SECTION 3

Affected Environment and Environmental Consequences

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

All potentially relevant resource areas were initially considered in this EA. In accordance with NEPA, CEQ regulations, and DHS MD 5100.1, the following evaluation of environmental effects focuses on those resources and conditions potentially subject to effects, on potentially significant environmental issues deserving of study, and deemphasizes insignificant issues. Some environmental resources and issues that are often analyzed in an EA have been omitted from detailed analysis. The following provides the basis for such exclusions.

Climate. The project area climate is generally considered semi-arid continental (NOAA 2007) and has been further described as subtropical steppe within the Modified Marine climatic type, e.g., summers are long and hot and winters are short, dry, and mild (Larkin and Bomar 1983, Bailey 1995). The marine climate forms in response to the predominant onshore flow of tropical maritime air from the Gulf of Mexico. Onshore air flow is modified by a decrease in moisture content from east to west and by intermittent seasonal intrusions of continental air.

Average temperatures in Del Rio range from a low of 39 degrees Fahrenheit (°F) in January to 74 °F in July, and a high of 62 °F in January to a high of 96 °F in July. The average annual precipitation is 18 inches and approximately 80 percent occurs as showers and thunderstorms from the late spring through early fall seasons. A long growing season is experienced for the area, approximately 300 days. The evaporation rate during the summer season is high and the average relative humidity is 44 percent, measured in the afternoon.

The construction and maintenance of tactical infrastructure would neither affect nor be affected by the climate. However, emissions, including greenhouse gases, and their effect on air quality are discussed in **Section 3.1**.

Roadways and Transportation. Numerous highway systems are in the vicinity of the proposed project corridor, including U.S. Highway 277, Business U.S. Highways 277 North/South, U.S. Highway 90, U.S. Highway 377, State Highway Spur 239, State Highway Spur 297, U.S. Highway 57, and State Highway Spur 240 (TxDOT 2006). In addition to the above highways, there are numerous municipal city roads, farm roads, county roads, and unpaved roads.

The construction of the proposed tactical infrastructure would require delivery of materials to and removal of debris from the construction site. Construction traffic would compose a small percentage of the total existing traffic and many of the vehicles would be driven to and kept onsite for the duration of construction activities, resulting in relatively few additional trips. Potential increases in traffic volume associated with proposed construction activities would be temporary. Heavy vehicles are frequently driven on local roadways. Therefore, the vehicles

necessary for construction would not be expected to have an effect on local transportation systems. No road or lane closures would be anticipated at this time. However, if roadways or lanes would be required to be closed, CBP would coordinate with Texas Department of Transportation (TxDOT) and local municipalities to reduce potential effects on local transportation systems. Therefore, roadways and transportation have been eliminated from further consideration.

Hazardous Materials and Wastes. Products containing hazardous materials (such as fuels, oils, lubricants, pesticides, and herbicides) would be procured and used during the proposed construction and for maintenance activities. Herbicides would be used for vegetation removal during proposed construction and maintenance activities. Herbicides would be applied according to USEPA standards and regulations. It is anticipated that the quantity of products containing hazardous materials used for construction and maintenance would be minimal and that the quantity of hazardous and petroleum wastes generated from proposed construction would be negligible. Accidental spills could occur as a result of the proposed construction and maintenance. A spill could potentially result in adverse effects on wildlife, soils, water, and vegetation. However, the amount of hazardous materials at the construction site would be limited and the equipment necessary to quickly contain any spill would be present when refueling. Impacts would be negligible. Construction contractors would be responsible for the management of hazardous materials and wastes, which would be handled in accordance with Federal and state regulations. Pesticides and herbicides could have been used in agricultural areas along the proposed project corridor. However, there are no known above- or underground storage tanks, or hazardous waste clean-up sites within the proposed construction corridor. Additional information on the proposed hazardous wastes at the proposed project corridor will be determined after the *Environmental Due Diligence Assessment for the Construction of Proposed Tactical Infrastructure*. A Spill Prevention Control and Countermeasures (SPCC) Plan would be developed and implemented to avoid impacts associated with hazardous materials and wastes. Therefore, hazardous materials and wastes have been eliminated from further consideration.

Sustainability and Greening. EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007), promotes environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and the maintenance of cost-effective waste prevention and recycling programs in Federal facilities. Construction and maintenance of tactical infrastructure would use minimal amounts of resources during construction and maintenance. Therefore, negligible effects on sustainability and greening would be expected.

Construction Safety. Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death,

and property damage. The Occupational Safety and Health Administration (OSHA) and the USEPA issue standards that specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits with respect to workplace stressors.

Construction workers are exposed to safety risks from the inherent dangers at any construction site. Contractors would be required to establish and maintain safety programs at the construction site. The proposed construction would not expose members of the general public to increased safety risks. Because the proposed construction would not introduce new or unusual safety risks, and assuming construction protocols would be carefully followed, detailed examination of safety is not included in this EA.

3.1 AIR QUALITY

3.1.1 Definition of the Resource

In accordance with Federal CAA requirements, the air quality in a given region or area is measured by the concentrations of various pollutants in the atmosphere. The CAA directed USEPA to develop National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to affect human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards.

The Federal CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. The State of Texas has adopted the NAAQS as the Texas Ambient Air Quality Standards (TAAQS) for the entire State of Texas. **Table 3.1-1** presents the primary and secondary USEPA NAAQS that apply to the air quality in the State of Texas.

USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than

Table 3.1-1. National Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
CO			
8-hour Average [a]	9 ppm	(10 mg/m^3)	Primary and Secondary
1-hour Average [a]	35 ppm	(40 mg/m^3)	Primary
NO_2			
Annual Arithmetic Mean	0.053 ppm	(100 µg/m^3)	Primary and Secondary
O_3			
8-hour Average [b]	0.08 ppm	(157 µg/m^3)	Primary and Secondary
1-hour Average [c]	0.12 ppm	(240 µg/m^3)	Primary and Secondary
Pb			
Quarterly Average		1.5 µg/m^3	Primary and Secondary
PM_{10}			
Annual Arithmetic Mean [d]		50 µg/m^3	Primary and Secondary
24-hour Average [a]		150 µg/m^3	Primary and Secondary
$PM_{2.5}$			
Annual Arithmetic Mean [e]		15 µg/m^3	Primary and Secondary
24-hour Average [f]		35 µg/m^3	Primary and Secondary
SO_2			
Annual Arithmetic Mean	0.03 ppm	(80 µg/m^3)	Primary
24-hour Average [a]	0.14 ppm	(365 µg/m^3)	Primary
3-hour Average [a]	0.5 ppm	(1,300 µg/m^3)	Secondary

Source: USEPA 2007a

Notes: Parenthetical values are approximate equivalent concentrations.

[a] Not to be exceeded more than once per year.

[b] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

[c] The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1. As of June 15, 2005, USEPA revoked the 1-hour ozone standard in all areas except the 14 8-hour ozone nonattainment Early Action Compact Areas.

[d] To attain this standard, the expected annual arithmetic mean PM_{10} concentration at each monitor within an area must not exceed 50 µg/m^3.

[e] To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

[f] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3.

the NAAQS, nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now in attainment, and unclassified means that there is not enough information to appropriately classify an AQCR, so the area is considered in attainment.

Many chemical compounds found in the Earth's atmosphere act as "greenhouse gases." These gases allow sunlight to enter the atmosphere freely. When sunlight strikes the Earth's surface, some of it is reflected back towards space as infrared radiation (heat). Greenhouse gases absorb this infrared radiation and trap the heat in the atmosphere. Over time the trapped heat results in the phenomenon of global warming.

In April 2007, the U.S. Supreme Court declared that carbon dioxide (CO_2) and other greenhouse gases are air pollutants under the CAA. The Court declared that the USEPA has the authority to regulate emissions from new cars and trucks under the landmark environment law.

Many gases exhibit these "greenhouse" properties. The sources of the majority of greenhouse gases come mostly from natural sources but are also contributed to by human activity. Additional information on sources of greenhouse gases is included in **Appendix E**.

3.1.2 Affected Environment

Route A

The Proposed Action is within Maverick and Val Verde counties, Texas, within the Metropolitan San Antonio Intrastate Air Quality Control Region (MSAI AQCR). The MSAI AQCR is composed of 21 counties in western Texas. Although portions of the MSAI AQCR are classified as being in nonattainment for 8-hour ozone, Maverick and Val Verde counties are classified as being in attainment/unclassified for all criteria pollutants.

Route B

Route B would also be within the MSAI AQCR. Therefore, the affected environment for air quality associated with Route B is the same as described for Route A.

3.1.3 Environmental Consequences

3.1.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, CBP would not construct or maintain new tactical infrastructure along two sections in the USBP Del Rio Sector and operational activities would remain unchanged. Therefore, the No Action

Alternative would not create any additional effects on air quality beyond those that are already occurring, as described in **Section 3.1.2**.

3.1.3.2 Alternative 2: Proposed Action Alternative

Route A

Regulated pollutant emissions associated with Alternative 2, Route A would not contribute to or affect local or regional NAAQS attainment status. Alternative 2, Route A activities would generate air pollutant emissions from the proposed construction, maintenance activities, and the operation of generators to supply power to construction equipment and portable lights. BMPs would include a Dust Control Plan to minimize fugitive dust emissions.

Proposed Construction Projects. Minor short-term adverse effects would be expected from construction emissions and land disturbance associated with Alternative 2, Route A. The proposed project would affect air quality primarily from site-disturbing activities and operation of construction equipment. The proposed construction would generate total suspended particulate and PM_{10} emissions as fugitive dust from ground-disturbing activities (e.g., grading, trenching, soil piles) and from combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

Construction operations would also result in emissions of criteria pollutants as combustion products from construction equipment. These emissions would be of a temporary nature. The NAAQS emissions factors and estimates were generated based on guidance provided in USEPA AP-42, Volume II, *Mobile Sources*. Fugitive dust emissions for various construction activities were calculated using emissions factors and assumptions published in USEPA's AP-42 Section 11.9. The emissions for CO_2 were calculated using emissions coefficients reported by the Energy Information Administration (EIA 2007).

For purposes of this analysis, the project duration and proposed project corridor that would be disturbed (presented in **Section 2**) were used to estimate fugitive dust and all other pollutant emissions. The construction emissions presented in **Table 3.1-2** include the estimated annual construction PM_{10} emissions associated with Route A. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. However, the effects would be temporary, and would fall off rapidly with distance from the proposed construction sites. As seen in **Table 3.1-2**, the emissions of NAAQS are not significant and would not contribute to the deterioration of the air quality in the region. In addition, the effect of this alternative on air quality would not exceed 10 percent of the regional values.

Table 3.1-2. Estimates of Total Proposed Construction Emissions from Alternative 2 in Tons Per Year

Description	NO_x	VOC	CO	CO_2	SO_x	PM_{10}
Construction Emissions	0.518	0.077	0.605	11.711	0.001	0.0171
Construction Fugitive Emissions	0.000	0.000	0.000	0.000	0.000	17.73
Maintenance Emissions	0.042	0.005	0.021	0.20	0.010	0.005
Generator Emissions	8.02	0.655	1.728	274	0.053	0.564
Total Alternative 2 Emissions	**8.58**	**0.74**	**2.35**	**285.9**	**0.055**	**18.32**
Federal *de minimis* Threshold	NA	NA	NA	NA	NA	NA
MSAI AQCR Regional Emissions	111,196	112,137	671,869	1,395,000	50,220	192,504
Project Percent of MSAI AQCR Regional Emissions	**0.008**	**0.001**	**>0.001**	**0.021**	**>0.001**	**0.010**

Source: USEPA 2007b

The construction emissions presented in **Table 3.1-2** include the estimated annual emissions from construction equipment exhaust and operation of agricultural mowers and diesel-powered generators associated with Alternative 2 in Calendar Year (CY) 2008. Early phases of construction projects typically involve heavier diesel equipment and earthmoving, resulting in higher NO_x and PM_{10} emissions. Later phases of construction projects typically involve more light gasoline equipment and surface coating, resulting in more CO and volatile organic compound (VOC) emissions. However, the effects would be temporary, fall off rapidly with distance from the proposed construction sites, and would not result in any long-term effects.

Proposed Operations and Maintenance Activities. The proposed tactical infrastructure would require mowing approximately two times per year to maintain vegetation height and allow enhanced visibility and security. It was assumed that two 40-horsepower (hp) agricultural mowers would mow the vegetation in the proposed project corridor approximately 14 days per year. No adverse effects on local or regional air quality would be expected from these maintenance activities. It is anticipated that future maintenance of tactical infrastructure would be conducted by contractors, and would primarily consist of welding and fence section replacements, as needed. Maintenance activities would result in criteria pollutant air emissions well below the *de minimis* thresholds and would have a

negligible contribution to the overall air quality. Negligible long-term adverse impacts on air quality would be expected.

After construction is completed, USBP Del Rio Sector would begin patrols along Sections M-1 and M-2A. The vehicles used for surveillance of the existing border area are currently generating criteria pollutants and would not introduce new pollutant sources. Therefore, no net increase of criteria pollutant emissions would be expected from these border-patrol operations.

Generators. Alternative 2, Route A activities would require six diesel-powered generators to power construction equipment. It is assumed that these generators would be approximately 75 hp and operate approximately 8 hours per day for 120 working days. The emissions factors and estimates shown in **Appendix E** were generated based on guidance provided in USEPA AP-42, Volume I, *Stationary Internal Combustion Sources*. According to Texas Administrative Code (TAC) Title 30, internal combustion engines greater than 500 brake horsepower require an operating permit (TAC 2007). Therefore, an operating permit from the Texas Commission on Environmental Quality (TCEQ) would not be needed to operate the generators.

Greenhouse Gases. USEPA has estimated that the total greenhouse emissions for Texas were 189 million metric tons of carbon equivalent (MMTCE) in 1999. Of this, an estimated 1,395,000 tons of CO_2 were associated with the MSAI AQCR regions. Therefore, proposed estimates of construction emissions of CO_2 would represent less than 10 percent of the regional emissions, as shown in **Table 3.1-2** (USEPA 2007c).

Current USBP operational activities would continue during and after construction. Vehicles that would patrol Sections M-1 and M-2A are currently in use and generate CO_2; therefore, no net increase of CO_2 emissions would be expected from Alternative 2. Therefore, no net increase of greenhouse emissions would be expected. Emissions factors, calculations, and estimates of emissions are shown in detail in **Appendix E**.

Summary. **Table 3.1-2** illustrates that the emissions from Alternative 2, Route A would be minor adverse and much less than 10 percent of the emissions inventory for MSAI AQCR (USEPA 2007b). Therefore, no adverse effects on regional or local air quality would be expected from implementation of Alternative 2, Route A. A conformity determination in accordance with 40 CFR 93-153(1) is not required, as the total of direct and indirect emissions from Alternative 2 would not be regionally significant (e.g., the emissions are not greater than 10 percent of the MSAI AQCR emissions inventory). Emissions factors, calculations, and estimates of emissions for Alternative 2 are shown in detail in **Appendix E**.

Route B

The air quality effects associated with Alternative 2, Route B would be expected to be the same as those for Route A. This is because the overall length of the proposed project corridors and construction emissions for Route A and Route B would be similar. Therefore, the analysis presented for Route A is applicable to Route B. **Table 3.1-2** illustrates that the emissions from proposed construction and maintenance of tactical infrastructure associated with Alternative 2, Route B would be minor, adverse and less than 10 percent of the MSAI AQCR inventory (USEPA 2007b).

3.1.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Alternative 3 would generate air pollutant emissions from the proposed construction projects, maintenance activities (including mowing), and the operation of generators to supply power to construction equipment and portable lights. Minor short-term adverse effects would be expected from construction site-disturbing activities and operation of construction equipment. For purposes of this analysis, the project duration and proposed project corridor that would be disturbed (presented in **Table 2-2**) was used to estimate fugitive dust and all other criteria pollutant emissions. The construction emissions presented in **Table 3.1-3** include the estimated annual construction PM_{10} emissions associated with Alternative 3. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. However, the effects would be temporary and would fall off rapidly with distance from the proposed construction sites. Emissions factors, calculations, and estimates of emissions are shown in detail in **Appendix E**.

Summary. Since the MSAI AQCR is within an area classified as being in attainment for all NAAQS criteria pollutants, General Conformity Rule requirements are not applicable to Alternative 3. **Table 3.1-3** illustrates that the emissions from Alternative 3 would be higher than Alternative 2, but much less than 10 percent of the MSAI AQCR inventory (USEPA 2007b).

3.2 NOISE

3.2.1 Definition of the Resource

Noise and sound share the same physical properties, but noise is considered a disturbance while sound is defined as an auditory effect. Sound is defined as a particular auditory effect produced by a given source, for example the sound resulting from rain hitting a metal roof. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Sound or noise (depending on one's perception) can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or

Table 3.1-3. Estimates of Total Proposed Construction Emissions from Alternative 3 in Tons Per Year

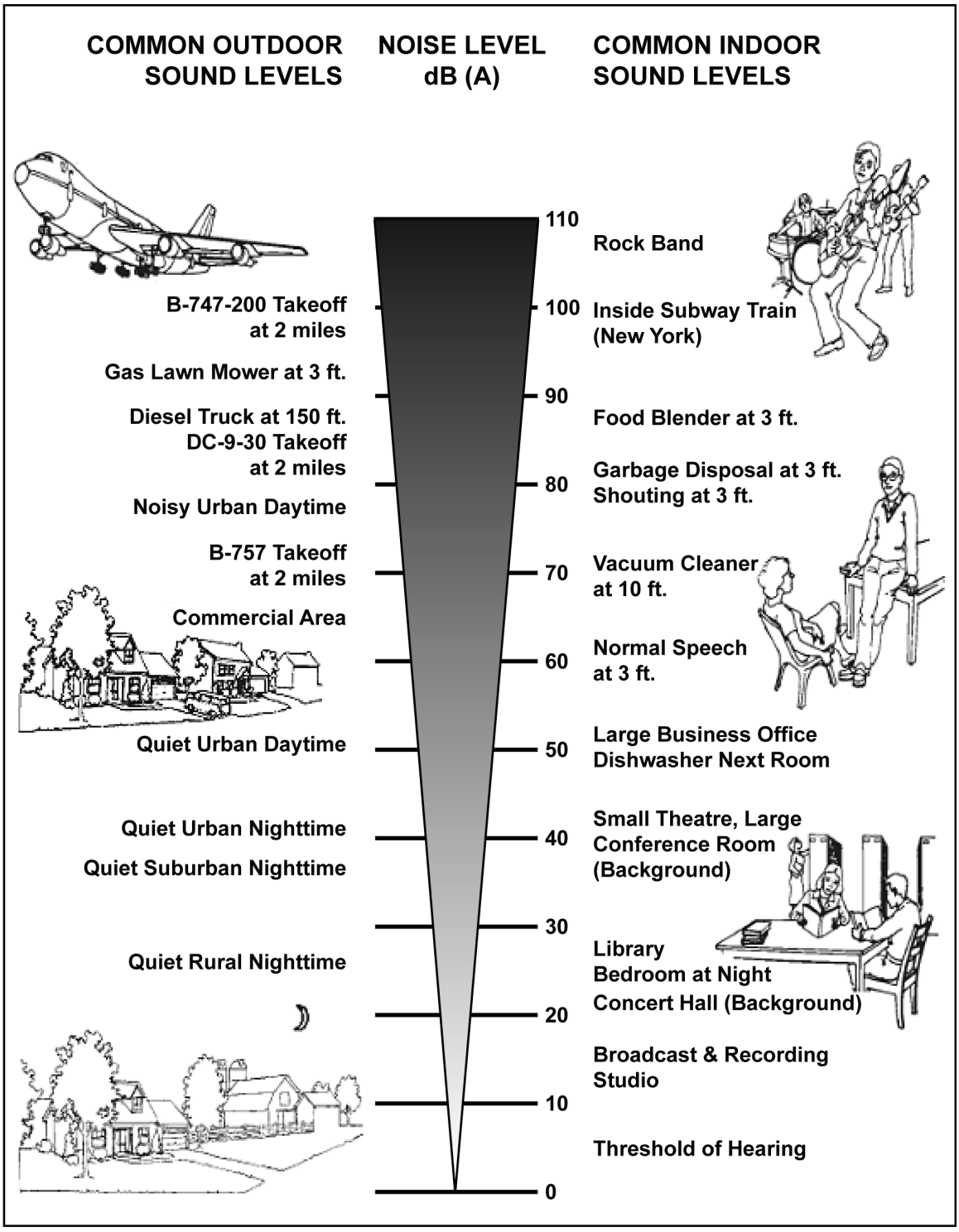
Description	NO_x	VOC	CO	CO_2	SO_x	PM_{10}
Construction Emissions	2.588	0.386	3.02	23.4	0.05	0.876
Construction Fugitive Emissions	0.000	0.000	0.000	0.000	0.000	44.33
Maintenance Emissions	0.127	0.015	0.064	0.20	0.030	0.015
Generator Emissions	10.69	0.87	2.30	366.5	0.703	0.752
Total Alternative 3 Emissions	**13.41**	**1.27**	**5.39**	**390.1**	**0.785**	**45.18**
Federal *de minimis* Threshold	NA	NA	NA	NA	NA	NA
MSAI AQCR Regional Emissions	111,196	112,137	671,869	1,395,000	50,220	192,504
Percent of MSAI AQCR Regional Emissions	0.012	0.001	>0.001	0.028	0.002	0.023

Source: USEPA 2007b

generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or an annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) in which occasional or persistent sensitivity to noise above ambient levels exists.

Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted decibels (dBA) are sound level measurements used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency content of a sound-producing event to represent the way in which the average human ear responds to the audible event. Construction and vehicle noise levels are analyzed using dBA.

Noise levels in residential areas vary depending on the housing density, location, and surrounding use. As shown in **Figure 3.2-1**, a quiet urban area in the daytime is about 50 dBA, a commercial area is about 65 dBA, and a noisy urban area is about 80 dBA.



Source: Landrum & Brown 2002

Figure 3.2-1. Common Noise Levels

Construction activities can cause an increase in sound that is well above the ambient level. A variety of sounds come from graders, pavers, trucks, welders, and other work processes. **Table 3.2-1** lists noise levels associated with common types of construction equipment that are likely to be used under the Proposed Action. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3.2-1. Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Bulldozer	80
Grader	80-93
Truck	83-94
Roller	73-75
Backhoe	72-93
Jackhammer	81-98
Concrete mixer	74-88
Welding generator	71-82
Pile driver	91-105
Crane	75-87
Paver	86-88

Source: USEPA 1971

3.2.2 Affected Environment

Route A

The two proposed sections of tactical infrastructure would be in areas with different acoustical environments. Del Rio, Texas, directly abuts the U.S./Mexico international border, and sits across the Rio Grande from Ciudad Acuña, Mexico. The ambient acoustical environment near Del Rio is primarily affected by vehicle traffic, agricultural equipment, aircraft operations, and industrial noise sources. Noise levels for the majority of Del Rio are likely to be equivalent to a quiet rural or suburban area (30 to 50 dBA). The dominant noise sources adjacent to the border likely originate from residential or commercial sources.

Major transportation routes in the vicinity of Del Rio include State Route (SR) 277, SR 90, and County Road 239. SR 277 passes through the northern side of Del Rio, running southeast to northwest and abuts several residential communities as it passes through the city. SR 90 runs north to south through central Del Rio and continues east from the city. SR 90 runs through many residential communities both to the north and east of Del Rio. County Road 239

runs northeast to southwest from central Del Rio to the U.S./Mexico international border, and passes by several residential areas on the southwestern side of the city. County Road 239 handles a heavy volume of traffic that crosses the border in both directions. Additionally, there are several trucking companies along County Road 239, Garza Lane, and Rio Grande Road. Traffic from these businesses contributes to the ambient acoustic environment along the proposed project corridor in Section M-1.

Industrial and commercial facilities in the vicinity of Del Rio are present mainly on the western side of the city with some on the northern side. However, there are several commercial and industrial businesses along Garza Lane in the southwestern section of Del Rio as well. Noise from these facilities contributes to the ambient acoustic environment along the proposed project corridor in Section M-1.

Del Rio International Airport is approximately 1.5 miles northwest of downtown Del Rio. There are an average of 48 aircraft operations at Del Rio International Airport each day (AirNav 2007). Consequently, noise from aircraft operations contributes slightly to the ambient acoustic environment in the vicinity of Del Rio, especially in close proximity to the airport.

Along the U.S./Mexico international border in areas south of Del Rio, agricultural activities are prominent. Noise from agricultural equipment can reach up to 100 dBA for the operator (OSU 2007). Irrigation activities occurring at these farm sites would also contribute to the ambient acoustical environment at times when they are in operation. While farms are generally spread out, noise from agricultural activities is likely to extend past the farm boundaries. Noise generated by small farms near the proposed project corridor would have an effect on the acoustic environment of Section M-1.

Eagle Pass, Texas, directly abuts the U.S./Mexico international border, and sits across the Rio Grande from Piedras Negras, Mexico. The ambient acoustical environment near Eagle Pass is primarily affected by vehicular traffic and industrial noise sources. Noise levels in Eagle Pass are likely to be equivalent to a quiet suburban or urban area (40 to 65 dBA). Noise sources directly adjacent to the border likely originate from residential sources.

Major transportation routes in the vicinity of Eagle Pass include SR 57, SR 277, and Ranch Road 1021. SR 57 runs east to west through central Eagle Pass, and connects Eagle Pass to Pedras Negras. Cross-border traffic on SR 57 would contribute heavily to the ambient acoustical environment in the vicinity of the border station. SR 277 traverses north-south in Eagle Pass and then continues east from the city. Ranch Road 1021 runs northwest to southeast, passing through the town of Las Quintas Fronterizas, Texas. Each of these major transportation routes passes by several residential areas in the vicinity of Eagle Pass. Traffic along these roads contributes to the ambient acoustical

environment. USBP currently uses patrol roads along the border and, therefore, USBP activities contribute to the acoustic environment along the border.

Industrial activities in Eagle Pass are concentrated mainly on the northeastern side of the city. There are several commercial operations in southwestern Eagle Pass. Noise from industrial activities and commercial operations, as well as traffic entering and leaving the facilities, contributes to the ambient acoustic environment of Section M-2A.

Route B

Alternative 2, Route B would be within the same ambient acoustic environment as described for Route A. Therefore, the affected environment associated with Route B is the same as described for Route A.

3.2.3 Environmental Consequences

3.2.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, there would be no change to the current noise environment; no effects would occur under the No Action Alternative.

3.2.3.2 Alternative 2: Proposed Action Alternative

Route A

Short-term moderate adverse effects would be expected. Temporary sources of noise would include operation of construction equipment and vehicles. Noise from construction activities and vehicle traffic can affect wildlife as well as humans. Noise effects on wildlife, particularly birds and mid- to large-sized mammals, are described in **Section 3.9**.

Construction of the proposed tactical infrastructure would result in noise effects on populations in the vicinity of the proposed sites. Proposed construction would result in increased noise levels associated with construction equipment used for grading, building, and possible pile-driving activities. Populations that could be affected by construction noise include adjacent residents; people visiting the adjacent recreation areas; or patrons and employees in nearby office, retail, or commercial buildings.

Noise from construction activities varies depending on the type of construction equipment being used, the area that the project would occur in, and the distance from the source. To predict how these activities would affect adjacent populations, noise from the proposed construction was estimated. For example, as shown on **Table 3.2-1**, construction usually involves several pieces of equipment (e.g., a backhoe and haul truck) that can be used simultaneously. Under Alternative 2, Route A, cumulative noise from construction equipment

used during the busiest day was estimated to determine the total effect of noise from building activities at a given distance. Since noise attenuates over distance, a gradual decrease in noise level occurs the further a receptor is away from the source of noise. The closest residence in Del Rio and Eagle Pass would be approximately 100 feet from Section M-1. At this distance, anticipated noise from construction during daytime hours would be approximately 79 dBA. Possible pile-driving noise from the construction of the proposed tactical infrastructure could reach 95 dBA for residents 100 feet from the construction.

Implementation of Alternative 2, Route A would have temporary adverse effects on the acoustic environment from the use of heavy equipment during construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.).

Increased noise levels from construction activities would affect residents as well as populations using recreational facilities. In general, users of recreational areas anticipate a quiet environment. Noise from construction would affect the ambient acoustical environment around these sites but would be temporary.

Noise effects from increased construction traffic would be temporary in nature. These effects would be confined to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and would last only as long as the construction activities were ongoing. Most of the major roadways in the vicinity pass by residential areas. Therefore, short-term minor adverse noise effects would result from an increase in traffic, most notably in the areas around SRs 277, 90, and 57.

Long-term, negligible, adverse effects on the acoustical environment would result from vehicle traffic patrols. Patrols would consist of a single vehicle driving along Sections M-1 and M-2A on the U.S. side. While adjustments to USBP operations due to tactical infrastructure construction would be anticipated to be negligible, shifts in operation pattern, location, or frequency would affect the noise environment in the vicinity of the tactical infrastructure.

Route B

Noise effects associated with Alternative 2, Route B would be expected to be the same as those described for Alternative 2, Route A. The overall length of the proposed construction corridor and duration of construction activities for Route A and Route B would be similar.

3.2.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Short-term moderate adverse effects would be expected. Under Alternative 3, primary and secondary fences would be constructed 130 feet apart on the same route as Alternative 2, Route B. Noise effects from Alternative 3 would be similar to those discussed under Alternative 2. However, residents would be closer to

the secondary fence; therefore, noise effects from construction equipment would be slightly higher than under Alternative 2.

3.3 LAND USE

3.3.1 Definition of the Resource

The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. There is, however, no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning include written master plans/management plans and zoning regulations. In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on the proposed project corridor and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use in the proposed project corridor, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its permanence.

3.3.2 Affected Environment

The existing land use in the vicinity of the proposed project corridor includes well-developed urban centers of commerce (i.e., Del Rio and Eagle Pass), and open natural land. For the purposes of this EA, a land use analysis was conducted using the National Land Cover Dataset. The National Land Cover Dataset is the first land cover mapping project with a national scope. Land cover and land use are closely related in that land uses commonly have similarly associated cover types, such as agricultural and residential. The National Land Cover Dataset provides 21 different land cover classes for the lower 48 states. The 21 land cover classes were generalized into the following 4 land classification categories: agricultural, developed, undeveloped, and water. The definitions of each category are defined below.

- *Agricultural* – Areas characterized by herbaceous vegetation that have been planted or are intensively managed for the production of food, feed, or fiber; or are maintained in developed settings for specific purposes. Specific land cover classes grouped for the Agricultural classification include pasture/hay; row crops; small grains; fallow areas used for the production of crops that are temporarily barren or with sparse vegetative

cover; and urban/recreational grasses consisting of vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

- *Developed* – Areas characterized by a high percentage (30 percent or greater) of constructed materials such as asphalt, concrete, and buildings. These include low- and high-intensity residential uses (e.g., single-family housing units and apartment complexes/row houses, respectively), and commercial/industrial/transportation infrastructure, which consists of all highly developed areas not classified as high-intensity residential and transportation infrastructure such as roads and railroad.
- *Water* – This land classification consists of all areas of open water (typically 25 percent or greater cover of water), including naturally occurring and man-made lakes, reservoirs, gulfs, bays, rivers, and streams; and perennial ice/snow, although no ice or snow was detected within the area analyzed for this EA.
- *Undeveloped* – This land classification consists of the remaining 11 land cover classes not used for the agricultural, developed, and water land use classifications. These land cover classes include barren (bare rock/sand/clay, quarries/strip mines/gravel pits, and transitional), forested upland (deciduous forest, evergreen forest, and mixed forest), shrubland, nonnatural woody (orchards/vineyards/other), herbaceous upland (grasslands/herbaceous), and wetlands (woody wetlands and emergent herbaceous wetlands).

Route A

The following is a brief description of the land classifications and associated land uses within and adjacent to the proposed project corridor of Alternative 2, Route A. The proposed project corridor traverses 17 land parcels in Section M-1 and 3 private and public land parcels in Section M-2A and is classified by approximately 0.3 percent agricultural, 34 percent developed land, 3.7 percent water, and 62 percent undeveloped land (see **Table 3.3-1**).

- *Agricultural* – Approximately 0.3 percent of Section M-1 and M-2A consists of agricultural land.
- *Developed* – Approximately 34.1 percent of Section M-1 and M-2A consists of developed lands. A majority of the developed land within Section M-1 is immediately north of Garza Lane, Rio Grande Road, and Qualia Drive, and consists of private residences, commercial entities, and other structures such as the Silver Lake Wastewater Treatment Plant.
- *Water* – There is no water within the proposed project corridor of Section M-1, however there are approximately 2 acres of water within Section M-2A, representing approximately 3.7 percent of the proposed project corridor.

Table 3.3-1. Land Classifications Within the Proposed Project Corridor of Route A

Proposed Tactical Infrastructure Section Number	Land Classification (acres)				Total Acres	Total Percent
	Agricultural	Developed	Water	Undeveloped		
M-1	0.2	20.5	-	34.7	**55.3**	**90.1%**
M-2A	-	0.5	2.2	3.3	**6.1**	**9.9%**
Total Acres	**0.2**	**21.0**	**2.2**	**38.0**	**61.4**	
Total Percent	**0.3%**	**34.1%**	**3.7%**	**61.9%**		

- *Undeveloped* – The majority (61.9 percent) of the proposed project corridor consists of undeveloped land. The undeveloped land is privately and publicly owned.

Appendix D presents detailed maps of the areas surrounding the proposed tactical infrastructure. **Section 3.12** describes the aesthetics and visual resources of the project area.

Route B

The proposed project corridor of Alternative 2, Route B would traverse the same parcels and land uses as described for Route A. Therefore, the affected environment associated with Route B is the same as described for Route A; however the amount (acreage) of land affected would be different. Similar to the analysis prepared for Route A, a land use analysis of Route B was prepared using the National Land Cover Dataset. The proposed project corridor of Route B is classified by approximately 43 percent developed land, 53 percent undeveloped land, and 4 percent water (see **Table 3.3-2**).

Table 3.3-2. Land Classifications Within the Proposed Project Corridor of Route B

Proposed Tactical Infrastructure Section Number	Land Classification (acres)				Total Acres	Total Percent
	Agricultural	Developed	Water	Undeveloped		
M-1	-	20.2	-	23.2	**43.3**	**89.0%**
M-2A	-	0.9	2.1	2.4	**5.4**	**11.0%**
Total Acres	**0.0**	**21.0**	**2.1**	**25.5**	**48.7**	
Total Percent	**0%**	**43.2%**	**4.3%**	**52.5%**		

3.3.3 Environmental Consequences

3.3.3.1 Alternative 1: No Action Alternative

The No Action Alternative would result in continuation of the existing land uses and their associated impacts, as described in **Section 3.3.2**. No additional effects on land use would be expected as a result of the Proposed Action not being implemented.

3.3.3.2 Alternative 2: Proposed Action Alternative

Route A

Constructing the proposed tactical infrastructure would result in long-term minor to major adverse effects on land use based on private structures that would remain south of the proposed tactical infrastructure. CBP might be required to obtain a permit or zoning variance based on local restrictions and ordinances. Short-term minor adverse effects would occur from construction. Effects on land use would vary depending on potential changes in land use and the land use of adjacent properties.

Construction of the proposed tactical infrastructure would require the government to acquire various interests in land. Section M-1 would traverse 17 private and public land parcels in Del Rio, Texas, and Section M-2A would traverse 3 private and public land parcels in Eagle Pass, Texas (see **Appendix D**). Property owners and residents could be directly, adversely affected by restricted access, visual effects (see **Section 3.12.3**), noise effects during construction (see **Section 3.2.3**), and other disruptions during construction. Under current law, the Secretary of Homeland Security has the authority to contract for or buy an interest in land that is adjacent to or in the vicinity of the U.S./Mexico international border when the Secretary deems the land essential to control and guard the boundaries and borders of the United States (8 U.S.C. 1103(b)).

Because the proposed tactical infrastructure would traverse both public and private lands, various methods could be used to acquire the necessary interests in land. These methods include, among other things, acquiring permanent easements, rights-of-way (ROWs), or outright purchase in fee simple. There would be long-term major adverse effects on property owners who do not wish to sell their property or relocate, but the effects would be mitigated by compensating fair market value for the property.

On private land, the government would likely purchase the land or some interest in land from the relevant landowner. Acquisition from private landowners would be a negotiable process that would be carried out between the government and the landowner on a case-by-case basis. The government also has the statutory authority to acquire such interests through eminent domain.

Under Alternative 2, Route A, Section M-1, some land uses on private parcels, including private residences and other structures, would be located south of the proposed tactical infrastructure, resulting in a major adverse impact on land use. Additionally, agricultural lands within the proposed Section M-1 corridor might not be available for future crop production or grazing. Gates could be installed in the primary pedestrian fence to provide landowners whose properties would be affected access to other portions of their property to reduce potential inconvenience. Private and public developed and undeveloped lands within the proposed project corridor would not be available for future development.

Route B

Alternative 2, Route B would have similar effects as those described for Route A, with the exception of the private residences and structures south of the proposed tactical infrastructure in Section M-1. These private residences and structures would be north of the proposed tactical infrastructure under Route B. Therefore, impacts would be minor under Route B. Additionally, no land designated as agricultural would be affected under Route B. The figures in **Appendix D** show the locations of the proposed tactical infrastructure and the proximity of adjacent and intersecting land.

3.3.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Alternative 3 would have similar effects as Alternative 2, Route B; however the proposed project corridor would affect more land and a greater percentage of this land would be undeveloped. The figures in **Appendix D** show the location of the proposed tactical infrastructure and the proximity of adjacent and intersecting land.

3.4 GEOLOGY AND SOILS

3.4.1 Definition of the Resource

Geology and soils resources include the surface and subsurface materials of the earth. Within a given physiographic province, these resources typically are described in terms of topography, soils, geology, minerals, and paleontology, where applicable.

Topography is defined as the relative positions and elevations of the natural or human-made features of an area that describe the configuration of its surface. Regional topography is influenced by many factors, including human activity, seismic activity of the underlying geological material, climatic conditions, and erosion. Information describing topography typically encompasses surface elevations, slope, and physiographic features (i.e., mountains, ravines, or depressions).

Site-specific geological resources typically consist of surface and subsurface materials and their inherent properties. Principal factors influencing the ability of geological resources to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), topography, and soil stability. Soils are the unconsolidated materials overlying bedrock or other parent material. They develop from weathering processes on mineral and organic materials and are typically described in terms of their landscape position, slope, and physical and chemical characteristics. Soil types differ in structure, elasticity, strength, shrink-swell potential, drainage characteristics, and erosion potential, which can affect their ability to support certain applications or uses. In appropriate cases, soil properties must be examined for compatibility with particular construction activities or types of land use.

Prime and unique farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require Federal agencies to evaluate the adverse effects (direct and indirect) of their activities on prime and unique farmland, as well as farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects.

3.4.2 Affected Environment

Route A

Physiography and Topography. Section M-1 in Del Rio, Texas, is on Edwards Plateau. The Edwards Plateau is known for the extent and quality of its groundwater aquifer system. Landforms around Del Rio include rolling hills. Most of the landscape features in the area have been the result of erosion caused by the Rio Grande and its tributaries (USACE 1994).

Section M-2A in Eagle Pass, Texas, is on the Balcones Escarpment of the Blackland Prairies which is the innermost section of the Gulf Coastal Plains. The blacklands have a gentle undulating surface where the majority of natural vegetation has been cleared for crops (University of Texas 2006).

Geology. The proposed project corridor for Alternative 2, Route A lies on recent floodplain deposits adjacent to the Rio Grande. The soils are composed of sediments that include unconsolidated mixed gravel, sand, silt, and clay. The predominant rock types are mixed shales and sandstones. Some areas include bedrock along the channels of the Rio Grande. The landforms reflect the different rock types with the sandstones forming gentle hills and the shales forming valleys. The soils along the Del Rio Sector are subject to periodic flooding (NRCS 1982).

Section M-1 is underlain by hard limestone that is resistant to erosion. Val Verde County's surface geology is dominated by sedimentary rock derived from

deposits of three geologic periods (NRCS 1982). Section M-2A is underlain by the Navarro and Taylor Groups of the Quaternary Period including undivided Quaternary materials.

Soils. Section M-1 would cross over four soil units. Three soil units (Lagloria loam, Rio Grande silt loam, and Rio Grande soils) are derived from Rio Grande alluvium and are nearly level to sloping soils on floodplains and low terraces. The other soil unit (Pits) includes areas that have been excavated for mining of caliche, gravel, and limestone (NRCS 1982). The pits are a few feet to about 25 feet deep. They range from less than an acre to 20 acres in size.

The proposed location for Route A lies on the boundary of Lagloria and Rio Grande soils for the majority of its length, while the proposed location for Route B lies primarily in Rio Grande soils and crosses over two excavation pits (see **Appendix F**).

Rio Grande soils (Ro) are deep, nearly level to gently sloping soils found on the bottom lands of the Rio Grande that are frequently flooded. Along the Del Rio Sector below Amistad Reservoir, these soils are flooded every 4 to 20 years when the floodgates are opened. Slopes range from 0 to 3 percent with an average of 1 percent. Mapped areas are long and parallel the Rio Grande. The surface layer is composed of silt loam, very fine sandy loam, loam, and very fine sand with no regular pattern. The surface layer is light brownish gray, very fine sandy loam about 8 inches thick. The underlying layer is light brownish gray. The Rio Grande soils are well-drained with slow surface runoff and are susceptible to erosion. Rio Grande soils are considered hydric soils. Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper layer (NRCS 1982).

Lagloria loam (LaB) is a deep, nearly level to gently sloping soil found on the low terraces of the Rio Grande. Slopes average 0.3 percent. The surface layer is brown loam and the subsoil is light yellowish brown loam. The soil is moderately alkaline and calcareous throughout. The soil is well-drained and surface runoff is medium. This soil is susceptible to erosion (NRCS 1982).

The Rio Grande silt loam (Rg) is a deep, nearly level to gently sloping soil found on the bottom lands of the Rio Grande. The soil below the Amistad Reservoir is occasionally flooded when the floodgates are opened. However, the dam protects these soils from the majority of flood events. Slopes range from 0 to 3 percent. The surface layer is pale brown silt loam and the subsoil is light brownish gray loam. The soil is well-drained with slow surface runoff (NRCS 1982).

The Rio Grande silt loam is the only soil map unit listed as prime farmland. Prime farmland has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an

economic manner if it is treated and managed according to acceptable farming methods (NRCS 2007). Although the soil type indicates it could be prime farmland, area mapped as prime farmland soils is mostly located under the Del Rio POE. Therefore, no part of the proposed project corridor for Section M-1 is considered prime farmland.

The proposed routes for Section M-2A would cross over four soil map units according to the Web Soil Survey. They are Copita sandy clay loam, Lagloria very fine sandy loam (0 to 1 percent slope), Lagloria very fine sandy loam (1 to 3 percent slope), and Rio Grande and Zalla soils, frequently flooded (NRCS 2007).

Rio Grande and Zalla soils (Rz) are found on the Rio Grande terrace adjacent to the river. These soils are flooded when sufficient water is released from Amistad Reservoir. Slopes range from 0 to 1 percent. The surface layer is 10 inches thick and is a very fine sandy loam while the subsoil (10 to 80 inches thick) is a stratified silt loam. The soil is well-drained to somewhat excessively drained (NRCS 2007).

The Copita sandy clay loam (CoB) forms linear bands in interfluves. The slope ranges from 1 to 3 percent. The surface soil layer and subsoil layer are both sandy clay loams. Between 20 and 40 inches, the soil reaches a restrictive paralithic bedrock layer. The soil is well-drained (NRCS 2007).

The Lagloria very fine sandy loam, 0 to 1 percent slope (LgA), forms linear bands on the upper reaches of the Rio Grande terrace. The slope ranges from 0 to 1percent. The surface soil layer is very fine sandy loam and the subsoil layer is stratified silty clay loam. The Lagloria very fine sandy loam, 1 to 3 percent slope (LgB) has identical soil characteristics as LgA, but is found further from the Rio Grande on slight slopes (NRCS 2007). Both Lagloria very fine sandy loam soil types (LgA and LgB) are considered prime farmland when properly irrigated. However, the project area is not irrigated. Therefore, no part of the proposed project corridor for Section M-2A is considered prime farmland.

Route B

The physiographic, topographic, and geologic resources associated with the proposed project corridor for Alternative 2, Route B are similar to Route A. The soil resources of Route B are largely similar to Route A. An exception is that the Pits (Pt) map unit does not occur on Route B (see **Appendix F**).

3.4.3 Environmental Consequences

3.4.3.1 Alternative 1: No Action Alternative

The No Action Alternative would result in the continuation of existing conditions for geologic resources and soils, as characterized in **Section 3.4.2**. Soil resources would continue to be degraded by cross-border violators who often

damage habitat, cut vegetation, and increase erosion through repeated use of footpaths. Soils within the project area are extremely susceptible to erosion due in part to their fine texture and alluvial nature.

3.4.3.2 Alternative 2: Proposed Action

Route A

Physiography and Topography. Short- and long-term minor adverse effects on the natural topography would occur as a result of implementing the Proposed Action. Grading, contouring, and trenching associated with the installation of the proposed tactical infrastructure would affect approximately 55 acres for Section M-1 and approximately 6 acres for Section M-2A, which would alter the existing topography.

Geology. Short- and long-term negligible to minor adverse effects on geologic resources could occur at locations where bedrock is at the surface and grading would be necessary for tactical infrastructure placement or patrol road development. Geologic resources could affect the placement of the primary pedestrian fence or patrol roads due to the occurrence of bedrock at the surface, or as a result of structural instability. Project design and engineering practices would be implemented to mitigate geologic limitations to site development to the extent practicable.

Soils. Short-term minor direct adverse effects on soils would be expected. Soil disturbance and compaction due to grading, contouring, and trenching associated with the installation of the proposed tactical infrastructure would affect approximately 55 acres for Section M-1 and approximately 6 acres for Section M-2A.

The proposed construction activities would be expected to result in an increase in soil erosion due to the fine texture and alluvial nature of the soils. Wind erosion has the potential to affect disturbed soils where vegetation has been removed due to the semi-arid climate of the region. Storm Water Pollution Prevention Plans (SWPPPs) and sediment- and erosion-control plans would be developed to minimize sediment runoff. Construction activities would be expected to directly affect the existing soils as a result of grading, excavating, placement of fill, compaction, and mixing or augmentation necessary to prepare the site for development of the proposed tactical infrastructure.

Because proposed construction would result in a soil disturbance of greater than 5 acres, authorization under the TCEQ Construction Storm Water Permit (Construction General Permit, TXR150000) would be required. Construction activities subject to this permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, but do not include regular maintenance activities performed to restore the original line, grade, or capacity of

a facility. The Construction General Permit requires the development and implementation of an SWPPP.

The SWPPP should contain site maps which show the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list BMPs the discharger will use to protect storm water runoff along with the locations of those BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body. Part III of the Construction General Permit describes the elements that must be contained in an SWPPP.

Additional soil disturbance could occur during and following construction as a result of periodic patrols. Compaction and erosion of soil would be expected as a result of patrol operations and possible off-road vehicle use that could decrease vegetation cover and soil permeability.

The Rio Grande silt loam for Section M-1 and the Lagloria soil types for Section M-2A are designated as prime farmland. However, no area within the proposed project corridor for either Section M-1 or M-2A would be considered prime farmland.

Route B

Alternative 2, Route B would result in similar environmental effects on physiographic, topographic, geologic, and soils resources as described for Route A. However, approximately 43 acres in Section M-1 and approximately 5 acres in Section M-2A would be affected by grading contouring and trenching.

3.4.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Alternative 3 would result in similar environmental effects on geologic and soil resources as Alternative 2, Route B. However, the magnitude of the effects would be greater due to the additional fence and overall larger (wider) corridor. Approximately 43 acres would be affected within Section M-1 and approximately 14 acres within Section M-2A. BMPs and mitigation measures outlined for the Proposed Action would be implemented for the entire area of effect.

3.5 HYDROLOGY AND GROUNDWATER

3.5.1 Definition of the Resource

Hydrology consists of the redistribution of water through the processes of evapotranspiration, surface runoff, and subsurface flow. Hydrology results primarily from temperature and total precipitation that determine

evapotranspiration rates, topography which determines rate and direction of surface flow, and soil properties that determine rate of subsurface flow and recharge to the groundwater reservoir. Groundwater consists of subsurface hydrologic resources. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

3.5.2 Affected Environment

Route A

Alternative 2, Route A is in the Middle Rio Grande Valley Subbasin in the Rio Grande Basin. The Rio Grande Basin drains an area of more than 330,000 square miles in Colorado, New Mexico, and Texas in the United States and Chihuahua, Durango, Coahuila, Nuevo Leon, and Tamaulipas in Mexico. It is the international boundary between the United States and Mexico along the last 1,254 miles from the Colorado Rockies to the Gulf of Mexico. In Texas, the Rio Grande Basin drains an area of 86,720 square miles. Water development projects in the Middle Rio Grande Valley have disrupted natural flow regimes, including structures such as Falcon Dam and Amistad Dam. Substantial quantities of surface water are diverted from the Rio Grande to meet municipal, industrial, and agricultural demands in Texas and Mexico, with a significant portion used in the Middle Rio Grande Valley for farming and urban applications. The International Amistad Reservoir impounds water upstream of Del Rio and the release of water is based on allocation of water rights in the United States and Mexico (USIBWC 2003).

The northwestern portion of Section M-1 in Del Rio, Texas, starts at Cienegas Creek which is a tributary of the Rio Grande. The northwestern portion of Section M-2A is adjacent to an arroyo. Both sections are parallel to the Rio Grande (see **Appendix D**).

The City of Del Rio obtains water from both the Rio Grande and the Edwards-Trinity Aquifer. The land beneath the proposed corridor for Section M-1 lies adjacent to the Rio Grande and does not recharge the Edwards-Trinity Aquifer. The City of Eagle Pass obtains its water exclusively from the Rio Grande. The depth to the water table for the soil map units for Sections M-1 and M-2A is more than 80 inches.

Route B

The hydrology and groundwater associated with the proposed project corridor of Route B would be identical to Route A. The primary difference is that Section M-1, Route B would avoid the arroyo at the northwestern end of Section M-1 (see **Appendix D**).

3.5.3 Environmental Consequences

3.5.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, CBP would not implement the Proposed Action. As a result, there would be no change from the baseline conditions and no effects on surface hydrology or groundwater would be expected to occur. The No Action Alternative would result in continuation of the existing condition of hydrology and groundwater, as discussed in **Section 3.5.2**.

Effects on hydrology and groundwater would be expected as a result of erosion, sedimentation, and soil compaction associated with repeated crossings by cross-border violators

3.5.3.2 Alternative 2: Proposed Action

Route A

Short- and long-term negligible direct adverse effects on the hydrology of the Rio Grande would be expected to occur as a result of the grading and contouring associated with Alternative 2, Route A. Grading and contouring would be expected to alter the topography and remove vegetation of approximately 6 acres within the floodplain of the Rio Grande (in Section M-2A), which could in turn increase erosion potential and increase runoff during heavy precipitation events. Revegetating the area following construction along with other BMPs to abate runoff and wind erosion could reduce the effects of erosion and runoff. Additionally, the small increase in impervious surface within the floodplain would result in negligible increases in the quantity and velocity of storm water flows to the Rio Grande. As required by the Texas Construction General Permit (TXR150000), BMPs would be developed as part of the required SWPPPs to manage storm water both during and after construction. Therefore, effects would be expected to be negligible. Potential impacts on the arroyo are discussed in **Section 3.6.3.2**.

Short-term minor direct adverse construction-related effects on groundwater resources in Maverick and Val Verde counties would also be expected. During construction, water would be required for pouring concrete, watering of road and ground surfaces for dust suppression during construction, and for washing construction vehicles. Water use for construction would be temporary, and the volume of water used for construction would be minor when compared to the amount used annually in the area for municipal, agricultural, and industrial purposes. The source for this water is currently unknown; prior to construction a water source with a current allocation and all appropriate permits would be identified. Development of spill prevention practices as part of the SWPPP would minimize potential for adverse effects on groundwater quality resulting from spills or leakage from construction equipment

Route B

Effects on hydrology and groundwater under Alternative 2, Route B would be expected to be similar to those under Route A. Grading and contouring would be expected to alter the topography and remove vegetation of approximately 49 acres within the floodplain of the Rio Grande, which could in turn increase erosion potential and increase runoff during heavy precipitation events.

3.5.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Effects on hydrology in Sections M-1 and M-2A under Alternative 3 would be similar, but slightly greater than the effects described under Alternative 2. Grading and contouring would be expected to alter the topography and remove vegetation of approximately 57 acres within the floodplain of the Rio Grande, which could in turn increase erosion potential and increase runoff during heavy precipitation events. The primary and secondary fence sections proposed under Alternative 3 would result in a larger increase in impervious surface.

Effects on groundwater under Alternative 3 would be slightly greater than the effects under Alternative 2 because the area of surface disturbance would be greater. Disturbance at the ground surface would not affect groundwater aquifers directly. Reestablishment of pre-construction runoff patterns following project development would be expected to minimize effects on groundwater recharge associated with modification of natural flows.

3.6 SURFACE WATERS AND WATERS OF THE UNITED STATES

3.6.1 Definition of the Resource

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale.

The CWA (33 U.S.C. 1251 et seq.) established the Federal authority for regulating discharges of pollutants into waters of the United States. Section 404 of the CWA (33 U.S.C. 1344) establishes a Federal program to regulate the discharge of dredged and fill material into waters of the United States. The USACE administers the permitting program for authorization of actions under Section 404 of the CWA. Section 401 of the CWA (33 U.S.C. 1341) requires that proposed dredge and fill activities permitted under Section 404 be reviewed and certified by the designated state agency that the proposed project will meet state water quality standards. The Federal permit under Section 404 is not valid until it has received Section 401 water quality certification. Section 402 of the CWA authorizes the discharge of any pollutant, or combination of pollutants, into navigable waters of the United States under an NPDES permit. On September 17, 1998, control over storm water permitting shifted from the Federal NPDES program to the Texas Pollutant Discharge Elimination System (TPDES). Before

the permits were merged, applicants were required to comply with both the Federal and Texas permitting systems. TPDES is now the one permit that governs Federal and state surface water discharge standards in the state. Pursuant to Texas Water Code 26.040 and CWA Section 402, all construction that would result in a soil disturbance of greater than 5 acres requires authorization under the TCEQ Construction General Permit (TXR150000). Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water-quality standards and to develop Total Maximum Daily Loads (TMDLs) and an implementation plan to reduce contributing sources of pollution.

Waters of the United States are defined in 33 CFR 328.3. Navigable waters are defined in 33 CFR 329.4. In addition, the Supreme Court issued a decision on June 19, 2006, that addresses the scope of the CWA jurisdiction over certain waters of the United States, including wetlands. On June 5, 2007, USEPA and the USACE issued joint guidance clarifying CWA jurisdiction in light of the court decision.

The CWA (as amended in 1977) established the basic structure for regulating discharges of pollutants into the waters of the United States. The objective of the CWA is restoration and maintenance of chemical, physical, and biological integrity of U.S. waters. To achieve this objective, several goals were enacted, including (1) eliminate discharge of pollutants into navigable waters by 1985; (2) achieve water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water by 1983; (3) prohibit discharge of toxic pollutants in toxic amounts; (4) provide Federal financial assistance to construct publicly owned waste treatment works; (5) develop and implement the national policy for areawide waste treatment management planning processes to ensure adequate control of sources of pollutants in each state; (6) establish the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into navigable waters, waters of the contiguous zone, and the oceans; and (7) establish the national policy that programs be developed and implemented in an expeditious manner so as to enable the goals to be met through the control of both point and nonpoint sources of pollution. The USACE regulates the discharge of dredged and fill material (e.g., concrete, riprap, soil, cement block, gravel, sand) into waters of the United States including wetlands under Section 404 of the CWA and work on or structures in or affecting navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899.

Wetlands are an important natural system and habitat, performing diverse biologic and hydrologic functions. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, unique flora and fauna niche provision, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are considered as a subset of the waters of the United States under

Section 404 of the CWA. The term "waters of the United States" has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 328).

3.6.2 Affected Environment

Route A

Surface Waters and Other Waters of the United States. Surface water features that could be potentially classified as waters of the United States in the proposed project corridor include arroyos, Cienegas Creek, and wetlands. The northwestern portion of Section M-1 starts at Cienegas Creek which is a tributary of the Rio Grande. The northwestern portion of Section M-2A is adjacent to an arroyo. Both sections of tactical infrastructure would parallel the Rio Grande. According to a reconnaissance survey conducted in November 2007, wetlands were identified along the eastern end of Section M-1 based on vegetation and hydrology (see **Appendix G**). These wetlands are potentially jurisdictional waters of the United States.

Wetland indicator species are listed in **Appendix G** and include the following vegetation associations: sugarberry riparian woodland and giant reed herbaceous vegetation. The sugarberry riparian woodland is a rare vegetation association found in narrow bands on the outer floodplain margin of the Rio Grande and the banks of its tributaries within Sections M-1 and M-2A. Dense giant reed stands were observed on saturated soils of Rio Grande floodplain terraces, floodplains of tributary drainages, pond edges, and ditch banks of Sections M-1 and Section M-2A. The location of potential wetlands identified during the November 2007 natural resources survey is presented in **Appendix G**. Formal delineation or jurisdictional determination of the extent of wetlands or other waters of the United States has not yet been conducted. The most current information available to identify wetlands is the National Wetlands Initiative (NWI) (USFWS 2007a). However, NWI digital data are not available for Maverick and Val Verde counties, Texas.

During construction, water would be required for pouring concrete, watering of road and ground surfaces for dust suppression during construction, and for washing construction vehicles. Water use for construction would be temporary, and the volume of water used for construction would be minor when compared to the amount used annually in the area for municipal, agricultural, and industrial purposes. A water source with a current allocation and all appropriate permits would be used.

Surface Water Quality. The Rio Grande is used for drinking water, irrigation, and recreation. The water quality in the Middle Rio Grande Valley Subbasin is better than other sections of the Rio Grande drainage (USIBWC 2003). The primary concern for the area is the high levels of bacteria and nutrient loading. The increases are found below return drains and tributaries where wastewater discharges enter the Rio Grande. Cities along the Rio Grande, including Del Rio and Eagle Pass and their sister cities in Mexico, Ciudad Acuña and Piedras Negras, are addressing the issue by constructing or upgrading wastewater treatment facilities (USIBWC 2003).

Water tested upstream of the SR 277 bridge in Del Rio had high levels of phosphorus, although these levels had decreased during the sampling period. Water tested 4.5 miles downstream of Del Rio, Texas, at Moody Ranch had increased levels of fecal coliform bacteria. Similar trends are observed for water sampled upstream and downstream of Eagle Pass where bacteria levels increased above the surface water standard for water that has passed through the City of Eagle Pass (USIBWC 2003).

Route B

The surface water and waters of the United States associated with the proposed project corridor of Route B would be identical to Route A. The primary difference is that Section M-2A, Route B avoids the arroyo at the northwestern end of Section M-2A (see **Appendix D**).

3.6.3 Environmental Consequences

3.6.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, CBP would not implement the Proposed Action. As a result, there would be no change from the baseline conditions and no effects on surface waters and waters of the United States would be expected. The No Action Alternative would result in continuation of the existing condition of surface water and waters of the United States, as discussed in **Section 3.6.2**.

Surface waters and waters of the United States would also continue to be degraded by cross-border violators from the increase in sedimentation caused by erosion of repeatedly used footpaths.

3.6.3.2 Alternative 2: Proposed Action

Route A

Surface Waters and Waters of the United States. Short-term and long-term minor adverse effects on surface water and waters of the United States would be expected. Effects on surface water and wetlands that are potentially jurisdictional waters of the United States would be avoided to the maximum

extent practicable. Effects that cannot be avoided would be minimized and BMPs enacted that would comply with all applicable Federal, state, and local regulations. Potential effects include dredging or the placement of fill into wetlands of other waters of the United States and moving the alignment of irrigation canals and drainage ditches.

If effects on waters of the United States cannot be avoided, the CBP would obtain any necessary CWA Section 404 permits and Rivers and Harbors Act Section 10 Permits. As part of the permitting process, CBP would develop, submit, and implement a compensatory mitigation plan to reduce effects and compensate for unavoidable effects. The plan would be developed in accordance with USACE guidelines and in cooperation with USEPA. The plan would outline BMPs from preconstruction to post-construction activities to reduce the effect on wetlands and water bodies. The USACE Fort Worth District would also obtain a Section 401 (a) CWA Permit from TCEQ, to ensure that action would comply with state water quality standards.

A Texas Construction General Permit would be required to address the development and implementation of an SWPPP with BMPs to reduce the effects of storm water runoff. Additionally, any required CWA Section 404 and Section 401, and Rivers and Harbors Act Section 10 permits would be obtained prior to all unavoidable effects on jurisdictional waters of the United States. A compensatory mitigation plan to lessen unavoidable effects would be developed, submitted, and implemented. The plan would outline BMPs from preconstruction to post-construction activities to reduce the effect on waters of the United States, including wetlands.

Surface Water Quality. Short-term negligible adverse effects on water quality would be expected. The Proposed Action would increase runoff potential in the proposed project corridor. Approximately 55 acres of disturbance in Section M-1, Route A and approximately 6 acres of disturbance in Section M-2A, Route A would occur as a result of grading, contouring, and trenching. The soil disturbance associated with the Proposed Action would disturb more than 5 acres of soil; therefore, a TCEQ Construction Storm Water Permit (TXR150000) would be required. Erosion and sediment control and storm water management practices during and after construction would be implemented consistent with the SWPPP developed under the Construction General Permit. Based on these requirements, adverse effects on surface water quality would be reduced to negligible.

Route B

Effects on surface water, waters of the United States, and surface water quality under Alternative 2, Route B would be expected to be similar to those described for Route A. Approximately 43 acres for Section M-1 and approximately 5 acres for M-2A would be affected by grading, contouring, and trenching associated with

Alternative 2, Route B. Additionally, Section M-2A, Route B would avoid an arroyo that could be considered waters of the United States.

3.6.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Effects on surface waters, waters of the United States, and surface water quality would be expected to be similar to those described in Alternative 2. However, the magnitude of the effects would be greater due to the additional fence and wider corridor. Approximately 43 acres for Section M-1 and approximately 14 acres for Section M-2A would be affected by the proposed grading, contouring, and trenching associated with Alternative 3. As described in **Section 3.6.3.2**, a Texas Construction General Permit including a SWPPP would be required. Additionally, any required CWA Section 404 or Section 401, and Rivers and Harbors Act Section 10 permits would be obtained prior to all unavoidable effects on jurisdictional waters of the United States. A compensatory mitigation plan to lessen unavoidable effects would be developed, submitted, and implemented. The plan would outline BMPs from preconstruction to post-construction activities to reduce the effect on waters of the United States, including wetlands.

3.7 FLOODPLAINS

3.7.1 Definition of the Resource

Floodplains are areas of low-level ground and alluvium adjacent to rivers, stream channels, or coastal waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic systems in which each component helps to maintain the characteristics of the environment that supports it. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and a diversity of plants and animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body (FEMA 1986).

Floodplains are subject to periodic or infrequent inundation due to runoff of rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed upstream from the floodplain. Flood potential is evaluated by FEMA, which defines the 100-year floodplain. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be constructed in either the 100- or 500-year floodplain, including hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of appropriate FEMA Flood Insurance Rate Maps (FIRMs), which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, a specific step-by-step process must be followed to comply with EO 11988. This process is outlined in Section 1.5 and discussed in the FEMA document *Further Advice on EO 11988 Floodplain Management*. As a planning tool, the NEPA process incorporates floodplain management through analysis and public coordination of the EA.

3.7.2 Affected Environment

Route A

Section M-1 for Alternative 2, Route A occurs in FEMA FIRM Panel No. 4806310010A for Val Verde County, Texas, effective June 1, 1987 (FEMA undated a). Route A is mapped in Zone X or "areas determined to be outside the 500-year floodplain."

Section M-2A for Alternative 2, Route A occurs in FEMA FIRM Panel No. 4804710004C for Eagle Pass, Texas, effective October 19, 2005. The section is mapped in Zone AE which lies in the 100-year floodplain of the Rio Grande.

Route B

Section M-1 for Alternative 2, Route B is mapped in Zone A (100-year floodplain). No Base Flood Elevations or depths are shown on the FIRM (FEMA undated c). In addition to FEMA mapping, detailed hydraulic studies have determined base flood elevations. Site-specific surveys have determined that Route B is in the FEMA 100-year floodplain, but not in the USIBWC floodplain (See Map 1 in **Appendix D**).

Section M-2A for Alternative 2, Route B is in the same flood zone as Route A.

3.7.3 Environmental Consequences

3.7.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, CBP would not implement the Proposed Action. As a result, there would be no change from the baseline conditions and no effects would be expected. The No Action Alternative would result in continuation of the existing condition of water resources, as discussed in **Section 3.7.2**.

Floodplains would also continue to be degraded by cross-border violators from the increase in sedimentation caused by erosion of repeatedly used footpaths.

3.7.3.2 Alternative 2: Proposed Action

Route A

Effects on floodplains would be avoided to the maximum extent practicable. Potential short- and long-term minor adverse effects on the Rio Grande floodplain in Section M-2A would occur as a result of construction activities associated with Alternative 2, Route A. Approximately 6 acres of the FEMA 100-year floodplain would be affected in Section M-2A. Placement of the tactical infrastructure and removal of vegetation in Section M-2A would increase the volume and velocity of sheet flow and runoff in the floodplain. Section M-1 Route A would not directly affect the FEMA 100-year floodplain.

The Proposed Action would disturb more than 5 acres of soil; therefore, a TCEQ Construction Storm Water Permit (TXR150000) would be required. Erosion and sediment control and storm water management practices during and after construction would be implemented consistent with the SWPPP. Based on these requirements, adverse effects on floodplains would be minimized.

A tactical infrastructure within the floodplain would have the potential to affect flood flows if the tactical infrastructure is not maintained to remove blockages to flow (debris and wrack) following high flow events. Periodic maintenance of the primary pedestrian fence to remove debris would minimize the potential for it to modify flood flows.

Hydraulic modeling indicates that no impacts on the USIBWC international floodplain would be expected for Section M-1, Route A. Hydraulic modeling will be conducted to determine if Section M-2A, Route A would have an impact on the USIBWC international floodplain. Increased impervious areas and loss of vegetation associated with the tactical infrastructure would have minor adverse impact on groundwater recharge, nutrient cycling, and water quality.

In accordance with the FEMA Document, *Further Advice on EO 11988, Floodplain Management*, CBP has determined that Section M-2A, Route A cannot be practicably located outside the floodplain. The current floodplain extends inland past local communities and roads strategic to the operations of USBP. CBP would mitigate unavoidable impacts associated with floodplains using planning guidance developed by the USACE. Properly designed erosion and sediment controls and storm water management practices would be implemented to minimize potential for adverse impacts.

Route B

Effects on floodplains would be avoided to the maximum extent practicable. Potential short- and long-term minor adverse effects on the Rio Grande floodplain in Sections M-1 and M-2A would occur as a result of construction activities associated with Alternative 2, Route B. Approximately 43 acres in Section M-1 and approximately 5 acres in Section M-2A of the FEMA 100-year floodplain would be affected. Placement of the primary pedestrian fence and removal of vegetation in Sections M-1 and M-2A would increase the volume and velocity of sheet flow and runoff in the floodplain.

The Proposed Action would disturb more than 5 acres of soil; therefore, authorization under the TCEQ Construction Storm Water Permit (TXR150000) would be required. Erosion and sediment control and storm water management practices during and after construction would be implemented consistent with the SWPPP developed under the Construction General Permit. Based on these requirements, adverse effects on floodplain resources would be minimized.

A primary pedestrian fence within the floodplain would have the potential to affect flood flows if the fence is not maintained to remove blockages to flow (debris and wrack) following high flow events. Periodic maintenance of the primary pedestrian fence to remove debris would minimize the potential for it to modify flood flows.

Hydraulic modeling indicates that no impacts on the USIBWC international floodplain would be expected for Section M-1, Route B. Hydraulic modeling will be conducted to determine if Section M-2A, Route B would have an impact on the USIBWC international floodplain

In accordance with the FEMA Document, *Further Advice on EO 11988, Floodplain Management*, CBP has determined that Route B of Sections M-1 and M-2A cannot be practicably located outside the floodplain since the current floodplain extends inland past local communities and roads strategic to the operations of USBP. CBP would mitigate unavoidable impacts associated with floodplains using planning guidance developed by the USACE. Properly designed erosion and sediment controls and storm water management practices would be implemented to minimize potential for adverse impacts.

3.7.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Effects on floodplains under Alternative 3 would be slightly greater than those described under Alternative 2, Route B. The primary and secondary sections proposed under Alternative 3 would result in an increase in impervious surface, contributing slightly more surface runoff to the Rio Grande and its associated floodplain. Approximately 43 acres in Section M-1 and approximately 14 acres in Section M-2A of the FEMA 100-year floodplain would be affected. No effects on

floodplains or USIBWC international floodplains would be expected for Section M-1, Route A.

3.8 VEGETATION RESOURCES

3.8.1 Definition of the Resource

The vegetation resources section describes the vascular plants or vegetated earth cover of the project area. Structurally, the vegetation occurs as forest, woodland, shrubland, and herbaceous communities or smaller stands with various mixes of canopy heights and plant species composition. The various vegetation types observed consisted of native and nonnative plant species that have become established. Sufficient cover data and field photographs were collected during field visits to accurately inventory, describe, illustrate, and map the various vegetation types that occur. This approach is in accord with the national vegetation classification system, a standard of the Federal Geographic Data Committee (FGDC 2007). Vegetation classifications were prepared using national (NatureServe 2007) and State of Texas hierarchies to appropriately present the information to ecologists, botanists, wildlife biologists, and others. Collectively the vegetation represents an important portion of the wildlife habitat for the project area providing forage and hiding cover in particular.

3.8.2 Affected Environment

Route A

The vegetation near Del Rio and Eagle Pass has been classified as Dry Domain (300), Tropical/Subtropical Steppe Division (310) (Bailey 1995). The proposed project corridor is more finely classified as the Southwestern Plateau and Plains Dry Steppe and Shrub Province (315). The Texas Parks and Wildlife Department (TPWD) provides discussion and describes vegetation geography of biotic provinces and natural regions using topographic features, climate, vegetation types, and terrestrial vertebrates. This system places the proposed project corridor in the Tamaulipan Biotic Province, South Texas Brush Country (Rio Grande Basin) Natural Region, Brush Country Sub-region, and the Level III Ecoregion of the Southern Texas Plains. The climate for the area is described in **Section 3**.

Tamaulipan Brushland represents a unique ecosystem (USFWS 1988). The characteristic natural vegetation is dense and thorny, and plant species distribution can be correlated with geologic formations. The Rio Grande floodplain supports tall, dense riparian forest, woodland, shrubland, and herbaceous vegetation while the xeric upland areas support mostly spiny shrubs, short-stature trees, and dense nonnative grasslands. Between the 1920s and 1980s, more than 95 percent of the native brushland and 90 percent of the riparian vegetation had been converted to agriculture and urban land use (USFWS 1988). In 1988, it was estimated that 98 percent of the lush, subtropical

region of the Rio Grande Valley had been cleared of native vegetation in the United States and a large but unknown percentage cleared in Mexico. This section describes and illustrates the existing condition and distribution of vegetation as it occurred in the 2007 Biological Resources Survey (see **Appendix G**) within Sections M-1 and M-2A.

In general, the vegetation of Sections M-1 and M-2A consists of small stands of native sugarberry, black willow, granjeno, huisache, and honey mesquite woodlands; honey mesquite and retama shrublands regrowing from nonnative Bermuda grass pastures; and nonnative Bermuda grass, giant reed, and Russian-thistle stands. Some agriculture, mostly pastures of Bermuda grass, occur along the northeastern side of Garza Lane of Section M-1. Emergent and forested wetland communities (identified by type in **Section 3.6.2**) occur rarely within the corridor in seep and spring sites and giant reed wetland stands are common; project-related effects on wetlands are presented under **Section 3.6.3**.

Route B

Vegetation that occurs in the proposed project corridor for Alternative 2, Route B is the same as Route A. The proposed project corridor is similar for both routes.

3.8.3 Environmental Consequences

3.8.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative native sugarberry, granjeno, huisache, and honey mesquite woodland strips and patches would continue to be managed by private and public landowners and would likely remain unchanged. Honey mesquite woodlands and shrublands and retama shrublands that have become reestablished in Bermuda grass pastures would be managed by private landowners and could be cleared to continue to support grazing livestock resulting in low, long-term, adverse effects on biodiversity and wildlife habitat structure. Bermuda grass stands that occur near the POE would continue to be mowed by USBP, as would those stands managed by public land managers resulting in negligible, long-term, adverse effects on native plant species. Forblands of Section M-2A dominated by Russian-thistle and being reinvaded by some native plant species could be removed to support future earthwork and construction for a housing development resulting in an negligible to minor, long-term, adverse effect due to poor quality habitat being converted to housing.

Dust generated from the existing access roads traveled by a variety of public, agency, recreation, and illegal vehicles would result in negligible to minor, short- and long-term adverse effects on downwind vegetation due to interference with pollination and photosynthesis.

3.8.3.2 Alternative 2: Proposed Action Alternative

Route A

Approximately 61 acres of grading, contouring, and trenching would be associated with Alternative 2, Route A. Approximately 9 acres are already cleared of vegetation and there would be no effects on vegetation within this portion of the proposed project corridor. Proposed construction grading for this alternative would result in approximately 52 acres of vegetation clearing and removal. Vegetation clearing and removal within this section would result in moderate short- and long-term adverse effects on strips and patches of sugarberry, huisache, granjeno, and honey mesquite woodland; honey mesquite shrubland; Bermuda grassland; Russian-thistle forbland; and giant reed communities. The 150-foot corridor in Section M-1 would also be maintained clear of giant reed and other woodland, shrubland, and other grassland vegetation. Dust generated from vehicles on access roads would result in negligible to minor, short- and long-term adverse effects on downwind vegetation due to interference with pollination and photosynthesis.

Route B

Approximately 49 acres of grading, contouring, and trenching would be associated with Alternative 2, Route B. There are no areas in Route B that have been completely cleared of vegetation; therefore proposed construction grading for this alternative would result in approximately 49 acres of direct, adverse impacts on vegetation. Vegetation clearing and removal within this section would result in moderate, short- and long-term, adverse effects on strips and patches of sugarberry, granjeno, and honey mesquite woodland; honey mesquite and retama shrubland; Bermuda grassland; Russian-thistle forbland; and giant reed communities. The 150-foot corridor in Section M-1 would also be maintained clear of giant reed, woodland, shrubland, and other grassland vegetation. Dust generated from vehicles on access roads would result in minor short- and long-term adverse effects on downwind vegetation due to interference with pollination and photosynthesis.

3.8.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Under this alternative a 150-foot-wide corridor containing the proposed tactical infrastructure would be cleared (approximately 57 acres). Additionally, a portion would be maintained following construction to support long-term maintenance, sight distance, and patrol activities. Vegetation clearing and removal within this section would result in moderate, short- and long-term, adverse effects on strips and patches of sugarberry, granjeno, and honey mesquite woodland; honey mesquite and retama shrubland; Bermuda grassland; Russian-thistle forbland communities; and giant reed stands. Dust generated from vehicles on access roads would result in short- and long-term minor adverse effects on downwind vegetation due to interference with pollination and photosynthesis.

3.9 WILDLIFE AND AQUATIC RESOURCES

3.9.1 Definition of the Resource

Wildlife and aquatic resources are native or naturalized animals, including migratory birds, and the habitats in which they exist. Federal- and state-listed species and designated critical habitats are discussed in further detail in **Section 3.10**.

3.9.2 Affected Environment

Route A

Wildlife. Sections M-1 and M-2A of Alternative 2, Route A is in the South Texas Brush Country Natural Region within the Tamaulipan Biotic Province, in a transition zone with the Chihuahuan Biotic Province boundary a few miles northwest and the Balconian Biotic Province boundary a few miles north. Wildlife species from all three biotic provinces are likely to frequent the proposed project corridor. Both sections border the Rio Grande. Additionally, the Rio Grande is a major migratory flyway for numerous bird species, particularly waterfowl, shore birds, and those associated with riparian habitats.

The Chihuahuan Biotic Province includes the northwestern region of Texas that borders Mexico. The antelope (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*) are the most widely distributed large game animals. The collared peccary or javelina (*Pecari tajacu*) is common in the southern part of the region. The blacktail jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), kangaroo rat (*Dipodomys* spp.), wood rat (*Neotoma floridana*), and numerous smaller rodents compete with domestic and wild herbivores for available forage. Mammalian predators include the coyote (*Canis latrans*) and bobcat (*Lynx rufus*). The black-throated sparrow (*Amphispiza bilineata*) is one of the most abundant birds of the province. Greater roadrunner (*Geococcyx californianus*), curve-billed thrasher (*Toxostoma curvirostre*), and Chihuahuan raven (*Corvus cryptoleucus*) are also common. Scaled quail (*Callipepla squamata*) and Gambel's quail (*Callipepla gambelii*) occupy most of the area, and northern bobwhite (*Colinus virginianus*) populations reach into its eastern portion. Raptors include the golden eagle (*Aquila chrysaetos*), great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), ferruginous hawk (*Buteo regalis*), and the rare zone-tailed hawk (*Buteo albonotatus*). The many reptiles include the common chuckwalla (*Sauromalus ater*), Texas horned lizard (*Phrynosoma cornutum*), desert spiny lizard (*Sceloporus magister*), and various species of rattlesnakes (*Crotalus* spp.) (Bailey 1995).

The Balconian Biotic Province includes the Edwards Plateau north of the Del Rio Sector. The Mexican ground squirrel (*Spermophilus mexicanus*) and gray fox (*Urocyon cinereoargenteus*) are found in this province. Whitetail deer (*Odocoileus virginianus*) are abundant, and nine-banded armadillo (*Dasypus*

novemcinctus) are present. The fox squirrel (*Sciurus niger*) is hunted in wooded areas along streams. Chief furbearers are the ringtail (*Bassariscus astutus*) and raccoon (*Procyon lotor*). Wild turkey (*Meleagris gallopavo*), mourning dove (*Zenaida macroura*), scaled quail, and bobwhite are common game birds, and several species of hawks and owls are present (Bailey 1995).

The Tamaulipan Biotic Province includes a variety of wildlife species. Common species of amphibians in the region include spadefoot toads (*Scaphiopus* spp.), chorus frogs (*Pseudacris* spp.), true toads (*Bufo* spp.), and true frogs (*Rana* spp.). Common snakes include rat snakes (*Elaphe* spp.), water snakes (*Nerodia* spp.), western diamondback rattlesnakes (*Crotalus atrox*), and Texas coral snakes (*Micrurus fulviustener*). Common turtles in the region include eastern river cooter (*Pseudemys concinna*), ornate box turtle (*Terrapene ornata*), yellow mud turtle (*Kinosternon flavescens*), Texas tortoise (*Gopherus berlandieri*), smooth softshell (*Apalone mutica*), and spiny softshell (*A. spinifera*). Mammal species likely to occur within or near the project area include coyote (*Canis latrans*), raccoon (*Procyon lotor*), cottontail (*Sylvilagus floridanus*), eastern fox squirrel (*Sciurus niger*), bobcat (*Lynx rufus*), and the nine-banded armadillo (*Dasypus novemcinctus*) (CBP 2007).

During a November 2007 survey, habitats observed within the proposed project corridor were native and nonnative woodlands, desert shrublands, riparian communities, and nonnative pastures and forblands (See **Section 3.8**). The riparian community is dominated by giant reed along the banks and undeveloped natural floodplains of the Rio Grande. Giant reed has become highly invasive, colonizing vast areas of riparian zones and displacing native vegetation along the Rio Grande and its tributaries. Because the proposed project corridor lies adjacent to densely populated urban areas, the riparian habitat could be used as a corridor for some wildlife species to travel through to less-disturbed habitat (CBP 2007). Wildlife species observed during the survey are presented in **Table 3.9-1**. During the survey 21 bird species, 1 mammal species, 2 amphibian species, 1 reptile species, and 3 invertebrates were recorded.

Aquatic Resources. The aquatic ecosystems are restricted to the Rio Grande and the tributaries that flow into the Rio Grande. In the Rio Grande, the dominant fish species include alligator gar (*Lepisosteus spatula*), thread-fin shad (*Dorosoma petenense*), common carp (*Cyprinus carpio*), bullhead minnow (*Pimephales vigilax*), striped bass (*Roccus saxatilus*), and Rio Grande perch (*Cichlasoma cyanoguttatum*) (CBP 2007).

Route B

Wildlife and aquatic resources that occur in Route B are the same as Route A. The proposed project corridor for both routes is similar.

Table 3.9-1. Wildlife Species Observed in November 2007 Survey

Common Name	Scientific Name	Species Status	M-1	M-2A
Insects				
Cloudless sulfur	*Phoebis sennae eubule*	C	X	
Monarch butterfly	*Danaus plexippus*	C	X	
Painted lady butterfly	*Vanessa cardui*	C	X	
Amphibians				
Bullfrog	*Rana catesbiena*	C	X	
Rio Grande leopard frog	*Rana berlandieri*	C	X	
Reptiles				
Indigo snake	*Drymarchon corais*	ST	X	
Birds				
Baltimore oriole	*Icterus galbula*	C	X	X
Barn swallow	*Riparia riparia*	C		X
Black-bellied whistling duck	*Dendrocygna autumnalis*	C	X	
Bufflehead	*Bucephala albeola*	C	X	
Couch's kingbird	*Tyrannus couchii*	C	X	X
Double-crested cormorant	*Phalacrocorax auritus*	C	X	
Gadwall	*Anas Strepera*	C	X	
Great egret	*Ardea alba*	C		X
Great-tailed grackle	*Quiscalus mexicanus*	C	X	X
Inca dove	*Columbina inca*	C		X
Kingfisher	*Megaceryle sp.*	C	X	
Mallard	*Anas platyrhynchos*	C	X	
Mourning dove	*Zenaida macroura*	C	X	
Northern cardinal	*Cardinalis cardinalis*	C	X	
Northern shoveler	*Anas clypeata*	C	X	
Red-shouldered hawk	*Buteo lineatus*	C	X	
Says phoebe	*Sayornis saya*	C		X
Scissor-tailed flycatcher	*Tyrannus forticatus*	C		X
Sparrow	*Spizella sp.*	C	X	X
Vermilion flycatcher	*Pyrocephalus rubinus*	C		X
Wild turkey	*Meleagris gallopavo*	C	X	
Mammals				
Raccoon	*Procyon lotor*	C		X

Notes: ST = State Threatened; C = Common

3.9.3 Environmental Consequences

3.9.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, new tactical infrastructure would not be built and there would be no change in fencing, access roads, or other facilities along the U.S./Mexico international border in the proposed project locations within the Del Rio Sector. The No Action Alternative would not directly affect wildlife in the proposed project corridor. However, wildlife species and their habitat would continue to be indirectly affected through habitat alteration and loss due to trails and erosion from illegal cross-border activities.

3.9.3.2 Alternative 2: Proposed Action

Route A

Wildlife. Alternative 2, Route A would permanently affect approximately 46 acres in Section M-1 and approximately 6 acres in Section M-2A. Potential threats to wildlife along the Del Rio Sector include barrier to movement, interruption of corridors, increased human activity, impacts of lights on nocturnal species, and loss of habitat. Some wildlife deaths, particularly reptiles and amphibians could increase due to the improved accessibility of the area and increased vehicle traffic. Although some incidental take might occur, wildlife populations within the proposed project corridor would not be significantly affected through the implementation of the Proposed Action Alternative.

Noise created during construction would be anticipated to result in short-term, moderate, adverse effects on wildlife, particularly birds and mid- to large-sized mammals. Noise levels after construction are anticipated to return to close to current ambient levels. Elevated noise levels during construction could result in reduced communication ranges, interference with predator/prey interactions, or habitat avoidance. More intense effects, potentially resulting with intense pulses of noise associated with blasting, could include behavioral change, disorientation, or hearing loss. Predictors of wildlife response to noise include noise type (i.e., continuous or intermittent), prior experience with noise, proximity to a noise source, stage in the breeding cycle, activity, and age. Prior experience with noise is the most important factor in the response of wildlife to noise, because wildlife can become accustomed (or habituate) to the noise. The rate of habituation to short-term construction is not known, but it is anticipated that wildlife would be permanently displaced from the areas where the habitat is cleared and the primary pedestrian fence and associated tactical infrastructure constructed, and temporarily dispersed from areas adjacent to the project areas during construction periods. See **Section 3.2** for additional details on expected noise levels associated with the Proposed Action.

For the proposed length of approximately 4 miles, the area within the proposed construction corridor that would be cleared of vegetation is approximately 52

acres for Sections M-1 and M-2A. The 52 acres of vegetation removed for Sections M-1 and M-2A are dominated by sugarberry, huisache, granjeno, and honey mesquite woodlands; honey mesquite and retama shrublands; giant reed wetlands; and nonnative grasslands and forblands. This vegetation removal would result in short- and long-term, minor adverse effects on wildlife due to habitat conversion.

Lights along the fence corridor may behaviorally exclude nocturnal wildlife such as the bobcat from the illuminated zone, although potential use of these areas by bobcat is likely minimal given their proximity to urban development. Lights would be anticipated to have only minor adverse impacts on nocturnal wildlife depending on the species examined. Potential impacts of lights on ocelot and jaguarundi are addressed in section 3.10.3

Effects on migratory birds could be substantial and are highly dependent upon the timing of tactical infrastructure construction. Implementing a series of BMPs to avoid or minimize adverse effects could markedly reduce their intensity. Standard BMPs to reduce or avoid adverse effects on migratory birds include the following:

- Any groundbreaking construction activities should be performed before migratory birds return to the area (approximately 1 March) or after all young have fledged (approximately 31 July) to avoid incidental take.
- If construction is scheduled to start during the period in which migratory bird species are present, steps should be taken to prevent migratory birds from establishing nests in the proposed project corridor. These steps could include covering equipment and structures, and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting on the site. Once a nest is established, they cannot be harassed until all young have fledged and left the nest site.
- If construction is scheduled to start during the period when migratory birds are present, a supplemental site-specific survey for nesting migratory birds should be performed immediately prior to site clearing.
- If nesting birds are found during the supplemental survey, construction should be deferred until the birds have left the nest. Confirmation that all young have fledged should be made by a competent biologist.

Because not all of the above BMPs can be fully implemented due to time constraints of tactical infrastructure construction, a Migratory Bird Depredation Permit would be obtained from USFWS.

Assuming implementation of the above BMPs to the fullest extent feasible, effects of the Proposed Action on migratory birds is anticipated to be short- and long-term, minor, and adverse due to construction disturbance and associated loss of habitat, and long-term, minor, and beneficial due to reduction of foot traffic through migratory bird habitat north of the proposed project corridor.

Aquatic Resources. Removal of vegetation and grading during construction could temporarily increase siltation in the river and therefore have short-term minor adverse effects on fish and aquatic resources within the Rio Grande.

Route B

Wildlife. Effects on wildlife associated with Alternative 2, Route B would be similar to those described for Route A. The proposed project corridor would include approximately 43.3 acres of vegetation removal for Section M-1 and approximately 5.4 acres of vegetation removal for Section M-2A.

For the proposed length of approximately 3.3 miles, the area within the corridor that would be cleared of vegetation is approximately 49 acres for Sections M-1 and M-2A. The approximate 49 acres of vegetation that would be removed are dominated by sugarberry, granjeno, and honey mesquite woodlands; honey mesquite and retama shrublands; giant reed wetlands; and nonnative grasslands and forblands. This vegetation removal would result in short- and long-term, minor adverse effects on wildlife due to habitat conversion.

Aquatic Resources. Removal of vegetation and grading during construction could temporarily increase siltation in the river and therefore have short-term minor adverse impacts on fish and other aquatic resources within the Rio Grande.

3.9.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Effects on wildlife and aquatic resources associated with Alternative 3 would be similar to those described for Alternative 2, Route B; however, the area impacted would be greater because the area disturbed would be greater. This alternative would also include construction and maintenance of access and patrol roads. Vegetation would be cleared and grading would occur where needed. Increased threats to wildlife in these areas include barrier to movement, interruption of corridors, increased human activity, and loss of habitat. Wildlife populations within the project area would not be significantly affected by vehicular traffic because the patrol road would be located between the fences. However, vehicle traffic would continue to cause a disruption of wildlife. These long-term intermittent adverse effects would be negligible to minor.

3.10 THREATENED AND ENDANGERED SPECIES

3.10.1 Definition of the Resource

Federal and state threatened and endangered species are addressed in this EA. Each group has its own definitions, and legislative and regulatory drivers for consideration during the NEPA process; these are briefly described below.

The ESA, as amended (16 U.S.C. 1531–1544 et seq.) provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the United States or elsewhere. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. Section 7 of the ESA outlines procedures for Federal agencies to follow when taking actions that can jeopardize listed species, and contains exceptions and exemptions. Criminal and civil penalties are provided for violations of the ESA.

Section 7 of the ESA directs all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the USFWS, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of Federal lands as well as other Federal actions that might affect listed species, such as approval of private activities through the issuance of Federal permits, licenses, or other actions.

Under the ESA, a Federal endangered species is defined as any species which is in danger of extinction throughout all or a significant portion of its range. The ESA defines a Federal threatened species as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

In 1973, the Texas legislature authorized the TPWD to establish a list of endangered animals in the state. State endangered species are those species which the Executive Director of the TPWD has named as being 'threatened with statewide extinction." Threatened species are those species which the TPWD has determined are likely to become endangered in the future (TPWD 2007a).

In 1988 the Texas legislature authorized TPWD to establish a list of threatened and endangered plant species for the state. An endangered plant is one that is "in danger of extinction throughout all or a significant portion of its range." A threatened plant is one that is likely to become endangered within the foreseeable future (TPWD 2007b).

TPWD regulations prohibit the taking, possession, transportation, or sale of any of the animal species designated by state law as endangered or threatened without the issuance of a permit. State laws and regulations prohibit commerce in threatened and endangered plants and the collection of listed plant species from public land without a permit issued by TPWD. Listing and recovery of endangered species in Texas is coordinated by the TPWD. The TPWD Wildlife Permitting Section is responsible for the issuance of permits for the handling of listed species (TPWD 2007a).

3.10.2 Affected Environment

Route A

Eleven federally listed species have the potential to occur within the proposed project corridor of Alternative 2, Route A (see **Table 3.10-1**). An additional 15 species that are listed by the State of Texas as threatened or endangered have the potential to be present (see **Table 3.10-1**). Further information on the natural history of the federally listed species is presented in **Appendix G**.

Table 3.10-1. Federal- and State-Listed Species Potentially Occurring in the Proposed Project Corridor

Common Name	Scientific Name	County	Federal Status	State Status
Plants				
Texas snowbells	*Styrax texana*	VV	**E**	**E**
Tobusch fishhook cactus	*Ancistrocactus tobuschii*	VV	**E**	**E**
Mussels				
Texas hornshell (clam)	*Popenaias popeii*	VV	**C**	
Fish				
Blotched gambusia	*Gambusia senilis*	VV		**T**
Blue sucker	*Cycleptus elongates*	M		**T**
Conchos pupfish	*Cyprinodon eximius*	VV		**T**
Devils River minnow	*Dionda diabolic*	VV	**T**	**T**
Pecos pupfish	*Cyprinodon pecosensis*	VV		**T**
Proserpine shiner	*Cyprinella Proserpina*	M		**T**
Rio Grande darter	*Etheostoma graham*	M		**T**
Rio Grande silvery minnow	*Hybognathus amarus*	M	**E**	**E**
Amphibians				
South Texas siren (Large form)	*Siren sp. 1*	M		**T**
Reptiles				
Indigo snake	*Drymarchon corais*	M		**T**
Reticulate collared lizard	*Crotaphytus reticulatus*	M		**T**
Texas horned lizard	*Phrynosoma cornutum*	M		**T**
Texas tortoise	*Gopherus berlandieri*	M		**T**

Common Name	Scientific Name	County	Federal Status	State Status
Reptiles (continued)				
Trans-Pecos black-headed snake	*Tantilla cucullata*	VV		**T**
Birds				
American peregrine falcon	*Falco peregrines anatum*	M	**DL**	**E**
Arctic peregrine falcon	*Falco peregrines tundrius*	M	**DL**	**T**
Interior least tern	*Sterna antillarum athalassos*	M, VV	**E**	**E**
Black-capped vireo	*Vireo atricapilla*	VV	**E**	**E**
Brown pelican	*Pelecanus occidentalis*	VV	**E**	
Common black hawk	*Buteogallus anthracinus*	VV		**T**
Peregrine flacon	*Falco peregrines*	M	**DL**	**ET**
Zone-tailed hawk	*Buteo albonotatus*	VV		**T**
Mammals				
Gulf Coast jaguarundi	*Herpailurus yaguarondi*	M	**E**	**E**
Gray wolf	*Canis lupus*	M	**E**	**E**
Black bear	*Ursus americanus*	M	**T/SA;NL**	**T**
White-nosed coati	*Nasus narica*	M		**T**
Ocelot	*Leopardus pardalis*	M	**E**	**E**

Source: TPWD 2007a, USFWS 2007b

Notes:

E = Endangered; T = Threatened; C = Candidate; T/SA = Threatened by Similarity of Appearance; NL = Not Listed; DL = De-listed

M = Maverick County (Section M-1)

VV = Val Verde County (Section M-2A)

A biological survey of the project area, conducted November 5, 2007, recorded the presence of only one state-listed species, indigo snake *(Drymarchon corais*); and the presence of potential habitat for ocelot and jaguarundi. These two species are further discussed here. Detailed information on the methods and results of the November 5, 2007, survey and further information on the other Federal threatened or endangered species are provided in **Appendix G**.

The indigo snake is listed as threatened by TPWD. This species occupies a range that includes Texas south of the Guadalupe River and the Balcones Escarpment. It inhabits thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors. The indigo snake can do well in suburban

and irrigated croplands if not molested or indirectly poisoned. It requires moist microhabitats, such as rodent burrows, for shelter. An indigo snake was observed near wetland habitat in Section M-1.

The habitat of the jaguarundi is similar to that of the ocelot and is found within the Tamaulipan Biotic Province which includes several variations of subtropical thornscrub brush. Jaguarundi and ocelot both prefer dense thornscrub habitats with greater than 95 percent canopy cover. Habitat for the ocelot and jaguarundi occurs within Section M-1, although no records for either species are known from this area.

Route B

Federally and state-listed species that occur in the project corridor for Alternative 2, Route B are the same as Route A. The proposed project corridor for both routes is similar.

3.10.3 Environmental Consequences

Section 7 of the ESA requires Federal agencies to consult with the USFWS when actions might affect federally listed species or designated critical habitat. Pre-consultation coordination with the USFWS is underway for this project. The USFWS has provided critical feedback on the location and design of tactical infrastructure to avoid, minimize, or mitigate potential effects on listed species or designated critical habitat. CBP is developing the BA in coordination with the USFWS. Potential effects of tactical infrastructure construction, operation, and maintenance will be analyzed in both the BA and response document (BO or Letter of Concurrence/ Nonconcurrence, as appropriate) to accompany the Final EA.

Potential effects on federally listed species are based on currently available data. Effects are developed from a NEPA perspective and are independent of any effect determinations made for the Section 7 consultation process. Effect categories used in this document cannot be assumed to correlate to potential effects determinations which have not yet been made. Potential effects on state and federally listed species would be due to direct mortality during construction and operation, and loss of habitat (quality or quantity).

3.10.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, new tactical infrastructure would not be built and there would be no change in fencing, access roads, or other facilities along the U.S./Mexico international border in the proposed project locations within the Del Rio Sector. There would be no direct effects on threatened and endangered species and there would be no loss or alteration of habitat due to construction. However, threatened and endangered species and their habitats would continue

to be indirectly affected through habitat alteration and loss due to erosion and the movement of cross-border violators through the riparian zones.

3.10.3.2 Alternative 2: Proposed Action Alternative

Under the Proposed Action, a 150-foot-wide corridor (Section M-1) and 60-foot-wide corridor (Section M-2A) containing the proposed new primary pedestrian fence, access/patrol roads, lights, and construction staging areas would be cleared along approximately 4 miles using proposed Route A (approximately 61 acres) or approximately 3 miles using proposed Route B (approximately 49 acres) during construction and a portion maintained following construction to support long-term maintenance, sight distance, and patrol activities. For the period of construction, lay-down areas for materials and equipment would be identified within the disturbed corridor.

Direct mortality during construction activities is unlikely for the ocelot, jaguarundi, or indigo snake, but the indigo snake would be the most susceptible of the three. Operational effects such as road kill of indigo snakes or disturbance of ocelots or jaguarundi potentially using the corridor, would not be anticipated to increase measurably above current conditions. The use of lights for nighttime construction and the operational use of lights would have the potential to adversely affect any ocelot and jaguarundi in the vicinity of M-2A. However, the dense habitat through which these cats tend to move resists substantial light penetration. Lights used for construction and operations would be shielded to avoid unnecessary illumination of potential habitat for these two species. Finally, the Proposed Action for M-2A is proximal to a POE and runs along the edge of Eagle Pass, areas that already experience above-normal illumination. Therefore, it is not anticipated that impacts of lights (used during construction or operations) would have more than minor adverse impacts on any ocelot or jaguarundi inhabiting the area.

Route A

Proposed construction grading for this alternative would result in 52 acres of clearing and removal of vegetation including approximately 5 acres of giant reed wetlands (habitat for the indigo snake, and movement corridor for ocelots and jaguarundi), and strips and patches of sugarberry, granjeno, and honey mesquite woodland, and honey mesquite and retama shrubland (habitat for ocelot and jaguarundi); Bermuda grassland; and Russian-thistle forbland communities. This loss of habitat within this section would result in negligible to minor (for cats and the indigo snake, respectively) short- and long-term, adverse effects on state- and Federal-listed species.

Route B

Proposed construction grading for this alternative would result in approximately 49 acres of vegetation clearing and removal (including approximately 9 acres of

giant reed wetlands). Habitat loss resulting from implementation of this alternative would result in the greater potential for adverse effects on both cats and the indigo snake; however these effects would still fall within the negligible to minor range for ocelot and jaguarundi and minor to moderate for indigo snake.

3.10.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Under this alternative a 150-foot-wide corridor containing the proposed new primary and secondary fences, lighting, access/patrol roads, and construction staging areas would be cleared along approximately 4 miles (approximately 57 acres) during construction and a portion maintained following construction to support long-term maintenance, sight distance, and patrol activities. For the period of construction, lay-down areas for materials and equipment would be identified within the disturbed corridor. Proposed construction grading for this alternative would result in approximately 57 acres of habitat loss (including approximately 9 acres of giant reed wetlands). Implementation of this alternative would result in moderate, short- and long-term, adverse effects on ocelot, jaguarundi, and the indigo snake and their habitats as a result of habitat loss.

3.11 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

3.11.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources. The NHPA focuses on historic properties, specifically, prehistoric or historic districts, sites, buildings, or structures included in, or eligible for, the National Register of Historic Places (NRHP), including related artifacts, records, and material remains. Traditional, religious, and cultural properties holding significance for Native American tribes, and Native Alaskan and Native Hawaiian organizations can also be considered NRHP-eligible. Depending on the condition and historic use, such resources might provide insight into living conditions in previous civilizations or might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes. Archaeological resources are locations containing evidence of human activity. In the Rio Grande Valley, archaeological resources dating to the prehistoric period (prior to European contact) typically

consist of deposits of artifacts, such as flaked and ground stone tools; fragments of ceramic vessels; and, less commonly, bone or shell ornaments or tools; dietary refuse such as bone, shells, or burned seeds, features such as house floors, hearths, or, rarely, human remains. Archaeological resources dating to the historic period might consist of structural remains such as foundations, cisterns, or privies; features such as roads, railroad grades, levees, or water canals; or deposits of artifacts representing domestic, commercial, or other activities.

Architectural resources include standing structures such as buildings, dams, canals, bridges, transmission lines, and other structures of historic or aesthetic value. Although architectural resources generally must be more than 50 years old to be considered for protection, exceptions can be made where the structures are likely to gain value in the future.

Resources of traditional, religious, or cultural significance to Native American tribes are those that relate to the traditional practices, beliefs, and religions of a living community, and are considered essential to maintaining the identity of that culture. Traditional cultural resources might include the locations of historical or mythological events, traditional hunting or gathering areas, sacred areas, or any other location of traditional cultural importance.

3.11.2 Affected Environment

Information presented on cultural, historical, and archaeological resources is based largely upon data gathered from the THC's Texas Historic Sites Atlas and Texas Archaeological Sites Atlas. This information was supplemented by other sources, including the Bureau of Land Management's General Land Office (GLO), and regional historical and archaeological syntheses. The THC atlases provide summary information about archaeological sites and surveys, markers describing historical sites and events, neighborhood surveys, and individual properties and historic districts listed in the NRHP. Because the atlases include only architectural resources that are listed in the NRHP and none that have been determined eligible for the NRHP without having been listed, it is not a complete data set for architectural resources. It is expected that further archival research will reveal a large number of additional buildings and other resources that have been previously determined to be eligible for listing in the NRHP, and that survey and evaluation efforts will identify additional ones that have not been surveyed or evaluated. Moreover, the atlases might not reflect the results of recent archaeological surveys, and additional recorded archaeological sites, as well as previously unrecorded archaeological resources, might exist. Further research and cultural resources surveys are being conducted.

Area of Potential Effect

According to 36 CFR Part 800, the Area of Potential Effect (APE) of a Federal undertaking is defined as the geographical area within which effects on historic properties might occur if such properties hypothetically exist. The APE should

account for both direct and indirect effects. 36 CFR 800.5(a)(2) specifically cites visual effects and changes to the setting of a historic property where the setting contributes to the significance of the property as adverse. Other possible adverse effects include damage or destruction of historic properties due to grading, construction, noise, or vibrations.

Under Alternative 2 (Routes A and B), direct effects would occur within a 150-foot-wide corridor in Section M-1 and a 60-foot-wide corridor in Section M-2A from proposed grading of vegetation and tactical infrastructure construction. Under Alternative 3, the proposed project corridor APE would be 150 feet wide. A larger APE has been developed for both Alternative 2 (Routes A and B) and Alternative 3 for effects on architectural resources. Topography, type, and density of vegetation and intervening development, orientation of streets and properties in relation to the alternatives, traffic patterns, and surrounding development all are factors to be considered in the definition of this latter APE.

Several Native American tribes with ancestral ties to lands within the Del Rio Sector have been contacted for input into the cultural resources survey as required under NHPA (see **Appendix C**).

Known Resources

In the following discussion, archaeological sites, historic districts, and individual properties in or near the APE that are listed in the NRHP are described. These descriptions are based on information contained in the THC Texas Historic Sites Atlas and Texas Archaeological Sites Atlas. As noted, additional resources likely occur within the APEs for Alternative 2 (Routes A and B) and Alternative 3. Further research and survey efforts to identify these resources are currently in progress.

The prehistory and history of the Del Rio area of the Rio Grande Valley are rich, unique, and important. The river has been a critical conduit for trade and transportation, and a natural border between interests to the north and the south. This is true from the earliest times. Evidence of human occupation in the region is abundant. A review of the prehistory and history of the area is presented in **Appendix H.**

Previously reported prehistoric archaeological resources within a mile of the proposed project corridor include open air campsites and lithic scatters. Temporal and cultural affiliations for these sites are unclear, and few sites are very extensive. Historic properties include a fort, courthouse, church, and residences.

Historic Property Surveys

An archaeological survey of a 150-foot-wide corridor for each proposed tactical infrastructure section (inclusive of the direct effect APEs for both Alternative 2

[Routes A and B] and Alternative 3) is in progress, as well as an architectural survey. The goal of these surveys is to identify historic properties potentially affected by the Proposed Action. The completed surveys and final findings will be provided in the Final EA. Information about previously recorded archaeological, historical, and architectural sites within the 150-foot survey corridor and within a 1-mile radius of the corridor was gathered from the THC Historic Sites Atlas and Archaeological Sites Atlas. This information was plotted on project maps, aerial photographs, and topographic maps to identify areas of interest for further identification and evaluation.

Consultations with tribes is ongoing; as of November 2007, no resources of traditional, religious, or cultural significance to Native American tribes have been identified within the APE (direct construction effects) (see **Appendix C**).

Route A

Section M-1, Route A passes through one previously recorded archaeological site. Site 41VV1714 was recorded in 1994 by a TxDOT employee but a site form was never submitted. Other than location and site number, there is no further information about this site.

There are three archaeological sites and one historic marker within one mile of Section M-1, Route A. Two of the archaeological sites are prehistoric (41WI198 and 41WI1601). The third site (41WI1713) was recorded in 1994 by the TxDOT; no site form was submitted. The marker was erected in 2003 to commemorate the Brinkley Mansion, built in 1934 by the infamous John R. Brinkley, also known as the "Goat-Gland Doctor."

Section M-2A, Route A passes through one prehistoric site. Site 41MV65 is an open-air lithic scatter of unknown cultural or temporal affiliation. No eligibility recommendation has been made.

Section M-2A, Route A passes near two properties of historical significance. These properties are summarized in **Table 3.11-1**.

Table 3.11-1. Historic Properties near the M-2A Proposed Project Corridor

Section	Historic Property	NRHP Status
M-2A	Fort Duncan National Register District	NRHP Listed 1971
M-2A	Maverick County Courthouse	NRHP Listed 1980

The Fort Duncan National Register District was listed on the NRHP by the Secretary of the Interior in 1971. The 1,000-acre historic district includes three contributing buildings that are typical examples of mid-19th-century frontier military architecture. The Maverick County Courthouse was erected in 1885

when Eagle Pass was the Maverick County Seat. The courthouse was listed on the NRHP by the Secretary of the Interior in 1980. Additional information on these historic properties is presented in **Appendix H**.

In addition to these NRHP properties and districts there are five Recorded Texas Historic Landmarks near Section M-2A. These properties are summarized in **Table 3.11-2**.

Table 3.11-2. Texas Historic Landmarks near M-2A

Section	Historic Property	Brief Description	Marker Number
M-2A	420 Commercial Street	Two-story Victorian residence constructed in the 1880s	N/A
M-2A	Church of the Redeemer	1887 Gothic Revival church	862
M-2A	Eagle Pass Post Office	1912 Renaissance Revival building currently used as library	1328
M-2A	S.P. Simpson Jr. House	1883 residence built by pioneer banker and civic leader	4402
M-2A	Lee Building	Built before 1875 and named for Gen. Robert E. Lee; originally used as sergeant quarters, now serves as a museum	5370

Local neighborhood surveys in Eagle Pass have recorded four historic homes in the area of Section M-2A. Information on the construction dates and architectural styles for these resources is incomplete. Several historic markers within Section M-2A speak to the important military history of the area including the varying designations of Fort Duncan and the men associated with them. It is assumed that with more thorough survey and evaluation, these properties and locations might be determined eligible for local or state recognition.

Route B

Section M-1, Route B does not pass through any previously recorded archaeological sites or historic properties. The three sites listed above as occurring within one mile of Section M-1, Route A, 41WI198, 41WI1601, and 41WI1713, also are within one mile of Section M-1, Route B.

Section M-2, Route B is nearly identical to Route A. It also passes through Site 41MV65, an open-air prehistoric site with no eligibility recommendation. The Fort Duncan National Historic District and the Maverick County Courthouse are within

one mile of the route, as are the five Texas Historic Landmarks presented in **Table 3-11.2**.

3.11.3 Environmental Consequences

3.11.3.1 Alternative 1: No Action Alternative

Under Alternative 1, proposed tactical infrastructure would not be built and there would be no change in the Del Rio Sector. Since there would be no tactical infrastructure built, there would be no change to cultural, historical, and archaeological resources. No historic properties would be affected.

3.11.3.2 Alternative 2: Proposed Action Alternative

Minor to major long-term adverse effects would be expected under Alternative 2, Routes A and B. However, the differences in the routes in section M-1 would affect historic properties differently. Cultural resources surveys were completed for M-1 and the portion of M-2A for which Right of Entry has been obtained. Two sites were found. Both are prehistoric artifact scatters that are recommended as eligible for nomination to the NRHP under criterion D. Additional archaeological investigations and consultation with the SHPO would occur prior to construction. An historic structure survey is also being completed.

Route A

Major long-term adverse effects would be expected under Route A. Section M-1, Route A passes through one poorly known archaeological site (Site 41VV1714). No site record was ever submitted for this site and the effect of the Proposed Action cannot be known except in the event that the site is relocated and documented during archaeological survey.

Section M-2A, Route A passes through one prehistoric site (Site 41MV65), which is an open-air lithic scatter of unknown cultural or temporal affiliation. The project corridor passes near two NRHP-listed properties, the Fort Duncan National Register District and the Maverick County Courthouse (see **Appendix H**). An architectural survey is underway that will evaluate potential impacts of Alternative 2, Route A on contributing buildings of the Fort Duncan National Register District. The alternative could present long-term adverse effects on the setting and viewshed of the historic district. In addition, the construction corridor could include archaeological remains related to the early fort.

Route B

Minor to major long-term adverse effects would be expected under Route B. Section M-1, Route B would not pass through any known archaeological sites or historic properties. If no historic properties are discovered during the archaeological and architectural surveys, or through consultation with Native

American tribes, Section M-1, Route B would have no significant effect on cultural resources.

Section M-2A, Route B would follow a nearly identical route to M2-A, Route A and would be expected to affect cultural resources in the same way. M-2A, Route B would pass through Site 41MV65, a prehistoric open-air lithic scatter. The project corridor would also pass near two NRHP-listed properties, the Fort Duncan National Register District and the Maverick County Courthouse (see **Appendix H**). An architectural survey is underway that will evaluate potential impacts of Alternative 2, Route B on contributing buildings of the Fort Duncan National Register District. The alternative could present long-term adverse effects on the setting and viewshed of the historic district. In addition, the construction corridor could include archaeological remains related to the early fort.

Treatment of Historic Properties

CBP would identify measures to avoid, minimize, or mitigate adverse effects on historic properties in consultation with the THC and other parties by complying with Section 106 of the NHPA. Other consulting parties, including the THC, federally recognized Native American tribes that might attach religious and cultural significance to historic properties affected by the project, representatives of local governments, landowners, and historic preservation groups and individuals, would be involved.

Mitigation measures could include recordation of affected architectural resources to the standards outlined by the Historic American Building Survey (HABS) or Historic American Engineering Record (HAER), or recovering archaeological data through a data recovery effort. The latter might include partial or complete excavation of archaeological sites, and would be determined through consultation with the THC. Additionally, there are other treatment options that would be investigated. Methods for avoiding, minimizing, or mitigating effects on resources of traditional, religious, or cultural significance to Native American tribes would be determined in consultation with tribes having ancestral ties to the Del Rio Sector. An Unanticipated Discovery Plan would also be implemented to protect historic properties.

3.11.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Effects on historic properties from Alternative 3 would be similar to Alternative 2, Route B and would be expected to be long-term and adverse.

3.12 AESTHETIC AND VISUAL RESOURCES

3.12.1 Definition of the Resource

CBP does not currently have a standard methodology for analysis and assessment of effects on visual resources. Accordingly a standard methodology developed by another Federal agency was adopted for the analysis and assessment of effects on visual resources for this EA. Methodologies reviewed included those developed by the National Park Service (NPS), the Bureau of Land Management (BLM), and the Federal Highway Administration (FHWA). It was determined that the FHWA methodology was the most applicable for this analysis due to its focus on linear corridors that include a variety of features and cross-cut a variety of landscapes. The FHWA methodology examines visual resources in similar ways (texture, contrast, visual quality) as those of NPS and BLM, but unlike those methodologies, the FHWA does not tie the assessment to the management goals for a given parcel of land (i.e., BLM- and NPS-owned land parcels typically have specific management goals and the assessment of effects on visual resources within a given parcel is tied to the management priorities for those parcels).

The discussion in the following paragraphs summarizes the methology presented in FHWA Publication No. FHWA-HI-88-054: *Visual Impact Assessment for Highway Projects* (USDOT undated). Under the FHWA approach, the major components of the visual analysis process include establishing the visual environment of the project, assessing the visual resources of the project area, and identifying viewer response to those resources.

Establishing a Visual Environment. Two related steps are performed to characterize the visual environment: (1) develop a framework for visual assessment that will help compare project alternatives, and (2) define the physical limits of the visual environment that each alternative might affect. The landscape classification process establishes the general visual environment of a project and its place in the regional landscape. The starting point for the classification is an understanding of the landscape components that make up the regional landscape, which then allows comparisons between landscapes. Regional landscapes consist of landforms (or topography) and land cover. It should be noted that land cover is not equivalent to land use, as that term is defined and used in **Section 3.3**. Land cover is essential to the identification of what features (e.g., water, vegetation, type of man-made development) dominate the land within a given parcel. Examples of land cover would include agricultural field, residential development, airport, forest, grassland, and reservoir. While there is some overlap with land use, land cover does not distinguish function or ownership of parcels.

Relatively homogenous combinations of landforms and land cover that recur throughout a region can be considered landscape types. To provide a framework for comparing the visual effects of the project alternatives, regional landscape is

divided into distinct landscape units; these are usually enclosed by clear landform or land cover boundaries and many of the views within the unit are inward-looking. Landscape units are usually characterized by diverse visual resources, and it is common for several landscape types to be in view at any one time.

Assessing the Visual Resources. An assessment of the visual resources within a project area involves characterization of the character and quality of those resources. Descriptions of visual character can distinguish at least two levels of attributes: pattern elements and pattern character. Visual pattern elements are primary visual attributes of objects; they include form, line, color, and texture. Awareness of these pattern elements varies with distance. The visual contrast between a project and its visual environment can frequently be traced to four aspects of pattern character: dominance, scale, diversity, and continuity.

Visual quality is subjective, as it relies on the viewer's enjoyment or interpretation of experience. For example, there is a clear public agreement that the visual resources of certain landscapes have high visual quality and that plans for projects in those areas should be subject to careful examination. Approaches to assessing visual quality include identifying landscapes already recognized at the national, regional, or local level for their visual excellence (e.g., National Historic Landmarks [NHLs], National Scenic Rivers); asking viewers to identify quality visual resources; or looking to the regional landscape for specific resource indicators of visual quality. One evaluative approach that has proven useful includes three criteria: vividness (the visual power or memorable character of the landscape), intactness (the visual integrity of the natural and man-made landscape and its freedom from encroaching elements), and unity (the visual coherence and compositional harmony of the landscape considered as a whole). A high value for all three criteria equates to a high visual quality; combinations of lesser values indicate moderate or low visual quality. It should be noted that low visual quality does not necessarily mean that there will be no concern over the visual effects of a project. In instances such as urban settings, communities might ask that projects be designed to improve existing visual quality.

Identifying Viewer Response. An understanding of the viewers who might see the project and the aspects of the visual environment to which they are likely to respond is important to understanding and predicting viewer response to the appearance of a project. The receptivity of different viewer groups to the visual environment and its elements is not equal. Viewer sensitivity is strongly related to visual preference; it modifies visual experience directly by means of viewer activity and awareness, and indirectly by means of values, opinions, and preconceptions. Because viewers in some settings are more likely to share common distractions, activities, and awareness of their visual environment, it is reasonable to distinguish among project viewers located in residential, recreational, and industrial areas.

Visual awareness is the extent to which the receptivity of viewers is heightened by the immediate experience of visual resource characteristics. Visual change heightens awareness, for example, a landscape transition, such as entering a mountain range or a major city, can heighten viewer awareness within that particular viewshed. Measures that modify viewer exposure, such as selective clearing or screening, can also be deliberately employed to modify viewer awareness. Viewers also tend to notice and value the unusual, so they might see more value in preserving the view towards a particularly dramatic stand of trees than the view towards more ubiquitous landscape features.

Local values and goals operate indirectly on viewer experience by shaping view expectations, aspirations, and appreciations. For example, at a regional or national level, viewers might be particularly sensitive to the visual resources and appearance of a particular landscape due to its cultural significance, and any visual evidence of change might be seen as a threat to these values or resources. Concern over the appearance of the proposed action often might be based on how it will affect the visual character of an area rather than on the particular visual resources it will displace.

Aesthetics is the science or philosophy concerned with the quality of visual experience. One cannot meaningfully assess the effects of an action on visual experience unless one considers both the stimulus (visual resources) and the response (viewers) aspects of that experience.

3.12.2 Affected Environment

Route A

Visual Environment. Primary landform types present within the APEs include the Rio Grande channel and that of a stream that intersects the Rio Grande on the south side of Del Rio in Section M-1, the floodplains and terraces of those waterways, and the bluff along the river in Section M-2A. Within the Rio Grande terrace are a number of abandoned meander loops, some containing water (ponds) and some only visible as traces on aerial photographs.

Land cover overlying these landforms can be simplified into four primary types: agricultural, developed, undeveloped, and water with developed composing the dominant land cover type in both Sections M-1 and M-2A (see **Section 3.3**). There are also certain features that cross-cut or link land cover types, such as transportation features (e.g., highways, paved and unpaved roads, bridges).

Although there is significant development in both Sections M-1 and M-2A, views that contain only agricultural and undeveloped areas remain within each section. Accordingly, the most applicable landscape unit types that can be defined for these sections are agricultural/undeveloped and urban/industrial. **Figures 3.12-1** and **3.12-2** show the range of variation of views within these landscape units.

Figure 3.12-1. Photograph View of Del Rio Residential Areas (Section M-1)

Figure 3.12-2. Photograph View of Rio Grande Channel from Bluff (Section M-2A)

The agricultural/undeveloped unit includes the terraces and floodplain of the Rio Grande where they are overlain by agricultural fields, grazing areas, or undeveloped, open areas. The underlying landforms are clearly visible and play the primary role in the layout or location of overlying features. Typical features include field breaks, irrigation features, dirt roads, and isolated structures such as electrical transmission lines or water tanks.

The urban/industrial unit includes the terraces of the Rio Grande where they are overlain by moderate- to high-density mixed use development. The underlying landforms are almost completely masked by man-made features and play little or no role in the layout or location of overlying features. Typical features include buildings of varying heights, sizes, and materials; a mixture of gridded and nongridded road networks (primarily paved); planned park areas (often near water sources); open paved areas (e.g., parking areas); the larger POEs; industrial and commercial areas; overhead utility lines on poles; elevated roadways and overpasses; and elevated signage.

Character and Quality of Visual Resources. **Tables 3.12-1** and **3.12-2** provide summaries of the visual character and quality, respectively, of visual resources observed within the landscape units within the Del Rio Sector. Values reflect visual character and visual quality of resources visible from distances of 50 feet to 1,000 feet (see **Figure 3.12-3**). Typically, the amount of visual clutter between the viewer and the proposed project corridors would increase with distance.

Table 3.12-1. Character of Visual Resources within Typical Del Rio Sector Landscape Units (Current Conditions)

Landscape Unit	Line	Color	Form	Texture
Agricultural/ Undeveloped	Primarily horizontal lines (fields, roads, canals), with occasional vertical elements (silos, utility towers, tree lines, buildings)	Earthy colors (bare earth and crops)	Mixture of angled and curved forms (roads and buildings vs. rolling hills and meandering river)	Relatively subtle variations in texture (mostly bare earth or crops)
Urban/ Industrial	Vertical lines more prominent than horizontal, except for viewers on the river side of Del Rio in Section M-1 (view of levee and agricultural fields has more horizontal lines)	Often a high variety of colors associated with buildings, signs, green spaces	Primarily rectilinear forms but can be punctuated by curves from more elaborate architecture or organic shapes of natural elements	Variety of textures related to different building materials against natural textures in green spaces

Table 3.12-2. Quality of Visual Resources within Typical Del Rio Sector Landscape Units (Current Conditions)

Landscape Unit	Vividness	Intactness	Unity	Rating
Agricultural/ Undeveloped	Moderate	Moderate/High	Moderate/High	Moderate/High
Urban/Industrial	Low to High	Moderate	Low to High	Moderate

In terms of visual quality, the analysis presumes that any view that includes the Rio Grande constitutes a high-quality view, except for views dominated by industrial or commercial elements (e.g., views of the POEs). Similarly, given that quality of view can be somewhat subjective, it is possible to find at least one low- and one high-quality view within any landscape unit type. Rather than simply provide a range of ratings of low to high for each, the quality of the most common views within a given landscape unit type was used.

In addition to these averaged assessments of visual character and quality of resources within each landscape unit type, there are a number of specific visual resources considered to be of particular importance because of their natural or cultural value, such as those listed in the following:

- Brinkley Mansion historical marker (Section M-1)
- Fort Duncan Historic District and Park (Section M-2A)
- Maverick County Courthouse (Section M-2A)
- 420 Commercial Street (Texas Historical Landmark, Section M-2A)
- Church of the Redeemer (Texas Historical Landmark, Section M-2A)
- Eagle Pass Post Office (Texas Historical Landmark, Section M-2A)
- S.P. Simpson Jr. House (Texas Historical Landmark, Section M-2A)
- Lee Building (Texas Historical Landmark, Section M-2A)
- Shelby Park (Section M-2A)
- Eagle Pass Golf Course (Section M-2A).

Viewer Response. The pool of viewers making up the affected environment includes single individuals, such as rural landowners on whose property the primary pedestrian fence would be constructed, and groups of individuals such as residents and business owners in the cities of Del Rio and Eagle Pass, or recreational users of public access recreation areas. Viewers could also include avocational groups such as local historical societies or local chapters of the National Audubon Society that have interests in preserving the settings of cultural or natural resources. These viewers are likely to have both individual responses to specific resources related to their experiences and emotional connection to those resources, as well as collective responses to visual resources considered to be important on a regional, state, or national level. Although individual viewer responses will be captured where possible from viewer comments, for the

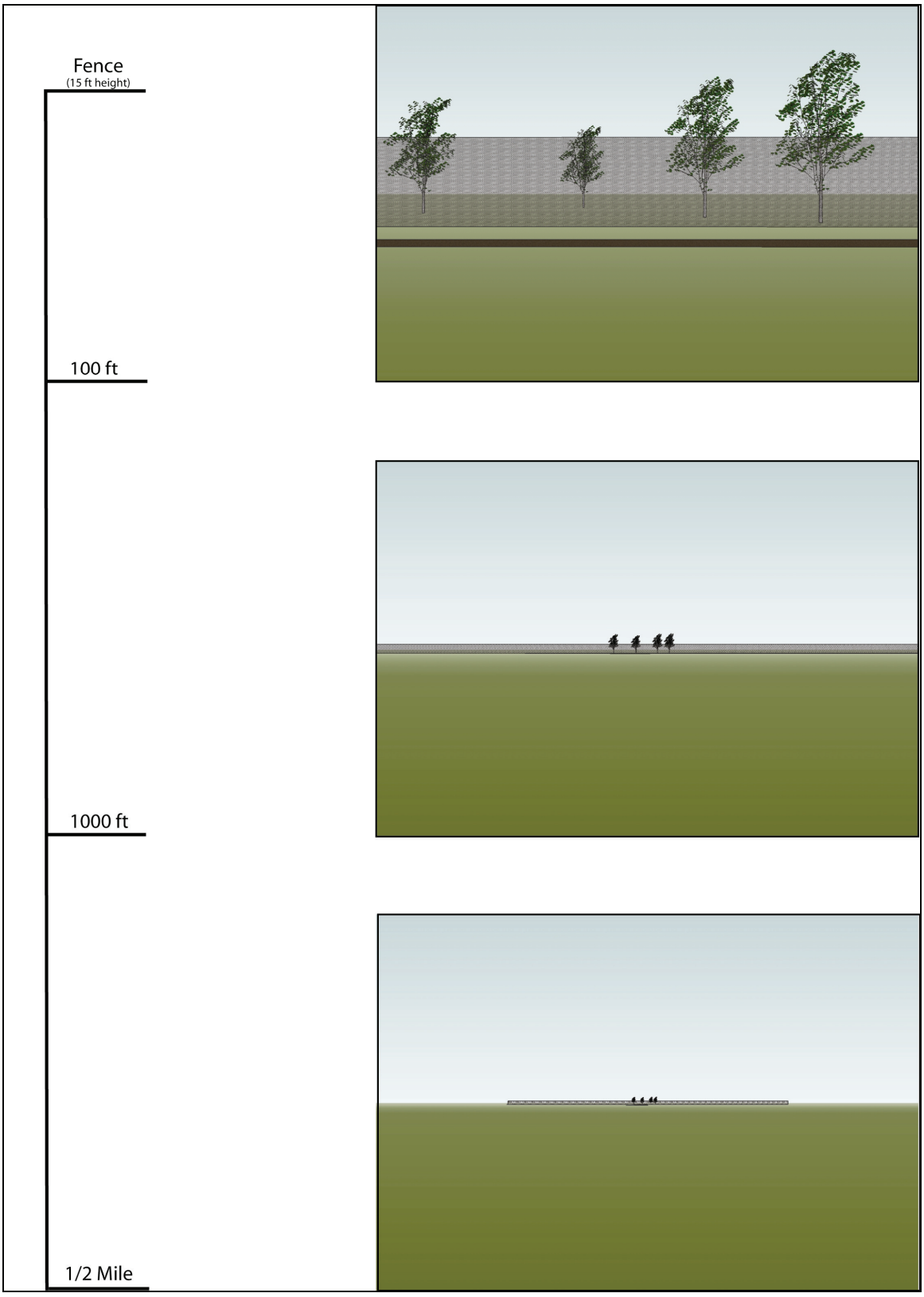


Figure 3.12-3. Schematic Showing Visibility of Fencing at Various Distances

purposes of this analysis, the pool of affected viewers will be grouped into the following general categories:

- Residential viewers
  - Urban residents
- Commercial viewers
  - Urban businesses
- Industrial viewers
  - Town and urban
- Recreational viewers
  - Tourists visiting towns and cities
- Special interest viewers
  - Native American tribes
  - Local historical societies
  - Local chapters of conservation societies (e.g., Audubon Society)
  - Park commissions
  - Regulatory agencies (e.g., USFWS, THC)
- Intermittent viewers (view primarily from transportation corridors)
  - Commuters
  - Commercial (e.g., truck drivers).

Within each of these categories, viewer response will also vary depending on the typical duration of exposure to visual resources and the typical distance from which they view those resources. For example, a residential viewer who currently has an unobstructed view of a high-quality resource from their backyard would be affected differently than a residential viewer who lives several streets away and already has an obstructed view of those resources, or a viewer that only views the resource from the highway as they pass through the region.

Route B

The character and quality of visual resources would be same for Route B as it is for Route A. The pool of viewers and viewer response would be expected to be similar. Route B would be similar to Route A.

3.12.3 Environmental Consequences

The Proposed Action would affect visual resources both directly and indirectly. Construction of tactical infrastructure would result in the introduction of both temporary (e.g., heavy equipment, supplies) and permanent (e.g., fencing and patrol roads) visual elements into existing viewsheds. Clearing and grading of the landscape during construction would result in the removal of visual elements

from existing viewsheds. Finally, the primary pedestrian fence sections would create a physical barrier potentially preventing access to some visual resources.

Effects on aesthetic and visual resources would include short-term effects associated with the construction phase of the project and use of staging areas, recurring effects associated with monitoring and maintenance, and long-term effects associated with the completed action. Effects can range from minor, such as the effects on visual resources adjacent to the proposed project corridor when seen from a distance or when views of primary pedestrian fences are obstructed by intervening elements (e.g., trees, buildings) to major, such as the intrusion of primary pedestrian fence sections into high-quality views of the Rio Grande or the setting of an NHL. The nature of the effects would range from neutral for those land units containing lower quality views or few regular viewers, to adverse, for those land units containing high-quality views, important cultural or natural resources, or viewers who would have constant exposure to the primary pedestrian fence at close distances. Beneficial effects are also possible (e.g., addition of the primary pedestrian fence increases the unity or dramatic effect of a view, removal of visual clutter within the proposed project corridor clarifies a view, or a viewer positively associates the primary pedestrian fence with a feeling of greater security), but are considered to be less common.

3.12.3.1 Alternative 1: No Action Alternative

Under Alternative 1, proposed tactical infrastructure would not be built and there would be no change in fencing, patrol roads, or other facilities along the U.S./Mexico international border in the proposed project locations within the USBP Del Rio Sector. Therefore, there would be no adverse effects attributable to construction, operation, or maintenance of the proposed tactical infrastructure. Conversely, the potential beneficial effects of unifying a cluttered landscape in some areas would not be realized, however minor or subjective this beneficial effect might be.

3.12.3.2 Alternative 2: Proposed Action Alternative

Under Alternative 2, a single line of primary pedestrian fence and an associated patrol road would be constructed along either the routing depicted as Route A or as Route B (see **Appendix D**). Although the choice of routing might alter the effects on specific visual resources within the proposed project corridor (e.g., avoidance of a section of park/refuge or culturally significant resource), the broader visual effects associated with the two routes are comparable.

Route A

Project Characteristics. The primary introduced visual elements associated with Route A in Section M-1 would be the single line of fencing, gates, patrol roads, access roads, and construction clutter (stockpiles of supplies and heavy equipment during construction). Route A would also potentially remove existing

visual elements, such as buildings, vegetation, and subtle landforms (through grading or filling) that occur within the proposed project corridor. Finally, the primary pedestrian fence would act as a physical barrier between viewers and those views that can only be viewed from vantage points on the other side of the fence.

Addition of fencing and the associated patrol road, removal of existing elements from the proposed project corridor in Section M-1, and the loss of access to specific visual resources due to the fact that the primary pedestrian fence is a barrier would have long-term effects on visual resources, while the remaining elements would have temporary or short-term effects limited to the period of construction. The nature (adverse or beneficial) and degree (minor to major) of the long-term effects can be affected by the appearance of the fencing (width, height, materials, color), the patrol road (paved or unpaved, width), the lighting configuration (number of lighting poles, number of lights per pole, angle and screening of lights), and the access roads (number, paved or unpaved, width).

Removal of existing visual elements in Section M-1 and the northern portion of Section M-2A would also constitute a long-term effect. Where the existing element adds to the visual character and quality of the resource, such as the giant reed, the effect of its removal would be adverse. In the case of the giant reed, the replacement of the reed with native vegetation might eventually mitigate this effect and could even improve the quality of the views in this area. Where the existing element detracts from the visual character and quality of the resource (e.g., rusted equipment or dead trees), the effect of removal could be beneficial. In all cases, removal of existing elements would have the net result of exposing more of the primary pedestrian fence, patrol road, and other tactical infrastructure; in settings where the addition of the fence is considered to have a major adverse effect on visual resources, any benefit occurring from removal of existing elements would be outweighed by the more dominant adverse visual effect of the primary pedestrian fence.

The effects associated with the loss of access to specific visual resources in Section M-1 and the northern portion of Section M-2A can be affected primarily by the placement of the primary pedestrian fence relative to those resources and inclusion of gates that allow access to those resources. CBP has already included provisions for a number of gates to allow access to agricultural fields, businesses, and cemeteries. These gates also allow access to some of the visual resources that would otherwise be blocked.

The patrol road would be the existing road between the bluff and the river bank. The primary new visual addition to the corridor would be lighting poles, placed at approximately 100-yard intervals along the patrol road. Clearing of vegetation and some cutting of the bluff would likely be required as part of the retaining wall construction.

Visual Resource Concerns. In **Section 3.12.2**, **Tables 3.12-1** and **3.12-2** provided a summary of the character and quality of visual resources currently present within the proposed project corridor. **Tables 3.12-3** and **3.12-4** show how implementation of Route A would likely alter the character and quality of existing visual resources within each landscape unit. **Figures 3.12-4** and **3.12-5** provide examples of typical effects; these images show the effects associated with the addition of a fence constructed using a type of primary pedestrian fence currently being constructed in other USBP sectors. These photographs provide approximations of the degree of alteration that would result from introduction of the primary pedestrian fence and patrol road to these viewsheds.

In Section M-1, most viewers look out across agricultural fields towards the Rio Grande and, beyond that, to an urban landscape backed by mountains. In Section M-2A, viewers are closer to the Rio Grande, but views on the opposite bank are primarily natural vegetation backed by mountains. Views in the southern portion of Section M-2A could also include Shelby Park or the Eagle Pass Golf Course in the foreground, the international bridge and Eagle Pass POE and the Rio Grande in the mid-ground, and an urban landscape backed by mountains in the far ground.

From within Del Rio or Eagle Pass, typically greater screening of the primary pedestrian fence would be expected due to the greater variety of lines, colors, forms, and textures present. More common occurrences of other tactical infrastructures and tall or massive forms would also increase the ability of the tactical infrastructure to blend with its surroundings in Section M-1 and the northern part of Section M-2A. The effect of the tactical infrastructure at closer distances would vary depending on its immediate setting; the more exposed the primary pedestrian fence is the greater the contrast between it and surrounding elements, the greater the visual effect. For Section M-1 and the northern part of Section M-2A, the impacts would range from minor to major, and neutral to adverse. The FHWA guidance (USDOT undated) cites examples where addition of a consistent aesthetic element to an urban setting helps create greater unity to the views within the land unit, thus resulting in a beneficial effect. Although this outcome is possible within this land unit type, a review of the settings along the proposed project corridor suggests that the best-case scenario would be a neutral or minor adverse effect.

In the southern part of Section M-2A, where the primary pedestrian fence would consist of a retaining wall on the river side of the existing bluff, the primary effect related to the Proposed Action would be from the lighting along the patrol road. The poles themselves should blend with existing visual clutter at a distance, but would be noticeable intrusions in the backyards of people living along the bluff. Perhaps more importantly, though, the pool of light generated by the lights would be a new visual element in the nighttime view for anyone looking towards the Rio Grande in this direction; depending on the intensity of the light and the amount of background lighting associated with the POE and the development across the

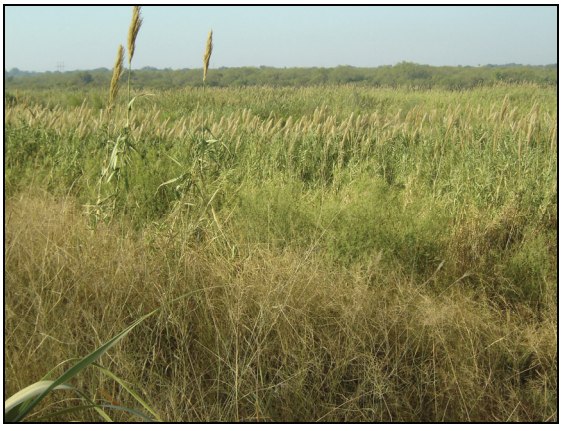
Table 3.12-3. Effect on the Character of Visual Resources within Typical Del Rio Sector Landscape Units

Landscape Units	Line	Color	Form	Texture
Agricultural/ Undeveloped	At short distances the fence would introduce a primarily horizontal line that might blend with other dominant horizontal lines. With greater distance, the vertical posts of the fence might blend where other vertical elements are present (power poles, silos, remote video surveillance system) depending on the height of those elements in each area. The regularity of the lines could contrast with less regular lines.	The current fence design parameters call for fencing to be black. Although the vertical posts in the fence might blend with tree trunks, choice of a color scheme that matches the dominant vegetation would reduce the impact.	The fence and patrol road are rectilinear in form and might result in greater domination of rectilinear forms compared to organic forms when viewed at a distance.	As a man-made, synthetic element, the fence would contrast with the dominant textures of this land unit. The patrol roads and access roads would not significantly alter the viewshed for most rural landscapes, as a number of roads and field breaks are already present in this land unit.
Urban/ Industrial	In Section M-1, views include a mix of vertical and horizontal lines. In Section M-2A, linear elements are more typically horizontal. The introduction of additional linear features would be consistent with the existing landscape from a distance. In closer proximity, however, the height and regularity of the fence line would likely contrast with existing lines.	The pedestrian fence proposed for all sections except the southern portion of Section M-2A is black, which might blend or contrast with its surroundings depending on the colors in the foreground and background.	Against a more natural or organic background, such as what viewers see in Section M-2A, the fence would be a noticeable contrast. Against a more developed background (Section M-1), the form and massing of the fence would be less of a contrast.	Except where the fence would be constructed within or immediately adjacent to existing development, the texture of the fence would contrast with natural elements around it. From a distance, the texture of the fence would blend against urban backgrounds that contain mixed textures, but would stand out relative to more natural backgrounds.

Table 3.12-4. Quality of Visual Resources within Typical Del Rio Sector Landscape Units After Proposed Construction

Land Units	Vividness	Intactness	Unity	Rating
Agricultural/ Undeveloped	Moderate	Moderate/High	Moderate	Moderate
Urban/Industrial	Low to Moderate	Low/Moderate	Low to Moderate	Moderate

Figure 3.12-4. Typical Views towards Proposed Project Corridor, Section M-1



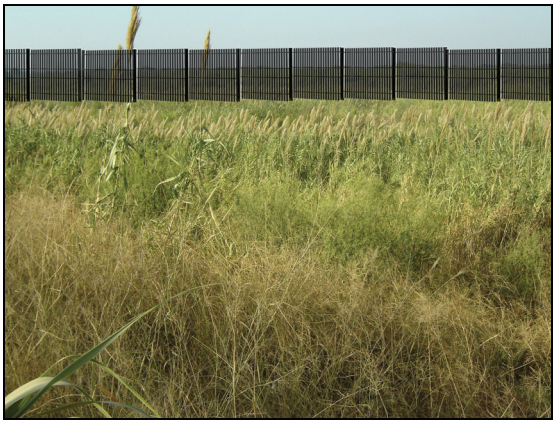


Figure 3.12-5. Typical Views towards Proposed Project Corridor, Section M-2A (Northern Portion)

river in Mexico, the pool of light might blend or stand in stark contrast to a typically dark setting. Accordingly, effects on visual resources in the southern part of Section M-2A would range from minor to major, and neutral to adverse.

Finally, with respect to the effects on the specific visual resources listed in **Section 3.12.2**, implementation of Route A would likely have short- or long-term adverse effects on the settings of those resources. The greater the distance between the resource and the intrusive visual elements (primarily the primary pedestrian fence), and the more intervening visual elements between them, the less the degree of the effect. For example, construction of the primary pedestrian fence at a distance of 60 feet from a historic building would typically constitute a major adverse effect, while construction of the primary pedestrian fence several hundred feet from the resource with intervening vegetation or buildings would reduce the effect to moderate or minor. Placement of the fence within the boundaries of an NHL or historic district, particularly where there is a high degree of visual continuity between resources (few noncontributing elements) would also be considered a major adverse effect on that resource. A more detailed discussion of the effects on the settings or viewsheds of specific cultural resources is provided in **Section 3.11.3**.

Intrusions into the settings or viewshed of many of these resources would need to be avoided, minimized, or mitigated depending on the extent and duration of the effect. Mitigation measures could include HABS documentation of historic resources, use of different fence materials (e.g., use of brick facing on a fence where surrounding buildings are brick construction) or change of color of fencing to blend into natural settings.

Viewer Response Concerns. In many respects, the principle of "not in my backyard" has a strong correlation with the responses of viewers for whom view of the primary pedestrian fence would be regular or constant (i.e., residential, commercial, or industrial viewers). Where the primary pedestrian fence would directly affect private property, the viewer response from the landowner would likely to be that Route A would represent a major adverse effect on visual resources visible from their property. In the case of the properties in Eagle Pass, however, the use of a retaining wall on the backside of the bluff might be considered less of an adverse effect than the clearing of vegetation (including the giant reeds) from the proposed project corridor. As vegetation is reestablished along the banks of the Rio Grande, the long-term effect might become neutral. There is also a possibility that the viewer response in this instance could be beneficial, based on a feeling of increased safety or security (e.g., fence as protection). Responses from viewers located a greater distance from the primary pedestrian fence, particularly if their view of the fence is obstructed by other elements or is simply part of the overall visual clutter, would typically be less intense (minor) and more likely neutral, unless the fence would obstruct a visual resource considered to be of high quality or cultural importance. In general, the closer the proximity of the viewer to the fence, the more likely the response is to be major and adverse.

For viewers likely to view the primary pedestrian fence on a less-regular basis (i.e., recreational viewers, special interest viewers, intermittent viewers), viewer responses would be tied to perception of how the proposed tactical infrastructure would alter their access (impede existing views or impede physical access to views) to valued visual resources. Although any of these groups might object on principal to any type of alteration or feel a beneficial response due to a sense of increased security, responses would be more intense and adverse where alterations downgrade the quality or character of existing visual resources.

As a final point, for viewers accustomed to accessing views available from settings other than parks or refuges, the construction of the tactical infrastructure would place a permanent barrier between the viewer and the visual resources in those locales. By presumption, any visual resource regularly sought out by a viewer would constitute a moderate- or high-quality visual resource; and restricting physical access to those resources would thus constitute a long-term major adverse effect for those viewers.

Route B

Route B was developed to decrease the extent to which the primary pedestrian fence would physically affect certain cultural and natural resources. This route would reduce or remove some of the effects related to access when compared to Route A.

Project Characteristics. The physical characteristics of Route B are similar to those for Route A, discussed above.

Visual Resource Concerns. To the extent that Route B mirrors Route A, the concerns regarding visual resources would be expected to be identical to those discussed for Route A. Where Route B deviates from Route A, the deviation is typically done to minimize an effect on a natural or cultural resource, resulting in a lesser visual effect relative to that resource.

Viewer Response Concerns. Implementation of Route B would improve viewer responses relative to effects on specific sensitive resources, since Route B would avoid some of those resources. Otherwise, the viewer response concerns would be expected to be comparable to those discussed for Route A.

3.12.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Project Characteristics. In addition to those physical characteristics already noted for Alternative 2, Alternative 3 would involve addition of a second line of tactical infrastructure (permanent element, long-term effect) and remove a greater number of existing visual elements due to the larger proposed project corridor compared to Alternative 2, Route A. As with the single line of fencing in Alternative 2, choice of fence colors and material types could affect the nature (adverse, neutral, beneficial) or intensity (minor to major) of the effects on visual

resources in certain land units or viewshed, as could removal of existing visual elements. In general, however, having two lines of fencing would amplify the overall visual effect of Alternative 2, as would the larger proposed project corridor. Effects related to the physical characteristics of Alternative 3 would be, therefore, likely to be major and adverse compared to those of Alternative 2.

Visual Resource Concerns. Implementation of Alternative 3 would also amplify the effects on the character and quality of visual resources within each of the land units compared to Alternative 2. The additional line of tactical infrastructure would have a greater visual contrast and a greater chance of dominating the view in most settings, although one could argue that parallel lines of tactical infrastructure would potentially add more visual unity to some settings. Long-term effects on the visual environment associated with Alternative 3 (permanent construction elements) would range from neutral to adverse, and moderate to major. Short-term effects would also be more adverse and intense (moderate to major) given that construction of a double fence and wider corridor could take more time.

Viewer Response Concerns. Implementation of Alternative 3 would also amplify viewer responses, in most cases changing minor or neutral responses to moderate or major adverse responses. For viewers with constant or close proximity exposure, a double line of tactical infrastructure and larger corridor would be perceived as doubly intrusive. The proposed project corridor would intrude more closely on many landowners, increase the number of viewers that would have regular exposure, and further complicate access to visual resources behind the far line of fencing. For viewers with less regular exposure, Alternative 3 would likely be perceived as having a greater effect than Alternative 2, simply because it makes effects on various visual resources more difficult to avoid.

3.13 SOCIOECONOMIC RESOURCES, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

3.13.1 Definition of the Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity.

Socioeconomic data in this section are presented at census tract, county, and state levels to characterize baseline socioeconomic conditions in the context of regional and state trends. Census tracts are designed to be relatively homogenous units with respect to population characteristics, economic status, and living conditions at the time of establishment. Data have been collected from previously published documents issued by Federal, state, and local agencies; and from state and national databases (e.g., U.S. Census Bureau).

Environmental Justice and Protection of Children. There are no Federal regulations specifically addressing socioeconomics; however there are two EOs that pertain to environmental justice issues. These are included in the socioeconomics analysis because they relate to specific socioeconomic groups and the health effects that could be imposed on them. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The purpose of the EO is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the adverse environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

EO 13045, *Protection of Children From Environmental Health Risks and Safety Risks*, addresses the Federal policy of protection of children from exposure to disproportionate environmental health and safety risks. This EO established that each agency has a responsibility to ensure that its policies, programs, activities, and standards address risk to children that results from environmental health risks or safety risks.

3.13.2 Affected Environment

Route A

Socioeconomics. Proposed tactical infrastructure would occur adjacent to residential and commercial areas in the United States. The most current census tract data are from Census 2000. Section M-1 is within Val Verde County, Census Tract 9507 and Section M-2A is within Maverick County, Census Tract 9505. For the purposes of this project, Census Tracts 9507 is considered the Region of Influence (ROI) in Val Verde County and Census Tract 9505 is considered the ROI in Maverick County.

The largest employment type in Census Tract 9507, Val Verde County, Census Tract 9505, Maverick County, and Texas is educational, health, and social services, which accounts for 25.0, 21.4, 32.5, 26.7, and 19.3 percent, respectively, of employed persons (see **Table 3.13-1**) (U.S. Census Bureau 2002). Construction accounts for 5.9 percent of the employed persons in Census

Tract 9507, 7.5 percent in Val Verde County, 2.7 in Census Tract 9505, 6.8 percent in Maverick County, and 8.1 percent in the State of Texas.

In 2006, Val Verde and Maverick counties had unemployment rates of 6.1 percent and 13 percent, respectively, compared to a 4.9 percent unemployment rate for Texas (Fedstats 2007a, 2007b). **Table 3.13-2** shows demographic data and economic indicators of the ROI, Val Verde and Maverick counties, and the State of Texas.

The populations of Ciudad Acuña and Piedras Negras, Mexico, are approximately 124,232 and 142,011, respectively. The Del Rio POE connects Ciudad Acuña and Del Rio (TxDOT 2007a). There are two POEs (Camino Real International Bridge and Eagle Pass Bridge I) and one international rail bridge that connect Eagle Pass to Piedras Negras.

Environmental Justice and Protection of Children. The ROI is considered to have a disproportionately high percentage of low-income or minority residents under either of two conditions: (1) the percentage of low-income or minority populations within each census tract is greater than its perspective county's minority percentage or low-income percentage, or (2) the percentage of persons in low-income or minority populations within each census tract is greater than 50 percent. Census Tract 9507 has a higher percentage of low-income residents than the county. **Table 3.13-2** shows that 28.9 percent of the population in Census Tract 9507 is living below the poverty level as compared to 26.1 percent in Val Verde County and 15.4 percent in Texas. Census Tract 9505 has a higher percentage of minority and low-income residents than Maverick County (see **Table 3.13-2**). Approximately 32 percent of residents in Census Tract 9505 reported to be a minority (i.e., race other than "white alone") compared to 29.1 percent in Maverick County. In addition, approximately 37.2 percent of the population in Census Tract 9505 live below the poverty line, as compared to 34.8 percent in Maverick County and 15.4 percent in the State of Texas.

Residents living in the ROI have a lower median household income than that of their respective county and the State of Texas (see **Table 3.13-2**). However, the per capita incomes of Census Tracts 9507 and 9505 are higher than Val Verde and Maverick counties, respectively, but lower than the State of Texas.

Route B

Socioeconomics, Environmental Justice, and Protection of Children is the same for Route B as Route A. The primary difference between Route B and Route A is that Route B would be south of the existing residential and commercial structures along Garza Lane and Rio Grande Road (in Section M-1).

Table 3.13-1. Employed Persons by Industry Type in Census Tracts, Val Verde and Maverick Counties, and the State of Texas (Percent)

Economic and Social Indicators	Census Tract 9507	Val Verde County	Census Tract 9505	Maverick County	State of Texas
Employed Persons in Armed Forces	0.6	4.0	0.4	0.1	0.7
Employed Persons in Civilian Labor Force (By Industry)					
Agriculture, forestry, fishing and hunting, and mining	1.8	2.8	5.0	3.8	2.7
Construction	5.9	7.5	2.7	6.8	8.1
Manufacturing	10.6	10.7	8.6	10.1	11.8
Wholesale trade	1.3	2.1	2.9	2.0	3.9
Retail trade	8.8	13.8	14.8	14.7	12.0
Transportation and warehousing, and utilities	6.6	6.0	5.5	9.6	5.8
Information	0.4	1.0	1.2	1.2	3.1
Finance, insurance, real estate, and rental and leasing	5.9	3.6	4.0	3.7	6.8
Professional, scientific, management, administrative, and waste management services	5.3	5.5	3.6	3.3	9.5
Educational, health and social services	25.0	21.4	32.5	26.7	19.3
Arts, entertainment, recreation, accommodation and food services	10.1	8.4	6.5	5.8	7.3
Other services (except public administration)	7.9	5.3	2.9	4.7	5.2
Public administration	10.5	11.9	10.0	7.6	4.5

Source: U.S. Census Bureau 2002

Note: Census 2000 data are the most recent comprehensive employment data for the ROI.

Table 3.13-2. Demographic and Economic Characteristics of Census Tracts, Val Verde and Maverick Counties, and the State of Texas

	Census Tract 9507	Val Verde County	Census Tract 9505	Maverick County	Texas
Total Population	6,397	44,856	5,685	47,297	20,851,820
Percent White	81.1	76.4	68.0	70.9	71.0
Percent Black or African American	0.9	1.5	0.4	0.3	11.5
Percent American Indian Alaska Native	0.7	0.7	0.5	1.3	0.6
Percent Asian	0.1	0.6	1.0	0.4	2.7
Percent Native Hawaiian and Other Pacific Islander	0.1	0.1	0.0	<0.1	0.1
Percent "Some other race"	14.7	18.2	26.5	24.1	11.7
Percent Reporting 2 or more races	2.4	2.6	3.7	2.9	2.5
Percent Below Poverty	28.9	26.1	37.2	34.8	15.4
Per Capita Income	$13,070	$12,096	$9,644	$8,758	$19,617
Median Household Income	$23,667	$28,376	$17,218	$21,232	$39,927

Source: U.S. Census Bureau 2002

Note: Census 2000 data are the most recent comprehensive economic and demographic data for the ROI.

3.13.3 Environmental Consequences

3.13.3.1 Alternative 1: No Action Alternative

Alternative 1 would result in continuation of the existing baseline socioeconomic conditions, as discussed in **Section 3.13.2**. Under this alternative, illegal immigration, narcotics trafficking, and opportunities for terrorists and terrorist weapons to enter the United States would remain. Over time, the number of crimes committed by smugglers and some cross-border violators would increase, and an increase in property damage would also be expected.

3.13.3.2 Alternative 2: Proposed Action

Route A

Socioeconomics. Short-term minor direct beneficial effects would be expected as a result of construction associated with Alternative 2, Route A. The construction activities would occur from Spring 2008 to December 2008. Some local materials, supplies, and contractors would be used, providing a minor

beneficial effect on the local economy through new jobs and increased local spending. Construction of the proposed tactical infrastructure would require up to 75 workers consisting of one fabrication crew (35 workers) and one installation crew (40 workers) completing one mile of tactical infrastructure per month. Based upon U.S. Census data, there are 1,051 and 872 construction workers in Val Verde and Maverick counties, respectively, which represents approximately 7 percent and 9 percent of the number of workers required to construct the proposed tactical infrastructure in the USBP Del Rio Sector, respectively (U.S. Census Bureau 2002). Due to the existing supply of construction workers in each of these counties, it would likely not be necessary for workers from other locations to participate in the construction activities. The temporary nature of the construction (approximately 4 miles) and new employment (up to 75 workers) associated with Alternative 2 would have a minor indirect beneficial effect on local businesses and the local economy from the temporary influx of construction workers.

Environmental Justice and Protection of Children. Minor adverse disproportionate effects on minority or low-income populations could occur. Direct beneficial effects on safety and the protection of children would be expected from the projected deterrence of cross-border violators, smugglers, terrorists, and terrorist weapons from entering the United States. Therefore, border communities would be safer for minority and low-income populations and children.

The proposed infrastructure runs through or adjacent to 17 private and public land parcels in Del Rio and 3 private and public land parcels in Eagle Pass. In Section M-1, some private residences and other structures, would be located south of the proposed tactical infrastructure. Property owners and residents could be directly, adversely affected by restricted access, visual effects (see **Section 3.12.3**), noise (see **Section 3.2.3**) effects during construction, and other disruptions during construction. In some cases, the Government would acquire the property or property would be substantially impaired. This would be a long-term, major, adverse effect on property owners, but the effect would be mitigated by compensation of fair market value for the property and relocation assistance. The proposed tactical infrastructure under Route A would have short- to long-term direct beneficial effects on children and safety in the surrounding areas. The addition of tactical infrastructure could increase the safety of USBP agents in the Del Rio Sector. In addition, this alternative would help to deter cross-border violators in the immediate area, which could prevent drug smugglers, terrorists, and terrorist weapons from entering nearby neighborhoods.

Route B

Socioeconomics. Short-term minor direct beneficial effects would be expected as a result of the construction, operation, and maintenance of Route B. The primary difference between Route B and Route A is that Route B would be south of the existing residential and commercial structures along Garza Lane and Rio

Grande Road (in Section M-1), thus lessening the severity of adverse impact on those residents. However, Route B would still intersect the 17 parcels, running behind the structures.

Environmental Justice and Protection of Children. Route B would avoid the existing residential and commercial structures along Garza Lane and Rio Grande Road (in Section M-1) that would be directly and adversely affected under Route A. However, Route B would still intersect the 17 parcels, running behind the structures. Indirect adverse effects associated with the visual effects (see **Section 3.12.3**) and noise effects (see **Section 3.2.3**) would still occur. Otherwise, effects on minority or low-income populations and children would be generally the same as described for Route A.

3.13.3.3 Alternative 3: Secure Fence Act Alignment Alternative

Socioeconomics. Short-term minor direct beneficial effects would be expected as a result of the construction, operation, and maintenance of Alternative 3. The effects of Alternative 3 on socioeconomic groups would be expected to be similar to Alternative 2, Route B; however the effects on the local economy would be slightly greater due to the construction of two layers of pedestrian fence rather than one. Furthermore, two layers of fence would be more effective in preventing illegal entry into the United States, thereby decreasing the potential for degradation to grazing operations in the area.

Environmental Justice and Protection of Children. Effects under Alternative 3 would be similar to those discussed for Alternative 2, Route B. Direct beneficial effects on safety and the protection of children would be expected as Alternative 3 would be designed with two layers of pedestrian fence along each section. The additional layer of fencing would deter drug smugglers, terrorists, and cross-border violators, and therefore provide for a generally safer area. Environmental justice issues would be greater for Alternative 3 than for Alternative 2, Route B. Alternative 3 has a more intrusive visual presence affecting any potential low-income, minority residents who live adjacent to the proposed infrastructure.

3.14 UTILITIES AND INFRASTRUCTURE

3.14.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section include municipal water systems, sanitary sewer systems, storm water drainage systems, solid waste management, and utilities, including electrical and natural gas systems.

Solid waste management primarily relates to the availability of landfills to support a population's residential, commercial, and industrial needs. Alternative means of waste disposal might involve waste-to-energy programs or incineration. In some localities, landfills are designed specifically for, and limited to, disposal of construction and demolition debris. Recycling programs for various waste categories (e.g., glass, metals, papers, asphalt, and concrete) reduce reliance on landfills for disposal.

3.14.2 Affected Environment

Route A

Municipal Water Systems. The Rio Grande and several aquifers, reservoirs, and springs are the main sources of water for many communities and cities in Maverick and Val Verde counties. Municipal water infrastructure within the proposed project corridor includes the Eagle Pass Regional Water Treatment Plant (WTP) and associated interceptor, collector, distribution, or transmission pipelines; pumps; and storage tanks (see **Table 3.14-1**), which are located at the northern terminus of Section M-2A. This WTP removes and treats water from the Rio Grande for drinking water for the City of Eagle Pass, portions of Maverick County, and the Kickapoo Indian Nation.

Table 3.14-1. Water/Sewer Systems Infrastructure Within the Proposed Project Corridor by Section

Section	Water/Sewer Systems Infrastructure
M-1	Silver Lake Wastewater Treatment Plant (includes associated infrastructure)
M-2A	Eagle Pass Regional Water Treatment Plant (includes associated infrastructure)

Municipal Sanitary Sewer Systems. Some municipal sanitary sewer systems in Maverick and Val Verde counties discharge through the land application method, while others discharge into water bodies, including the Rio Grande and San Felipe Creek (USEPA 1998, BECC undated). The Silver Lake Wastewater Treatment Plant (WWTP) and its associated pipelines, pumps, and storage tanks is located within the proposed project corridor, approximately 0.5 miles south of Cienegas Creek at the northern terminus of Section M-1 (see **Table 3.14-1**). This WWTP provides sewerage services for the City of Del Rio, and discharges into the Rio Grande and through the land application method.

Storm Water Drainage Systems. No storm water drainages are known to occur within the proposed project corridor; however the number of storm water drainage systems along the proposed project corridor has not been inventoried.

Solid Waste Management. As of 2005, there was one active municipal landfill in Maverick County and one active municipal landfill in Val Verde County. The remaining capacity in terms of years for these landfills was determined based on compaction rate and the amount disposed of in 2005 (TCEQ 2006). The remaining capacity of these landfills as of 2005 is reported in **Table 3.14-2**.

Table 3.14-2. Remaining Capacity of Municipal Landfills as of 2005

Landfill Name	County	Remaining Capacity* (Years)
City of Eagle Pass Type IV Landfill Site	**Maverick**	**90.54**
City of Del Rio Municipal Landfill	Val Verde	15.20

Source: TCEQ 2006

Note: * Based on rate of compaction and amount disposed of in 2005.

Electrical and Natural Gas Systems. There are overhead electric lines adjacent and perpendicular to Section M-2A, and natural gas pipelines run along the Rio Grande and the roadway (Garza Lane and Rio Grande Road) at Section M-1. Lights that would be installed along Sections M-1 and M-2A would connect into existing electric distribution infrastructure in the area.

Route B

The general description of utilities and infrastructure is the same for Route B as it is for Route A.

3.14.3 Environmental Consequences

3.14.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no impact on utilities and infrastructure would be expected because the tactical infrastructure would not be built and therefore there is no potential for impacts on utilities and infrastructure as a result of Alternative 1.

3.14.3.2 Alternative 2: Proposed Action Alternative

Route A

No effects on storm water drainage systems, or electrical and natural gas systems would be expected due to the absence of these systems' infrastructure within the proposed project corridor. However, if infrastructure was identified during design, short-term minor adverse effects on these systems could occur. The primary pedestrian fence line and patrol road would avoid most storm water drainage culverts or reroute the project around this infrastructure. Any infrastructure that would be affected by the proposed construction would be

moved, and temporary interruptions to these systems could be experienced. No long-term effects would be expected.

Alternative 2, Route A would not substantially increase impervious surface area that could potentially affect local storm water management. Adherence to proper engineering practices and applicable codes and ordinances would reduce storm water runoff-related effects to a level of insignificance. In addition, erosion and sedimentation controls would be in place during construction to reduce and control siltation or erosion effects on areas outside of the construction site.

Short-term minor adverse effects on municipal water and sanitary sewer systems would be expected due to the presence of the Silver Lake WWTP and the Eagle Pass Regional WTP and the associated infrastructure (e.g., pipelines, pumps, and tanks) along Section M-1 and Section M-2A. Any infrastructure that would be affected by the proposed construction would be moved. No long-term effects would be expected.

Short-term minor adverse effects on solid waste management would be expected. Solid waste generated from the proposed construction activities would consist of building materials such as concrete and metals (conduit and piping). The contractor would recycle construction materials to the greatest extent possible. Nonrecyclable construction debris would be taken to either the City of Eagle Pass Type IV Landfill Site or the City of Del Rio Municipal Landfill, which are both permitted to take this type of waste. Both landfills have sufficient capacity. Therefore, solid waste generated as a result of Alternative 2, Route A would be expected to be negligible compared to the solid waste currently generated in Maverick and Val Verde counties, and would not exceed the capacity of either landfill.

Route B

The effects of Alternative 2, Route B would be similar to those described for Alternative 2, Route A.

3.14.3.3 Alternative 3: Secure Fence Act Alignment Alternative

The potential effects of Alternative 3 on infrastructure and utilities would be expected to be similar to the potential effects of Alternative 2, Route A. Additional solid waste would be generated under Alternative 3 because two pedestrian fences would be built rather than one.

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