these wetlands include agricultural development and proximity to the Town of Lamar. These stressors affected variables such as water source, water distribution, water outflow, geomorphology, and the chemical environment. The primary function of this wetlands is support of wildlife habitat, production export/food chain support and sediment retention

The lowest rank was shared by Willow Creek, additional segments of the Vista Del Rio Ditch, Lamar Canal, and portions of Amity Canal, each with a composite FCI score of 0.66, representing "functionally impaired" systems. The main stressors causing the lower score were the channelization of Willow Creek, agricultural development in the area, and proximity to the Town of Lamar. These stressors affected variables such as habitat connectivity, buffer capacity, water source, water distribution, water outflow, and geomorphology. The primary functions of these wetlands are wildlife habitat, production export/food chain support, and sediment retention.

Impacts of No Action Alternative

The No Action Alternative would not include new transportation infrastructure or construction and, therefore, would not affect riparian areas, wetlands, or waters of the United States.

Impacts of Proposed Action

Impacts would occur to wetlands, riparian areas, and/or potential waters of the U.S. where new culverts, bridge structures, and the new roadway alignment cross water features. Permanent impacts would be limited to the footprint of the culverts, bridge abutments and piers, and roadway cut and fill limits, and temporary impacts would be limited to construction disturbance areas. Additionally, increased impervious surface would cause increased runoff and associated pollutants, which would affect water quality in potential waters of the U.S. and wetlands.

The Proposed Action would impact Lamar Canal, Willow Creek, the Arkansas River, Hyde Canal, Vista Del Rio Ditch, two pond areas (Ponds #1 and #2), Markham Arroyo, Fort Bent Canal, an unnamed ditch, and the sub-irrigated open meadow (Figure 3-10). Small wetland

fringes along some of the channels would be impacted, but wetland impacts would be limited to the areas immediately around the new crossings. Retaining walls or a similar feature would be constructed at or near the shoulder of the roadway alignment through the sub-irrigated open meadow (WL-9) to reduce impacts in this area.

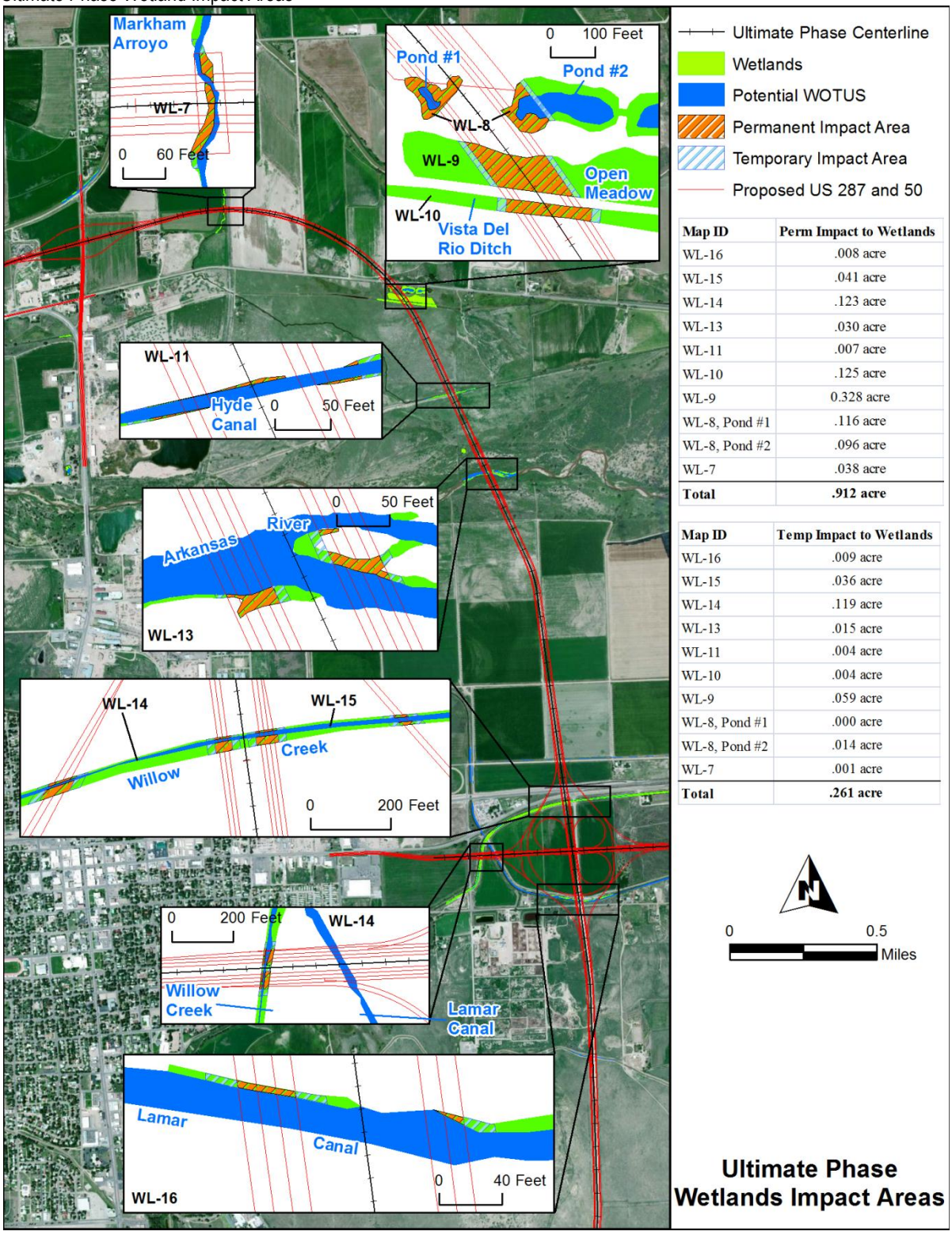
Preliminary information based on conceptual road design indicates a total of 0.912 acre of permanent impacts and 0.261 acre of temporary impacts to wetlands in the ultimate phase. Analysis also indicates 0.379 acre of permanent impacts and 0.121 acre of temporary impacts to potential waters of the U.S. in the ultimate phase (see Tables 3-11 and 3-12). Permanent impacts to potential waters of the U.S. are due to the incorporation of six ditches into culverts and impacts to two pond areas (WL-8).

During the interim phase, as described in Section 2.4.1, the option would exist to build the interim facility in either the southbound or northbound lanes. Depending on whether the northbound or southbound lanes are built during the interim phase, impacts to wetlands and potential waters of the U.S. would vary. If the northbound option is built, preliminary design indicates an impact of 0.433 acre of permanent impact and 0.227 acre of temporary impact to wetlands, and 0.193 acre of permanent and 0.106 acre of temporary impact to potential waters of the U.S. If the southbound option is built, preliminary design indicates 0.466 acre of permanent impact and .210 acre of temporary impact to wetlands, and .170 acre of permanent impact and 0.081 acre of temporary impact to potential waters of the U.S. (see Tables 3-11 and 3-12). Permanent impacts to potential waters of the U.S. result from the incorporation of six ditches into culverts and impacts to two pond areas (WL-8).

The interim phase impacts take into account the area needed for two travel lanes, two 10-foot shoulders, and the adjacent ROW for cut and fill limits for the roadway. The ROW limits for both the northbound and southbound interim alignments extend beyond the center line of the ultimate phase alignment. Therefore, there is some overlap in impacts between the northbound and southbound alignments, where their ROW limits overlap in the center of the ultimate phase alignment. For this reason the northbound and southbound impact quantities do not add up to the ultimate phase impact quantities. Precise acreage impacts will be calculated during final design. Figure 3-10 shows the permanent and temporary impacts to wetland areas in the ultimate phase.

Project impacts would be permitted with the appropriate combination of Nationwide and/or Individual Permits during final design stages.

FIGURE 3-10
Ultimate Phase Wetland Impact Areas



Map ID	Perm Impact to Wetlands
WL-16	.008 acre
WL-15	.041 acre
WL-14	.123 acre
WL-13	.030 acre
WL-11	.007 acre
WL-10	.125 acre
WL-9	0.328 acre
WL-8, Pond #1	.116 acre
WL-8, Pond #2	.096 acre
WL-7	.038 acre
Total	**.912 acre**

Map ID	Temp Impact to Wetlands
WL-16	.009 acre
WL-15	.036 acre
WL-14	.119 acre
WL-13	.015 acre
WL-11	.004 acre
WL-10	.004 acre
WL-9	.059 acre
WL-8, Pond #1	.000 acre
WL-8, Pond #2	.014 acre
WL-7	.001 acre
Total	**.261 acre**

TABLE 3-11
Permanent Impacts to Wetlands and Potential Waters of the U.S.

Water Body	Wetland ID	Northbound Interim Impact (acres)		Southbound Interim Impact (acres)		Ultimate Phase Impact (acres)	
		Wetland	Potential Waters of the U.S.	Wetland	Potential Waters of the U.S.	Wetland	Potential Waters of the U.S.
Vista Del Rio Ditch	WL-1 & WL-2	0	0	0	0	0	0
Amity Canal	WL-3 & WL-4	0	0	0	0	0	0
Vista Del Rio Ditch	WL-5	0	0	0	0	0	0
Unnamed Pond	WL-6	0	0	0	0	0	0
Markham Arroyo (culvert)	WL-7	0.018	0.029	0.025	0.029	0.038	0.039
Pond #1	WL-8	0.035	0	0.116	0.025	0.116	0.025
Pond #2	WL-8	0.096	0.048	0	0	0.096	0.048
Open Meadow	WL-9	0.110	0	0.123	0	0.328	0
Vista Del Rio Ditch (culvert)	WL-10	0.062	0.023	0.066	0.023	0.125	0.053
Hyde Canal (culvert)	WL-11	0.004	0.023	0.003	0.023	0.007	0.053
Arkansas River (bridge)	WL-13	0.016	0	0.014	0	0.030	0
Willow Creek (bridge)	WL-14	0.052	0	0.101	0	0.123	0
Willow Creek (bridge)	WL-15	0.036	0	0.014	0	0.041	0
Lamar Canal (bridge)	WL-16	0.004	0	0.004	0	0.008	0
Lamar Canal (culvert)	no wetland	0	0.024	0	0.024	0	0.055
Fort Bent Canal (culvert)	no wetland	0	0.023	0	0.023	0	0.053
Unnamed Ditch North of Willow Creek	no wetland	0	0.023	0	0.023	0	0.053
Total (acres)		**0.433**	**0.193**	**0.466**	**0.170**	**0.912**	**0.379**

TABLE 3-12
Temporary Impacts to Wetlands and Potential Waters of the U.S.

Water Body	Wetland ID	Northbound Interim Impact (acres)		Southbound Interim Impact (acres)		Ultimate Impact (acres)	
		Wetland	Potential Waters of the U.S.	Wetland	Potential Waters of the U.S.	Wetland	Potential Waters of the U.S.
Vista Del Rio Ditch	WL-1 & WL-2	0	0	0	0	0	0
Amity Canal	WL-3 & WL-4	0	0	0	0	0	0
Vista Del Rio Ditch	WL-5	0	0	0	0	0	0
Unnamed Pond	WL-6	0	0	0	0	0	0
Markham Arroyo (culvert)	WL-7	0.008	0.011	0.007	0.011	0.001	0.011
Pond #1	WL-8	0.010	0	0	0	0	0
Pond #2	WL-8	0.012	0.014	0	0	0.014	0.014
Open Meadow	WL-9	0.081	0	0.083	0	0.059	0
Vista Del Rio Ditch (culvert)	WL-10	0.026	0.011	0.025	0.011	0.004	0.011
Hyde Canal (culvert)	WL-11	0.004	0.011	0.003	0.011	0.004	0.011
Arkansas River (bridge)	WL-13	0.010	0.026	0.005	0.015	0.015	0.041
Willow Creek (bridge)	WL-14	0.040	0	0.065	0	0.119	0
Willow Creek (bridge)	WL-15	0.033	0	0.012	0	0.036	0
Lamar Canal (bridge)	WL-16	0.003	0	0.010	0	0.009	0
Lamar Canal (culvert)	no wetland	0	0.011	0	0.011	0	0.011
Fort Bent Canal (culvert)	no wetland	0	0.011	0	0.011	0	0.011
Unnamed Ditch North of Willow Creek	no wetland	0	0.011	0	0.011	0	0.011
Total (acres)		**0.227**	**0.106**	**0.210**	**0.081**	**0.261**	**0.121**

Mitigation of Proposed Action

Avoidance and Minimization. Measures will be taken during final design to avoid and minimize impacts to riparian areas, wetlands, and waters of the United States. Permanent impacts to riparian areas, wetlands, streams, rivers, and canals will be reduced to the minimum practicable area.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Temporary and permanent impacts to waters of the U.S, wetlands, and to riparian habitat areas. Acreage impacts will be determined during final project design.	• During final design, CDOT will consider additional construction measures, such as steepening side slopes or constructing additional retaining walls, to potentially further reduce impacts to existing wetlands and potential waters of the U.S. • In both the interim and ultimate phases, retaining walls will be constructed at or near the edge of the proposed shoulder of the project in the sub-irrigated open meadow (WL-9) to reduce the project's impact to this specific wetland. • Acquire the appropriate nationwide and/or individual CWA Section 404 permit(s). Mitigate according to USACE permitting requirements and CDOT guidelines .All wetlands, regardless of jurisdiction, will be replaced at a 1:1 ratio**.** • Appropriate Senate Bill 40 consultation with CPW will be completed prior to construction**.** Impacts to riparian vegetation will be mitigated as determined during consultation with CPW (typically 1:1 tree and shrub replacement). • A project specific Wetland Mitigation Plan will be prepared that includes locations of permanent wetland mitigation sites identified during final design, if needed. Wetland mitigation banking credits are available from the CDOT Limon Bank located in Lincoln County, which can be used for both jurisdictional and non-jurisdictional mitigation.

3.5 Ecology

Lamar is located in the eastern great plains of Colorado. In general, the climate of this area is semi-arid with precipitation averaging about 14 inches per year. About half of the yearly precipitation is received during the months of May through August (Colorado Natural Heritage Program [CNHP], 2010). This section evaluates current conditions, impacts, and mitigations for the ecological resources in and near Lamar. Specific ecological components discussed include vegetation, noxious weeds, wildlife, and sensitive species. Figure 3-11 shows water resources, agricultural lands, riparian areas, and other vegetation types in the study area.

3.5.1 Vegetation

Current Conditions

Most of study area no longer reflects natural conditions due to disturbance from ranching and farming activities. The reliever route study area contains four primary vegetation types including shortgrass prairie, riparian areas, agriculture, and rural development. Figure 3-11 depicts the distribution of vegetation types within the study area (Lowry et al., 2005).

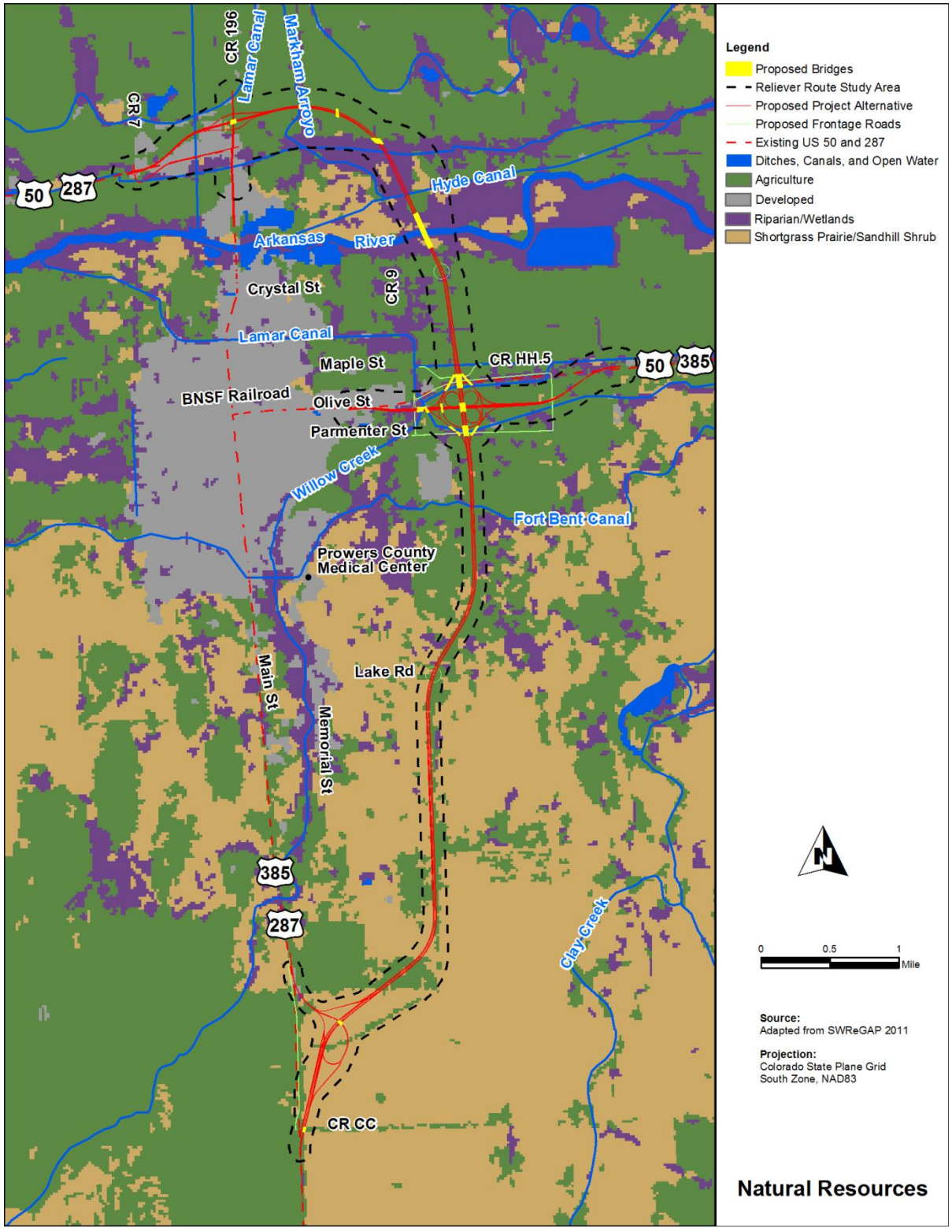
Shortgrass and mixed-grass range and sandhill prairie vegetation is found throughout the study area (see Figure 3-11). Approximately 153 acres of shortgrass prairie is found north of the Arkansas River, and approximately 230 acres is found near the southern end of the reliever route study area (Figure 3-11). This vegetation type is primarily used as rangeland for grazing cattle. Typical species characterizing the rangeland and pasture areas include blue grama (*Bouteloua gracilis*), side oat grama (*Bouteloua curipendula*), needle and thread (*Hesperostipa comata*), and sand dropseed (*Sporobolus cryptandrus*). Dominant species in the sandhill areas include sandsage and sagewort (*Artemesia* sp.) with an admixture of scrub oak (*Quercus* sp.).

Approximately 63 acres of riparian vegetation is found along the Arkansas River corridor within the study area (Figure 3-11). Dominant riparian species in the Arkansas floodplain include plains cottonwood (*Populus deltoides*), coyote willow (*Salix exigua*), and tamarisk (*Tamarisk ramosissima*) (an invasive species). A riparian corridor dominated by tamarisk exists adjacent north and south of the Arkansas River. The majority of the riparian corridor in the study area is relatively undisturbed with the exception of some grazing, and tamarisk invasion of the native willow stands.

Two areas of irrigated farmland bisected by the Arkansas River are found north of U.S. 50. These agricultural fields include alfalfa and grain crops.

The area from the Fort Bent Canal north about 1 mile to U.S. 50 is developed and includes the Fort Bent and Lamar canals, and a channelized segment of Willow Creek. Development includes cattle feedlots, sparse rural residential areas, and commercial/industrial uses.

FIGURE 3-11
Natural Resources



CNHP identified five plant communities it considers rare that are known to exist in the study area. These communities include narrowleaf cattail marsh; plains cottonwood/coyote willow riparian woodland; saltgrass meadows; sandsage; and shortgrass prairie. Cattail communities are associated with several of the ditches in the reliever route study area, particularly in the central and northern segments. Plains cottonwood/coyote willow stands occur discontinuously along the banks of the Arkansas River in the study area, and are intermixed with tamarisk. Saltgrass meadow areas were found on fields between the Arkansas River and U.S. 50. Sandsage and shortgrass prairie communities exist in the southern portion of the reliever route study area.

Impacts of No Action Alternative

The No Action Alternative would not result in any earth disturbance or land use changes and no impacts to vegetation would occur.

Impacts of Proposed Action

The Proposed Action would impact approximately 20 acres of shortgrass prairie habitat north of the Arkansas River, and approximately 131 acres near the proposed southern interchange. The Proposed Action would impact approximately 8 acres of riparian habitat along the Arkansas River. This impact area includes the Arkansas River itself in the calculation. The riparian area also includes concentrations of cottonwood and willow tree stands, which could be impacted during construction. Similar vegetation types are found adjacent to the reliever route study area, and minimal removal of sensitive vegetation communities is not expected to alter the community landscape. Impacts to vegetation are expected to be minor.

The Short Grass Prairie Initiative (SGPI) is an Memorandum of Agreement between CDOT, FHWA, United States Fish and Wildlife Service (USFWS), state natural resource agencies, and The Nature Conservancy that commits the participants to work to mitigate anticipated impacts to the shortgrass prairie ecosystem from CDOT projects identified in a 20-year transportation plan. Although a portion of shortgrass prairie (approximately 151 acres) would be affected by the project, the SGPI is only relevant to changes made to pre-existing roadway alignments and does not apply to the proposed reliever route.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, effort was made to avoid and minimize impacts to vegetation. By following the existing gravel Alternative Truck Route south of U.S. 50 and building in cultivated agricultural fields, the Proposed Action reliever route minimizes impacts to native plant species and communities.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Disturbance to tree stands during construction.	In order to protect mature cottonwood trees during construction, CDOT will install orange fencing around all trees greater than 10 inches in diameter at breast height (DBH) within the project area that are not to be removed.
		Willows will be protected during construction by trimming them to ground level, placing down a geotextile layer, covering it with a 12-inch layer of weed-free straw, and covering it up with fill. When construction is completed, the fill, straw, and geotextile blanket will be removed and the willows will grow back from the preserved root stock. The straw layer acts as an indicator layer so the equipment operator is aware he/she is approaching native ground and needs to take extra care in not grubbing out the willow root stock. During design, specific locations for willow cutting transplants will be identified.
	Disturbance to shortgrass prairie.	Minimize impacts to shortgrass prairie during construction. Native seed will be used for revegetation efforts.
		Limit construction-related disturbances by implementing BMPs, including locating staging and storage areas away from sensitive vegetation.

3.5.2 Noxious Weeds

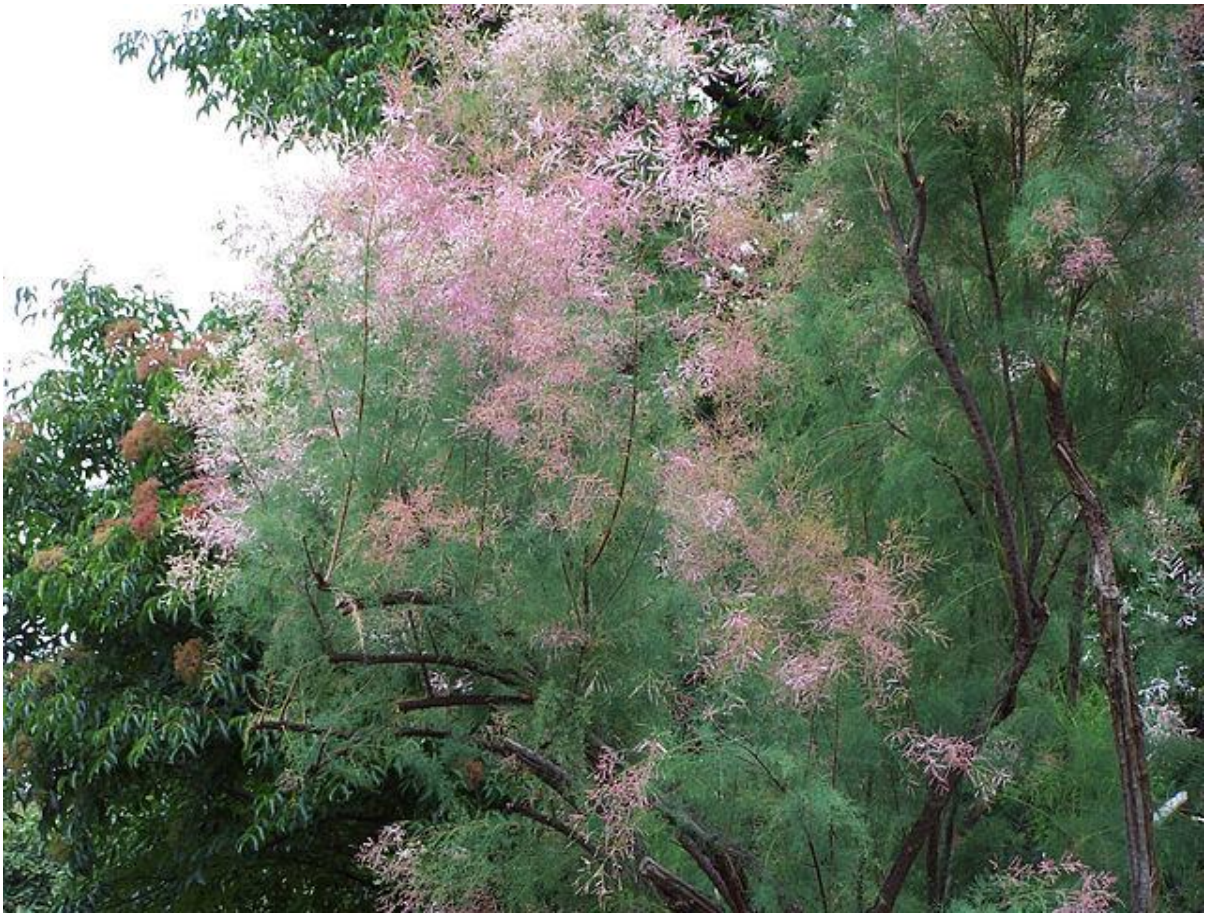
Current Conditions

Ten noxious weed species were identified by project biologists surveying the reliever route study area, as identified in the sidebar. Noxious weed surveys were conducted along existing roadways and easily accessible portions of the reliever route study area. The reliever route study area north of U.S. 50 was not surveyed for noxious weeds. Noxious weed surveys will be conducted during final design of the project. The majority of noxious weeds in the reliever route study area are found in existing road ROWs (including ROW along U.S. 287, U.S. 50, and the existing gravel Alternative Truck Route). Road ROWs are mowed regularly and had been mowed prior to the field survey; thus, additional weed species may be present that were not evident during the survey.

Noxious Weeds in Study Area

- Canada thistle *Cirsium arvense*
- Cheatgrass *Bromus tectorum*
- Diffuse knapweed *Centaurea diffusa*
- Foxtail *Setaria viridis*
- Johnsongrass *Sorghum halepense*
- Kochia *Kochia scoparia*
- Russian olive *Elaeagnus angustifolia*
- Russian thistle *Salsola iberica*
- Tamarisk *Tamarix ramosissima*
- Wild mustard *Brassica kaber*

Review of the Colorado Department of Agriculture, Division of Plant Industry 21 priority noxious weeds quarter-quad survey information for 2002 and 2004 indicated that tamarisk (*Tamarix ramosissima*) and Russian olive (*Elaeagnus angustifolia)* are present in the Arkansas River corridor. The 2002 and 2004 surveys are the most recent surveys for these noxious weeds. The infested acreage for the county is estimated to be a density of 51 to 100 acres for tamarisk and 6 to 50 acres for Russian olive (per 9,000-acre quarter quad).



Tamarisk (*Tamarix ramosissima*) (Photo by Jerzy Opiota)

Dense areas of noxious weeds include kochia (*Kochia scoparia*) and Russian thistle (*Salsola iberica*) in the south and central portions of the reliever route study area; tamarisk in the Arkansas River floodplain; and johnsongrass (*Sorghum halepense)* in the north portion of the reliever route study area. The predominant noxious weed species in the southern portion of the reliever route study area were kochia, Russian thistle, and cheatgrass (*Bromus tectorum)*. These herbaceous species occur in the road ROWs, and adjacent to all disturbed areas including the maintained agricultural ditches and access roads. Johnsongrass, cheatgrass, kochia, Russian thistle, and green foxtail (*Setaria viridis*) also are common in the northern portion of the reliever route study area.

The Colorado Department of Agriculture maintains lists of those weed species that are of high priority for management (Colorado Department of Agriculture, 2012b). None of the species known from the study area are on List A, the highest priority list. List A consists of those species designated by the Commissioner for eradication.

Canada thistle, diffuse knapweed, and Russian-olive are on List B. List B weed species are species for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, develops and implements state noxious weed management plans designed to stop the continued spread of these species. Johnsongrass is on List C, which lists those species that the Commissioner will develop and implement state noxious weed management plans for. The management plans will be

designed to support the efforts of local governing bodies to facilitate more effective integrated weed management on private and public lands. The goal of such plans will not be to stop the continued spread of these species but to provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species.

Russian olive (*Elaeagnus angustifolia*) (Photo by Georg Slickers)

Impacts of No Action Alternative

Noxious weeds are present along the existing U.S. 287 and U.S. 50 routes within the reliever route study area. Standard CDOT operations and maintenance for weed control, such as mowing and periodic herbicide application, would continue. Absent regular maintenance, weeds would continue to grow along the existing gravel Alternative Truck Route south of U.S. 50.

Impacts of Proposed Action

The Proposed Action would increase vehicle usage in the study area, which may facilitate spread of noxious weeds. Constructing the Proposed Action could introduce invasive species following site disturbance. However, appropriate BMPs would be implemented to minimize and avoid spread of noxious weeds in the area. Impacts from noxious weeds as a result of implementation of the Proposed Action are expected to be minor.

Mitigation of Proposed Action

Avoidance and Minimization. By following the existing gravel Alternative Truck Route south of U.S. 50 and building in cultivated agricultural fields, the Proposed Action minimizes impacts to noxious weeds in the area.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Increased vehicle usage may facilitate spread of noxious weeds.	• Develop and implement a Noxious Weed Management Plan during final design that complies with CDOT guidance. • Coordinate with state and local weed coordinators during final project design. • Russian thistle and tamarisk will be removed from CDOT ROW in the Arkansas River corridor. • Post-construction monitoring for noxious weeds will be conducted during the period for the restoration of the vegetative ground cover.
	Construction activities may introduce invasive species following site disturbance.	• Implement BMPs for noxious weed control during and after construction. • The disturbed area will be reseeded immediately following construction with a weed-free mulch and native grass species mix.

3.5.3 Wildlife

Project biologists discussed the project personally with staff of the USFWS, CPW, and CNHP in 2002, 2003, 2010, and 2011. Site surveys were conducted in August and September 2002, April 2003, April 2007, and July 2011.

Current Conditions

Wildlife in the study area is typical of species found within shortgrass prairie, rural development, riparian, and agricultural habitats of the eastern plains. The species discussed below may be found in various habitat types, however, they are representative of each of the habitat types in the study area. Shortgrass prairie wildlife may include pronghorn (*Antilocapra americana*), swift fox (*Vulpes velox*), desert cottontail (*Sylvilagus audubonii*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), Western Meadowlark (*Sternella neglecta*), Lark Bunting (*Calamospiza melanocorys*), Western Kingbird (*Tyrannus verticalis*), and

bull snake (*Pituophis catenifer*). American Robin (*Turdus migratorius*), European Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*), fox squirrel (*Sciurus niger*), and other species accustomed to human activity may be found in the developed portions of the study area. Raccoon (*Procyon lotor*), swallows, ducks, geese, shorebirds, and other migratory birds may be associated with the riparian areas of the Arkansas River. Within the study area, the Arkansas River is minimally braided with dense riparian vegetation. The river itself provides habitat for aquatic species such as fish, microinvertebrates, and macroinvertebrates. Red fox (*Vulpes vulpes*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), Swainson's Hawk (*Buteo swainsoni*), Mourning Dove (*Zenaida macroura*), and Great-Tailed Grackle (*Quiscalus mexicanus*) may be found in the agricultural habitats of the study area.

A review of available CPW Natural Diversity Information Source (NDIS) geographic information system (GIS) data was performed based on species distributions throughout the study area. The data (dated July 2011) show the following: mule deer overall range and concentration area throughout the reliever route study area, and winter range along the Arkansas River corridor; pronghorn overall range and limited use areas extending from the Arkansas River drainage southward in the reliever route study area, and a pronghorn concentration area to the southwest of the reliever route study area; swift fox overall range throughout the reliever route study area; Ring-Necked Pheasant (*Phasianus colchicus*) overall range in the Arkansas River drainage and northern portion of the reliever route study area; and Scaled Quail (*Callipepla squamata*) overall range south of U.S. 50 and an approximate 4-mile band of scaled quail concentration area south of U.S. 50.

A review of CDOT road kill data for the 8-mile stretch of existing highway shows that four deer were killed in 2010, one in 2011, and none in 2012 (CDOT, 2010; CDOT, 2011d; CDOT, 2012). Though not fully indicative of wildlife activity in the area, these data suggest this segment is not responsible for significant loss of wildlife from collisions.

Impacts of No Action Alternative

The No Action Alternative does not include new transportation infrastructure and would not fragment or reduce wildlife habitat in the reliever route study area. No changes in wildlife mortality or water quality would occur.

Impacts of Proposed Action

Implementation of the Proposed Action may affect wildlife within the reliever route study area through habitat reduction, alteration, or fragmentation; interference with behavioral activities; injury or mortality of wildlife; and decrease in water quality from construction activities.

Approximately 159 acres of shortgrass prairie and riparian vegetation that serve as potential foraging areas and nesting sites would be permanently removed due to construction of the Proposed Action. However, removal of habitat would be minimized to the extent possible, and loss of habitat is not anticipated to result in population level declines. Habitat would also be fragmented in agricultural fields north of the Arkansas River; however, habitat fragmentation impacts are anticipated to be minimal due to the lack of native vegetation in the area.

Wildlife may be displaced and avoid surrounding habitats during construction. Once operational, the Proposed Action would have high speed traffic, creating noise and dust, and wildlife would generally be reduced in this area. Additionally, ROW fencing along the reliever route may inhibit some wildlife movement across the highway.

The Arkansas River corridor provides riparian habitat and a movement corridor for species in the region. The new bridge may require removing trees that provide bird roosting and nesting sites. Approximately 8 acres of riparian habitat would be disturbed by construction of the new bridge. Although this area is primarily tamarisk, it still provides quality habitat for a variety of species and an essential corridor for wildlife movement. However, impacts to wildlife are expected to be negligible due to the minimal loss of habitat within the Arkansas River corridor.

Loss of shortgrass prairie habitat (approximately 151 acres) would occur. Along the edge of the existing gravel Alternative Truck Route south of U.S. 50, loss of shortgrass prairie would increase from the current footprint to the profile of the Proposed Action. Loss of the habitat is expected to have minimal impacts on local wildlife because shortgrass prairie habitat is available adjacent to the study area.

Direct impacts from mortality or injury to smaller, less-mobile species (e.g., reptiles, small mammals, ground nesting birds) and birds of prey could occur during operation if those species are present. These impacts are expected to be minor to the species but could be detrimental to the local population.

CPW has sampled many of the natural and artificial channels surrounding the study area for fish population data. Sample intensity varies from single survey in small canals to over 150 surveys in the Arkansas River that go back to 1980 (though most are from the late-1990s onward). Nonetheless, these data provide an indication of the fish species within several miles of the study area.

Thirty-one sample locations were surveyed in which a total of 21 species were recorded. The only sensitive species identified was the Arkansas darter (*Etheostoma cragini)* which was found at 9 locations across 3 water bodies: West May Valley Ditch, Hyde Ditch, and Willow Creek. Though the Arkansas River contained the highest number of total species, the Arkansas darter was not recorded at the two sampling points on the river approximately 1.5 miles west of the study area.

Appropriate BMPs would be implemented to avoid and minimize direct impact to waterways, both natural and artificial. Sedimentation would be minimized to the extent possible. With these BMPs, impacts to fish are expected to be minimized or avoided.

Construction of the Proposed Action may impair water quality of the Arkansas River by increasing sedimentation. However, appropriate BMPs would be implemented to avoid and minimize erosion and sedimentation to the extent possible. With these BMPs, impacts to aquatic species, including wading birds, are expected to be minimized or avoided. Please see Section 3.4.3, *Surface Water*, for further information.

Overall, implementation of the Proposed Action would result in minor impacts to wildlife in the reliever route study area. Review of the Proposed Action with biologists at CPW in Lamar and Pueblo confirmed this finding.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, effort was made to avoid and minimize impacts to wildlife and habitat. By following the existing gravel Alternative Truck Route south of U.S. 50 and building in cultivated agricultural fields, the Proposed Action reliever route minimizes direct impacts to wildlife habitat in the area. To avoid vehicle-caused mortality to wildlife, roadways will be landscaped in manners to maintain clear visibility for drivers and avoid attracting wildlife to roadsides.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Loss of riparian habitat along the Arkansas River.	• Coordination with CPW will occur to determine appropriate mitigation strategy for riparian losses, in accordance with Senate Bill 40 guidelines.
	Loss of shortgrass habitat along the reliever route.	• Restoration or enhancement of disturbed habitat after construction will be conducted to mitigate for impacts that could not be avoided.
		• To mitigate for wildlife impacts and to prevent birds from nesting, remove vegetation within construction zone outside of nesting season.
		• Keep vegetation mowed to 6 inches or less prior to clearing and grubbing.
	Loss of roosting and foraging sites in mature cottonwood trees.	• Site bridge to minimize removal of mature cottonwoods.
	Interrupt wildlife movement along Arkansas River.	• Design bridge to provide sufficient clearance for wildlife movement.
		• Tamarisk and Russian olive in CDOT ROW at Arkansas River crossing will be removed.
	Wildlife strikes may increase on the highway.	• Where feasible, design enlarged culverts to maintain connectivity across highway to allow small and large mammal movement.
	ROW fencing along reliever route may inhibit wildlife movement.	• In ROW not adjacent to open rangeland for cattle, install smooth bottom wire fencing to facilitate crossing under fence by pronghorn.
	Impaired water quality for aquatic habitat.	• Design bridge features to provide maximum water quality protection, including size and location of piers and abutments, and designing to minimize scour and impacts to fish habitat.
		• Treat stormwater runoff from bridge deck using BMPs prior to discharging to adjacent water bodies.
		• Construction and installation of the bridges over the Arkansas will avoid fish spawning season from April 15 to June 30.

3.5.4 Sensitive Species

Lists of special status species and occurrence data in Prowers County were obtained from USFWS and CPW. These lists were examined to assess the potential of special status species

occurrences and habitat in the study area. Habitat associations and Prowers County occurrence data for sensitive species are based on known records and species distribution and life histories found in the USFWS IPaC database (USFWS, 2012), CPW NDIS (CPW, 2008), Andrews and Righter (1992), Fitzgerald et al. (1994), Kingery (1998), and NatureServe (2010).

CNHP Biodiversity Tracking and Conservation System data were acquired for the study area. CNHP tracks occurrence records of significant natural communities and rare, threatened, or endangered plants and animals in Colorado. The CNHP report includes resources known to occur within the specified project site and resources known from similar landscapes near the site. CNHP potential conservation areas (PCA) are intended to capture the ecological processes that are necessary to support the continued existence of a particular element of natural heritage significance. PCA may include a single occurrence of a rare element or a suite of rare elements or significant features. The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element or suite of elements depends for their continued existence.

Current Conditions

Federally Listed Threatened, Endangered, and Candidate Species

Wildlife species listed by the USFWS for Prowers County are identified in Table 3-13 (USFWS, 2012; CDOT, 2011e).

TABLE 3-13
USFWS Threatened, Endangered, and Candidate Species for Prowers County, Habitat Association, and Presence/Absence of Suitable Habitat in Study Area

Species	Scientific name	Status	Habitat Association	Presence/Absence of Suitable Habitat
Fish				
Arkansas Darter	*Etheostoma cragini*	C	Clear, sandy-gravelly streams	Present in Arkansas River; known from the study area at the Markham Arroyo Ditch, Hyde Ditch, West May Valley Ditch, and Willow Creek.
Birds				
Least Tern (interior population)	*Sternula antillarum*	E	Bare sandy shorelines of islands in reservoirs	Absent; suitable habitat may exist; however, due to the dense vegetation along the river, it is unlikely area is being used for nesting.
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*	C	Sandsage and sandsage-bluestem grasslands; agricultural areas in winter	Present; CPW does not believe leks are present in the vicinity of the project area (CDOT, 2011e).[1]
Piping Plover	*Charadrius melodus*	T	Mudflats and shorelines of reservoirs and lakes	Absent; suitable habitat may exist; however, due to the dense vegetation along the river, it is unlikely area is being used for nesting.

E = Endangered species T = Threatened species C = Candidate species

[1]A lek is an area used by males of the species for the purpose of mating displays during breeding season.

CPW biologists conducted an intensive search of much of southeast Colorado for Lesser Prairie-Chickens in the spring of 2004 and 2007. No Lesser Prairie-Chickens were detected on any survey routes within 15 miles of the study area. CPW concluded implementation of the Proposed Action is unlikely to impact this species (Prenzlow, 2007) and confirmed this via communication with CDOT in 2011 (CDOT, 2011e).

In Colorado, piping plovers occur as migrants, arriving around the first of April (CPW, 2012a). There are only four confirmed breeding records of piping plover in Colorado (Andrews and Righter, 1992; Kingery, 1998). Piping plover nesting habitat in Colorado is on sandy lakeshore beaches, sandbars within riverbeds or even sandy wetland pastures, and an important feature of this habitat is sparse vegetation (CPW, 2012a). Suitable habitat may exist along the Arkansas River; however, due to the dense vegetation along the river, it is unlikely that the area is being used for nesting. CNHP does have a 1988 record of occurrence for piping plover in the study area (CNHP, 2010). However, this record is not one of the known breeding areas and based the lack of suitable nesting habitat in the study area; this record is likely a migrant. CPW mapping of piping plover foraging or production habitat indicates there is not habitat near the project area (CPW, 2012b). The study area does not provide primary breeding or foraging habitat for piping plover and disturbance to this species from implementation of the Proposed Action is highly unlikely, therefore, piping plovers were removed from further analysis.

The Arkansas darter is the only federally listed fish species with potential to occur in the study area. Suitable habitat for the Arkansas darter may be found in the Arkansas River, Willow Creek, and several ditches or canals in the area. The last confirmed sighting of the Arkansas darter within the study area occurred in 1985 (CNHP, 2010).

Colorado Sensitive Wildlife Species

CPW maintains a list of state threatened and endangered species as well as species of concern. CPW species of concern do not have a statutory mandate for protection, but are identified for project planning purposes. Table 3-14 shows CPW listed species that may be found in Prowers County (CPW, 2010).

TABLE 3-14
CPW Listed Species within Prowers County

Species	Scientific name	Status	Habitat Association	Presence/Absence of Suitable Habitat
Fish				
Suckermouth Minnow	*Phenacobius mirabilis*	SE	Riffle areas of warm prairie streams with gravel and sandy gravel substrate	Present; occurs in the Arkansas River, Clay Creek, Vista del Rio Ditch, and West May Valley Ditch. . Reintroduced near Rocky Ford.
Flathead Chub	*Platygobio gracilus*	SC	Mainstems of often turbid streams and rivers, in areas of fast water with sand or gravel substrates	Present; species believed to be extirpated. Most recent observation near study area is from 1981.

TABLE 3-14
CPW Listed Species within Prowers County

Species	Scientific name	Status	Habitat Association	Presence/Absence of Suitable Habitat
Orangethroat Darter	*Etheostoma spectabile*	SC	Slow to swift riffles, sometimes run and pools, of headwater, creeks, and small rivers with sand, gravel, rubble or bedrock substrates	Absent.
Stonecat	*Noturus flavus*	SC	Often rocks in runs, riffles, and rapids in warm creeks and small to large rivers	Present; no accounts of stonecat within watershed.
Lake Chub	*Couesius plumbeus*	SE	Varied habitats, standing or flowing water, large or small bodies of water; most common in gravel-bottomed pools and runs of streams and along rocky lake margins.	Present; no accounts of lake chub within watershed.
Plains Minnow	*Hybognathus placitus*	SE	Found in large streams and rivers over beds of sand and silt with some current. Clear to highly turbid rivers and creeks with sandy bottoms, high levels of dissolved solids, and slight to moderate erratic flows. Eggs probably are scattered over silt-bottomed backwaters.	Present; plains minnow believed to be extirpated from Colorado.
Brassy Minnow	*Hybognathus hankinsoni*	ST	Typically found in small, clear, sluggish, weedy creeks or small rivers with sand, gravel, or mud bottom overlain with organic sediment. Also common in cool, stained or acid waters of boggy streams, ponds, and lakes.	Present; no accounts of brassy minnow within watershed.
Amphibians				
Northern Leopard Frog	*Rana pipiens*	SC	Wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches	Present; species is not known to occur within the county.
Plains Leopard Frog	*Rana blairi*	SC	Margins of streams, natural and artificial ponds, reservoirs, creek pools, irrigation ditches, and other bodies of water	Present.
Couch's Spadefoot Toad	*Scaphiopus couchii*	SC	Breed in stock ponds and temporary pools	Present; species is not known to occur within the county.
Reptiles				
Yellow Mud Turtle	*Kinosternon flavescens*	SC	Permanent and intermittent streams, permanent ponds, isolated temporary ponds and rain pools far from permanent water, irrigation ditches, soggy fields, and the surrounding grasslands and sandhills	Present; record of occurrence in 1904 (CNHP, 2010).

TABLE 3-14
CPW Listed Species within Prowers County

Species	Scientific name	Status	Habitat Association	Presence/Absence of Suitable Habitat
Common King Snake	*Lampropeltis getula*	SC	Irrigated fields, rural residential areas in plains grassland, near stream courses, and in other areas dominated by shortgrass prairie	Present; species is not known to occur within the county.
Texas Horned Lizard	*Phrynosoma cornutum*	SC	Plains grassland especially where there are large patches of bare ground	Present.
Massasauga	*Sistrurus catenatus*	SC	Dry plains grassland and sandhill areas	Present.
Birds				
Bald Eagle	*Haliaeetus leucocephalus*	SC	Reservoirs and rivers	Present.
Western Yellow-Billed Cuckoo	*Coccyzus americanus*	SC	Lowland riparian forest	Present; Eastern populations do not have a special status.
Burrowing Owl	*Athene cunicularia*	ST	Grasslands in or near prairie dog towns	Present.
Greater Sandhill Crane	*Grus canadensis tabida*	SC	Migrants occur on mudflats around reservoirs, in moist meadows, and in agricultural areas	Present; species is not known to occur within the county.
Ferruginous Hawk	*Buteo regalis*	SC	Grasslands and semidesert shrublands	Present.
American Peregrine Falcon	*Falco peregrinus anatum*	SC	Rivers, riparian forests, grasslands, and agricultural areas	Present; species is not known to occur within the county.
Western Snowy Plover	*Charadrius alexandrinus*	SC	Breeding occurs on alkali flats around reservoirs and migrants occur in mudflats and sandy shorelines	Present.
Mountain Plover	*Charadrius montanus*	SC	Shortgrass grassland	Present.
Long-Billed Curlew	*Numenius americanus*	SC	Shortgrass grasslands and fallow fields	Present; no curlew have been observed within 18 miles of the study area.
Mammals				
Black-Tailed Prairie Dog	*Cynomys ludovicianus*	SC	Short/mixed grasslands	Present.
Swift fox	*Vulpes velox*	SC	Short/mixed grasslands	Present.

SC = State Special Concern (not a statutory category) SE= State Endangered ST= State Threatened

No orangethroat darter habitat is found in the study area. Although habitat is present for stonecat, lake chub, and brassy minnow, these species are not known from the watershed and are not expected to be found in the study area. Plains minnow and flathead chub are believed

to be extirpated from Colorado and is not expected to be found in the study area. Therefore these species were removed from further analysis.

There are no records of occurrence for northern leopard frogs, Couch's spadefoot toad, common king snake, Greater Sandhill Crane, or American Peregrine Falcon in Prowers County; therefore, these species were removed from further analysis.

CPW NDIS GIS data show overall range for Texas horned lizard and massasauga south of U.S. 50 in the shortgrass prairie/ sandhill shrub habitat, and overall range for black-tailed prairie dogs throughout the study area.

The site visit in April 2003 included surveys for black-tailed prairie dogs and burrowing owls. A colony of black-tailed prairie dogs is situated in the study area between the Arkansas River and CR 196. In 2003 the colony was estimated to be approximately 80 acres in size. This survey also confirmed the presence of burrowing owls in the prairie dog colony. The 2007 and 2011 field surveys confirmed that this colony still existed, although it had decreased substantially in size.

Black-Tailed Prairie Dog (*Cynomys ludovicianus*) (Photo by Quartl)

Colorado Natural Heritage Program

CNHP records indicate observations of an additional three sensitive species in the study area: Gray Vireo (*Vireo vicinior*) in 1907, little white tiger beetle (*Cicindela lepida*) in 1991, and eastern spotted skunk (*Spilogale putorius*) (CNHP, 2010).

CNHP data show two PCA in or near the study area: the Arkansas River PCA and the Central Arkansas Playa PCA (CNHP, 2010). The Arkansas River PCA includes open water and shorelines, the main stem of the Arkansas River, and surrounding lakes and reservoirs. This PCA is primarily for Bald Eagles but the Arkansas darter has historically occupied this stretch and there is an active black-tailed prairie dog colony within the site. The cottonwood gallery forests associated with the Arkansas River and its associated reservoirs is the most important environmental factor of the PCA.

The Central Arkansas Playas PCA includes numerous reservoirs near the Arkansas River and surrounding grasslands with playas. The site was drawn primarily for Western Snowy Plover, Piping Plover, and Least Tern. Lakes and reservoirs near the Arkansas River are included for nesting during dry years, and surrounding grasslands with playas are included for nesting during wet years. Other sensitive wildlife species which may use this PCA include plains leopard frog, northern leopard frog, Burrowing Owl, Long-Billed Curlew, Ferruginous Hawk, Mountain Plover, Bald Eagle, Arkansas darter, black-tailed prairie dog, swift fox, massasauga, and Texas horned lizard.

Impacts of No Action Alternative

The No Action Alternative does not include new transportation infrastructure and would not fragment or reduce wildlife habitat in the study area. No new impacts to sensitive species would occur.

Impacts of Proposed Action

Implementation of the Proposed Action may affect federal and/or state listed species that are present or known to occur (see Tables 3-13 and 3-14) within the reliever route study area through habitat reduction, alteration, or fragmentation; interference with behavioral activities; injury or mortality of wildlife; and decrease in water quality from construction activities. Impacts to sensitive species as a result of implementation of the Proposed Action reliever route would be similar to impacts described for general wildlife species and their habitat in Section 3.5.3.

A black-tailed prairie dog colony located north of the Arkansas River would likely be disturbed and the colony would be bisected by the new alignment. Burrowing Owls present in this colony would also be disturbed. Colorado-sensitive wildlife species in this area would permanently lose habitat or, in some cases, their habitat would be fragmented by implementation of the Proposed Action.

Construction of the Proposed Action could impair habitat for the Arkansas darter and suckermouth minnow by increasing sedimentation during construction. However, appropriate BMPs would be implemented to avoid and minimize erosion and sedimentation to the extent possible.

Implementation of the Proposed Action is expected to result in minor impacts to sensitive species wildlife and their habitat.

Mitigation of Proposed Action

Avoidance and Minimization. In developing and evaluating alternatives, actions were taken to avoid and minimize impacts to listed species. By following the existing gravel Alternative

Truck Route south of U.S. 50, the Proposed Action minimizes direct impacts to species and their habitat. During final design, CDOT would refresh agency coordination and re-survey the study area for new species listings and changes in habitat patterns prior to construction as required.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Impacts to sensitive species during bridge construction	• Schedule bridge construction seasonally to avoid nesting birds. • Schedule bridge construction seasonally to avoid fish spawning (April 15- June 30).
	Impaired water quality for aquatic habitat	• Design bridge features to provide maximum water quality protection, including size and location of piers and abutments, and design to minimize scour and impacts to fish habitat. • Discharge deck runoff to upland area before discharging to water bodies.
	Wildlife strikes may increase on the highway.	• Where feasible, design enlarged culverts to maintain connectivity across highway to allow small and large mammal movement.
	Arkansas darter: Impaired water quality during construction.	• Install water quality BMPs to ensure silt and other debris does not enter waterways. • Do not alter the hydrology of Markham Arroyo or the Hyde Canal. • Avoid or remove barriers to fish movement (i.e., waterfalls) • To the extent possible, time construction of bridge over the Arkansas River to avoid sedimentation of the river during spawning and egg incubation (April 15- June 30).
	Least Tern: direct loss of habitat	• Survey for suitable habitat. If suitable habitat does exist, avoid impact during the nesting season (April 15- August 19).
	Lesser Prairie Chicken: direct loss of habitat	• Contact CPW prior to final design and construction for updated information on leks. • When possible, avoid any leks identified in the future.
	Piping Plover: direct loss of habitat	• Survey for suitable habitat at the Arkansas River. If suitable habitat does exist, avoid impact during the nesting season (May 1- June 28).
	Suckermouth minnow: Impaired water quality during construction.	• Implement water quality BMPs during construction. • To the extent possible, time construction of bridge over the Arkansas River to avoid sedimentation of the river during spawning and egg incubation (April 15- June 30).
	Plains leopard frog: direct loss of habitat	• Avoid work along canal margins May- July to minimize impact to metamorphosing larvae. • Maintain current hydrology.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
	Yellow mud turtle	• Use BMPs to keep highway construction/operation pollutants from entering waterways. • If possible, provide structures that will allow safe passage under the highway (see swift fox conservation measures for details).
	Texas horned lizard: direct loss of habitat	• If possible, provide structures that will allow safe passage under the highway (see swift fox conservation measures for details).
	Massasauga: direct loss of habitat	• Maintain native range conditions in areas that are not farmed after construction is complete.
	Bald Eagle: direct loss of habitat	• Survey for nests and roosts. If found, follow CPW guidelines for buffer zones and seasonal restrictions. • Work between July 31 and October 15 if a nest is located within a half mile of the project footprint. • Minimize impacts to prairie dog towns. • Minimize removal of large cottonwood trees
	Burrowing Owl: direct loss of habitat	• Schedule work to occur within prairie dog town before March 15 or after October 31. • If scheduling outside the nesting season is not an option, survey for active nests within prairie dog towns according to CPW recommended survey protocols. • Active nests must be avoided out to a distance of 150 feet from edge of disturbance. Install a fence to delineate this boundary. • Oversizing of culverts will be examined during design to allow for species migration.
	Ferruginous Hawk: direct loss of habitat	• Survey for nests prior to construction. If a nest is found, follow CPW guidelines (no work within 0.5 mile of a nest from February 1 through July 15). If an inactive nest is found, remove the nest prior to construction.
	Western Snowy Plover: direct loss of habitat	• Avoid impacting sandy areas near the Arkansas River.
	Mountain Plover: direct loss of habitat	• Work in habitat outside of nesting season (May 30-August 15). If that is not an option, survey suitable habitat prior to work. If an active nest is found, establish a no work zone 150 feet around the nest.
	Long-Billed Curlew: direct loss of habitat	• Work in habitat outside of nesting season (May 30-July 15). If that is not an option, survey suitable habitat prior to work. If an active nest is found, establish a no work zone 150 feet around the nest.
	Black-tailed prairie dog: direct loss of habitat.	• Follow CDOT prairie dog management policy.
	Swift fox: direct loss of habitat	• Minimize amount of impact to habitat taken in southern one-third of project footprint.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
		• Design structures that will allow safe passage under the highway. According to a study conducted by the California Department of Transportation entitled *Effects of Four-Lane Highways on Desert Kit Fox and Swift Fox: Inferences for the San Joaquin Kit Fox Population*, (Clevenger, et. al., April 30, 2010), culverts or concrete box culverts should be placed as often as possible within swift fox habitat and should be a minimum of 24 inches by 24 inches in size.

3.6 Historic Properties

This section evaluates current conditions, impacts, and proposed mitigations for historic and archaeological resources, paleontology, and Native American consultation. Historic properties are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP. A property is eligible for the NRHP if it possesses historic integrity, such as maintaining original materials and design, and meets one or more of the following criteria:

- Criterion A – associated with important historical events or patterns,
- Criterion B – associated with lives of persons significant in our past,
- Criterion C – embodies distinctive characteristics of an architectural type, period, or method of construction, or
- Criterion D – has yielded or is likely to yield information that is important in prehistory or history.

National Register of Historic Places Eligibility Definitions

Listed – a resource that is listed on the National Register of Historic Places maintained by the National Park Service.

Eligible – a resource that has been officially determined by the State Historic Preservation Officer to be eligible for, but is not yet listed on, the National Register. These resources are treated as if listed on the National Register.

Not Eligible – a resource that has been officially determined to not be eligible for the National Register

Section 106 of the National Historic Preservation Act of 1966, as amended, requires projects proposed or funded by federal agencies to identify and assess effects to historic properties listed on or eligible for inclusion in the NRHP. Throughout the Section 106 process, agencies must consult with the State Historic Preservation Office (SHPO) and other interested, or consulting, parties. In addition to the SHPO, Colorado Preservation Incorporated and the Prowers County Historic Preservation Advisory Commission participated as consulting parties in Section 106 consultations. Appendix A includes correspondence with the Colorado SHPO and consulting parties.

3.6.1 Historic Resources

Current Conditions

An intensive inventory of historic resources on 1,067 acres of land within the reliever route study area was conducted in May 2003 (Western Cultural Resources Management, Inc., 2003). Consultation with the SHPO in 2007 led to the definition of an area of potential effect (APE) that extended beyond the 2003 inventory area. The APE includes an area surrounding the proposed reliever route for consideration of direct effects—300 feet from the edge of the reliever route on the south side of U.S. 50 and 600 feet from the edge of the reliever route on the north side of U.S. 50—and the City of Lamar for consideration of indirect effects. In 2008, an updated file search was completed and an additional reconnaissance survey was conducted, and in 2009, CDOT completed a reconnaissance survey of Lamar's downtown commercial area (Western Cultural Resources Management, Inc., 2010).

In 2011, CDOT submitted eligibility and effect determinations to SHPO, Colorado Preservation Inc., and the Prowers County Historic Preservation Advisory Commission for review. Subsequent consultation was conducted with SHPO regarding the district potential in downtown Lamar. In 2013, CDOT consulted with the SHPO, Lamar Historic Preservation Advisory Board, and Prowers County Preservation Advisory Board regarding segments of the highways that would be removed from the state highway system. As a result of these consultations, ten historic properties are eligible or being treated as eligible for the NRHP within the APE. A commercial district determined to not be eligible is also present within the APE.

Resources recorded during the 2003, 2008, 2009, and 2013 investigations included the following ten historic properties, including two segments of the Lamar Canal and two segments of the Atchison, Topeka, and Santa Fe Railroad, and the non-eligible commercial district:

- Abandoned spur segment of the Atchison, Topeka and Santa Fe Railroad (eligible/non-supporting segment) (5PW152.5)
- Mainline segment of the Atchison, Topeka and Santa Fe Railroad (eligible/supporting segment) (5PW152.6)
- One segment of U.S. Highway 385/50 (eligible/non-supporting segment) (5PW171.5)
- Two segments of the Lamar Canal (eligible/non-supporting segments) (5PW191.1; 5PW191.2)
- One segment of Fort Bent Canal (eligible/supporting segment)(5PW192.1)
- One segment of the Vista del Rio Ditch (eligible/non-supporting segment) (5PW193.1)
- One segment of the Hyde Canal (eligible/supporting segment)(5PW194.1)
- Downtown Lamar Commercial Area (not eligible/no district potential) (5PW298)
- One segment of U.S. Highway 50 (eligible/non-supporting segment) (5PW385.1)
- One segment of U.S. Highway 287 (eligible/non-supporting segment) (5PW386.1)

The three supporting segments are discussed first. The segments of the Fort Bent and Hyde canals and the mainline segment of the Atchison, Topeka and Santa Fe Railroad support the eligibility of these linear resources for the NRHP. The mainline segment of the Atchison, Topeka and Santa Fe Railroad (5PW152.6) (currently the Burlington Northern – Santa Fe Railroad) supports the eligibility of the resource for inclusion in the NRHP under Criterion A because it is one of the key transportation systems in the Lamar region. The railroad made notable and undeniable contributions to the history of southeastern Colorado and the West from the time of its construction in 1875 through the 1940s. This segment retains the integrity necessary for it to contribute to the overall eligibility of the rail line. The Fort Bent (5PW192.1) and Hyde (5PW194.1) canal segments support the eligibility of these resources for the NRHP under Criterion A because of their association with early agricultural development and water resource utilization in the Lamar area. These segments of the Fort Bent and Hyde canals have adequate integrity to contribute to the entire resource.

The following discussion relates to the non-supporting segments of eligible linear resources. The Atchison, Topeka and Santa Fe Railroad abandoned spur segment (5PW152.5) and the Lamar Canal segments (5PW 191.1 and 5PW191.2) have been modified to such an extent that they lack integrity and do not support the overall eligibility of these resources for the NRHP. The segment of the Vista Del Rio Ditch (5PW193.1) is partially intact, having suffered a loss of integrity stemming from its abandonment. It also lacks the historic significance to support the overall eligibility of the resource. The segment of U.S. 385/U.S. 50 (5PW171.5) proved to be less than 50 years old in its current configuration and does not support eligibility of this resource for the NRHP (Western Cultural Resources Management, Inc., 2010). The segments of U.S. 50 (5PW385.1) and U.S. 287 (5PW386.1) lack integrity and do not support the eligibility of the overall linear resources for the NRHP. Although none of the segments of these linear resources within the APE supports the eligibility of the overall resources, the overall linear resources are considered NRHP-eligible.

CDOT defined the boundaries of a Downtown Lamar Commercial Area, and through consultation with SHPO, it was determined that this area does not maintain enough integrity to convey significance or to warrant NRHP eligibility of a district.

The Colorado SHPO concurred with National Register eligibility findings in two letters, dated May 10, 2011 and March 29, 2013, respectively. This concurrence, along with detailed documentation of historic properties, bases for their eligibility, effects from the Proposed Action, and associated correspondence between CDOT and consulting parties is documented in Appendix A. New information about effects to these historic properties has resulted in additional consultation with the SHPO. This consultation is ongoing.

In November 2009, Historic Downtown Lamar and the City of Lamar received and accepted a grant from the State Historical Fund to undertake an intensive-level historic and architectural survey of 70 buildings in the downtown business district. The purpose was to document the area's core commercial history, architectural character, and potential listing of individual buildings on the NRHP or as a local landmark to determine the potential for a local or National Register Historic District. The Historic and

Prowers County Courthouse

Architectural Survey for downtown Lamar was finalized in October 2012 and revealed there is a sufficient concentration of buildings with historic integrity for the creation of a historic district. Historic Downtown Lamar is working toward designation of downtown Lamar as a local historic district or listing on the NRHP. CDOT is consulting with the Historic Downtown Lamar on the downtown district, and the results of this consultation will be addressed in the decision document.

Impacts of No Action Alternative

The No Action Alternative does not include new transportation infrastructure or construction, and thus no new impacts to historic resources would occur.

Impacts of Proposed Action

Under Section 106 of the National Historic Preservation Act, effect determinations consist of one of the following:

- No Historic Properties Affected – historic properties are either not present or not affected by the action,
- No Adverse Effect – a historic property is affected but the characteristics that qualify the property for inclusion in the NRHP are not affected, or
- Adverse Effect – an action directly or indirectly alters the characteristics of a historic property that qualify it for inclusion in the NRHP.

As a result of initial consultation, the Proposed Action was determined to have No Adverse Effects with regard to the six NRHP-eligible resources within the APE, including the two linear properties with two associated segments each in the APE. Effect determinations are presented in Table 3-15 and are further described in correspondence between CDOT and the SHPO in Appendix A, Agency Correspondence. However, new information about effects to these historic properties requires additional consultation with the SHPO, which is ongoing.

TABLE 3-15
Effects to Historic Properties

Site Number	Description	Date	NRHP Eligibility (Criteria)	Summary of Effects
5PW152.5	Atchison, Topeka and Santa Fe Railroad Segment (abandoned spur)	1875	Does not support eligibility of the resource.	No Adverse Effect. Non-supporting segment.
5PW152.6	Atchison, Topeka and Santa Fe Railroad Segment (Mainline)	1875	Segment retains integrity and supports eligibility of entire resource. (Criteria A)	No Adverse Effect. No direct impact; four new bridges spanning railroad at east interchange.
5PW171.5	Segment of U.S. Highway 385/50	1989-1990	Does not support eligibility of the resource.	No Adverse Effect. Non-supporting segment.
5PW 191.1	Segment of the Lamar Canal	1875	Does not support eligibility of the resource.	No Adverse Effect. Non-supporting segment.
5PW 191.2	Segment of the Lamar Canal	1875	Does not support eligibility of the resource.	No Adverse Effect. Non-supporting segment.

TABLE 3-15
Effects to Historic Properties

Site Number	Description	Date	NRHP Eligibility (Criteria)	Summary of Effects
5PW192.1	Segment of the Fort Bent Canal	1880s	Segment retains integrity and supports eligibility of entire resource. (Criteria A)	No Adverse Effect. New box culvert carrying reliever route over irrigation ditch.
5PW193.1	Segment of the Vista Del Rio Ditch	Circa 1950	Does not support eligibility of the resource.	No Adverse Effect. Non-supporting segment.
5PW194.1	Segment of the Hyde Canal	Circa 1887	Segment retains integrity and supports eligibility of entire resource. (Criteria A)	No Adverse Effect. New box culvert carrying reliever route over irrigation ditch.
5PW385.1	Segment of U.S. Highway 50	Entire highway circa 1910	Does not support eligibility of the resource.	No Adverse Effect. Non-supporting segment.
5PW386.1	Segment of U.S. Highway 287	Entire highway circa 1912	Does not support eligibility of the resource.	No Adverse Effect. Non-supporting segment.

Mitigation of Proposed Action

Avoidance and Minimization. BMPs would be implemented during construction to avoid and minimize impacts, including clearly marking the features and locating construction staging areas to avoid impacts to historic features.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Minimization Measures for the Proposed Action
None	Potential construction disturbance of previously unidentified sites.	• CDOT will query the SHPO COMPASS database prior to construction to ensure no new resources have been identified. • If previously undiscovered historic resources are identified during construction activities, work would be halted and CDOT's cultural resources manager would be contacted immediately.
	Crossings of eligible historic segments of Atchison, Topeka and Santa Fe Railroad, Fort Bent Canal, and Hyde Canal.	• Highway crossings of irrigation ditches will be constructed to prevent interrupting delivery or impairing the quality of irrigation water. • Bridges will be designed and built to span the width of the railroad. • BMPs will be implemented during construction to avoid and minimize impacts, including clearly marking the features and locating construction staging areas to avoid impacts to historic features. • CDOT will coordinate with BNSF Railway and irrigation ditch owners during final design to minimize impacts. • CDOT will minimize the use of orange construction fencing to limit temporary visual impacts near historic resources.

Mitigation. The project would not result in adverse effects to any historic properties, and mitigation is not required.

3.6.2 Archaeological Resources

Current Conditions

The archaeological analysis of the study area comprised a search of State Historic Society records and site surveys in February and November 2003. No archaeological sites or isolated finds were recorded during the site surveys. One previously recorded Native American burial site is located on private land south of the Lamar Canal, near the proposed eastern interchange site. The site was determined not eligible for listing on the NRHP; however, the locality remains sacred to the Southern Cheyenne and other regional tribes and is discussed in Section 3.6.4, *Native American Consultation*.

The Arkansas River dune field (discussed further in Section 3.7, *Geology and Soils*) is an archaeologically sensitive area that parallels the south side of the Arkansas River from La Junta, Colorado, eastward into Kansas; it crosses the reliever route study area. Archaeological materials have been identified in other portions of the dune field. However, no materials were identified in the dune field within the reliever route study area during site surveys (Gantt and Zier, 2003a; Gantt and Zier, 2003b). No prehistoric or historic archaeological resources eligible for the NRHP were found in the study area.

Impacts of No Action Alternative

The No Action Alternative does not include new transportation infrastructure or construction and thus no new impacts to archaeological resources would occur.

Impacts of Proposed Action

The Proposed Action would follow the existing gravel Alternative Truck Route south of U.S. 50. This alignment would minimize the risk of impacting archaeological resources south of U.S. 50. The Proposed Action would avoid the Native American burial site and would not affect any known archaeological resources. The Proposed Action would traverse the Arkansas River dune field, an archaeologically sensitive area with limited surface visibility, and could result in impacts to previously unidentified resources in the dune field.

Mitigation of Proposed Action

Avoidance and Minimization. The Proposed Action would follow the existing gravel Alternative Truck Route south of U.S. 50, minimizing impacts to any archaeological resources in that area.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Crossing the Arkansas River dune field, an archaeologically sensitive area with limited surface visibility.	• Prior to construction, CDOT will excavate discontinuous deep trenches along the reliever route ROW centerline within the Arkansas River dune field, and an archaeologist will inspect the trenches for archaeological features. • If previously unidentified archaeological resources are discovered during the excavation or other construction activities, work would be halted and CDOT's cultural resources manager would be contacted immediately.

3.6.3 Paleontology

Current Conditions

Paleontology is the study of past geological periods as known from fossil remains. The paleontological analysis of study area included a site survey by CDOT in June 2003. No recorded fossil localities exist in the three geological units occurring in the study area, and none were observed during the site visit. These three geological units are the Broadway Alluvium, Greenhorn Limestone, and Graneros Shale. No indications of an increased possibility of encountering fossils along the banks of the Arkansas River were found during research and the site survey.

Paleontology or Archaeology?

Paleontology pertains to fossilized plant and animal materials from past geologic periods.

Archaeology pertains to material remains of previous human life and activities that may be historic or prehistoric.

Impacts of No Action Alternative

The No Action Alternative does not include new transportation infrastructure or construction, and therefore, no new impacts to paleontological resources would occur.

Impacts of Proposed Action

The Proposed Action would not affect any known paleontological resources. The Proposed Action would follow the existing gravel Alternative Truck Route south of U.S. 50. This alignment would minimize the risk of impacting paleontological resources south of U.S. 50. Construction could result in impacts to previously unidentified paleontological resources.

Mitigation of Proposed Action

Avoidance and Minimization. The Proposed Action would follow the existing gravel Alternative Truck Route south of U.S. 50, minimizing impacts to any paleontological resources in that area.

Mitigation. Impacts will be mitigated by the following mitigation measures. The three geological areas identified during the reconnaissance are not known to produce scientifically significant vertebrae or invertebrate fossils such that monitoring during construction would be recommended.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Impacts on previously unidentified paleontological resources.	• If paleontological resources are identified during construction activities, work would be halted and CDOT's paleontologist would be contacted immediately.

3.6.4 Native American Consultation

Section 106 of the National Historic Preservation Act (as amended) and the Advisory Council on Historic Preservation regulations [36 CFR 800.2(c)(2)(ii)] mandate that federal agencies must involve interested Native American tribes in the planning process for federal undertakings. Consultation with a Native American tribe recognizes the government-to-government relationship between the U.S. government and sovereign tribal groups, and federal agencies must be sensitive to the fact that historic properties of religious and cultural significance to one or more tribes may be located on ancestral, aboriginal, or ceded lands beyond modern reservation boundaries.

Consulting tribes are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. If it is found that the project would impact cultural resources that are eligible for inclusion on the NRHP and are of religious or cultural significance to one or more consulting tribes, their role in the consultation process may also include participation in resolving how best to avoid, minimize, or mitigate those impacts. By describing the proposed undertaking and the nature of known cultural sites, and consulting with the interested Native American community, FHWA and CDOT strive to effectively protect areas important to Native Americans.

In October 2003, the following seven federally recognized tribes with an established interest in Prowers County, Colorado, were invited by letter to participate as consulting parties:

- Apache Tribe of Oklahoma
- Cheyenne and Arapaho Tribes of Oklahoma (two tribes administered by a unified tribal government)
- Comanche Nation of Oklahoma
- Kiowa Tribe of Oklahoma
- Northern Arapaho Tribe (Wyoming)
- Northern Cheyenne Tribe (Montana)

The Cheyenne and Arapaho Tribes of Oklahoma expressed in writing a desire to be a consulting party for the project. The Comanche Nation of Oklahoma responded by telephone,

also with a request to be considered a consulting party (Appendix A). The tribes indicated a specific concern regarding a known Native American burial site located within the reliever route study area.

Each consulting tribe continued to receive information about the project as it became available, and every opportunity was and will be taken to involve them in the planning and project development process. Each consulting tribe will be individually invited to the future public hearing.

The Proposed Action would not affect any known Native American resources. The Proposed Action would not affect the burial site. This information was transmitted to representatives of the consulting tribes, who were satisfied that the human remains would be adequately avoided. CDOT's cultural resources manager would continue coordinating with tribal leaders during design and construction of the Proposed Action.

3.7 Hazardous Materials, Soils, and Geology

This section discloses potential impacts on hazardous materials sites, soils, and geology.

3.7.1 Hazardous Materials

Current Conditions

A Phase I initial site assessment (ISA) was conducted in 2002 for the project in accordance with American Society for Testing and Materials (ASTM) Standard Practice E 1527-00. A database report was obtained from Environmental Data Resources, Inc. (EDR®) in 2007 and 2010 to update the Records Review portion of the ISA, which included a records search of all reasonably ascertainable environmental databases, including the standard state and federal sources in accordance with ASTM standard practice. The records search was performed within a 1-mile buffer of the reliever route centerline for all categories of sites (CH2M HILL, 2010).

Based on a review of available records, regulatory agency databases, historical maps, and the Phase I ISA reconnaissance, one notable environmental concern was identified in the study area: leaking underground storage tanks (LUSTs) at the Ports-to-Plains Travel Plaza in the north portion of the study area, at U.S. 287/U.S. 50 and CR 7, have contributed to groundwater contamination with the potential for groundwater migration offsite. Several nearby businesses were classified as small quantity hazardous waste generators as defined by the Resource Conservation and Recovery Act (RCRA). Sites with underground storage tanks (USTs) were also identified in or near the study area (see Figure 3-12). As with any sites that contain USTs or RCRA wastes, there is a potential that the underlying environmental media may have been compromised. Appendix C of the *U.S. 287 at Lamar: Initial Site Assessment* TM (CH2M HILL, 2003d) provides an atlas of sites identified in the Phase I ISA, and provides additional detail on UST or RCRA sites.

Site reconnaissance also identified drums, containers, heavy equipment, and debris at businesses in the commercial and industrial portion of the study area. Debris was also observed in rural portions of the study area. The debris may contain hazardous materials, chemicals or wastes. Soils and groundwater under areas where large numbers of cattle have

been maintained (feedlots and sites of large manure piles) may also have been compromised. The *U.S. 287 at Lamar: Initial Site Assessment* TM contains an atlas noting the locations of debris piles, feedlots, and manure piles. No violation of environmental regulations was reported for the above areas in the EDR® records review; however, the risk of hazardous materials, chemicals or wastes warrants a more detailed assessment of conditions to include an updated public records review and site reconnaissance during final design.

Impacts of No Action Alternative

Under the No Action Alternative, none of the hazardous waste sites identified within the study area would be disturbed. All of the sites, including the LUSTs at the Ports-to-Plains Travel Plaza, would remain the responsibility of their current owners.

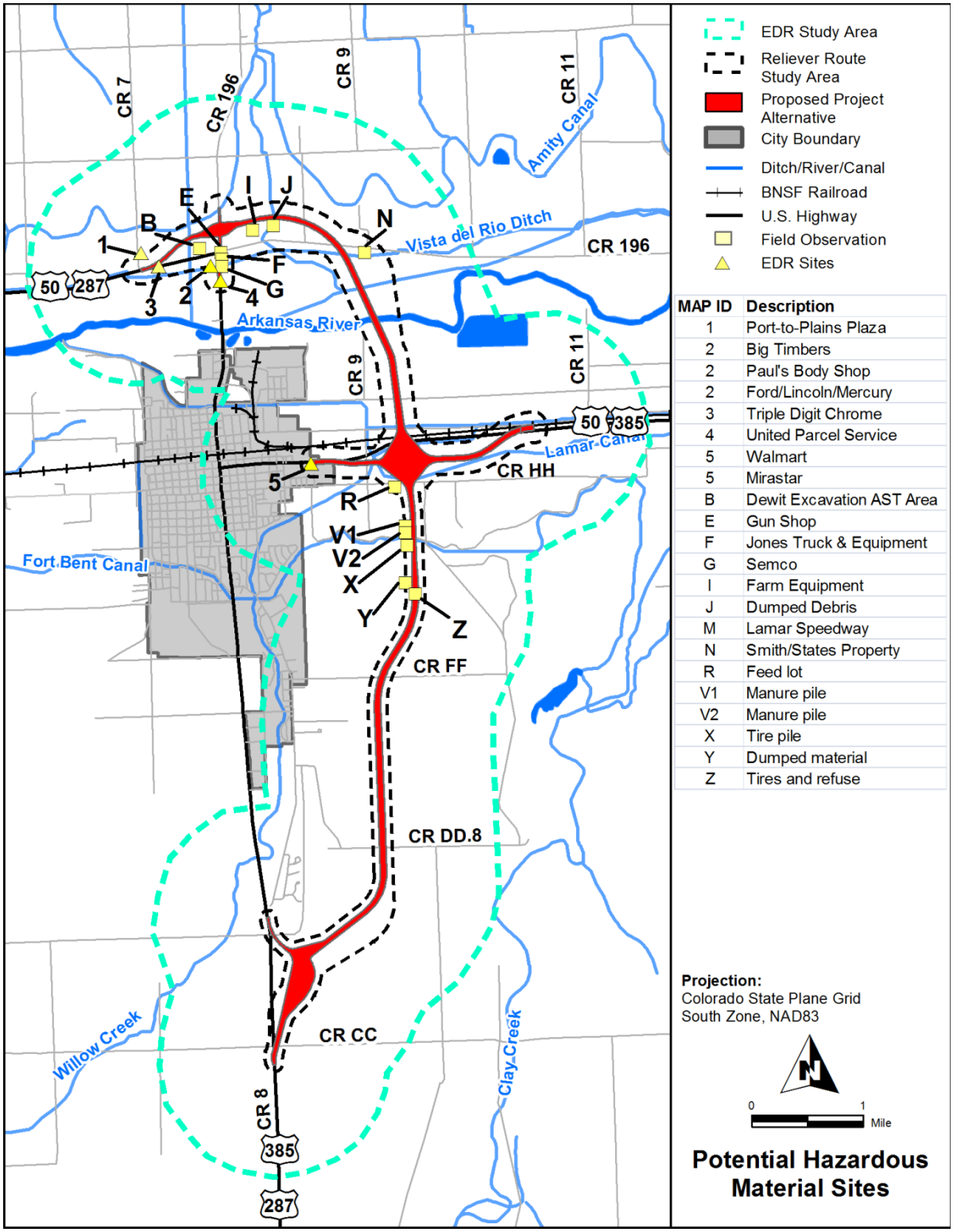
Impacts of Proposed Action

The Proposed Action would not include risks from hazardous materials known at this time. The proposed north interchange would avoid the Ports-to-Plains Travel Plaza. Because conditions can change over time, site specific assessments would be conducted during final design. The investigations should include:

- Review of records for the Ports-to-Plains Travel Plaza to determine the extent of contaminant migration and containment actions;
- Site reconnaissance, interviews, and review of county and/or state records for the identified industrial and commercial facility operations adjacent to the Proposed Action reliever route relative to historical and current environmental conditions;
- Interviews and record reviews with the county health/environment department; and
- Screening/evaluation of debris piles for hazardous materials, chemicals, or wastes prior to their removal and proper disposal.

Some environmental concerns may be elevated to a Phase 2 environmental site assessment to include soil and /or ground water investigation.

FIGURE 3-12
Potential Hazardous Material Sites



MAP ID	Description
1	Port-to-Plains Plaza
2	Big Timbers
2	Paul's Body Shop
2	Ford/Lincoln/Mercury
3	Triple Digit Chrome
4	United Parcel Service
5	Walmart
5	Mirastar
B	Dewit Excavation AST Area
E	Gun Shop
F	Jones Truck & Equipment
G	Semco
I	Farm Equipment
J	Dumped Debris
M	Lamar Speedway
N	Smith/States Property
R	Feed lot
V1	Manure pile
V2	Manure pile
X	Tire pile
Y	Dumped material
Z	Tires and refuse

Mitigation of Proposed Action

Avoidance and Minimization. No impacts are currently identified at this level of assessment that require avoidance or minimization measures.

Mitigation. Impacts will be mitigated by the following mitigation measures:

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Potential for impacts on previously identified hazardous material sites within the project footprint.	• A site specific ISA will be performed during detailed project design. Mitigation will include soil and/or groundwater cleanup if necessary. • CDOT will conduct a Phase 2 walk-through at the time of property acquisition to determine the location of any buried fuel tanks or other hazardous materials not previously identified. • If hazardous materials are encountered CDOT will follow its Section 250 specifications in the CDOT 2011 Standard Specifications for Road and Bridge Construction.

3.7.2 Geology and Soils

Current Conditions

Soils and geology maps from the USGS and the NRCS were evaluated to identify geologic features and soils of concern in constructing and operating the Proposed Action.

The reliever route study area contains primarily silt and windblown sands south of U.S. 50 and alluvial deposits in the river valley and terraces north of the Arkansas River. All soil types represent fair to good sources of road fill. The Arkansas River sand dunes area occurs south of the Arkansas River in a wide belt that extends across the country. It consists of deep sandy soils, deposited by the wind, that are susceptible to wind erosion and are difficult to revegetate after being disturbed.

Two small fault lines exist in the project area, both generally oriented east-west. One fault line lies just north of the proposed south interchange, while the other follows U.S. 50/Olive Street east from downtown Lamar. However, fault lines are not good indicators of earthquakes east of the Rocky Mountains and, in fact, most known fault lines do not appear to have any correlation with modern earthquakes (USGS, 2003).

Impacts of No Action Alternative

The No Action Alternative would result in continued wind erosion in the sand dunes area along the existing gravel Alternative Truck Route, contributing to reduced visibility for vehicles during high-wind conditions.

Impacts of Proposed Action

Construction of the Proposed Action would cause a temporary increase in soils erosion in the vicinity of the Arkansas River and would temporarily increase wind and water erosion in the sand dunes area south of U.S. 50. Permanent impacts include the potential for bank erosion around the proposed new Arkansas River bridge and increased wind erosion in newly disturbed areas within the sand dunes area. Erosion would also continue to occur in areas located downwind of larger sand dunes.

Mitigation of Proposed Action

Avoidance and Minimization. The Proposed Action would follow the existing gravel Alternative Truck Route alignment within the sand dunes area, and would therefore avoid larger sand dunes, limiting the potential for additional wind erosion.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Increased wind and water erosion during construction.	• Implement BMPs to control erosion, including silt fencing, straw bales, diversion ditches, and dust palliatives.
	Increased bank erosion at Arkansas River bridge.	• Stabilize banks as determined necessary during design with rip-rap or similar and by seeding with suitable native vegetation.
	Increased wind erosion in and near dunes south of U.S. 50.	• Seed disturbed areas with aggressive, drought-tolerant vegetation to stabilize soils.

3.8 Utilities

This section pertains to utilities that may be affected by the project and is based on information obtained through research and communication with the utility owners. The Proposed Action has been reviewed, potential conflicts with known utilities have been identified, and utility relocation costs have been included in the conceptual cost estimate for the Proposed Action.

Current Conditions

An inventory of existing utilities was conducted for the *U.S. 287 at Lamar Alternative Truck Route - Design Concept Summary Report* (CDOT, 2000). Multiple private and municipal utilities were found to intersect or parallel the study area. Utilities in the reliever route study area include overhead and underground electric transmission lines and distribution lines, telephone lines, high pressure gas lines, water lines, sanitary sewer, and storm sewer. Since the original inventory was conducted, a wind power transmission line has been constructed parallel to the east side of the existing gravel Alternative Truck Route, north of CR FF. CDOT communicated with the wind developer during conceptual design of the Proposed Action to facilitate a coordinated design between the reliever route and the transmission line.

Impacts of No Action Alternative

The No Action Alternative would not impact overhead or buried utilities in the study area and would not impact irrigation facilities or affect system conveyance or delivery. Standard upgrades and maintenance to utility lines would continue to be performed by utility owners.

Impacts of Proposed Action

The Proposed Action would impact several utilities in the study area. Potential conflicts with known utilities have been identified, and utility relocation costs have been included in the conceptual cost estimate for the Proposed Action. Initial estimates indicate that a total of nine overhead or buried telephone lines and 11 water lines would be impacted by the Proposed Action. Additionally, constructing the reliever route would impact four sanitary sewers and one storm sewer. Twenty-seven electric power lines and 13 gas lines would be impacted under the Proposed Action. The reliever route would impact irrigation ditches and canals; those impacts are disclosed in Section 3.4.1, *Irrigation Ditches and Canals*.

Mitigation of Proposed Action

Avoidance and Minimization. During final design, utilities will be avoided through design modifications or, where conflicts cannot be avoided, utilities will be relocated.

Mitigation. Impacts will be mitigated by the following mitigation measures.

Impacts of the No Action Alternative	Impacts of the Proposed Action	Mitigation Measures for the Proposed Action
None	Potential for interrupted utility delivery during construction	• CDOT will survey for all utilities within and adjacent to the project area during final design. • CDOT will coordinate all utility impacts with the City of Lamar, Prowers County, and private and public utility providers throughout project design and construction. • Impacts to buried utilities may be avoided by protecting them with encasements. • Utilities will be relocated if they cannot be avoided.

3.9 Cumulative Impacts Analysis

Cumulative impacts result when the incremental impact of the Proposed Action is collectively added to the past, present, and reasonably foreseeable future actions undertaken in the region. The cumulative impacts analysis focuses on specific resources that are directly or indirectly affected by the Proposed Action. If an individual project has no direct or indirect impact on a resource, then it would not contribute to cumulative impacts on that resource.

This cumulative impacts analysis focuses on the geographic area encompassing Prowers County. Trends were examined beginning 1965 and out to 2035 for the future long range planning horizon. A flood of the Arkansas River in 1965 through downtown Lamar, in addition to the collapse of the agricultural economy, marked the beginning of an economic

recession for the area and serves as a baseline for determining economic growth. Looking back from 1965 to the present, the population in Prowers County decreased slightly until the mid-1980s, when population began to grow again. Prowers County grew from approximately 13,300 in 1970 to approximately 14,500 at its peak in 2000, and returned to less than 12,600 by 2010. The city of Lamar followed a similar trend, peaking with a population of 8,869 in 2000 and returning to 1970 levels of approximately 7,800 in 2010.

Between 1970 and 2000, Lamar added approximately 1,000 new housing units. Between 2000 and 2010, new single family building permits totaled only 66, echoing the population trends experienced during that time. Review of historic aerial coverage between 1988 and 2012 suggests that the city and county have not added large scale residential or commercial developments, and the majority of new development occurred within city limits.

3.9.1 Past, Present, and Reasonably Foreseeable Future Actions

The descriptions below briefly explain each of the past, present, and reasonably foreseeable actions that are expected to contribute to cumulative impacts involving the reliever route.

1) **Ports-to-Plains Trade Corridor.** U.S. 287 through Lamar resides on the Ports-to-Plains Trade Corridor. The Ports-to-Plains Alliance is a grassroots alliance of communities and businesses whose mission is to advocate for a robust transportation infrastructure to promote economic security and prosperity throughout North America's energy and agricultural heartland. The Ports-to-Plains Trade Corridor is a 2,300-mile stretch of road between Laredo, Texas, and Alberta, Canada. Over the past decade, Ports-to-Plains Alliance members have raised more than $1 billion in federal funding for road improvements in the nine-state Ports-to-Plains region. The alliance also helps local communities market themselves as part of a major economic region driven not only by legacy industries such as ranching, but by new industries such as wind power, biotechnology, and clean energy.

   CDOT has reconstructed 24 segments of the Ports-to-Plains Trade Corridor on U.S. 287 between the Oklahoma border and Limon since 1991. Those reconstructions, in most instances, have consisted of removing the existing asphalt roadway, replacing it with concrete, and upgrading it to a "super-two" configuration – a wider, two-lane highway, with occasional passing lanes and wider shoulders. With the amount of truck traffic on U.S. 287 through eastern Colorado, reconstruction was required to meet the "High Priority" standard for the Ports-to-Plains Trade Corridor. Large truck traffic averages 30 to 50 percent on the route, with some segments averaging nearly 60 percent.

2) **U.S. 287 Strategic Corridor.** Colorado Senate Bill 1 (1997) funded the U.S. 287 Strategic Corridor that extends from the Colorado/Oklahoma state line to Kit Carson, Colorado, approximately 60 miles north of Lamar. U.S. 287 provides a direct connection with the Mexico border and the potential to attract and serve existing and future travel demands associated with the North American Free Trade Agreement (NAFTA) and international trade. Completing the section of U.S. 287 in Lamar would provide a continuous paved route for truck traffic to enhance safety and mobility throughout the Strategic Corridor. The U.S. 287 Strategic Corridor funding is separate from the Ports-to-Plains Trade Corridor discussed above. CDOT completed the final segment of the U.S. 287 Strategic Corridor, in Kit Carson, in August 2012.

3) **U.S. 50 Corridor.** FHWA and CDOT are working in partnership with government agencies, communities, and the general public in the development and analysis of proposed improvements to the U.S. 50 Corridor. FHWA and CDOT are preparing a Tier 1 EIS for transportation improvements on U.S. 50 between Pueblo and the vicinity of the Colorado/Kansas state line in southeastern Colorado. This environmental study, known as the U.S. 50 Corridor East project, is built on the 2003 CDOT U.S. 50 corridor planning study. This planning study culminated in a community-developed vision for the corridor that called for a safer roadway on or near the existing U.S. 50 that maintains a reasonable traffic flow and speed for the movement of people and goods along and through the Lower Arkansas Valley, while providing flexibility to accommodate future transportation needs.

   The vision for U.S. 50, based on the Tier 1 EIS currently underway, calls for a high-speed, limited-access roadway that balances the needs of all users (local, regional, and statewide travelers). The existing four-lane portions of U.S. 50 through towns would not accommodate these characteristics. In these areas, expanding the current lanes would severely impact homes and businesses located along U.S. 50. Building a new roadway outside of town will allow each community to retain the existing U.S. 50 roadway as their own main street, and provides additional options for regional and statewide travelers to efficiently travel through the valley. There will be signs and connections to guide travelers into the towns. After the Tier 1 study is complete, a series of location-specific environmental and engineering studies will be conducted to produce construction projects.

4) **Colorado Rail Relocation Implementation Study.** In 2009, CDOT, BNSF Railway, and UPRR completed the Colorado Rail Relocation Implementation Study, investigating the potential for public-private partnerships that would culminate in the relocation of a significant portion of through freight rail traffic away from the congested Front Range onto a reliever route in the Eastern Plains of Colorado. In order to analyze the possible project costs as well as determine the railroad operations savings and costs associated with such potential reliever routes, two "Study Alignments" located west of Lamar were identified for analysis in the study. In comparison to the existing conditions, either of the two alternatives would provide significant operational benefits, including a more direct route for coal trains between Wyoming and Texas. Ultimately, the study recommended more detailed engineering and additional environmental analysis be conducted in the future for both of the study's alignments. To date, no additional studies have been initiated.

5) **AVC.** The Bureau of Reclamation released a Draft EIS for the AVC in August 2012. The AVC would provide higher-quality water to municipal entities in southeastern Colorado. The AVC would connect to Lamar's municipal water system in southern Lamar.

6) **Wind Power Projects.** The largest wind farm in Colorado is located in southern Prowers County, approximately 20 miles south of Lamar. Completed in late 2003, the 162-megawatt (MW) Colorado Green Wind Power Project utilizes 108 GE 1.5-MW wind turbines and sits on about 11,000 acres used as a working cattle ranch. That project is about 8 miles east of the Twin Buttes Wind Power Project, a 75-MW wind energy project located on 9,000 acres in Bent County, approximately 20 miles southwest of Lamar. The actual footprint of the wind turbines on these wind farms is less than 2 percent of the total

acreage, leaving most of the land available for livestock grazing and ranching. In addition to the Colorado Green and Twin Buttes projects, Lamar Light & Power is generating power from five 1.5-MW GE wind turbines at a municipal utilities project located about 15 miles south of Lamar.

7) **Existing Gravel Alternative Truck Route.** The city and county purchased ROW east of the city and in 2000 constructed a segment of an existing two-lane gravel Alternative Truck Route (currently maintained by Prowers County) along the proposed reliever route. This serves to divert trucks traveling through downtown by connecting with U.S. 287 just north of CR CC and skirting downtown Lamar by connecting to U.S. 50 east of CR 9. However, the city and county's construction project did not extend as far north as envisioned, and the roadway terminates at its intersection with U.S. 50. This 5.5-mile alignment is well located for its purpose; the south half of the Proposed Action follows much of the same alignment.

Cumulative Impacts on Transportation

With the formalization of the federal highway system, U.S. 50 was one of the original cross-country numbered U.S. highways (1926), followed by U.S. 287 (ca. 1940). FHWA, CDOT, and other entities have worked to improve these highways over the years. The most recent action to improve local and regional travel along these highways was taken by Prowers County with the construction of the existing gravel Alternative Truck Route southeast of the city in 2000. This two-lane gravel road serves to divert trucks traveling through downtown, particularly those traveling between U.S. 287 south of Lamar and U.S. 50 east of the city. In recent years, CDOT transferred ownership of SH 196 to Prowers County, and the highway was redesignated CR 196.

A number of the past, present, and reasonably foreseeable future projects described above may contribute to a cumulative increase in interstate and regional freight traffic traveling through Prowers County. The effects of those actions include the following:

- **Ports-to-Plains Trade Corridor** and **U.S. 287 Strategic Corridor —** As trade in the corridor increases, interstate freight traffic on U.S. 287 will increase.
- **U.S 50 Corridor East Project —** Future improvements on U.S. 50 would improve safety and maintain mobility of people and goods.
- **Colorado Rail Relocation Implementation Study —** Still in the study phase, this project, if constructed, would provide significant operational benefits for interstate freight movement, including a more direct route for coal trains between Wyoming and Texas.
- **Wind Power Projects —** Commercial trucks transported oversize loads through downtown Lamar on U.S. 287/Main Street during construction of the Colorado Green Wind Power Project (108 turbines) and the Twin Buttes Wind Power Project (50 turbines).
- **Existing Gravel Alternative Truck Route —** Local farming trucks use this route, but commercial trucks have continued to utilize the existing U.S. 287/Main Street route.

The Proposed Action would construct a reliever route to provide efficient travel for interstate and regional freight traffic traveling through Lamar on U.S. 287 and U.S. 50. The Proposed Action reliever route is not expected to generate additional freight traffic on its own;

however, it would divert nearly 84 percent of heavy truck traffic and 30 percent of automobile traffic that presently travel through the city without stopping, improving regional mobility and freight delivery efficiency.

The Proposed Action in conjunction with other past, present, and reasonably foreseeable future actions would have a long-term beneficial cumulative effect on the efficient movement of interstate and regional freight traffic through Prowers County. The growth in both highway and rail freight traffic in the region as a result of other future projects, along with the provision of non-stop traffic flow for through-traffic on the Proposed Action reliever route and the proposed grade-separated crossing of the BNSF Railway railroad by U.S. 287 and U.S. 50, would result in improved safety and mobility for freight traffic. The U.S. 287 and U.S. 50 routes would become more desirable freight routes for interstate and regional traffic.

Cumulative Impacts on Economics

Lamar serves as a primary regional trade hub, with livestock, crops, equipment, and machinery traveling on U.S. 287 and U.S. 50 from local farms and ranches to shipping destinations or processors for markets across the nation. Downtown Lamar has had a well-defined central business district since the turn of the 20th century, as evidenced by the dates on its storefronts today. The Prowers County Courthouse still anchors the city's government, financial, and commercial center, although growth now radiates north, south, and east, paralleling U.S. 287 and U.S. 50. Motor hotels built on east U.S. 50 after World War II still serve the traveling public. With its arrival in the 1990s, the Walmart Supercenter shifted the retail base 2 miles east and created strong competition for the locally owned retailers. The largest manufacturing employer in Prowers County, NeoPlan USA, closed its factory and headquarters in 2004. The economic conditions in Lamar and Prowers County are cyclical and reflective of both local influences (the flood of 1965, closing of NeoPlan) and regional and national trends. A number of the past, present, and reasonably foreseeable future projects may also contribute cumulatively to the economic growth in Prowers County:

- **Ports-to-Plains Trade Corridor**—As the trade corridor continues to modernize and interstate freight traffic on U.S. 287 increases, the corridor is anticipated to have a beneficial economic impact in Prowers County.
- **U.S. 287 Strategic Corridor**—Completion of the U.S. 287 Strategic Corridor improvements could be a driver of economic growth by confirming the ability of U.S. 287 to serve existing and future travel demands associated with NAFTA and international trade.
- **Colorado Rail Relocation Implementation Study**—If constructed, substantial additional freight rail traffic would travel through the region on a more efficient and direct freight rail route than the existing Front Range freight rail corridors. Construction of the new corridor in Bent, Crowley, or Lincoln County could provide construction jobs and associated construction spending in the short term for Prowers County.
- **AVC –** Construction of the AVC would create short-term construction jobs and associated spending in Prowers County.
- **Wind Power Projects**—Construction of the wind facilities provided construction jobs in the short term. Long-term operations and maintenance of the wind power projects creates stable jobs for residents in Prowers County.

The Proposed Action would require relocation of one residence and three businesses, and would acquire 385 acres of privately owned property that currently contribute to the property tax base for the city and county.

From a regional economic perspective, the Proposed Action reliever route would provide businesses an alternative location to the Main Street corridor, if zoning allows for such development along the reliever route. This would provide additional opportunities for new businesses. It could also lead to businesses relocating from within city limits to the interchanges along the reliever route and could create competition between downtown businesses and reliever route businesses. This could impact individual businesses and could redirect a portion of the city's sales tax revenues to the county.

The Proposed Action could also indirectly affect existing highway-dependent businesses on Main Street—such as convenience stores, lodging, and restaurants—by diverting a portion of their customer base to the reliever route. Approximately one-third of Main Street business sales are sensitive to changes to traffic patterns; these sales comprise approximately 6 percent of overall business sales in Lamar. Any reduced sales at highway-dependent businesses on Main Street would likely be offset by an improved business climate for destination businesses resulting from the reduction in trucks and other through-traffic on Main Street. Additionally, Lamar is the largest city within a 100-mile radius; travelers needing gas, food, or other services would be likely to stop in Lamar because no other large municipalities are nearby.

Construction of the reliever route would create construction jobs and associated construction spending in Lamar.

The Proposed Action in conjunction with other past, present, and reasonably foreseeable future actions is anticipated to have a long-term beneficial cumulative effect on economic resources in Prowers County. The improvements in interstate and regional mobility associated with the Proposed Action and other future projects, along with new commercial development opportunities along the reliever route, could collectively encourage economic development in the county. This cumulative effect on economic development would be expected to offset any short-term economic losses resulting from the diversion of businesses or customers to the reliever route. The construction of the Proposed Action, other future transportation and infrastructure projects, and new businesses and development that would establish along the proposed reliever route would provide short-term construction employment and associated spending in Prowers County.

Cumulative Impacts on Farmlands

The survey area for prime and unique farmlands for Prowers County totals 1.05 million acres (NRCS, 2007). Of that total, approximately 27 percent is not prime farmland, while 73 percent, or 768,000 acres, is prime farmland or farmland of statewide importance. A vast majority of this land is considered prime if irrigated. Irrigation of croplands is relatively recent in the region's history, but it is essential in the creation of productive farmlands. Applying water to fertile, but arid, soils markedly improved productivity of the area's farms and ranches, and opened new areas for settlement and the cultivation of crops.

The conversion of farmland to nonagricultural uses began not long after irrigation became feasible, and continues today in numerous forms. Expansion of Lamar's city limits,

construction of rural residences or businesses on the edge of the city, and infrastructure development all have the potential to remove farmlands from production.

Continued slow conversion of farmlands is likely in the future as a result of population growth and economic development in and near Lamar. Several past projects described above, along with future growth and development, may also contribute to the cumulative consumption of farmlands:

- **Wind Power Projects**--The footprint of the wind turbines accounts for less than 2 percent of the two projects' land area, leaving most of the land available for existing uses.
- **Existing Gravel Alternative Truck Route—**The original construction of the existing gravel Alternative Truck Route consumed both prime and not prime farmland, totaling 5.5 miles long and 200 feet wide.

The Proposed Action would convert 364 acres of prime farmland or farmland of statewide importance to a transportation facility. According to NRCS estimates, this accounts for less than a thousandth of a percent of total prime farmland and farmland or statewide importance. When considering the impacts of the Proposed Action in combination with other past, present and reasonably foreseeable future actions, negligible cumulative impacts on farmlands would occur in Prowers County.

Cumulative Impacts on Ecology

Prowers County is located in the western Great Plains, a semi-arid ecosystem of mixed-grass prairies, relatively scant precipitation, and wide seasonal climatic variation. Farming and ranching brought broad, marked, and permanent changes to the region more than a century ago. Cattle and other domestic livestock replaced bison; alfalfa and corn fields now grow in place of mixed-grass prairies; and irrigation systems redistribute water resources. These practices also introduced nonnative plant and animal species such as Russian olives, crested wheat grass, and domesticated dogs and cats – often to the detriment of their native predecessors – willows, little bluestem, prairie dogs, and swift fox. The cumulative impact of these events has been irreversible changes to the mixed-grass prairie ecosystem, including a reduction in native grassland species across the entire Great Plains.

The conversion of natural prairie habitat to agricultural uses slowed in southeast Colorado two decades ago, in part from the U.S. Department of Agriculture's Conservation Reserve Program. By compensating landowners to leave farmland fallow, native grasses have returned, and small-game species have flourished. In the long-term horizon, the shortgrass prairie ecosystem may continue to shrink slowly as a result of population growth and economic development in and near Lamar.

Past, present, and reasonably foreseeable future projects may also contribute to cumulative impacts to suitable habitat for native plant and animal species:

- **AVC—**The AVC would reduce water flows in the Arkansas River, which would increase the concentration of pollutants in the river and could affect aquatic species.
- **Wind Power Projects**--The footprint of the wind turbines accounts for less than 2 percent of the two projects' land area, leaving most of the land available for existing uses.

- **Existing Gravel Alternative Truck Route**—The original construction of the existing gravel Alternative Truck Route consumed undeveloped and agricultural lands and created an additional barrier to wildlife movement, totaling 5.5 miles long and 200 feet wide.

The Proposed Action would impact approximately 20 acres of shortgrass prairie habitat north of the Arkansas River, and approximately 131 acres near the proposed southern interchange; this habitat serves as potential foraging areas and nesting sites. The Proposed Action would impact approximately 8 acres of riparian habitat along the Arkansas River, including the Arkansas River itself. Loss of the habitat is expected to have minimal impacts on local wildlife because shortgrass prairie and riparian habitat is available adjacent to the proposed reliever route. Construction of the Proposed Action could result in temporary displacement of wildlife and mortality or injury to smaller less-mobile species. Construction may also increase sedimentation in the Arkansas River and its tributaries. These impacts would be temporary and minimized through mitigation measures described in Section 3.4, *Water Resources*, and 3.5, *Ecology*.

The Proposed Action, in conjunction with other past, present, and reasonably foreseeable future actions, is anticipated to have a negligible cumulative effect on habitat and wildlife. Minimal additional habitat would be converted to developed uses. Prowers County would remain largely agricultural and undeveloped, with wildlife movement corridors and habitat remaining intact. Construction and permanent BMPs would treat stormwater runoff, reducing sediment loads and minimizing impacts to aquatic species.

Cumulative Impacts on Water Resources

The project is located in the Arkansas River basin. The Arkansas River flows from west to east through the north end of the study area. The Arkansas River has a history of flooding, including in 1965 when the recorded flood depth was 19 feet. One of its tributaries, Willow Creek, flows from south to north through the study area. Willow Creek has been channelized north of the BNSF Railway railroad tracks and U.S. 50. The ditches and canals in the study area receive their water from the Arkansas River. Water quality in the ditches and canals varies depending on the flow rate and time of year, with flow rate peaking between May and August. The level of dissolved solids generally increases as the flow rate decreases. Groundwater is the primary source of drinking water in Prowers County.

In support of farming and municipal growth, there has been a history of constructing water diversion canals, altering floodplains, and straightening rivers and streams for various purposes, including flood control and irrigation. Transportation projects also constrain the natural course of rivers and streams where they cross over those features. Additional crossings of the Arkansas River would limit the ability of the river to meander over time.

In Prowers County, agricultural practices are the primary contributors to surface water pollution. As a result of industrial and agricultural practices, the Arkansas River in the study area has high salinity. The segment of the Arkansas River within the study area has been determined to be impaired due to levels of dissolved selenium and dissolved uranium, and has been listed on the 303(d) list for these parameters. These two parameters are frequently found in waterways throughout Colorado due to naturally occurring sources, specifically from groundwater and/or exposed geologic sources. Stormwater runoff from impervious

surfaces is less of a concern because development is sparse. CDOT does perform winter snow removal on its roadways in Prowers County. This winter maintenance includes a mixture of sand/salt, Ice Slicer™ (sodium chloride), and liquid anti-icing or de-icing agents (magnesium chloride).

Past, present, and reasonably foreseeable future projects may also contribute to cumulative impacts to water resources:

- **AVC—**The AVC would reduce water flows in the Arkansas River, which would increase the concentration of pollutants in the river and could affect aquatic species. It would provide a pipeline to convey cleaner drinking water to Prowers County.

The Proposed Action would construct or modify eight water crossings and would construct nearly 10 miles, or 90 acres, of new roadway. The Proposed Action is anticipated to offset some of the impacts of the AVC project on water resources. Hydraulic analysis of the conceptual design indicates less than a 1-foot rise in the water surface elevation as a result of the reliever route, and the Proposed Action would capture and treat all stormwater runoff in the project footprint, which would decrease the pollutants associated with highway traffic and maintenance into the waterways. The Proposed Action would not contribute measurably to cumulative impacts on water resources in the Arkansas River basin, but cumulative impacts of other past, present, and reasonably foreseeable future actions include adverse effects of channelization and decreased water quality in the Arkansas River basin.

Cumulative Impacts on Greenhouse Gases

Climate change is an important national and global concern. While the earth has gone through many natural changes in climate in its history, there is general agreement that the earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) GHG emissions contribute to this rapid change. Carbon dioxide (CO_2) makes up the largest component of these GHG emissions. Other prominent transportation GHGs include methane and nitrous oxide.

Many GHGs occur naturally. Water vapor is the most abundant GHG and makes up approximately two thirds of the natural greenhouse effect. However, the burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Many GHGs remain in the atmosphere for time periods ranging from decades to centuries. GHGs trap heat in the earth's atmosphere. Because atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate-related phenomena. For example, warmer global temperatures can cause changes in precipitation and sea levels.

To date, no national standards have been established regarding GHGs, nor has EPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO_2 under the CAA. However, there is a considerable body of scientific literature addressing the sources of GHG emissions and their adverse effects on climate, including reports from the Intergovernmental Panel on Climate Change, the US National Academy of Sciences, and EPA and other Federal agencies. GHGs are different from other air pollutants evaluated in federal environmental reviews because GHG impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO_2 and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global

climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

Under NEPA, detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making.[2] FHWA has concluded, based on the nature of GHG emissions and the exceedingly small potential GHG impacts of the Proposed Action (as discussed below and shown in Table 3-16) that the GHG emissions from the Proposed Action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emissions from the project build alternatives will be insignificant, and will not play a meaningful role in a determination of the environmentally preferable alternative or the selection of the Proposed Action. More detailed information on GHG emissions "is not essential to a reasoned choice among reasonable alternatives" (40 CFR 1502.22(a)) or to making a decision in the best overall public interest based on a balanced consideration of transportation, economic, social, and environmental needs and impacts (23 CFR 771.105(b)). For these reasons, no alternatives-level GHG analysis has been performed for this project.

The context in which the emissions from the proposed project will occur, together with the expected GHG emissions contribution from the project, illustrate why the project's GHG emissions will not be significant and will not be a substantial factor in the decision-making. The transportation sector is the second largest source of total GHG emissions in the U.S., behind electricity generation. The transportation sector was responsible for approximately 27 percent of all anthropogenic (human caused) GHG emissions in the U.S. in 2010.[3] The majority of transportation GHG emissions are the result of fossil fuel combustion. CO_2 makes up the largest component of these GHG emissions. U.S. CO_2 emissions from the consumption of energy accounted for about 18 percent of worldwide energy consumption CO_2 emissions in 2010.[4] U.S. transportation CO_2 emissions accounted for about 6 percent of worldwide CO_2 emissions.[5]

While the contribution of GHGs from transportation in the U.S. as a whole is a large component of U.S. GHG emissions, as the scale of analysis is reduced the GHG contributions become quite small. Using CO_2 because of its predominant role in GHG emissions, Table 3-16 below presents the relationship between current and projected Colorado highway CO_2 emissions and total global CO_2 emissions, as well as information on the scale of the project relative to statewide travel activity.

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2 *See* 40 CFR 1500.1(b), 1500.2(b), 1500.4(g), and 1501.7.

3 Calculated from data in U.S. Environmental Protection Agency, *Inventory of Greenhouse Gas Emissions and Sinks*, 1990-2010.

4 Calculated from data in U.S. Energy Information Administration I*nternational Energy Statistics, Total Carbon Dioxide Emissions from the Consumption of Energy*, http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=90&pid=44&aid=8, accessed 2/25/13.

5 Calculated from data in U.S. Energy Information Administration *Energy-Related Carbon Dioxide Emissions* Figure 104: http://www.eia.gov/forecasts/archive/ieo10/emissions.html and
EPA table ES-3: http://epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Executive-Summary.pdf.

Based on emissions estimates from EPA's MOVES model[6], and global CO_2 estimates and projections from the Energy Information Administration, CO_2 emissions from motor vehicles in the entire state of Colorado contributed less than one tenth of one percent of global emissions in 2010 (0.0813 percent). These emissions are projected to contribute an even smaller fraction (0.0612 percent) in 2035.[7] VMT in the project study area represents 0.00015 percent of total Colorado travel activity; and the project itself would increase statewide VMT by 0.00003 percent. (Note that the project study area, as defined for the travel demand analysis, includes travel on many other roadways in addition to the proposed project.) As a result, based on the build alternative with the highest VMT[8], FHWA estimates that the proposed project could result in a potential increase in global CO_2 emissions in 2035 of 0.0012 percent (less than one thousandth of one percent), and a corresponding increase in Colorado's share of global emissions in 2035 of 0.078 percent. This very small change in global emissions is well within the range of uncertainty associated with future emissions estimates.[9] [10]

To help address the global issue of climate change, the U.S. Department of Transportation is committed to reducing GHG emissions from vehicles traveling on our nation's highways. U.S. Department of Transportation and EPA are working together to reduce these emissions by substantially improving vehicle efficiency and shifting toward lower carbon intensive fuels. The agencies have jointly established new, more stringent fuel economy and first ever GHG emissions standards for model year 2012-2025 cars and light trucks, with an ultimate fuel economy standard of 54.5 miles per gallon for cars and light trucks by model year 2025. Further, on September 15, 2011, the agencies jointly published the first ever fuel economy and GHG emissions standards for heavy-duty trucks and buses.[11] Increasing use of technological innovations that can improve fuel economy, such as gasoline- and diesel-electric hybrid vehicles, will improve air quality and reduce CO_2 emissions future years.

Consistent with its view that broad-scale efforts hold the greatest promise for meaningfully addressing the global climate change problem, FHWA is engaged in developing strategies to reduce transportation's contribution to GHGs—particularly CO_2 emissions—and to assess the risks to transportation systems and services from climate change. In an effort to assist states

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[6] http://www.epa.gov/otaq/models/moves/index.htm. EPA's MOVES model can be used to estimate vehicle exhaust emissions of CO_2 and other GHGs. CO_2 is frequently used as an indicator of overall transportation GHG emissions because the quantity of these emissions is much larger than that of all other transportation GHGs combined, and because CO_2 accounts for 90 to 95 percent of the overall climate impact from transportation sources. MOVES includes estimates of both emissions rates and VMT, and these were used to estimate the Colorado statewide highway emissions in Table 3-16.

[7] Colorado emissions represent a smaller share of global emissions in 2035 because global emissions increase at a faster rate.

[8] Selected to represent a "worst case" for purposes of this comparison; the Preferred Alternative may have a smaller contribution.

[9] For example, Figure 114 of the Energy Information Administration's *International Energy Outlook 2010* shows that future emissions projections can vary by almost 20%, depending on which scenario for future economic growth proves to be most accurate.

[10] When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an EIS and there is incomplete or unavailable information, the agency is required make clear that such information is lacking (40 CFR 1502.22). The methodologies for forecasting GHG emissions from transportation projects continue to evolve and the data provided should be considered in light of the constraints affecting the currently available methodologies. As previously stated, tools such as EPA's MOVES model can be used to estimate vehicle exhaust emissions of CO_2 and other GHGs. However, only rudimentary information is available regarding the GHG emissions impacts of highway construction and maintenance. Estimation of GHG emissions from vehicle exhaust is subject to the same types of uncertainty affecting other types of air quality analysis, including imprecise information about current and future estimates of VMT, vehicle travel speeds, and the effectiveness of vehicle emissions control technology. Finally, there presently is no scientific methodology that can identify causal connections between individual source emissions and specific climate impacts at a particular location.

[11] For more information on fuel economy proposals and standards, see the National Highway Traffic Safety Administration's Corporate Average Fuel Economy website: http://www.nhtsa.gov/fuel-economy/.

and Metropolitan Planning Organizations in performing GHG analyses, FHWA has developed a *Handbook for Estimating Transportation GHG Emissions for Integration into the Planning Process.* This handbook presents methodologies reflecting good practices for the evaluation of GHG emissions at the transportation program level, and demonstrates how such evaluation may be integrated into the transportation planning process. FHWA has also developed a tool for use at the statewide level to model a large number of GHG reduction scenarios and alternatives for use in transportation planning, climate action plans, scenario planning exercises, and in meeting state GHG reduction targets and goals. To assist states and Metropolitan Planning Organizations in assessing climate change vulnerabilities to their transportation networks, FHWA has developed a draft vulnerability and risk assessment conceptual model and has piloted it in several locations.

At the state level, there are also several programs underway in Colorado to address transportation GHGs. The *Colorado Climate Action Plan,* adopted in November 2007, includes measures to adopt vehicle CO_2 emissions standards and to reduce vehicle travel through transit, flex time, telecommuting, ridesharing, and broadband communications. CDOT issued a "Policy Directive on Air Quality" in May 2009, which was developed with input from a number of agencies, including the State of Colorado's Department of Public Health and Environment, EPA, FHWA, the Federal Transit Administration, the Denver Regional Transportation District, and the Denver Regional Air Quality Council. The "Policy Directive on Air Quality" and implementation document, the "CDOT Air Quality Action Plan", address unregulated MSATs and GHGs produced from Colorado's state highways, interstates, and construction activities.

As a part of CDOT's commitment to addressing MSATs and GHGs, some of CDOT's program wide activities include:

1. Developing truck routes/restrictions with the goal of limiting truck traffic in proximity to facilities, including schools, with sensitive receptor populations.
2. Continue researching pavement durability opportunities with the goal of reducing the frequency of resurfacing and/or reconstruction projects.
3. Developing air quality educational materials, specific to transportation issues, for citizens, elected officials, and schools.
4. Offering outreach to communities to integrate land use and transportation decisions to reduce growth in VMT, such as smart growth techniques, buffer zones, transit-oriented development, walkable communities, access management plans, etc.
5. Committing to research additional concrete additives that would reduce the demand for cement.
6. Expanding Transportation Demand Management efforts statewide to better utilize the existing transportation mobility network.
7. Continuing to diversify the CDOT fleet by retrofitting diesel vehicles, specifying the types of vehicles and equipment contractors may use, purchasing low-emission vehicles such as hybrids, and purchasing cleaner burning fuels through bidding incentives where feasible. Incentivizing is the likely vehicle for this activity.
8. Exploring congestion and/or right-lane only restrictions for motor carriers.

9. Funding truck parking electrification (Note: mostly via exploring external grant opportunities).
10. Researching additional ways to improve freight movement and efficiency statewide.
11. Committed to incorporating ultra-low sulfur diesel for non-road equipment statewide.
12. Developing a low-volatile organic compound emitting tree landscaping specification.

Even though project-level mitigation measures will not have a substantial impact on global GHG emissions because of the exceedingly small amount of GHG emissions involved, the preceding measures during construction will have the effect of reducing GHG emissions. The above-identified activities are part of a program-wide effort by FHWA and CDOT to adopt practical means to avoid and minimize environmental impacts in accordance with 40 CFR 1505.2(c).

This document does not incorporate an analysis of the GHG emissions or climate change effects of each of the alternatives because the potential change in GHG emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those impacts will not be meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. As outlined above, FHWA is working to develop strategies to reduce transportation's contribution to GHGs—particularly CO_2 emissions—and to assess the risks to transportation systems and services from climate change. FHWA will continue to pursue these efforts as productive steps to address this important issue. Finally, the CDOT policy generated practices described above represent practicable programmatic-level measures that, while not substantially reducing global GHG emissions, may help reduce GHG emissions on an incremental basis and could contribute in the long term to meaningful cumulative reduction when considered across the federal-aid highway program.

TABLE 3-16
Project VMT Increase Compared to Colorado and Global CO_2 Increase

	Global CO_2 Emissions, million metric tons (MMT)[1]	Colorado Highway CO_2 Emissions, MMT[1]	Colorado Highway Emissions, % of Global Total[1]	Project Corridor VMT	Project Corridor VMT, % of Statewide VMT[2]
2005	27,700	24.6	0.0888%	81,900	0.00017%
2035	42,380	25.9	0.0611%	96,200	0.00020%

[1] Calculated by FHWA Resource Center.
[2] Based on Statewide VMT of 48,640,000,000 and 2010 project VMT, which overstates project's contribution because 2005 project VMT would be less.

3.10 Summary of Impacts and Mitigations

Table 3-17 provides a detailed list of mitigation commitments that will be implemented to minimize impacts identified as part of the Proposed Action. All of the mitigation commitments listed in Table 3-17 apply to both the interim and the ultimate phases of construction and operations. CDOT will use Table 3-17 to track mitigation commitments through the design and construction of all phases of the Proposed Action.

TABLE 3-17
Summary of Impacts and Mitigation Commitments

Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
1	Air Quality	Fugitive dust emissions during construction.	CDOT will implement BMPs to control fugitive dust emissions: covering trucks hauling soil and other fine materials; stabilizing and covering stock pile areas; revegetating areas exposed for long periods; washing construction equipment to minimize offsite tracking of mud and debris; limiting construction-related vehicle speeds while off road; street sweeping; scheduling construction to minimize dust impacts.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-33
2	Air Quality	Fugitive dust emissions during construction.	CDOT will obtain an APEN permit from the CDPHE Air Pollution Control Division, which includes a fugitive dust control plan.	CDOT, CDPHE	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-33
3	Air Quality	Increased PM10 emissions during construction.	CDOT will develop construction equipment idling and start-up plan for reduction of non-working idling equipment and work site combustion engines.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-33
4	Archaeological Resources	Crossing the Arkansas River dune field, an archaeologically sensitive area with limited surface visibility.	Prior to construction, CDOT will excavate discontinuous deep trenches along the reliever route ROW centerline within the Arkansas River dune field, and an archaeologist will inspect the trenches for archaeological features.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-90
5	Archaeological Resources	Crossing the Arkansas River dune field, an archaeologically sensitive area with limited surface visibility.	If previously unidentified archaeological resources are discovered during the excavation or other construction activities, work will be halted and CDOT's cultural resources manager will be contacted immediately.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-90

TABLE 3-17
Summary of Impacts and Mitigation Commitments

Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
6	Floodplains	Constructing and operating the new alignment and river/ stream crossing would disturb the Arkansas River floodplain and result in a minor rise in the Arkansas River BFE	Survey cross-sections of the Arkansas River to refine the FEMA effective model and proposed conditions models produced for this study.	CDOT	Final Design and Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-53
7	Floodplains	Constructing and operating the new alignment and river/ stream crossing would disturb the Arkansas River floodplain and result in a minor rise in the Arkansas River BFE	Design new bridges/structures to have capacity for the 100-year flow rate and provide the required freeboard to meet design criteria and regulatory requirements.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-53
8	Floodplains	New structures would be constructed in or adjacent to the Willow Creek floodplain.	Design new bridges to reduce the number and size of piers required in the floodplain, thereby minimizing impacts to the stream channel and adjacent riparian areas.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-53
9	Floodplains	New structures would be constructed in or adjacent to the Willow Creek floodplain.	Obtain from FEMA a CLOMR for Willow Creek during preliminary engineering to resolve inconsistency in mapped regulatory floodplain limits, and a LOMR after construction is complete.	CDOT, FEMA	Final Design and Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-53
10	Floodplains	New structures would be constructed in or adjacent to the Willow Creek floodplain.	During final design, evaluate whether permanent water quality features and BMPs, consistent with the guidelines set by the CDOT New Development and Redevelopment Program, can be provided along Willow Creek in the project to enhance flood control.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-53

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Summary of Impacts and Mitigation Commitments

Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
11	Geology and Soils	Increased wind and water erosion during construction.	Implement BMPs to control erosion, including silt fencing, straw bales, diversion ditches, and dust palliatives.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-96
12	Geology and Soils	Increased bank erosion at Arkansas River bridge.	Stabilize banks as determined necessary during design with rip-rap or similar and by seeding with suitable native vegetation.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-96
13	Geology and Soils	Increased wind erosion in and near dunes south of U.S. 50.	Seed disturbed areas with aggressive, drought-tolerant vegetation to stabilize soils.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-96
14	Groundwater	Water lines exist within the Proposed Action Footprint.	Project engineers will work with Lamar city officials to prevent impacts to utility lines.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-58
15	Riparian Areas, Wetlands, and Waters of the U.S.	Temporary and permanent impacts to waters of the United States and wetlands, and to riparian habitat areas associated with the Arkansas River.	During final design, CDOT will consider additional construction measures, such as steepening side slopes or constructing additional retaining walls, to potentially further reduce impacts to existing wetlands and potential waters of the U.S.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-65
16	Riparian Areas, Wetlands, and Waters of the U.S.	Temporary and permanent impacts to waters of the United States and wetlands, and to riparian habitat areas associated with the Arkansas River.	In both the interim and ultimate phases, retaining walls will be constructed at or near the edge of the proposed shoulder of the project in the sub-irrigated open meadow (WL-9) to reduce the project's impact to this specific wetland.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-65

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
17	Riparian Areas, Wetlands, and Waters of the U.S.	Impact acreages will be determined during final project design stages.	Acquire the appropriate nationwide and/or individual CWA Section 404 permit(s). Mitigation according to USACE permitting requirements and CDOT guidelines. All wetlands, regardless of jurisdiction, will be replaced at a 1:1 ratio.	CDOT, USACE	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-65
18	Riparian Areas, Wetlands, and Waters of the U.S.	Impact acreages will be determined during final project design stages.	Appropriate Senate Bill 40 consultation with CPW will be completed prior to construction. Impacts to riparian vegetation will be mitigated as determined during consultation with CPW (typically 1:1 tree and shrub replacement).	CDOT, CPW	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-65
19	Riparian Areas, Wetlands, and Waters of the U.S.	Impact acreages will be determined during final project design stages.	A project specific Wetland Mitigation Plan will be prepared that includes locations of permanent wetland mitigation sites identified during final design, if needed. Wetland mitigation banking credits are available from the CDOT Limon Bank located in Lincoln County, which can be used for both jurisdictional and non-jurisdictional mitigation.	CDOT, CPW, USACE	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-65
20	Hazardous Materials	Potential for impacts on previously identified hazardous material sites within the project footprint.	A site specific ISA will be performed during detailed project design. Mitigation will include soil and/or groundwater cleanup if necessary.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-95
21	Hazardous Materials	Potential for impacts on previously identified hazardous material sites within the project footprint.	CDOT will conduct a Phase 2 walk-through at the time of property acquisition to determine the location of any buried fuel tanks or other hazardous materials not previously identified.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-95

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
22	Hazardous Materials	Potential for impacts on previously identified hazardous material sites within the project footprint.	If hazardous materials are encountered, CDOT will follow its Section 250 specifications in the CDOT 2011 Standard Specifications for Road and Bridge Construction.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-95
23	Historic Resources	Potential construction disturbance of previously unidentified sites.	CDOT will query the SHPO COMPASS database prior to construction to ensure no new resources have been identified.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-88
24	Historic Resources	Potential construction disturbance of previously unidentified sites.	If previously undiscovered historic resources are identified during construction activities, work would be halted and CDOT's cultural resources manager would be contacted immediately.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-88
25	Historic Resources	Crossings of eligible historic segments of Atchison, Topeka and Santa Fe Railroad, Fort Bent Canal, and Hyde Canal.	Highway crossings of irrigation ditches will be constructed to prevent permanent interruptions to delivery or impairing the quality of irrigation water.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-88
26	Historic Resources	Crossings of eligible historic segments of Atchison, Topeka and Santa Fe Railroad, Fort Bent Canal, and Hyde Canal.	Bridges will be designed and built to span the width of the railroad.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-88
27	Historic Resources	Crossings of eligible historic segments of Atchison, Topeka and Santa Fe Railroad, Fort Bent Canal, and Hyde Canal.	BMPs will be implemented during construction to avoid and minimize impacts, including clearly marking the features and locating construction staging areas to avoid impacts to historic features.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-88

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
28	Historic Resources	Crossings of eligible historic segments of Atchison, Topeka and Santa Fe Railroad, Fort Bent Canal, and Hyde Canal.	CDOT will coordinate with BNSF Railway and irrigation ditch owners during final design to minimize impacts.	CDOT, BNSF Railway	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-88
29	Historic Resources	Crossings of eligible historic segments of Atchison, Topeka and Santa Fe Railroad, Fort Bent Canal, and Hyde Canal.	CDOT will minimize the use of orange construction fencing to limit temporary visual impacts near historic resources.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-88
30	Irrigation	Potential for interrupted water delivery during construction	CDOT will coordinate with affected ditch companies to provide alternative conveyance systems or stage construction to avoid and/or minimize interrupting water delivery.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-47
31	Irrigation	Construct new crossings of Hyde Canal, Vista del Rio Ditch, Markham Arroyo, and the unnamed ditch and expand existing crossing of Fort Bent Canal and Lamar Canal south of U.S. 50.	Design and construct structures to cross irrigation facilities, preserve conveyance capability, and allow uninterrupted delivery.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-47

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
32	Irrigation	Construct new crossings of Hyde Canal, Vista del Rio Ditch, Markham Arroyo, and the unnamed ditch and expand existing crossing of Fort Bent Canal and Lamar Canal south of U.S. 50.	Permanent access to and travel along the canals will be maintained for ditch riders.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-47
33	Irrigation	Construct new crossings of Hyde Canal, Vista del Rio Ditch, Markham Arroyo, and the unnamed ditch and expand existing crossing of Fort Bent Canal and Lamar Canal south of U.S. 50.	CDOT will coordinate design development with ditch companies to ensure compatibility with their system requirements.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-47
34	Local Economy	Highway-dependent businesses in downtown Lamar may suffer financially or relocate out of downtown Lamar.	CDOT will implement access controls on the ROW along the new alignment.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-15
35	Local Economy	Highway-dependent businesses in downtown Lamar may suffer financially or relocate out of downtown Lamar.	Main Street and Olive Street will be designated as "Business Route U.S. 287" and "Business Route U.S. 50."	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-15

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
36	Local Economy	Highway-dependent businesses in downtown Lamar may suffer financially or relocate out of downtown Lamar.	CDOT will provide signage at the new intersections/interchanges and on the reliever route to clearly identify the reliever route and to identify access to the business district in downtown Lamar.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-15
37	Local Economy	Splitting of farm and ranch operations.	CDOT will coordinate with property owners during final design to provide access between split properties for vehicles, equipment, and livestock.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-15
38	Noxious Weeds	Increased vehicle usage may facilitate spread of noxious weeds	Develop and implement a Noxious Weed Management Plan during final design that complies with CDOT guidance.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-72
39	Noxious Weeds	Increased vehicle usage may facilitate spread of noxious weeds	Coordinate with state and local weed coordinators during final project design.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-72
40	Noxious Weeds	Increased vehicle usage may facilitate spread of noxious weeds	Russian thistle and tamarisk will be removed from CDOT ROW in the Arkansas River corridor.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-72
41	Noxious Weeds	Increased vehicle usage may facilitate spread of noxious weeds	Post-construction monitoring for noxious weeds will be conducted during the period for the restoration of the vegetative ground cover.	CDOT	Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-72
42	Noxious Weeds	Construction activities may introduce invasive species following site disturbance.	Implement BMPs for noxious weed control during and after construction.	CDOT	Throughout Construction and Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-72

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
43	Noxious Weeds	Construction activities may introduce invasive species following site disturbance.	The disturbed area will be reseeded immediately following construction with a weed-free mulch and native grass species mix.	CDOT	Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-72
44	Paleontology	Impacts on previously unidentified paleontological resources.	If paleontological resources are identified during construction activities, work will be halted and CDOT's paleontologist will be contacted immediately.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-91
45	Right-of-Way	Acquire 385.30 acres of private property, including one residence and three businesses.	All property acquisition and relocation shall comply fully with the federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-40
46	Right-of-Way	Acquire 125.30 acres of county land and 5.77 acres of city land.	CDOT will develop an IGA with Prowers County and the City of Lamar detailing the land exchange regarding the relinquishment of the Alternative Truck Route and portions of U.S. 287 and the U.S. 50. Transfer of titles from one public agency to the other will occur, as denoted in the IGA.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-40
47	Right-of-Way	Acquire 1.35 acres of State Land Board land.	All property acquisition and relocation shall comply fully with the federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-40

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
48	Right-of-Way	Acquire 11.43 acres of land from the Port of Entry.	CDOT will execute an IGA with the Colorado Department of Revenue to detail the relocation of the Port of Entry facilities. CDOT will work with the Port of Entry to provide adequate queuing and storage space; establish a 3,000-foot separation from the Automated Vehicle Identification system to the Advanced Reader at the gore point to the Port of Entry; establish no "escape routes" for truck between Weigh-In Motion and Port of Entry; and provide adequate groundwater drainage among other considerations necessary for relocation of the Port of Entry.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-40
49	Sensitive Species	Impacts to sensitive species during bridge construction.	Schedule bridge construction seasonally to avoid nesting birds.	CDOT	Final Design and Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
50	Sensitive Species	Impacts to sensitive species during bridge construction.	Schedule bridge construction seasonally to avoid fish spawning (April 15-June 30).	CDOT	Final Design and Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
51	Sensitive Species	Impaired water quality for aquatic habitat.	Design bridge features to provide maximum water quality protection, including size and location of piers and abutments, and design to minimize scour and impacts to fish habitat.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-82
52	Sensitive Species	Impaired water quality for aquatic habitat.	Discharge deck runoff to upland area before discharging to water bodies.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-82
53	Sensitive Species	Wildlife strikes may increase on the highway.	Where feasible, design enlarged culverts to maintain connectivity across highway to allow small and large mammal movement.	CDOT	Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-82

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
54	Sensitive Species	Arkansas darter: Impaired water quality during construction.	Install water quality BMPs to ensure silt and other debris do not enter waterways.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-82
55	Sensitive Species	Arkansas darter: Impaired water quality during construction.	Do not alter the hydrology of Markham Arroyo or the Hyde Canal.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-82
56	Sensitive Species	Arkansas darter: Impaired water quality during construction.	Avoid or remove barriers to fish movement (i.e., waterfalls).	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
57	Sensitive Species	Arkansas darter: Impaired water quality during construction.	To the extent possible, time construction of bridge over the Arkansas River to avoid sedimentation of the river during spawning and egg incubation (April 15- June 30).	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
58	Sensitive Species	Least Tern: direct loss of habitat.	Survey for suitable habitat. If suitable habitat does exist, avoid impact during the nesting season (April 15-August 19).	CDOT	Construction during nesting season	U.S. 287 at Lamar Reliever Route EA page 3-82
59	Sensitive Species	Lesser Prairie Chicken: direct loss of habitat.	Contact CPW prior to final design and construction for updated information on leks.	CPW	Design period	U.S. 287 at Lamar Reliever Route EA page 3-82
60	Sensitive Species	Lesser Prairie Chicken: direct loss of habitat.	When possible, avoid any leks identified in the future.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
61	Sensitive Species	Piping Plover: direct loss of habitat.	Survey for suitable habitat at the Arkansas River. If suitable habitat does exist, avoid impact during the nesting season (May 1-June 28).	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-82
62	Sensitive Species	Suckermouth minnow: Impaired water quality during construction.	Implement water quality BMPs during construction.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
63	Sensitive Species	Suckermouth minnow: Impaired water quality during construction.	To the extent possible, time construction of bridge over the Arkansas River to avoid sedimentation of the river during spawning and egg incubation (April 15-June 30).	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
64	Sensitive Species	Plains leopard frog: direct loss of habitat.	Avoid work along canal margins May - July to minimize impact to metamorphosing larvae.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
65	Sensitive Species	Plains leopard frog: direct loss of habitat.	Maintain current hydrology.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-82
66	Sensitive Species	Yellow mud turtle.	Use BMPs to keep highway construction/operation pollutants from entering waterways.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
67	Sensitive Species	Yellow mud turtle.	If possible, provide structures that will allow safe passage under the highway (see swift fox conservation measures for details).	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
68	Sensitive Species	Texas horned lizard: direct loss of habitat.	If possible, provide structures that will allow safe passage under the highway (see swift fox conservation measures for details).	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
69	Sensitive Species	Massasauga: direct loss of habitat.	Maintain native range conditions in areas that are not farmed after construction is complete.	CDOT	Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
70	Sensitive Species	Bald Eagle: direct loss of habitat.	Survey for nests and roosts. If found, follow CPW guidelines for buffer zones and seasonal restrictions.	CDOT, CPW	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-83
71	Sensitive Species	Bald Eagle: direct loss of habitat.	Work between July 31 and October 15 if a nest is located within a half mile of the project footprint.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
72	Sensitive Species	Bald Eagle: direct loss of habitat.	Minimize impacts to prairie dog towns.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
73	Sensitive Species	Bald Eagle: direct loss of habitat.	Minimize removal of large cottonwood trees.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
74	Sensitive Species	Burrowing Owl: direct loss of habitat.	Schedule work to occur within prairie dog town before March 15 or after October 31	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
75	Sensitive Species	Burrowing Owl: direct loss of habitat.	If scheduling outside the nesting season is not an option, survey for active nests within prairie dog towns according to CPW recommended survey protocols.	CDOT, CPW	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
76	Sensitive Species	Burrowing Owl: direct loss of habitat.	Active nests must be avoided out to a distance of 150 feet from edge of disturbance. Install a fence to delineate this boundary.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
77	Sensitive Species	Burrowing Owl: direct loss of habitat.	Oversizing of culverts will be examined during design to allow for species migration.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-83
78	Sensitive Species	Ferruginous Hawk: direct loss of habitat.	Survey for nests prior to construction. If a nest is found, follow CPW guidelines (no work within 0.5 mile of a nest from February 1 through July 15). If an inactive nest is found, remove the nest prior to construction.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-83
79	Sensitive Species	Western Snowy Plover: direct loss of habitat.	Avoid impacting sandy areas near the Arkansas River.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
80	Sensitive Species	Mountain Plover: direct loss of habitat.	Work in habitat outside of nesting season (May 30-August 15). If that is not an option, survey suitable habitat prior to work. If an active nest is found, establish a no work zone 150 feet around the nest.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
81	Sensitive Species	Long-Billed Curlew: direct loss of habitat.	Work in habitat outside of nesting season (May 30-August 15). If that is not an option, survey suitable habitat prior to work. If an active nest is found, establish a no work zone 150 feet around the nest.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
82	Sensitive Species	Black-tailed prairie dog: direct loss of habitat.	Follow CDOT prairie dog management policy.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
83	Sensitive Species	Swift fox: direct loss of habitat.	Minimize amount of impact to habitat taken in southern one-third of project footprint.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-83
84	Sensitive Species	Swift fox: direct loss of habitat.	Design structures that will allow safe passage under the highway. According to a study conducted by the California Department of Transportation entitled *Effects of Four-Land Highways on Desert Kit Fox and Swift Fox: Inferences for the San Joaquin Kit Fox Population*, (Clevenger, et. al., April 30, 2010), culverts or concrete box culverts should be placed as often as possible within swift fox habitat and should be a minimum of 24 inches by 24 inches in size.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-84

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
85	Surface Water	Water crossings could concentrate deck runoff, increase scour, accumulate debris, and cause other similar water quality impacts.	Design bridge features to provide maximum water quality protection, including size and location of piers and abutments, and design to minimize scour. These mitigation features will be designed to minimize impact on aquatic habitat.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-57
86	Surface Water	Water crossings could concentrate deck runoff, increase scour, accumulate debris, and cause other similar water quality impacts.	Treat stormwater runoff from bridge deck using BMPs prior to discharging to adjacent water bodies.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-57
87	Surface Water	Increase impervious surfaces	Follow CDOT's Specification for Road and Bridge Construction to implement temporary and permanent water quality BMPs.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-57
88	Surface Water	Increase impervious surfaces	During final design, develop permanent water quality BMPs such as detention ponds or swales, consistent with the guidelines set by the CDOT New Development and Redevelopment Program, to treat stormwater runoff. The water quality impacts will be modeled to determine the appropriate permanent water quality BMPs.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-57
89	Surface Water	New and modified crossings of eight water bodies.	Obtain a Section 404 permit as necessary from USACE for proposed bridges and wetland impacts associated with waters of the United States.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-58
90	Surface Water	New and modified crossings of eight water bodies.	Submit a Pre-Construction Notification Letter to the USACE during final design to document the design of the proposed bridge and roadway approaches.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-58

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
91	Surface Water	Stormwater runoff from construction activities.	During construction, implement BMPs to protect water quality, including installing silt fences, maintaining sufficient distance between soils stockpiles and water bodies, and similar actions.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-58
92	Surface Water	Stormwater runoff from construction activities.	Obtain CDPS permit from CDPHE for stormwater discharges associated with construction activities. The CDPS will require the development of a Stormwater Management Plan, to be implemented for the duration of construction.	CDOT, CDPHE	Final Design and Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-58
93	Transportation	The reliever route would increase the length of the state highway system.	CDOT will execute an IGA with the City of Lamar and/or Prowers County to establish the terms of CDOT transferring ownership of ROW, address timing of construction of improvements, formalize partnerships, establish conditions for future capacity improvements, and define who is responsible for maintenance of the existing Main Street and Olive Street alignments.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-9
94	Transportation	Temporary detours and road and access closures during construction.	CDOT will create a detour plan for construction phase, including advance signing to minimize out-of-direction travel. Access to private properties will be provided by existing county road network via Lake Road, gated access at CR 8, and realignment of local roads in the vicinity of the existing intersection between U.S. 50 and the existing gravel Alternative Truck Route.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-9

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Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
95	Transportation	Temporary detours and road and access closures during construction.	CDOT will develop a public information plan to inform the public and affected businesses in advance of lane closures, detours, and construction activities to minimize traffic disruption.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-9
96	Utilities	Potential for interrupted utility delivery during construction.	CDOT will survey for all utilities within and adjacent to the project area during final design.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-97
97	Utilities	Potential for interrupted utility delivery during construction.	CDOT will coordinate all utility impacts with the City of Lamar, Prowers County, and private and public utility providers throughout project design and construction.	CDOT	Final Design and Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-97
98	Utilities	Potential for interrupted utility delivery during construction.	Impacts to buried utilities may be avoided by protecting them with encasements.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-97
99	Utilities	Potential for interrupted utility delivery during construction.	Utilities will be relocated if they cannot be avoided.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-97
100	Vegetation	Disturbance to tree stands during construction	In order to protect mature cottonwood trees during construction, CDOT will install orange fencing around all trees greater than 10 inches in diameter at breast height (DBH) within the project area that are not to be removed.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-69

TABLE 3-17
Summary of Impacts and Mitigation Commitments

Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
101	Vegetation	Disturbance to tree stands during construction	Willows will be protected during construction by trimming them to ground level, placing down a geotextile layer, covering it with a 12-inch layer of weed-free straw, and covering it up with fill. When construction is completed, the fill, straw and geotextile blanket will be removed and the willows will grow back from the preserved root stock. The straw layer acts as an indicator layer so the equipment operator is aware he/she is approaching native ground and needs to take extra care in not grubbing out the willow root stock. During design, specific locations for willow cutting transplants will be identified.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-69
102	Vegetation	Disturbance to shortgrass prairie.	Minimize impacts to shortgrass prairie during construction. Native seed will be used for revegetation efforts.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-69
103	Vegetation	Disturbance to shortgrass prairie.	Limit construction-related disturbances by implementing BMPs, including locating staging and storage areas away from sensitive vegetation.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-69
104	Visual Resources	Introduces new highway infrastructure and lighting, including elevated structures, to sparsely populated rural area.	Disturbed areas on the new alignment will be revegetated with native vegetation per consultation with city and county officials	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-35

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Summary of Impacts and Mitigation Commitments

Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
105	Visual Resources	Introduces new highway infrastructure and lighting, including elevated structures, to sparsely populated rural area.	CDOT will coordinate with the City of Lamar and Prowers County regarding aesthetics of the Proposed Action.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-35
106	Visual Resources	Introduces new highway lighting into a currently unlit rural area.	Develop lighting plan during final design that illuminates necessary areas only and incorporates fixtures that are fully shielded and aimed downward to minimize light trespass.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-35
107	Visual Resources	Removes vegetation during construction of highway improvements.	Landscape roadway shoulders with grasses and create naturalized areas that take advantage of local runoff to allow native vegetation, including trees and shrubs, to establish.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-35
108	Wildlife	Loss of riparian habitat along the Arkansas River.	Coordination with CPW will occur to determine appropriate mitigation strategy for riparian losses, in accordance with Senate Bill 40 guidelines.	CDOT, CPW	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-75
109	Wildlife	Loss of shortgrass habitat along the reliever route.	Restoration or enhancement of disturbed habitat after construction will be conducted to mitigate for impacts that could not be avoided.	CDOT	Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-75
110	Wildlife	Loss of shortgrass habitat along the reliever route.	To mitigate for wildlife impacts and to prevent birds from nesting, remove vegetation within construction zone outside of nesting season.	CDOT	Throughout construction	U.S. 287 at Lamar Reliever Route EA page 3-75
111	Wildlife	Loss of shortgrass habitat along the reliever route.	Keep vegetation mowed to 6 inches or less prior to clearing and grubbing.	CDOT	Throughout construction	U.S. 287 at Lamar Reliever Route EA page 3-75

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Summary of Impacts and Mitigation Commitments

Mitigation Commitment #	Mitigation Category	Impact from NEPA Document	Commitment From Mitigation Table In Source Document	Responsible Branch	Timing/Phase of Construction	Source Document of Mitigation Commitment
112	Wildlife	Loss of roosting and foraging sites in mature cottonwood trees.	Site bridge to minimize removal of mature cottonwoods.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-75
113	Wildlife	Interrupt wildlife movement along Arkansas River.	Design bridge to provide sufficient clearance for wildlife movement.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-75
114	Wildlife	Interrupt wildlife movement along Arkansas River.	Tamarisk and Russian olive in CDOT ROW at Arkansas River crossing will be removed.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-75
115	Wildlife	Wildlife strikes may increase on the highway.	Where feasible, design enlarged culverts to maintain connectivity across highway to allow small and large mammal movement.	CDOT	Post-Construction	U.S. 287 at Lamar Reliever Route EA page 3-75
116	Wildlife	ROW fencing along reliever route may inhibit wildlife movement.	In ROW not adjacent to open rangeland for cattle, install smooth bottom wire fencing to facilitate crossing under fence by pronghorn.	CDOT	Post-construction	U.S. 287 at Lamar Reliever Route EA page 3-75
117	Wildlife	Impaired water quality for aquatic habitat.	Design bridge features to provide maximum water quality protection, including size and location of piers and abutments, and designing to minimize scour and impacts to fish habitat.	CDOT	Final Design	U.S. 287 at Lamar Reliever Route EA page 3-75
118	Wildlife	Impaired water quality for aquatic habitat.	Treat stormwater runoff from bridge deck using BMPs prior to discharging to adjacent water bodies.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-75
119	Wildlife	Impaired water quality for aquatic habitat.	Construction and installation of the bridges over the Arkansas will avoid fish spawning season from April 15 to June 30.	CDOT	Throughout Construction	U.S. 287 at Lamar Reliever Route EA page 3-75

3.11 Permits and Approvals

Transportation projects must comply with a wide range of federal and state environmental laws and regulations, permits, reviews, notifications, consultations, and other approvals. Table 3-18 lists the permits, notifications, or concurrences that are required and must be obtained prior to project construction.

TABLE 3-18
Required Permits, Notifications, or Concurrences

Permitting Agency	Permit
Colorado Department of Public Health and Environment	CDPS General Permit for Stormwater Discharges Associated with Construction Activities (COR030000) (requires Stormwater Management Plan)
	CDPS General Permit for Construction Dewatering Activities (COG070000)
	CDPS General Permit for Stormwater Discharges Associated with MS4 COR090000 (permanent water quality BMPs)
	Construction Permit and APEN (fugitive dust control)
	Demolition Permit (requires asbestos survey)
	CDOT will ensure that the contractor obtains the APEN and CDPS permits during preconstruction.
United States Army Corps of Engineers	Section 401 Wetlands and Water Quality Certification of the CWA (required if Section 404 Individual Permit obtained)
	Section 402 National Pollutant Discharge Elimination System permit (if point source discharge anticipated)
	Nationwide CWA Section 404 (less than 0.5 acres) or Individual Section 404 Permit (more than 0.5 acres)
FEMA	CLOMR; LOMR (if flood elevation changed due to improvements)
Colorado Division of Parks and Wildlife	SB 40 Wildlife Certification (submit 60 days in advance of construction)
City of Lamar/Prowers County	IGA to document transfer of land among agencies
	Construction Noise Permit (if construction violates city or county noise ordinance)
Colorado State Land Board	Special Use Permit for encroachment upon property for which CDOT has not been granted ROW or IGA to document transfer of land among agencies
City of Lamar	IGA for maintenance and transfer of ownership rights for portions of relinquished ROW
Prowers County	IGA for maintenance and transfer of ownership rights for portions of relinquished ROW and existing gravel Alternative Truck Route
Department of Revenue, Division of Motor Carriers	Secure approval for relocation of Port of Entry and execute IGA for relocation of Port of Entry from existing location to an agreed upon location along the reliever route.
CDOT Transportation Commission	Approval of transfer of ownership of current U.S. 287 and U.S. 50 ROW to City of Lamar and Prowers County. Approval of new alignment for proposed reliever route.