Draft

ENVIRONMENTAL ASSESSMENT
FOR THE PROPOSED CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE
U.S. Border Patrol Marfa Sector, Texas

U.S. Department of Homeland Security
U.S. Customs and Border Protection
U.S. Border Patrol

January 2008

ABBREVIATIONS AND ACRONYMS

$\mu g/m^3$	micrograms per cubic meter
°F	Degrees Fahrenheit
APE	Area of Potential Effect
AQCR	air quality control region
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
CAA	Clean Air Act
CBP	U.S. Customs and Border Protection
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CM&R	Construction Mitigation and Restoration
CO	carbon monoxide
CO_2	carbon dioxide
CRS	Congressional Research Service
CWA	Clean Water Act
CY	calendar year
dBA	A-weighted decibels
DHS	U.S. Department of Homeland Security
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPLCAI AQCR	El Paso-Las Cruces-Alamogordo Interstate Air Quality Control Region
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FY	fiscal year
GLO	General Land Office
hp	horsepower
IBWC	International Boundary and Water Commission
JD	Jurisdictional Determination
MBTA	Migratory Bird Treaty Act
MD	Management Directive
mg/L	Milligrams per liter
mg/m^3	milligrams per cubic meter
MMTCE	million metric tons of carbon equivalent
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NADB	North American Development Bank
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOA	Notice of Availability
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O_3	ozone
OSHA	Occupational Safety and Health Administration
P.L.	Public Law

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Pb	lead
PM_{10}	particle matter equal to or less than 10 microns in diameter
$PM_{2.5}$	particle matter equal to or less than 2.5 microns in diameter
POE	Port of Entry
ppm	parts per million
ROI	Region of Influence
ROW	right-of-way
SBI	Secure Border Initiative
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasures
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TAAQS	Texas Ambient Air Quality Standards
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TxDOT	Texas Department of Transportation
THC	Texas Historical Commission
TMDL	Total Maximum Daily Load
TNRCC	Texas Natural Resource Conservation Commission
TPWD	Texas Parks and Wildlife Department
TXPF	Texas Pacifico Transportation Limited
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USIBWC	United States Section, International Boundary and Water Commission
VOC	volatile organic compound

COVER SHEET

DRAFT ENVIRONMENTAL ASSESSMENT
FOR THE PROPOSED CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE
U.S. BORDER PATROL MARFA SECTOR, TEXAS

Responsible Agencies: U.S. Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP).

Cooperating Agencies: United States Section, International Boundary and Water Commission (USIBWC).

Affected Location: U.S./Mexico international border in Hudspeth and Presidio counties, Texas.

Proposed Action: The Proposed Action includes the construction, operation, and maintenance of tactical infrastructure to include primary pedestrian fencing, patrol and access roads, and lights along approximately 11 miles of the U.S./Mexico international border in the USBP Marfa Sector, Texas. The Proposed Action would be implemented in three discrete sections. Two sections would be approximately 3.1 miles in length and one section would be approximately 4.6 miles in length.

Report Designation: Draft Environmental Assessment (EA)

Abstract: CBP proposes to construct, operate, and maintain approximately 11 miles of tactical infrastructure, including pedestrian fencing, patrol roads, access roads, and lights, along the U.S./Mexico international border in Hudspeth and Presidio counties, Texas.

The Proposed Action includes the construction of tactical infrastructure in three discrete sections along the international border in Hudspeth and Presidio counties, Texas. Two tactical infrastructure sections would each be approximately 3.1 miles in length and one section would be approximately 4.6 miles in length. For much of its length, the proposed tactical infrastructure sections would follow the USIBWC levee. Some portions of the tactical infrastructure would encroach on parcels of privately owned land. The infrastructure would cross predominantly rural and agricultural land.

The EA process will serve as a planning tool to assist agencies with decisionmaking authority associated with the Proposed Action and ensure that the required public involvement under the National Environmental Policy Act (NEPA) is accomplished. The EA presents potential environmental impacts associated with the Proposed Action and provides information to assist in the decisionmaking process addressing whether and how to implement the Proposed Action.

Throughout the NEPA process, the public may obtain information concerning the status and progress of the Proposed Action and the EA via the project Web site at *www.BorderFenceNEPA.com*; by emailing *information@BorderFenceNEPA.com*; or by written request to Mr. Charles McGregor, Environmental Manager, U.S. Army Corps of Engineers, Fort Worth District, Engineering and Construction Support Office (ECSO), 814 Taylor Street, Room 3B10, Fort Worth, TX 76102, fax: (757) 299-8444.

You may submit comments on this Draft EA to CBP. To avoid duplication, please use only <u>one</u> of the following methods:

(a) Electronically through the web site at: *www.BorderFenceNEPA.com*;

(b) By email to: *MScomments@BorderFenceNEPA.com*;

(c) By mail to: Marfa Sector Tactical Infrastructure EA, c/o e^{2}M, 2751 Prosperity Avenue, Suite 200, Fairfax, Virginia 22031

(d) By fax to (757) 299-8444.

Privacy Notice

Your comments on this document are due by February 6, 2008. Comments will be addressed in the Final EA and made available to the public. Any personal information included in comments will therefore be publicly available.

DRAFT

ENVIRONMENTAL ASSESSMENT
FOR THE
PROPOSED CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE U.S. BORDER PATROL MARFA SECTOR, TEXAS

U.S. Department of Homeland Security
U.S. Customs and Border Protection
U.S. Border Patrol

JANUARY 2008

This document printed on paper that contains at least 30 percent postconsumer fiber.

EXECUTIVE SUMMARY

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INTRODUCTION

The U.S. Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP) proposes to construct, operate, and maintain approximately 11 miles of tactical infrastructure, including three discrete sections of primary pedestrian fence and associated patrol roads, access roads, and lights along the U.S./Mexico international border in the USBP Marfa Sector, Texas.

The mission of CBP is to prevent terrorists and terrorist weapons from entering the United States, while also facilitating the flow of legitimate trade and travel. In supporting CBP's mission, USBP is charged with establishing and maintaining effective control of the border of the United States. USBP's mission strategy consists of five main objectives:

- Establish substantial probability of apprehending terrorists and their weapons as they attempt to enter illegally between the Ports of Entry (POEs)
- Deter illegal entries through improved enforcement
- Detect, apprehend, and deter smugglers of humans, drugs, and other contraband
- Leverage "smart border" technology to multiply the effect of enforcement personnel
- Reduce crime in border communities and consequently improve quality of life and economic vitality of targeted areas.

This Draft Environmental Assessment (EA) has been prepared through coordination with Federal and state agencies to identify and assess the potential impacts associated with the proposed construction, operation, and maintenance of tactical infrastructure. This Draft EA is also being prepared to fulfill the requirements of the National Environmental Policy Act (NEPA) of 1969.

PURPOSE AND NEED

The purpose of the Proposed Action is to increase border security within the USBP Marfa Sector through the construction, operation, and maintenance of tactical infrastructure in the form of fences, roads, lights, and supporting technological assets. The USBP Marfa Sector has identified three discrete areas along the U.S./Mexico international border that experience high levels of illegal cross-border activity. This activity occurs in areas that are remote and not easily accessed by USBP agents, are near POEs where concentrated populations might live on either side of the border, contain thick vegetation that can provide concealment, or have quick access to U.S. transportation routes.

The Proposed Action is needed because of high levels of illegal cross-border activity in the USBP Marfa Sector. The Proposed Action would provide USBP agents with the tools necessary to strengthen their control of the U.S. borders between POEs in the USBP Marfa Sector. The Proposed Action would help to deter illegal cross-border activities within the USBP Marfa Sector by improving enforcement, preventing terrorists and terrorist weapons from entering the United States, reducing the flow of illegal drugs and other contraband, and enhancing response time, while providing a safer work environment for USBP agents.

PUBLIC INVOLVEMENT

CBP notified relevant Federal, state, and local agencies of the Proposed Action and requested input regarding environmental concerns they might have. As part of the NEPA process, CBP coordinated with the U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); Texas State Historic Preservation Office (SHPO); and other Federal, state, and local agencies. Input from agency responses has been incorporated into the analysis of potential environmental impacts.

Notices of Availability (NOAs) for this EA and Draft Finding of No Significant Impact (FONSI) were published in the *Big Bend Sentinel,* the *Van Horn Advocate,* the *Hudspeth Herald,* the *Alpine Avalanche* and *El Diario*. This is done to solicit comments on the Proposed Action and involve the local community in the decisionmaking process. Comments from the public and other Federal, state, and local agencies will be incorporated into the Final EA**.**

DESCRIPTION OF THE PROPOSED ACTION

CBP proposes to construct, operate, and maintain tactical infrastructure consisting of three discrete sections of primary pedestrian fence, lighting, patrol roads, and access roads along the U.S./Mexico international border in the USBP Marfa Sector, Texas. Proposed tactical infrastructure includes installation of fence sections in areas of the border that are not currently fenced. The proposed locations of tactical infrastructure are based on a USBP Marfa Sector assessment of local operational requirements where such infrastructure would assist USBP agents in reducing illegal cross-border activities. The Fiscal Year (FY) 2007 DHS Appropriations Act (Public Law [P.L.] 109-295) provided $1,187,565,000 under the Border Security Fencing, Infrastructure, and Technology appropriation for the installation of fencing, infrastructure, and technology along the border.

ALTERNATIVES ANALYSIS

Alternative 1: No Action Alternative

Under the No Action Alternative, proposed 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 USBP Marfa Sector. The USBP Marfa Sector would continue to use agents and technology to identify illegal cross-border activity, and deploy agents to make apprehensions. Although USBP agents would continue to patrol the U.S./Mexico international border within the USBP Marfa Sector and make apprehensions, their response time and success rate in apprehensions would continue to be impeded. The No Action Alternative is no longer an efficient use of USBP resources and would not meet future USBP mission or operational needs. However, inclusion of the No Action Alternative is prescribed by the CEQ regulations and will be carried forward for analysis in the EA. The No Action Alternative also serves as a baseline against which to evaluate the impacts of the Proposed Action.

Alternative 2: Proposed Action

Under this alternative, three discrete sections of primary pedestrian fence, lighting, patrol roads, and access roads would be constructed along the U.S./Mexico international border within the USBP Marfa Sector in Hudspeth and Presidio counties, Texas. The two sections in Presidio County would be approximately 3.1 miles in length to the east and approximately 3.1 miles in length to the west of the Presidio POE and the third section would be approximately 4.6 miles in length in Hudspeth County

In alignment with Federal mandates, each proposed tactical infrastructure section would be an individual project and could proceed to completion independent of the other sections. CBP has identified these areas where a fence would contribute significantly to its priority homeland security mission.

Alternative 3: Secure Fence Act Alignment Alternative

Under this alternative, two layers of fence, known as primary and secondary pedestrian fence, would be constructed approximately 130 feet apart along the same alignment as Alternative 2. This alternative would be most closely aligned with fence described in the Secure Fence Act of 2006, P.L. 109-367, 120 Stat. 2638, codified at 8 United States Code (U.S.C.) 1701.

This alternative would also include construction and maintenance of patrol and access roads. The patrol roads would be constructed between the primary and secondary pedestrian fences. The design of the tactical infrastructure for this alternative would be similar to that of Alternative 2.

SUMMARY OF ENVIRONMENTAL IMPACTS

Table ES-1 provides an overview of potential impacts anticipated under each alternative considered, broken down by resource area. **Section 3** of this EA addresses these impacts in more detail.

Table ES-1. Summary of Anticipated Environmental Impacts by Alternative

Resource Area	Alternative 1: No Action Alternative	Alternative 2: Proposed Action	Alternative 3: Secure Fence Act Alignment
Air Quality	No new impacts would be expected.	Short- and long-term minor adverse impacts would be expected.	Impacts would be similar to, but greater than, the impacts described under Alternative 2.
Noise	No new impacts would be expected.	Short-term moderate adverse impacts would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.
Land Use	Long-term minor to major adverse impacts would be expected.	Long-term minor to major adverse and beneficial impacts would be expected.	Impacts would be similar to impacts described under Alternative 2.
Geology and Soils	Long-term minor adverse impacts would be expected.	Short- and long-term minor adverse impacts would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.
Hydrology and Groundwater	Long-term minor adverse impacts would be expected.	Short- and long-term negligible adverse impacts on hydrology and groundwater would be expected. Short-term, minor adverse impacts on groundwater would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.
Surface Waters and Waters of the United States	Long-term minor adverse impacts would be expected.	Short- and long-term negligible to minor adverse impacts on surface waters and wetlands would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.

Resource Area	Alternative 1: No Action Alternative	Alternative 2: Proposed Action	Alternative 3: Secure Fence Act Alignment
Floodplains	No new impacts would be expected.	Short- and long-term minor adverse impacts on floodplains would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.
Vegetative Resources	Long-term negligible to moderate adverse impacts would be expected.	Short- and long-term negligible to minor adverse and minor beneficial impacts would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.
Wildlife and Aquatic Resources	Long-term minor adverse impacts would be expected.	Short- and long-term negligible to moderate adverse and minor beneficial impacts would occur.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.
Threatened and Endangered Species	No new impacts would be expected.	No direct adverse impacts would be expected.	Impacts would be similar to the impacts described under Alternative 2.
Cultural, Historic, and Archaeological Resources	Long-term minor adverse impacts would continue to be expected.	No adverse impacts would be expected.	No adverse impacts would be expected.
Aesthetics and Visual Resources	No new impacts would be expected.	Short- and long-term minor to major adverse impacts would be expected.	Impacts would be similar to, but greater than, the impacts described under Alternative 2.
Socioeconomic Resources, Environmental Justice, and Protection of Children	Long-term minor to major adverse impacts would be expected.	Short-term minor beneficial socioeconomic impacts would occur. Minor adverse effects on minorities and low-income populations would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.

Resource Area	Alternative 1: No Action Alternative	Alternative 2: Proposed Action	Alternative 3: Secure Fence Act Alignment
Utilities and Infrastructure	No new impacts would be expected.	Short-term negligible to minor adverse impacts would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.
Roadways and Traffic	No new impacts would be expected.	Short-term minor adverse impacts would be expected.	Impacts would be similar to, but slightly greater than, the impacts described under Alternative 2.

CBP would follow design criteria to reduce adverse environmental impacts and would implement mitigation measures to further reduce or offset adverse environmental impacts to the extent possible. Design criteria to reduce adverse environmental impacts include avoiding physical disturbance and construction of solid barriers in wetlands/riparian areas and streambeds, consulting with Federal and state agencies and other stakeholders to avoid or minimize adverse environmental impacts, and developing appropriate Best Management Practices (BMPs) to protect natural and cultural resources to the extent possible. BMPs would include implementation of a Construction Mitigation and Restoration (CM&R) Plan; Spill Prevention Control and Countermeasures (SPCC) Plan; Dust Control Plan; and Unanticipated Discovery Plan for Cultural Resources.

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SECTION 1

Introduction

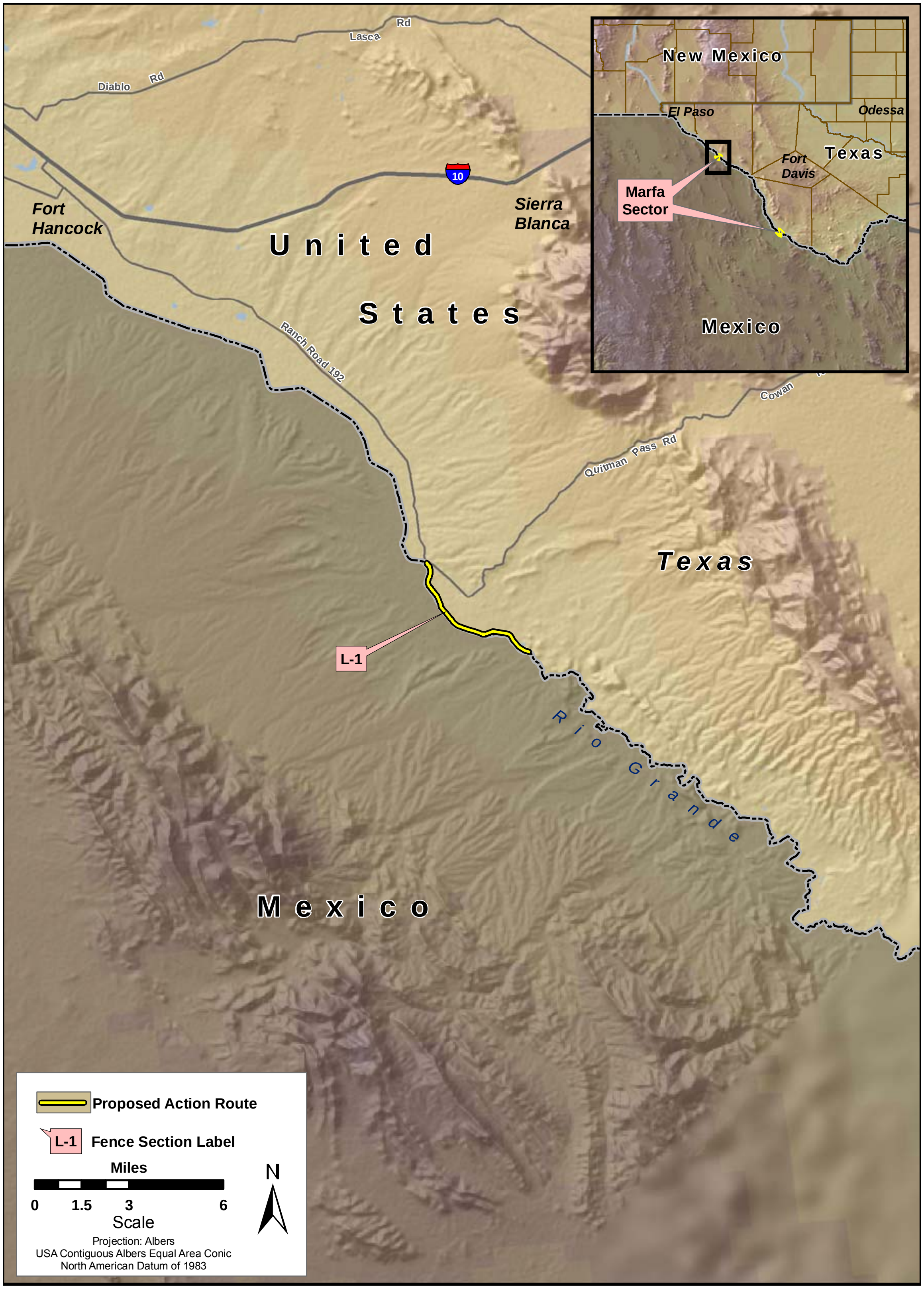
1. INTRODUCTION

The U.S. Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP) proposes to construct, operate, and maintain approximately 11 miles of tactical infrastructure, including three discrete sections of primary pedestrian fence and associated access roads, patrol roads, and lights along the U.S./Mexico international border in the USBP Marfa Sector, Texas.

The Proposed Action includes the installation of tactical infrastructure in three discrete fence sections (designated as Sections L-1, L-1A, and L-1B) along the U.S./Mexico international border in the vicinity of the town of Sierra Blanca (Hudspeth County) and the City of Presidio (Presidio County), Texas (see **Figures 1-1** and **1-2**).

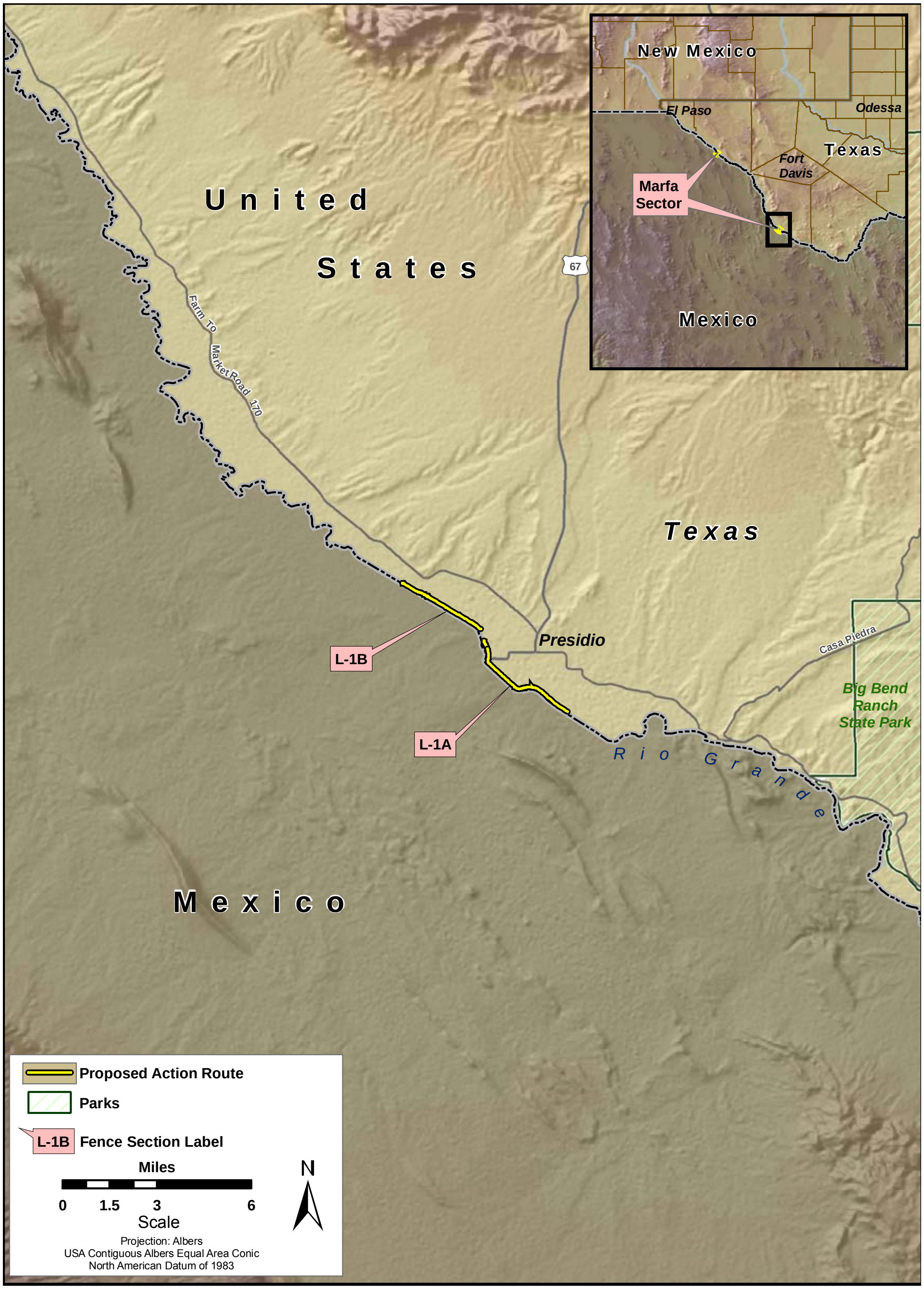
The locations of the individual tactical infrastructure sections were proposed based on the situational and operational requirements of the USBP Marfa Sector. Although some of the fence sections would be contiguous, each fence section would represent an individual project and could proceed independent of the other sections. Two tactical infrastructure sections would each be approximately 3.1 miles in length and one section would be approximately 4.6 miles in length. Detailed descriptions of the fence sections are presented in **Section 2.2.2**. For much of its length, the proposed tactical infrastructure would follow the United States Section, International Boundary and Water Commission (USIBWC) levee. The International Boundary and Water Commission (IBWC) enforces and oversees the boundary and water treaties of the United States and Mexico and settles differences that arise in their application (IBWC 2007). Some portions of the tactical infrastructure would also encroach upon multiple privately owned land parcels and would cross predominantly rural and agricultural land. A detailed description of the Proposed Action and the alternatives considered is presented in **Section 2**.

This Draft Environmental Assessment (EA) is divided into six sections and appendices. **Section 1** provides background information on USBP missions, identifies the purpose of and need for the Proposed Action, describes the area in which the Proposed Action would occur, and explains the public involvement process. **Section 2** provides a detailed description of the Proposed Action, alternatives considered, and the No Action Alternative. **Section 3** describes existing environmental conditions in the areas where the Proposed Action would occur, and identifies potential environmental impacts that could occur from each alternative evaluated in detail. **Section 4** discusses potential cumulative impacts and other impacts that might result from implementation of the Proposed Action, combined with foreseeable future actions. **Section 5** provides a summary of necessary mitigation measures and best management practices (BMPs). **Sections 6** and **7** provide references and a list of preparers, respectively.



Source: ESRI StreetMap USA 2005

Figure 1-1. General Location of Proposed Tactical Infrastructure, Section L-1



Source: ESRI StreetMap USA 2005

Figure 1-2. General Location of Proposed Tactical Infrastructure, Sections L-1A and L-1B

Appendix A provides potential fence designs and a description of the proposed tactical infrastructure. **Appendix B** contains a listing of those laws, regulations, and executive orders potentially applicable to the Proposed Action. **Appendix C** presents the newspaper ads from local papers, and agency coordination letters. **Appendix D** presents materials related to the EA comment process and public involvement along with the NOA. **Appendix E** presents air quality information. **Appendix F** contains detailed maps of each of the three proposed tactical infrastructure sections. **Appendix G** contains detailed soil maps of each of the three proposed tactical infrastructure sections. **Appendix H** contains the Draft Biological Survey Report. **Appendix I** contains preliminary cultural resource findings

1.1 USBP BACKGROUND

The mission of CBP is to prevent terrorists and terrorist weapons from entering the United States, while also facilitating the flow of legitimate trade and travel. In supporting CBP's mission, USBP is charged with establishing and maintaining effective control of the border of the United States. USBP's mission strategy consists of the following five main objectives:

- Establish substantial probability of apprehending terrorists and their weapons as they attempt to enter illegally between the Ports of Entry (POEs)
- Deter illegal entries through improved enforcement
- Detect, apprehend, and deter smugglers of humans, drugs, and other contraband
- Leverage "smart border" technology to multiply the effect of enforcement personnel
- Reduce crime in border communities and consequently improve quality of life and economic vitality of targeted areas.

USBP has nine administrative sectors along the U.S./Mexico international border. Each sector is responsible for implementing an optimal combination of personnel, technology, and infrastructure appropriate to its operational requirements. The Marfa Sector is responsible for more than 135,000 square miles encompassing 118 counties in Texas and Oklahoma, and 420 miles of the Rio Grande border (CBP 2006). Within the USBP Marfa Sector, areas for tactical infrastructure improvements have been identified that would help the Sector gain more effective control of the border and significantly contribute to USBP's priority mission of homeland security.

1.2 PURPOSE AND NEED

The purpose of the Proposed Action is to increase border security within the USBP Marfa Sector through the construction, operation, and maintenance of tactical infrastructure in the form of fences, roads, lights, and supporting technological assets. The USBP Marfa Sector has identified three discrete areas along the border that experience high levels of illegal cross-border activity. This activity occurs in areas that are remote and not easily accessed by USBP agents, are near POEs where concentrated populations might live on either side of the border, contain thick vegetation that can provide concealment, or have quick access to U.S. transportation routes.

The Proposed Action is needed because of high levels of illegal cross-border activity in the USBP Marfa Sector. The Proposed Action would provide USBP agents with the tools necessary to strengthen their control of the U.S. borders between POEs in the USBP Marfa Sector. The Proposed Action would help to deter illegal cross-border activities within the USBP Marfa Sector by improving enforcement, preventing terrorists and terrorist weapons from entering the United States, reducing the flow of illegal drugs and other contraband, and enhancing response time, while providing a safer work environment for USBP agents.

1.3 PROPOSED ACTION

CBP proposes to construct, operate, and maintain tactical infrastructure consisting of three discrete sections of primary pedestrian fence and associated patrol roads, access roads, and lights along three discrete areas of the U.S./Mexico international border in the USBP Marfa Sector, Texas (examples of primary pedestrian fence are included in **Appendix A**). Proposed tactical infrastructure includes installation of fence sections in some areas of the border that are not currently fenced. The proposed locations of tactical infrastructure are based on a USBP Marfa Sector assessment of local operational requirements where such infrastructure would assist USBP agents in reducing illegal cross-border activities. The Fiscal Year (FY) 2007 DHS Appropriations Act (Public Law [P.L.] 109-295) provided $1,187,565,000 under the Border Security Fencing, Infrastructure, and Technology appropriation for the installation of fencing, infrastructure, and technology along the border (CRS 2006). **Figures 1-1** and **1-2** illustrate the location of the proposed tactical infrastructure within the Marfa Sector. Details of the Proposed Action are included in **Section 2.2.2**. CBP has identified the Proposed Action as its Preferred Alternative. Implementation of the Proposed Action would meet USBP's purpose and need.

1.4 FRAMEWORK FOR ANALYSIS

The process for implementing the National Environmental Policy Act (NEPA) is codified in Code of Federal Regulations (CFR) 40 Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, and DHS's related Management Directive (MD) 5100.1, *Environmental Planning Program*. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee Federal policy in this process. CEQ regulations specify the following when preparing an EA:

- Briefly provide evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI)
- Aid in an agency's compliance with NEPA when an EIS is unnecessary
- Facilitate preparation of an EIS when one is necessary

To comply with NEPA, the planning and decisionmaking process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively."

Within the framework of environmental impact analysis under NEPA, additional authorities that may be applicable include the Clean Air Act (CAA), Clean Water Act (CWA) (including a National Pollutant Discharge Elimination System [NPDES] storm water discharge permit and Section 404 permit), Section 10 of the Rivers and Harbors Act of 1899, Noise Control Act, Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), National Historic Preservation Act (NHPA), Archaeological Resources Protection Act, Resource Conservation and Recovery Act, Toxic Substances Control Act, and various Executive Orders (EOs). A summary of laws, regulations, and EOs that might be applicable to the Proposed Action are shown in **Appendix B**. **Table 1-1** lists major Federal and state permits, approvals, and interagency coordination required to construct, operate, and maintain the proposed tactical infrastructure.

1.5 PUBLIC INVOLVEMENT

Agency and public involvement in the NEPA process promotes open communication between the public and the government and enhances the decisionmaking process. All persons or organizations having a potential interest in the Proposed Action are encouraged to participate in the decisionmaking process.

NEPA and implementing regulations from the CEQ and DHS direct agencies to make EAs available to the public during the document development process and prior to any decisionmaking on what actions are to be taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process.

Table 1-1. Major Permits, Approvals, and Interagency Coordination

Agency	Permit/Approval/Coordination
U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS)	- Section 7 (ESA) consultation - MBTA coordination
U.S. Environmental Protection Agency (USEPA)	- CWA NPDES permit
U.S. Army Corps of Engineers (USACE)	- CWA Section 404 permit
Texas Commission on Environmental Quality (TCEQ)	- CWA Section 401 State Water Quality Certification - CAA permit consultation - Construction Storm water permit
Texas Parks and Wildlife Department (TPWD)	- Texas Endangered Species Act coordination
Texas Historical Commission (THC)	- NHPA Section 106 consultation
Federally recognized American Indian Tribes	- Consultation regarding potential effects on cultural resources
Advisory Council on Historic Preservation	- NHPA Section 106 consultation

Through the public involvement process, CBP notified relevant Federal, state, and local agencies of the Proposed Action and requested input regarding environmental concerns they might have regarding the Proposed Action. The public involvement process provides CBP with the opportunity to cooperate with and consider state and local views in its decision regarding implementing this Federal proposal. As part of the EA process, CBP has coordinated with the U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); Texas Historical Commission (THC); and other Federal, state, and local agencies (see **Appendix C**). Input from agency responses has been incorporated into the analysis of potential environmental impacts.

Notices of Availability (NOAs) for this EA and Draft FONSI were published in the *Big Bend Sentinel,* the *Van Horn Advocate,* the *Hudspeth Herald*, the *Alpine Avalanche* and *El Diario* on ***January 8, 2008.***

The NOA solicits comments on the Proposed Action and involves the local community in the decisionmaking process. Comments from the public and other Federal, state, and local agencies will be addressed in the Final EA and included in **Appendix D.**

This Draft EA also serves as a public notice regarding impacts on 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 process must be followed to comply with EO 11988. This eight-step process is detailed in the Federal Emergency Management Agency (FEMA) document "Further Advice on EO 11988 Floodplain Management." The eight steps are as follows:

1. Determine whether the action will occur in, or stimulate development in, a floodplain.
2. Receive public review/input of the Proposed Action.
3. Identify and evaluate practicable alternatives to locating in the floodplain.
4. Identify the impacts of the Proposed Action (when it occurs in a floodplain).
5. Minimize threats to life, property, and natural and beneficial floodplain values, and restore and preserve natural and beneficial floodplain values.
6. Reevaluate alternatives in light of any new information that might have become available.
7. Issue findings and a public explanation.
8. Implement the action.

Steps 1, 3, and 4 have been undertaken as part of this Draft EA and are further discussed in **Section 3.7**. Steps 2 and 6 through 8 are being conducted simultaneously with the EA development process, including public review of the Draft EA. Step 5 relates to mitigation and is currently undergoing development.

Anyone wishing to provide written comments, suggestions, or relevant information regarding the Proposed Action may do so by submitting comments to CBP. To avoid duplication, please use only <u>one</u> of the following methods:

a. Electronically through the web site at: *www.BorderFenceNEPA.com*;
b. By email to: *MScomments@BorderFenceNEPA.com*;
c. By mail to: Marfa Sector Tactical Infrastructure EA, c/o e²M, 2751 Prosperity Avenue, Suite 200, Fairfax, Virginia 22031;
d. By fax to: (757) 299-8444.

Throughout the NEPA process, the public may obtain information concerning the status and progress of the EA via the project Web site at *www.BorderFenceNEPA.com*; by emailing *information@BorderFenceNEPA.com*; or by written request to Mr. Charles McGregor, Environmental Manager, U.S. Army Corps of Engineers (USACE), Fort Worth District, Engineering and Construction Support Office, 814 Taylor Street, Room 3B10, Fort Worth, TX 76102, and fax: (757) 299-8444.

1.6 COOPERATING AND COORDINATING AGENCIES

The USIBWC as a cooperating agency, and the USACE-Albuquerque District and the USFWS as coordinating agencies, also have decisionmaking authority for components of the Proposed Action and intend for this EA to fulfill their requirements for compliance with NEPA. The CEQ regulations implementing NEPA instruct agencies to combine environmental documents in compliance with NEPA to reduce duplication and paperwork (40 CFR 1506.4).

The USACE-Albuquerque District Engineer has the authority to authorize actions under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act of 1899 (33 United States Code [U.S.C.] 403). Applications for work involving the discharge of fill material into waters of the United States and work in, or affecting, a navigable water of the United States will be submitted to the USACE-Albuquerque District Regulatory Program Branch for review and a decision on issuance of a permit will be reached.

Section 7 of the ESA (P.L. 93-205, December 28, 1973) states that any project authorized, funded, or conducted by any Federal agency should not "…jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined … to be critical." The USFWS is a coordinating agency regarding this Proposed Action to determine whether any federally listed, proposed endangered, or proposed threatened species or their designated critical habitats would be adversely impacted by the Proposed Action. As a coordinating agency, the USFWS has assisted in completing the Section 7 consultation process, identifying the nature and extent of potential effects, and developing measures that would avoid or reduce potential effects on any species of concern.

For much of the proposed fence sections, the tactical infrastructure would follow the Rio Grande levee rights-of-way (ROWs) administered by the USIBWC. The IBWC is an international body composed of the U.S. Section and the Mexican Section, each headed by an Engineer-Commissioner appointed by their respective president. Each Section is administered independently of the other. The USIBWC is a Federal government agency headquartered in El Paso, Texas, and operates under the foreign policy guidance of the Department of State (USIBWC 2007). The USIBWC would provide access and ROWs to construct proposed tactical infrastructure along its levee system within the Marfa Sector. It will also ensure that design and placement of the proposed tactical infrastructure does not impact flood control and does not violate treaty obligations between the United States and Mexico. For purposes of the analysis in this EA, the phrase "north of the proposed fence sections" refers to the area on the U.S. side of the proposed tactical infrastructure.

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SECTION 2

Proposed Action and Alternatives

2. PROPOSED ACTION AND ALTERNATIVES

This section provides detailed information on CBP's proposal to construct, operate, and maintain tactical infrastructure along the U.S./Mexico international border in the Marfa Sector, Texas. The range of reasonable alternatives considered in this EA is constrained to those that would meet the purpose and need described in **Section 1** to provide USBP agents with the tools necessary to achieve effective control of the border in the Marfa Sector. Such alternatives must also meet essential technical, engineering, and economic threshold requirements to ensure that each is environmentally sound, economically viable, and complies with governing standards and regulations.

2.1 SCREENING CRITERIA FOR ALTERNATIVES

The following screening criteria were used to develop the Proposed Action and evaluate potential alternatives. The USBP Marfa Sector is working to develop the right combination of personnel, technology, and infrastructure to meet its objective to gain effective control of the border in the Marfa Sector.

- *USBP Operational Requirements*. The alternative must support USBP mission needs to hinder or delay individuals crossing the border illegally. Once individuals have entered an urban area or suburban neighborhood, it is much more difficult for USBP agents to identify and apprehend suspects engaged in unlawful border entry. In addition, around populated areas it is relatively easy for cross-border violators to find transportation into the interior of the United States.
- *Threatened or Endangered Species and Critical Habitat*. The alternative would be designed to minimize adverse impacts on threatened or endangered species and their critical habitat to the maximum extent practical. CBP is working with the USFWS to identify potential conservation and mitigation measures.
- *Wetlands and Floodplains*. The alternative would be designed to avoid and minimize impacts on wetlands, surface waters, and floodplain resources to the maximum extent practicable. CBP is working with the USACE-Albuquerque District and USIBWC to avoid, minimize, and mitigate potential impacts on wetlands, surface waters, and floodplains.
- *Cultural and Historic Resources.* The alternative would be designed to minimize impacts on cultural and historic resources to the maximum extent practical. CBP is working with the THC to identify potential conservation and mitigation measures.
- *Suitable Landscape*. Some areas of the border have steep topography, highly erodible soils, are in a floodway, or have other characteristics that could compromise the integrity of fence or other tactical infrastructure. For example, in areas susceptible to flash flooding, fence and other tactical

infrastructure might be prone to erosion that could undermine the fence's integrity. Areas with suitable landscape conditions would be prioritized.

In developing the Proposed Action, CBP evaluated a range of possible alternatives including route alternatives and alternative fence designs. The following sections describe the alternative analysis for this Proposed Action. **Section 2.2.1** presents the No Action Alternative, **Section 2.2.2** provides specific details of the Proposed Action, and **Section 2.2.3** discusses the Secure Fence Act Alternative. **Section 2.3** discusses alternatives considered but not analyzed in detail, **Section 2.4** is a summary comparison of the alternatives, and **Section 2.5** identifies the preferred alternative.

2.2 ALTERNATIVES ANALYSIS

2.2.1 Alternative 1: No Action Alternative

Under the No Action Alternative, proposed tactical infrastructure would not be built and there would be no change in fencing, or other facilities along the U.S./Mexico international border in the proposed project locations within the Marfa Sector. The USBP Marfa Sector would continue to use agents and technology to identify illegal cross-border activity, and deploy agents to make apprehensions. Although USBP agents would continue to patrol the U.S./Mexico international border within the USBP Marfa Sector and make apprehensions, their response time and success rate in apprehensions would continue to be impeded and would not meet future USBP mission needs for gaining effective control of our borders. However, inclusion of the No Action Alternative is prescribed by the CEQ regulations and will be carried forward for analysis in the EA. The No Action Alternative also serves as a baseline against which to evaluate the impacts of the Proposed Action.

2.2.2 Alternative 2: Proposed Action

CBP proposes to construct, operate, and maintain tactical infrastructure consisting of primary pedestrian fence, patrol roads, access roads, and lights along the U.S./Mexico international border in the Marfa Sector, Texas. Congress has appropriated funds for the construction of the proposed tactical infrastructure. Construction of additional tactical infrastructure might be required in the future as mission and operational requirements are continually reassessed.

The proposed tactical infrastructure would be constructed in three discrete sections along the border within the Marfa Sector in Hudspeth and Presidio counties, Texas. These sections of tactical infrastructure are designated as Sections L-1, L-1A, and L-1B on **Figures 2-1** and **2-2**. **Table 2-1** presents general information for each of the three proposed sections. The two sections in Presidio County would be approximately 3.1 miles in length to the east (Section L-1A) and approximately 3.1 miles in length to the west (Section L-1B) of the

Source: ESRI StreetMap USA 2005

Figure 2-1. Location of Section L-1 Tactical Infrastructure

Source: ESRI StreetMap USA 2005

Figure 2-2. Location of Sections L-1A and L-1B Tactical Infrastructure

Table 2-1. Proposed Tactical Infrastructure Sections for USBP Marfa Sector

Section Number	Associated USBP Station	General Location	Land Ownership	Length of Section (miles)
L-1	Sierra Blanca	Neely's Crossing	Public (USIBWC)	4.6
L-1A	Presidio	Rio Grande East of POE	Public (USIBWC) and private	3.1
L-1B	Presidio	Rio Grande West of POE	Public (USIBWC) and private	3.1
			Total	**10.8**

Presidio POE and the third section (Section L-1) would be approximately 4.6 miles in length in Hudspeth County.

Design criteria that have been established based on USBP operational needs specify that, at a minimum, any fencing must meet the following requirements:

- Built 15 to 18 feet high and extend below ground
- Capable of withstanding a crash of a 10,000-pound (gross weight) vehicle traveling at 40 miles per hour
- Capable of withstanding vandalism, cutting, or various types of penetration
- Semi-transparent, as dictated by operational need
- Designed to survive extreme climate changes
- Designed to reduce or minimize impacts on small animal movements
- Engineered to not impede the natural flow of surface water
- Aesthetically pleasing to the extent possible.

In addition, the USIBWC has design criteria for tactical infrastructure to avoid adverse impact on floodplains, levees, and flood control operations (see **Appendix C**) (USIBWC 2007). Typical primary pedestrian fence designs that could be used are included in **Appendix A**. The preliminary estimate to construct the proposed tactical infrastructure sections is approximately $33 million.

The alignment of the proposed tactical infrastructure under Alternative 2 was identified by the USBP Marfa Sector as meeting its operational requirements and developed through coordination with Federal and state agencies. The proposed tactical infrastructure would follow the USIBWC levee system for the majority of its length. Section L-1, in Hudspeth County, would be constructed as a "floating fence" and placed atop the levee (see **Figure 2-3**) This configuration would allow the majority of the proposed infrastructure to be placed on property owned by the USIBWC without major disturbance to current USIBWC operations or USBP patrol roads. In Sections L-1A and L-1B, in Presidio County, the proposed alignments along the USIBWC levee would be constructed as new levee retaining walls on the side of the levee facing the Rio Grande (see **Figure 2-4**). There would be a break in Section L-1B where the fence would encounter Cibolo Creek. A patrol road would be constructed around the perimeter of the creek crossing at a suitable point upstream.

There are several sections along the levee that the USIBWC does not own but has ROWs which would require new agreements or the acquisition of land. In addition, ROWs or land acquisition would be required for access roads and construction staging areas. The proposed tactical infrastructure in the three fence sections would also encroach on privately owned land parcels.

The proposed tactical infrastructure would impact an approximate 60-foot-wide corridor for fences and patrol roads. Vegetation within the corridor would be cleared and grading would occur where needed. The area that would be permanently impacted by the construction of tactical infrastructure would total approximately 78.1 acres. Unavoidable impacts on jurisdictional waters of the United States, including wetlands, would be mitigated. Wherever possible, existing roads and previously disturbed areas would be used for construction access and staging areas. **Figure 2-5** shows a schematic of typical impact areas for tactical infrastructure.

There would be no change in overall USBP Marfa Sector operations. The USBP Marfa Sector activities routinely adapt to operational requirements, and would continue to do so under this alternative. The Marfa Sector operations would retain the same flexibility to most effectively provide a law enforcement resolution to illegal cross-border activity. Fence maintenance would initially be performed by USBP Sector personnel, but would eventually become a contractor performed activity.

CBP is also proposing to construct and operate permanent lighting in both Presidio sections (L-1A and L-1B). Each light pole would be constructed approximately every 50 yards. Standard design for permanent lights is further discussed in **Appendix A**.

CBP is working closely with local landowners and others potentially affected by the proposed tactical infrastructure. Gates and ramps would be constructed to allow USBP, USIBWC, and other landowner's access to land, the Rio Grande, water resources, and infrastructure. In agricultural areas, gates would be wide enough to allow access for necessary farming equipment. In other cases, gates would be situated to provide access to existing recreational amenities; water

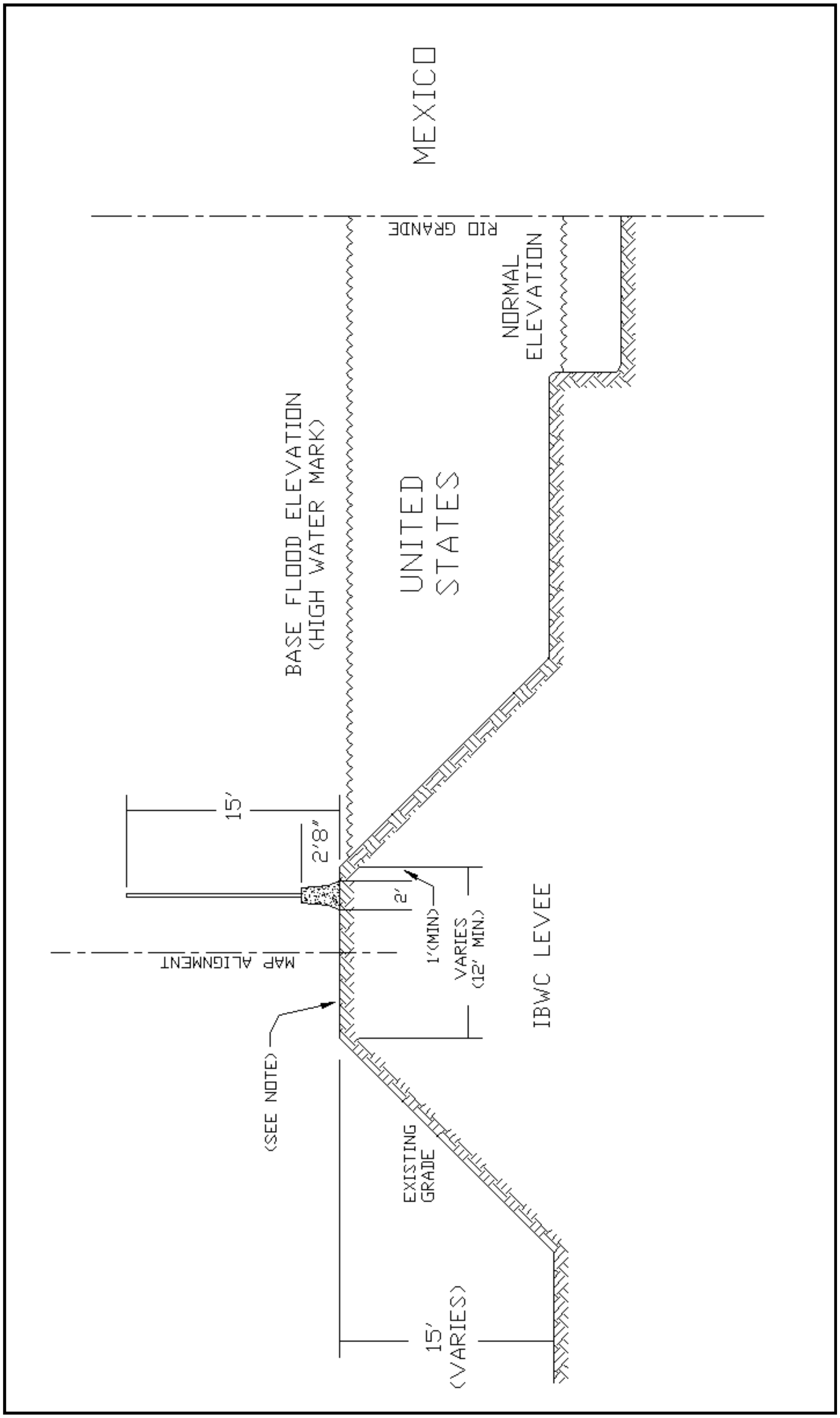

Figure 2-3. Fence Schematic for Section L-1

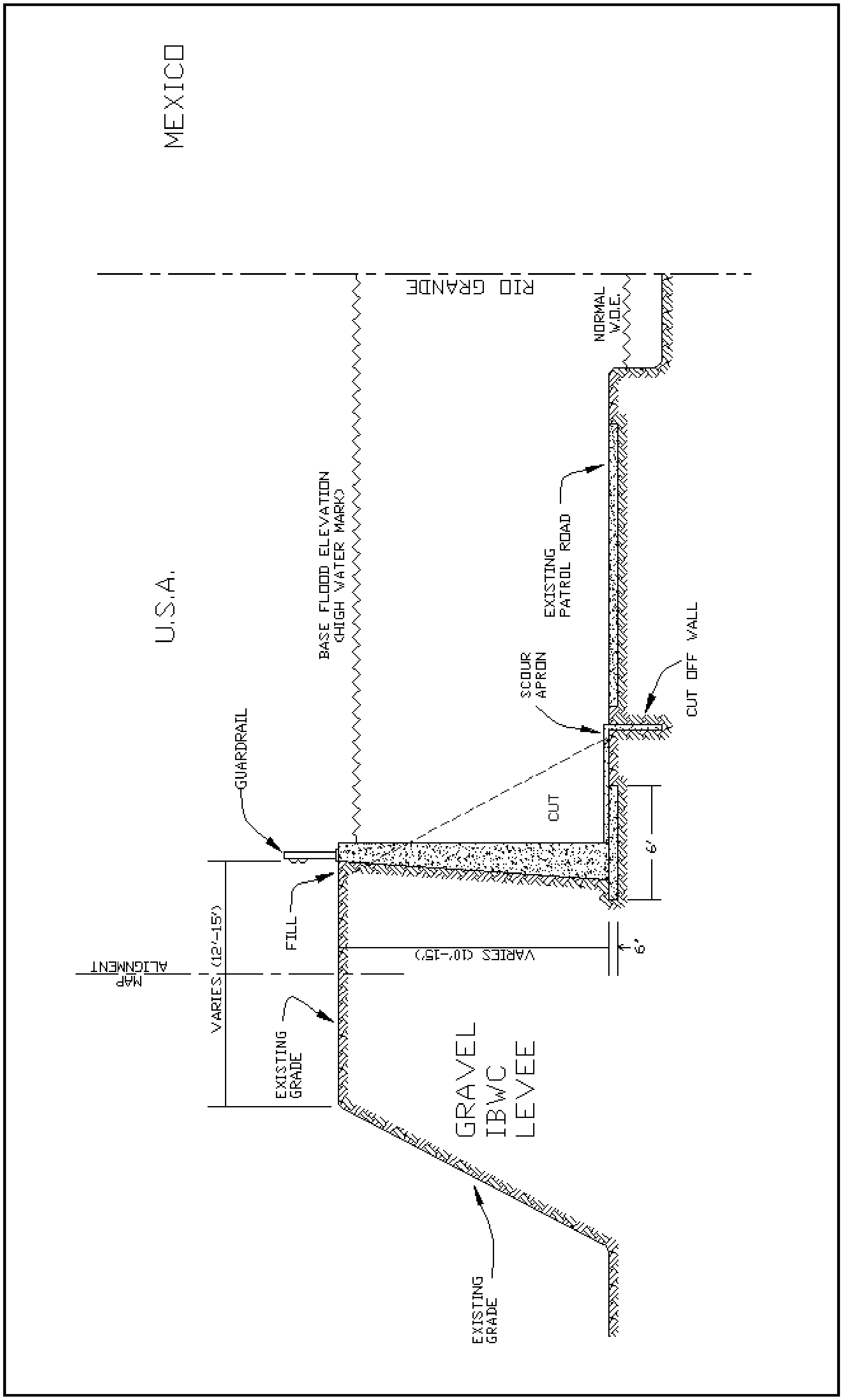

Figure 2-4. Fence Schematic for Sections L-1A and L-1B

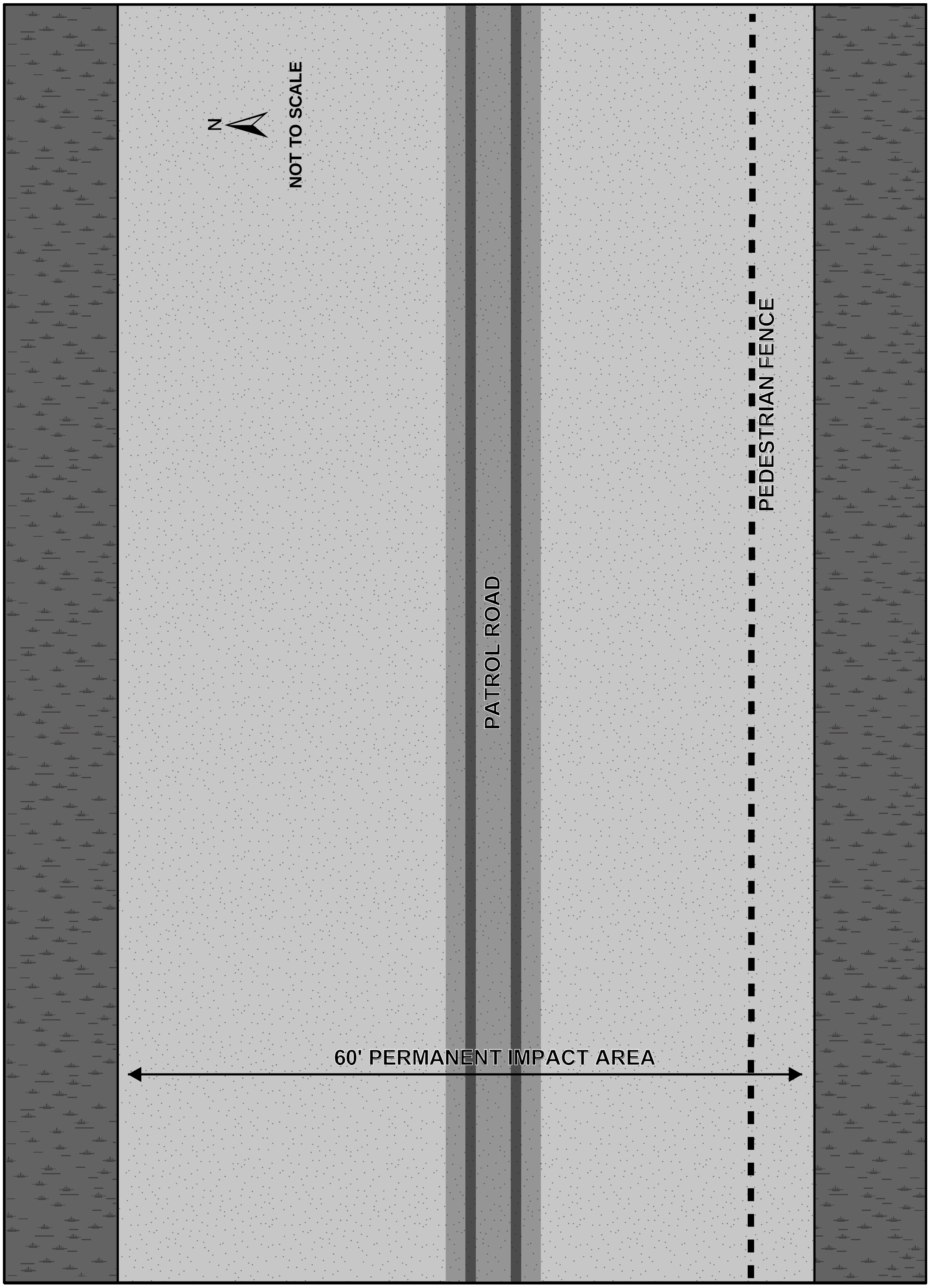

Figure 2-5. Schematic of Proposed Project Corridor – Alternative 2

resources, including pumphouses and related infrastructure; grazing areas; existing parks; and other areas. On a case-by-case basis, USACE might purchase the land between the fence and the Rio Grande on behalf of USBP, if operationally necessary.

If approved, construction of the proposed tactical infrastructure would begin in Spring 2008 and continue through December 31, 2008.

To the extent that additional actions in the study area are known, they are discussed in this EA in **Section 4**, Cumulative and Other Impacts.

2.2.3 Alternative 3: Secure Fence Act Alignment Alternative

An alternative of two layers of fence, known as primary and secondary pedestrian fence, is analyzed in this EA. Under this alternative, the two layers of fence would be constructed approximately 130 feet apart along the same alignment as Alternative 2 and would be most closely aligned with the fence description in the Secure Fence Act of 2006, P.L. 109-367, 120 Stat. 2638, codified at 8 U.S.C. 1701. This alternative would also include construction and maintenance of patrol and access roads. The patrol road would be between the primary and secondary pedestrian fences.

Figure 2-6 shows a schematic of typical proposed project corridor areas for this alternative. The design of the tactical infrastructure for this alternative would be similar to that of Alternative 2.

Construction of the proposed tactical infrastructure would impact an approximate 150-foot-wide corridor for 11 miles along the three fence sections. This construction corridor would accommodate access roads and construction staging areas. Vegetation would be cleared and grading would occur where needed. Unavoidable impacts on jurisdictional waters of the United States, including wetlands, would be mitigated. Wherever possible, existing roads would be used for construction access. This is a viable alternative and is carried forward for detailed analysis in this EA.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DETAILED ANALYSIS

CBP evaluated possible alternatives to be considered for the Proposed Action. This section addresses options that were reviewed but not carried forward for detailed analysis.

2.3.1 Additional USBP Agents in Lieu of Tactical Infrastructure

CBP considered the alternative of increasing the number of USBP agents assigned to the U.S./Mexico international border as a means of gaining effective

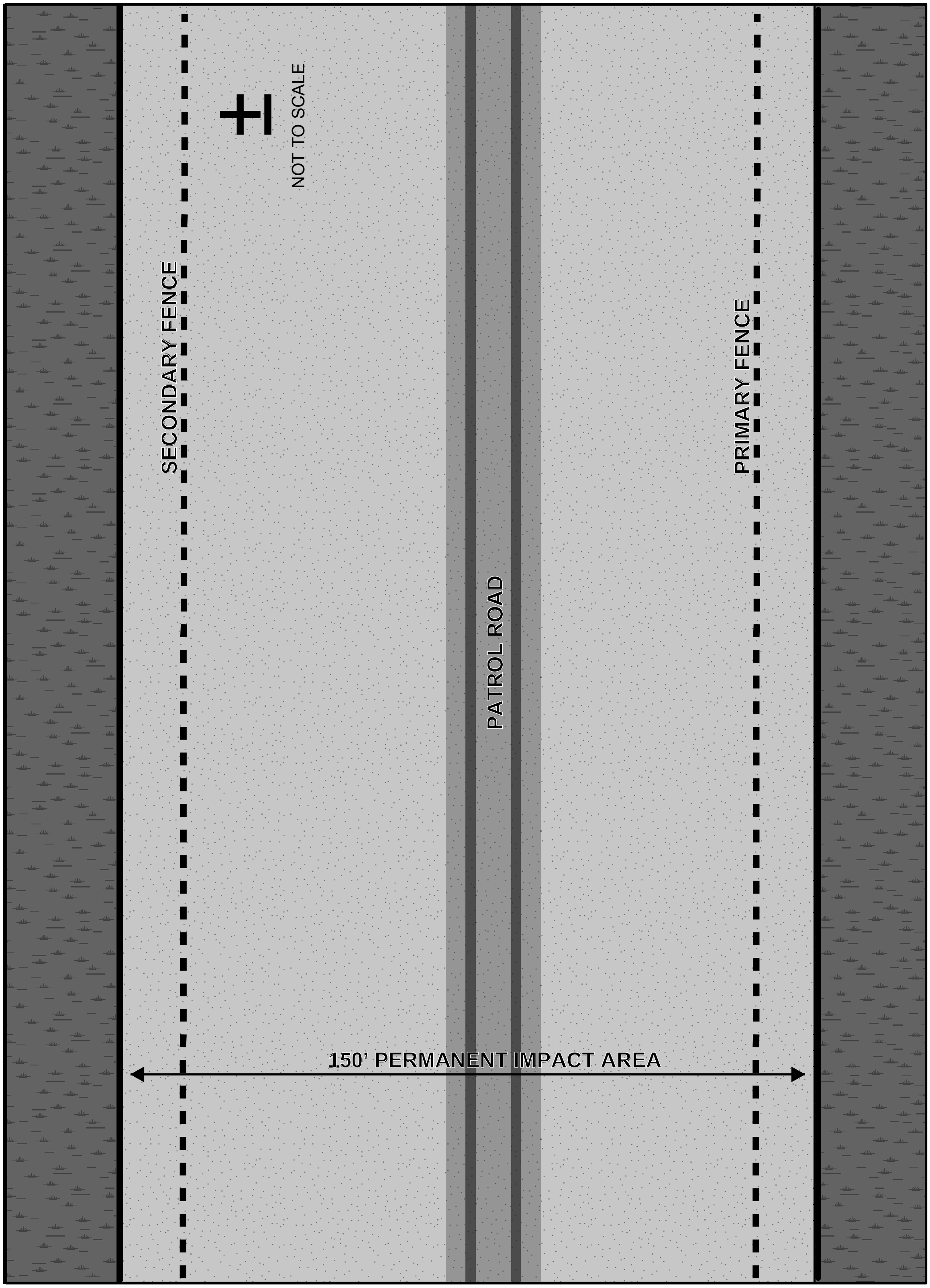

Figure 2-6. Schematic of Proposed Project Corridor – Alternative 3

control of the U.S./Mexico international border. Under this alternative, USBP would hire and deploy a significantly larger number of agents than are currently deployed along the U.S./Mexico international border and increase patrols to apprehend cross-border violators. USBP would deploy additional agents as determined by operational needs, but patrols might include 4-wheel drive vehicles, all-terrain vehicles, helicopters, or fixed-wing aircraft. Currently, USBP maintains an aggressive hiring program and a cadre of well-trained disciplined agents.

This alternative was determined not to meet the screening criteria of USBP operational requirements. The physical presence of an increased number of agents could provide an enhanced level of deterrence against illegal entry into the United States, but the use of additional agents alone, in lieu of the proposed tactical infrastructure, would not provide a practical solution to achieving effective control of the border in the Marfa Sector. The use of physical barriers has been demonstrated to slow cross-border violators and provide USBP agents with additional time to make apprehensions (USACE 2000). Additionally, as tactical infrastructure is built, agents could be more effectively redeployed to secure other areas. A Congressional Research Service (CRS) report (CRS 2006) concluded that USBP border security initiatives such as the 1994 “Operation Gatekeeper” required a 150 percent increase in USBP manpower, lighting, and other equipment. The report states that “It soon became apparent to immigration officials and lawmakers that the USBP needed, among other things, a ‘rigid’ enforcement system that could integrate infrastructure (i.e., multi-tiered fence and roads), manpower, and new technologies to further control the border region” (CRS 2006).

Increased patrol agents would aid in interdiction activities, but not to the extent anticipated by the construction of primary pedestrian fence and other tactical infrastructure along Sections M-1 and M-2A. As such, this alternative is not practical in the USBP Marfa Sector and will not be carried forward for further detailed analysis.

2.3.2 Technology in Lieu of Tactical Infrastructure

CBP does and would continue to use various forms of technology to identify cross-border violators. The use of technology in certain sparsely populated areas is a critical component of the Secure Border Initiative (SBI) and an effective force multiplier that allows USBP to monitor large areas and deploy agents to where they will be most effective. However, the apprehension of cross-border violators is still performed by USBP agents and other law enforcement agents. In the more densely populated areas within the Marfa Sector, physical barriers represent the most effective means to control illegal entry into the United States, as noted above. The use of technology alone would not provide a practical solution to achieving effective control of the border in the Marfa Sector. Therefore, this alternative would not meet the purpose and need as described in **Section 1.2** and will not be carried forward for further detailed analysis.

2.4 SUMMARY COMPARISON OF ACTION ALTERNATIVES

Table 2-2 presents a summary comparison of the action alternatives carried forward for analysis in the EA.

Table 2-2. Comparison of Action Alternatives

	Alternative 2: Proposed Action	Alternative 3: Secure Fence Act Alignment Alternative
Description	Three individual tactical infrastructure sections composed of primary pedestrian fence, patrol roads, access roads, and lights	Three individual tactical infrastructure sections composed of primary and secondary pedestrian fence constructed 130 feet apart, patrol roads between fences, access roads, and lights
Proposed Total Route Length	10.8 miles	10.8 miles
Proposed Project Corridor	60 feet	150 feet
Acreage of Proposed Project Corridor	78 acres	195 acres

2.5 IDENTIFICATION OF THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

CEQ's implementing regulations for NEPA under 40 CFR 1502.14(c) instructs preparers to "Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference." CBP has identified the Proposed Action as the environmentally preferred, least-damaging practicable alternative considered.

Implementation of the Proposed Action would meet CBP's purpose and need described in **Section 1.2**. The No Action Alternative would not meet CBP's purpose and need. Alternative 3 would meet CBP's purpose and need described in **Section 1.2** but would have greater environmental impacts compared to the Preferred Alternative. CBP might need to implement this alternative at some point in the future depending on future USBP operational requirements. While CBP believes that this level of tactical infrastructure is not required at this time it is a viable alternative and will be carried forward for detailed analysis.

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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, the CEQ regulations, and DHS MD 5100.1, the following evaluation of environmental impacts focuses on those resources and conditions potentially subject to impacts, 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. Temperatures in El Paso (Sierra Blanca) occur in an average annual minimum and maximum of 52 degrees Fahrenheit (°F) and 77 °F, respectively (NOAA 2007). The lowest and highest temperatures recorded for El Paso are -8 °F and 114 °F. The Proposed Action would neither affect nor be affected by the climate. Emissions (including greenhouse gases) and their effect on air quality are discussed in **Section 3.1** and **Section 4.1**.

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 their facilities. The Proposed Action would use minimal amounts of resources during construction and maintenance and there would be minimal changes in USBP operations. Therefore, the Proposed Action would have negligible effects on sustainability and greening issues.

Construction Site 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 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. Therefore, because the proposed construction would not introduce new or unusual safety risks, and assuming carefully followed construction protocols, detailed examination of safety is not included in this EA.

Hazardous Materials. Generally, hazardous materials, hazardous substances, and hazardous wastes include elements, compounds, mixtures, solutions, and substances which, when released into the environment or otherwise improperly managed, could present substantial danger to the public health, welfare, or the environment.

Long-term, minor, adverse effects would be expected as a result of the Proposed Action. Products containing hazardous materials (such as fuels, oils, lubricants, pesticides, and herbicides) would be procured and used during the proposed construction. There are no known hazardous waste clean-up sites within the proposed project corridor (USEPA 2007a). It is anticipated that the quantity of products containing hazardous materials used during construction would be minimal and their use would be of short duration. Minimal quantities of herbicide would be used for vegetative growth in the immediate vicinity of the fence. Additionally, it is anticipated that the quantity of hazardous and petroleum wastes generated from proposed construction would be negligible. Construction contractors would be responsible for the management of hazardous materials and wastes. The management of hazardous materials and wastes would include the use of BMPs, a pollution prevention plan, and a Storm Water Pollution Prevention Plan (SWPPP). All hazardous materials and wastes would be handled in accordance with applicable Federal, state, and local regulations.

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 impact 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.

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.

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 the NAAQS, nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now 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 K**.

3.1.2 Affected Environment

The Proposed Action is within Hudspeth County and Presidio County, Texas, within the El Paso-Las Cruces-Alamogordo Interstate Air Quality Control Region (EPLCAI AQCR). The EPLCAI AQCR is composed of six counties in western Texas and four counties in New Mexico. The EPLCAI AQCR is classified as being in attainment/unclassified for all criteria pollutants.

3.1.3 Environmental Consequences

Alternative 1: No Action Alternative

Under the No Action Alternative, CBP would not construct or maintain new tactical infrastructure along the three sections in the USBP Marfa Sector and operational activities would remain unchanged. Therefore, the No Action Alternative would not create any additional impacts on air quality beyond those that are already occurring, as described in **Section 3.1**.

Alternative 2: Proposed Action

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

Proposed Construction Projects. The Proposed Action would result in minor, short-term, adverse impacts on air quality during construction activities, primarily from site-disturbing activities and operation of construction equipment.

The construction projects 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 emission coefficients reported by the Energy Information Administration (EIA 2007).

For purposes of this analysis, the project duration and affected project site area 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 Alternative 2. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. However, the impacts 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 pollutant is not high, would not contribute to the deterioration of the air quality in the region, and does not exceed 10 percent of the regional values.

The construction emissions presented in **Table 3.1-2** include the estimated annual emissions from construction equipment exhaust associated with Alternative 2 in Calendar Year (CY) 2008 and operation of agricultural mowers and diesel-powered generators. Early phases of construction projects involve heavier diesel equipment and earthmoving, resulting in higher nitrogen oxides (NO_x) and PM_{10} emissions. Later phases of construction projects involve more light gasoline equipment and surface coating, resulting in more CO and volatile organic compounds (VOC) emissions. However, the impacts would be

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	11.333	1.689	12.239	23.40	0.227	0.380
Construction Fugitive Emissions	0.00	0.00	0.00	0.00	0.00	96.098
Maintenance Emissions	0.042	0.005	0.021	0.20	0.010	0.005
Generator Emissions	22.78	1.859	4.907	368.9	1.498	1.601
Total Alternative 2 Emissions	**34.153**	**3.554**	**18.167**	**392.50**	**1.735**	**98.084**
Federal *de minimis* Threshold	NA	NA	NA	NA	NA	NA
EPLCAI AQCR Regional Emissions	54,477	43,267	347,384	995,000	4,569	149,894
Project Percent of EPLCAI AQCR Regional Emissions	**0.63 %**	**0.008%**	**0.005%**	**0.037%**	**0.038%**	**0.065%**

Source: USEPA 2007b

temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

Proposed Operations and Maintenance Activities. The primary pedestrian fence and patrol road 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 project area approximately 14 days per year. No adverse impacts on local or regional air quality are anticipated from these future 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 L-1, L-1A, and L-1B. 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 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 were generated based on guidance provided in USEPA AP-42, Volume I, *Stationary Internal Combustion Sources*. According to TAC Title 30, internal combustion engines greater than 500 brake horsepower require an operating permit (TAC 2007). Therefore, the generators that would be associated with Alternative 2 activities are exempt from requiring an operating permit from the TCEQ.

Greenhouse Gases. USEPA has estimated that the total greenhouse emissions for Texas was 189 million metric tons of carbon equivalent (MMTCE) in 1999. Of this, an estimated 995 tons of CO_2 are associated with the EPLCAI AQCR regions. Therefore construction emissions of CO_2 represent less than 10 percent of the regional emissions (USEPA 2007c).

After construction is completed, normal border patrol schedules would continue. The vehicles used for surveillance of the existing border area are generating CO_2 that is accounted for in the Texas greenhouse gas inventory. No new sources of CO_2 would result 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 K**.

Summary. **Table 3.1-2** illustrates that the emissions from Alternative 2 would be minor adverse and much less than 10 percent of the emissions inventory for EPLCAI AQCR (USEPA 2007b). Within the EPLCAI AQCR, the estimated annual CO_2 emissions of power plants is 775,000 tons, while vehicles add another estimated 220,000 tons. Therefore, no adverse impacts on regional or local air quality are anticipated from implementation of Alternative 2.

According to 40 CFR Part 81, there are no Class I areas in the vicinity of Alternative 2. Therefore, Federal Prevention of Significant Deterioration (PSD) regulations would not apply.

In summary, no significant adverse impacts on regional or local air quality are anticipated from implementation of Alternative 2. 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 EPLCAI AQCR emissions inventory). Emissions factors, calculations, and estimates of emissions for Alternative 2 are shown in detail in **Appendix K**.

Alternative 3: Secure Fence Act Alignment Alternative

Alternative 3 would generate air pollutant emissions from the proposed construction projects, maintenance activities, and the operation of generators to supply power to construction equipment and portable lights.

Proposed Construction Projects. Major short-term adverse impacts would be expected from construction emissions and land disturbance as a result of implementing Alternative 3. The proposed project would result in impacts on regional air quality during construction activities, primarily from site-disturbing activities and operation of construction equipment.

The construction projects 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 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.

For purposes of this analysis, the project duration and affected project site area that would be disturbed (presented in **Section 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 impacts would be temporary, and would fall off rapidly with distance from the proposed construction sites.

Specific information describing the types of construction equipment required for a specific task, the hours the equipment is operated, and the operating conditions vary widely from project to project. For the purposes of this analysis, these parameters were estimated using established methodologies for construction and experience with similar types of construction projects. Combustion by-product emissions from construction equipment exhausts were estimated using USEPA's AP-42 emissions factors for heavy-duty, diesel-powered construction equipment.

The construction emissions presented in **Table 3.1-3** include the estimated annual emissions from construction equipment exhaust associated with Alternative 3 in CY 2008 and operation of agricultural mowers and diesel-powered generators. As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations. Early phases of construction projects involve heavier diesel equipment and earthmoving, resulting in higher NO_x and PM_{10} emissions. Later phases of construction

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	70.83	10.588	82.746	46.8	1.417	2.376
Construction Fugitive Emissions	0.00	0.00	0.00	0.00	0.00	240.245
Maintenance Emissions	0.127	0.015	0.064	0.20	0.030	0.015
Generator Emissions	22.777	1.859	4.907	368.9	1.498	1.601
Total Alternative 3 Emissions	**93.735**	**12.433**	**87.716**	**415.9**	**2.945**	**244.237**
Federal *de minimis* Threshold	NA	NA	NA	NA	NA	NA
EPLCAI AQCR Regional Emissions	54,477	43,267	347,384	995,000	4,569	149,894
Percent of EPLCAI AQCR Regional Emissions	**0.172%**	**0.029%**	**0.025%**	**0.042**	**0.064%**	**0.163%**

Source: USEPA 2007b

projects involve more light gasoline equipment and surface coating, resulting in more CO and VOC emissions. However, the impacts would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

Proposed Operations and Maintenance Activities. The primary pedestrian fence and patrol road would require mowing approximately two times per year to maintain vegetation height and allow enhanced visibility and security. It was assumed that six 40-hp agricultural mowers would mow the vegetation in the project area approximately 14 days per year. Emissions from these agricultural mowers would be minimal. No adverse impacts on local or regional air quality are anticipated from these future maintenance activities. The air quality effects of proposed operations and maintenance activities would be essentially the same as those described for Alternative 2. Criteria pollutant and greenhouse gas emissions would be comparable to but slightly greater that the Proposed Action because there would be more infrastructure to maintain. However, the air emissions associated with maintenance would be a negligible contribution to overall air quality in the region.

Generators. Alternative 3 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. Emissions from these diesel generators would be minimal. Operational emissions associated with Alternative 3 would not result in an adverse impact on air quality. The emissions factors and estimates were generated based on guidance provided in USEPA AP-42, Volume I, *Stationary Internal Combustion Sources*. According to TAC Title 30, internal combustion engines greater than 500 brake horsepower require an operating permit (TAC 2007). Therefore, the generators under Alternative 3 are exempt from requiring an operating permit from the TCEQ.

Summary. Since the EPLCAI 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 minor adverse but less than 10 percent of the EPLCAI AQCR inventory (USEPA 2007b).

According to 40 CFR Part 81, there are no Class I areas in the vicinity of Alternative 3. Therefore, Federal PSD regulations would not apply.

Greenhouse Gases. USEPA has estimated that the total greenhouse emissions for Texas was 189 MMTCE in 1999. Of this, of this an estimated 995,000 tons of CO_2 are associated with the EPLCAI AQCR regions. Therefore construction emissions of CO_2 represent less than 10 percent of the regional emissions (USEPA 2007c).

After construction is completed, normal border patrol schedules would continue. The vehicles used for surveillance of the existing border area are generating CO_2 that is accounted for in the Texas greenhouse gas inventory. No new sources of CO_2 would result from Alternatives 3. Therefore, no net increase of greenhouse emissions would be expected. Emissions factors, calculations, and estimates of emissions are shown in detail in **Appendix K**.

3.2 NOISE

3.2.1 Definition of the Resource

Noise and sound share the same physical aspects, 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 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. 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. Noise levels associated with construction equipment, vehicle operations, and aircraft operations are analyzed using dBA.

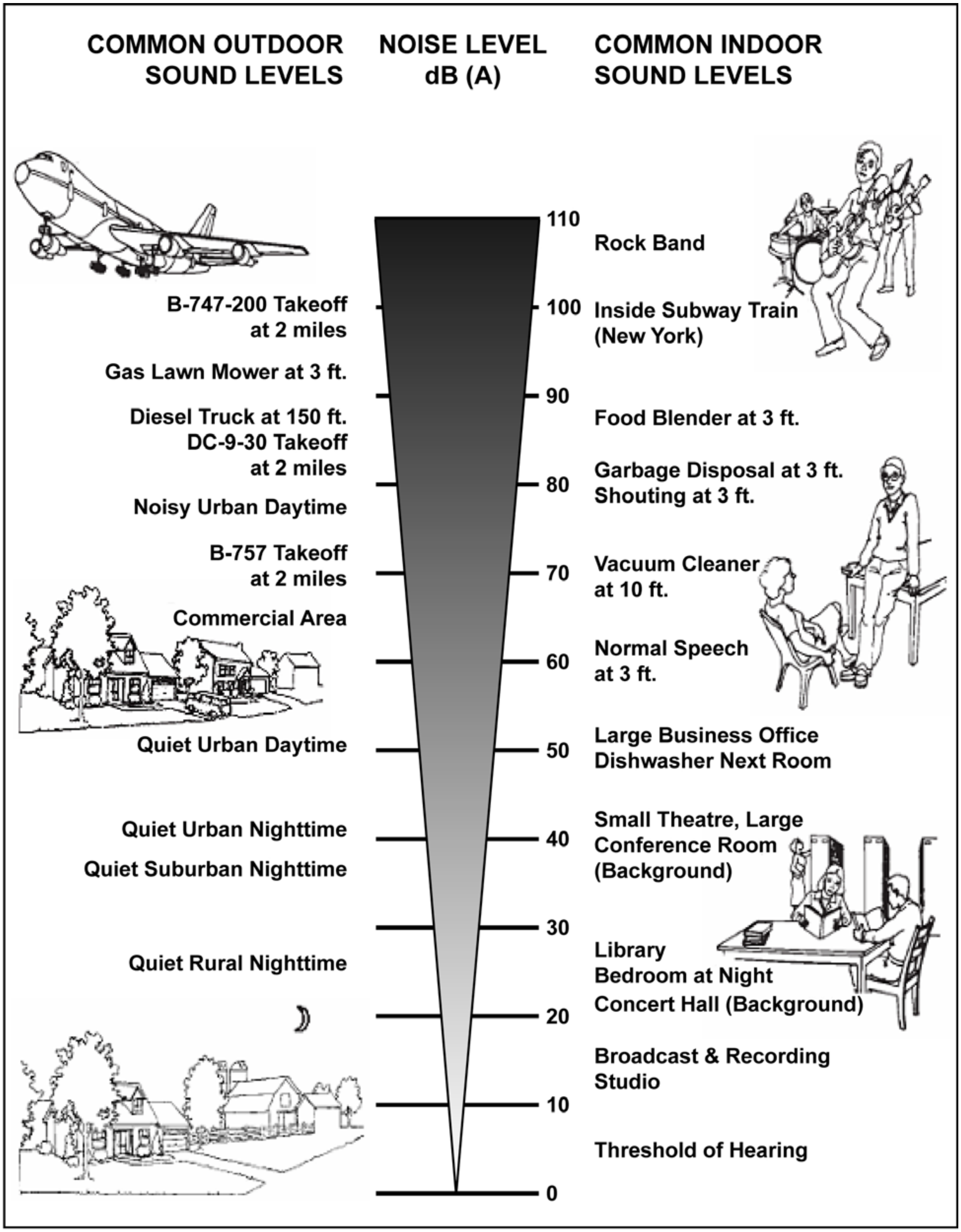
Noise levels in residential areas vary depending on the housing density, location, and surrounding use. As shown in **Figure 3.2-1**, a quiet urban area in the daytime is about 50 dBA, however, noise increases to 65 dBA for a commercial area, and 80 dBA for a noisy urban daytime area.

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

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



Source: Landrum & Brown 2002

Figure 3.2-1. Common Noise Levels

3.2.2 Affected Environment

The proposed border fence for the vicinity of Sierra Blanca and Presidio, Texas, passes through areas with different acoustical environments. Sierra Blanca is in a remote section of the U.S./Mexico international border. Due to the distance from Sierra Blanca, the ambient acoustical environment in the vicinity of Section L is not impacted by urban activities in that town. Presidio, Texas, is a larger community, and directly abuts the U.S./Mexico international border. The ambient acoustical environment near Presidio is primarily impacted by vehicular traffic, industrial noise sources, railroad, and agricultural equipment.

Major transportation routes in the vicinity of Presidio include State Route (SR) 67 and Ranch Road 170. SR 67 passes through the northern side of Presidio and abuts several residential communities. Ranch Road 170 passes by several residential areas on the southeastern, eastern, and northern sections of the city. It is anticipated that there is a high volume of traffic on border crossing roads. Traffic along these roads contributes to the ambient acoustical environment in the vicinity of Presidio.

Industrial and commercial noise sources in the vicinity of Presidio originate from both sides of the border. Industrial noise sources in Presidio are mainly relegated to the central areas of the city. Several industrial facilities exist directly south of Presidio on the Mexican side of the Rio Grande. Noise from these sources contributes to the ambient acoustical environment in the vicinity of Presidio.

Texas-Pacifico Transportation, LTD owns and operates a rail line passing south of the town of Presidio. Transportation of goods and services along this line by rail car would impact the ambient acoustical environment in the vicinity of Presidio. However, no details on the amount of traffic along this rail line were found, and frequency of rail traffic on the line is anticipated to be low. Noise from traffic along the rail line contributes little to the ambient acoustical environment to the areas west of Presidio.

Agricultural activities are prominent south of Presidio along the U.S./Mexico international border. The noise levels from agricultural equipment can reach up to 100 dBA for the operator (OSU 2007). While farms are generally spread out, noise from agricultural activities is likely to extend past the farm boundaries. Irrigation activities occurring at these farm sites would contribute slightly to the ambient acoustical environment at times when they are in operation.

3.2.3 Environmental Consequences

Alternative 1: No Action Alternative

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

Alternative 2: Proposed Action

Short-term, moderate, adverse effects would be expected due to construction of the primary pedestrian fence and other tactical infrastructure. Temporary sources of noise would include operation of construction equipment and noise from construction vehicles. Noise effects on wildlife are described in **Section 3.9.2**.

The construction of the fence sections and related tactical infrastructure would result in noise effects on populations in the vicinity of the proposed sites. 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 impact adjacent populations, noise from the probable 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 the Proposed Action, the cumulative noise from the construction equipment during the busiest day was estimated to determine the total impact of noise from building activities at a given distance. Since noise attenuates over distance, a gradual decrease in noise level occurs the farther a receptor is away from the source of noise. Examples of expected construction noise during daytime hours are as follows.

- The closest residence to the fence section in Sierra Blanca would be approximately 18 miles from proposed fence Section L-1. At this distance, noise from construction of the border fence would be approximately 26 dBA.
- The closest residence in Presidio would be approximately 350 feet from proposed fence Section L-1A. At this distance, noise from construction of the border fence would be approximately 75 dBA.
- The closest residence in Presidio would be approximately 2,600 feet from proposed fence Section L-1B. At this distance, noise from construction of the border fence would be approximately 57 dBA.

Implementation of the Proposed Action would have temporary adverse effects on the noise 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 residences as well as populations using recreational facilities and park areas. In general, users of recreational and park areas anticipate a quiet environment. Noise from construction would affect the ambient acoustical environment around these sites but would be temporary.

Noise impacts from increased construction traffic would also be temporary in nature. These impacts 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 of the Proposed Action pass by residential areas. Therefore, it is anticipated that the Proposed Action would have short-term minor adverse noise impacts as a result of the increase in traffic, most notably in the areas around SR 67 and Ranch Road 170.

Long-term, negligible, adverse effects on the acoustical environment would result from vehicle traffic patrols. Patrols would consist of a single vehicle driving on the patrol road. While adjustments to USBP operations due to fence construction are anticipated to be minor, shifts in operation pattern, location, or frequency would affect the noise environment in the vicinity of the fence sections. Noise from patrol activities would have a greater impact on populations near proposed Section L-1A than Section L-1.

Alternative 3: Secure Fence Act Alignment Alternative

Short-term moderate adverse effects would be expected under Alternative 3. Under Alternative 3, primary and secondary fences would be constructed 130 feet apart on the same route as Alternative 2. Noise effects from Alternative 3 would be similar to those discussed under Alternative 2. However, residences 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 a project site 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 at 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."

Recreational resources are both natural and improved lands designated by Federal, state, and local planning entities to offer visitors and residents diverse opportunities to enjoy leisure activities. Natural recreational resources are those places or amenities set aside as parklands, trails (e.g., hiking, bicycling, equestrian), open spaces, aesthetically pleasing landscapes, and a variety of other locales. Man-made recreational resources can include parks, man-made lakes, recreational fields, or sport or recreational venues. National, state, and local jurisdictions typically have designated land areas with defined boundaries for recreation. Other less-structured activities like hunting are performed in broad, less-defined locales. A recreational setting might consist of natural or man-made landscapes and can vary in size from a roadside monument to a multimillion-acre wilderness area.

3.3.2 Affected Environment

Major land uses within the proposed project corridor include agriculture, rangeland, and urban. Specific land uses in each classification are described below (USACE 1994).

- *Agriculture* – Specific land uses within this classification include highly developed croplands, pasture, small grains, forage crops, hay production, and orchards. The land can be irrigated or nonirrigated.
- *Rangeland* – Specific land use includes the grazing of cattle, horses, sheep, goats, and other domestic animals. This is based on the presence of naturally occurring grasses, grasslike plants and forbs, or shrubs suitable for grazing and browsing. This classification would include natural grasslands, savannas, some wetlands, and other areas with the potential to support certain forb and shrub communities under prudent and normally accepted land management practices.
- *Urban* – Specific land uses within this classification include residential, industrial, transportation, commercial, educational, medical, recreational, open space for environmental protection (i.e., floodway, utility easements,

and right-of-way), and underdeveloped land within political boundaries (i.e., cities, towns, and villages).

The existing land use in the Marfa Sector for the proposed project corridor ranges from well-developed urban centers of commerce (e.g., Presidio) to areas of intensive agricultural activities to extensive areas designated for recreation and wildlife management activities. The following is a brief description of the existing land use in Hudspeth and Presidio counties (USACE 1994):

- *Hudspeth County* – The major land use is rangeland (96 percent). Rangeland is used for production of beef cattle. Agricultural land use (2 percent) is used for the production of cotton, alfalfa, and vegetables. Approximately 40,000 acres (56 percent) of agricultural land is irrigated. There is a limited amount of mining (e.g., primarily talc, stone, and gypsum). The major recreational area is Guadalupe Mountains National Park. The park contains unique plant life, scenic canyons, scenic drives, hot springs, salt basins, white sands, and other geological formations. The leasing of rangeland for hunting is an important secondary and seasonal land use. Urban land use (less than 1 percent) is in Sierra Blanca (population 700 est.), the county seat and principal center of trade and commerce.
- *Presidio County* – Rangeland (99 percent) is the major land use. Rangeland is used to raise cattle and goats. Agricultural land use (1 percent) is limited to the production of cantaloupes, lettuce, watermelons, onions, and alfalfa. Limited irrigation of agricultural land occurs, mostly along the Rio Grande. Major secondary land uses involve hunting and tourism. Most tourism occurs within the Big Bend Ranch State Natural Area and on adjacent land. Marfa (population 2,689) is the county seat and the only urban area.

Appendix F presents detailed maps of the areas surrounding the proposed fence sections. **Section 3.12** describes the aesthetics and visual resources of the proposed project corridor.

3.3.3 Environmental Consequences

Alternative 1: No Action Alternative

In some locations, land use and land values are currently adversely affected by cross-border violators. Under the No Action Alternative, current land uses and values could continue to be adversely affected and degradation could increase.

Alternative 2: Proposed Action

Constructing the proposed tactical infrastructure would result in long-term minor adverse impacts on land use. The severity of the impact would vary depending on the need for rezoning to accommodate the fence sections, patrol roads, and lighting. CBP might be required to obtain a permit or zoning variance based on local restrictions and ordinances. Short-term minor adverse impacts would occur from construction. Impacts on land use would vary depending on potential changes in land use and the land use of adjacent properties.

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 (conterminous) scope. It is likely the most widely used land cover data set in the United States and no other national land cover mapping program has ever been undertaken. The National Land Cover Dataset provides 21 land cover classes for the lower 48 states. The 21 land cover classes were generalized into the following 4 categories: agricultural, urban, rangeland, and water. The proposed project corridor is classified by approximately 4.6 percent agricultural, 8.9 percent urban, and 86.5 rangeland.

Table 3.3-1 outlines by proposed tactical infrastructure section the existing communities within or adjacent to Alternative 2 that would potentially be affected by the proposed tactical infrastructure.

Table 3.3-1. Communities Potentially Affected by Alternative 2

Proposed Tactical Infrastructure Section Number	Community Affected
L-1	Sierra Blanca
L-1A	Presidio
L-1B	Presidio

Construction of the proposed tactical infrastructure sections would require the government to acquire various interests in land. 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 international land border when the Secretary deems the land essential to control and guard the borders of the United States (8 U.S.C. 1103(b)).

Because the proposed tactical infrastructure sections 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 easements, ROWs, or outright purchase.

For those proposed tactical infrastructure sections that are on Federal lands, the most likely means of acquisition would be a ROW obtained from the relevant Federal land manager. On private land, the government would likely purchase the land or some interest in land from the relevant landowner. Acquisition from private landowners is a negotiable process that is 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.

Agricultural lands within the 60-foot proposed project corridor would not be available for future crop production. In addition, residential, industrial, commercial, and undeveloped lands within the proposed impact corridor would not be available for future development.

As necessary, gates would be installed to allow landowners to access other portions of their property to reduce potential inconvenience.

No indirect adverse impacts on recreation would be expected during the construction activities associated with Alternative 2.

Land use in the areas between the three proposed fence sections would be expected to be adversely impacted by the deterrent effects the fence sections would experience from the funneling of illegal cross-border activities into those areas. Since the locations of the proposed tactical infrastructure sections are based on USBP operational requirements including the ability to make apprehensions, the adverse effects would be expected to be minor.

Alternative 3: Secure Fence Act Alignment Alternative

Alternative 3 would have similar impacts as Alternative 2. The figures in **Appendix F** show the location of the proposed tactical infrastructure sections and the proximity of adjacent and intersecting land. For the purposes of this EA, a land use analysis was conducted using the National Land Cover Dataset. The proposed project corridor is classified by approximately 9.1 percent agricultural, 7.8 percent developed, 83.1 percent range land, and 0.1 percent water.

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 geologic material, climatic conditions, and erosion. Information describing topography typically encompasses surface elevations, slope, and physiographic features (i.e., mountains, ravines, hills, plains, deltas, or depressions).

Site-specific geological resources typically consist of surface and subsurface materials and their inherent properties. Principal factors influencing the ability of geologic 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 the weathering processes of mineral and organic materials and are typically described in terms of 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. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Unique farmland is defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of a specific crop when treated and managed according to acceptable farming methods. Soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

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. Determination of whether an area is considered prime or unique farmland and potential impacts associated with a proposed action is based on preparation of the Farmland Conversion Impact Rating Form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR 658). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules and regulations for implementation of the act (see 7 CFR Part 658, 5 July 1984).

3.4.2 Affected Environment

Physiography and Topography. The Marfa Sector occurs in the Trans-Pecos Region of the Basin and Range Physiographic Province in Texas, which is bordered on the west by the Rio Grande and on the east by northwest-to-southeast-trending mountain ranges that rise above open rocky plains. This region is characterized by the highest peaks in Texas, with eight mountain peaks higher than 8,000 feet, and relatively narrow river valleys that have formed on the plains by eroding basin fill deposits or the older underlying rock. Plateaus of nearly horizontal and less-deformed rocks commonly flank the mountains. The interiors of mountain ranges are composed of strongly folded and faulted sedimentary, volcanic, or granitic rocks. Most peaks are ancient, formerly active volcanoes that have accumulated thick deposits of volcanic ash and debris on their flanks. These volcanoes were explosive in nature but successive lava flows were uncommon. Calderas, where the cores of volcanoes collapsed and subsided, are abundant. The topographic profile of the Marfa Sector project impact corridor range is relatively level as it follows the USIBWC levee system for the majority of its length with elevations ranging from approximately 3,500 mean sea level (MSL) along the L-1 fence section to approximately 2,500 feet above MSL along the L-1A and l-1B fence sections (TopoZone.com 2007).

Geology. The Marfa Sector occurs within the Trans-Pecos Region of the Basin and Range geomorphic province. The surface geology of the Trans-Pecos Region consists of Lower Paleozoic rocks to Quaternary unconsolidated materials, formed during a diverse and complex structural history spanning approximately 400 million years. At least two major series of tectonic episodes have shaped this region. The first series of episodes resulted in contorted Permian sedimentary rocks that were then eroded to a flat plain. Cretaceous seas then deposited carbonate sediments on this unconformity and formed what is now known as the limestones of the Comanche Series. In a second series of tectonic episodes, this unconformity was then deformed by a combination of overthrusting and extensive intrusive and extrusive igneous activity. This area then ceased to be volcanically active and much of the surface topography began to be transformed through erosion and alluvial deposition during the Quaternary as in the case of the Upper Rio Grande Basin. Currently, most of the Cretaceous deposits have been removed by erosion (USACE 1994).

Soils. Generally the soils of the Marfa Sector are typical of the Trans-Pecos Region of the Basin and Range province and consist of desertic soils with some undulating to hilly calcareous soils over limestone and limy earths of the Grande Prairie and Edwards Plateau (USACE 1994). The majority of the soils in the L-1 fence section of Hudspeth County were unmapped by the NRCS as shown in **Appendix G,** Map 1. However, a portion of the eastern L-1 fence section occurred in the Nickel-Delnorte-Canutio-Badland and Tigua-Harkey-Glendale-Gila soil associations as shown in **Appendix G,** Map 2. The Nickel-Delnorte-Canutio-Badland soil association consists of well-drained, moderately to moderately rapid permeable, very gravelly and fine sandy loams that occur on alluvial fans, fan piedmonts, hilly uplands, and on valley floors of wide arroyos in mountainous areas (0 to 35 percent slopes). The Tigua-Harkey-Glendale-Gila soil association consists of moderately well-drained to well-drained, moderately to moderately slowly to very slowly permeable, fine sandy to silty clay loams and silty clays that occur on alluvial fans, floodplains, bajadas, stream terraces, and piedmont slopes (0 to 5 percent slopes). Neither of these soil associations are designated as farmland of importance in Hudspeth County (NRCS 2007).

The majority of the soils in the L-1B fence section of Presidio County were mapped as occurring within the Nickel-Delnorte-Canutio-Badland soil association by the NRCS as shown in Appendix G, Map 3. A small portion of fence Section L-1B at its western extent was unmapped. The Nickel-Delnorte-Canutio-Badland soil association consists of well-drained, moderately to moderately rapid permeable, very gravelly and fine sandy loams that occur on alluvial fans, fan piedmonts, hilly uplands, and on valley floors of wide arroyos in mountainous areas (0 to 35 percent slopes). The majority of the soils in the L-1A fence section of Presidio County were unmapped by the NRCS as shown in **Appendix G,** Map 4. However, a small portion of the western L-1A fence section occurred in the Nickel-Delnorte-Canutio-Badland soil association. This soil association is not designated as farmland of importance in Presidio County (NRCS 2007).

In Hudspeth County, soils of the Tigua, Harkey, Glendale, and Gila series occur within the eastern portion of proposed project corridor for fence Section L-1 and are classified as partially hydric (the mapping units have inclusions of hydric soils that are too small to map as individual units). The mapped soil associations that occur within the proposed project corridor of fence Sections L-1B and L-1A are not classified as partially or fully hydric in Presidio County. Hydric soils are soils that are saturated, flooded, or have ponding sufficiently long during the growing season to develop anaerobic (oxygen-deficient) conditions in upper horizons. The presence of hydric soil is one of the three criteria (hydric soils, hydrophytic vegetation, and wetland hydrology) used to determine that an area is a wetland based on the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987).

3.4.3 Environmental Consequences

Alternative 1: No Action Alternative

The No Action Alternative would result in continuation of the existing condition of geologic resources, as discussed in **Section 3.4.1**. No effects on physiography, topography, and geologic resources would occur. However, cumulative short- and long-term adverse impacts related to the compaction of soils and increased erosion due to the use of the area by cross-border violators would be expected.

Alternative 2: Proposed Action

Physiography and Topography. Short- and long-term minor adverse impacts on the natural topography would be expected. Grading, contouring, and trenching associated with the installation of the fence, patrol roads, and other tactical infrastructure would impact approximately 78 acres, which would alter the existing topography. However, the existing topography of much of the proposed project corridor was previously altered to construct the levees and provide access roads.

Geology. Short- and long-term negligible to minor adverse impacts on geologic resources could occur at locations if bedrock is at the surface and blasting would be necessary to grade for fence placement or patrol road development. Geologic resources could affect the placement of the fence or patrol roads due to the occurrence of bedrock at the surface, or as a result of structural instability. Site-specific geotechnical surveys would be conducted prior to construction to determine depth to bedrock due to the lack of available information on soils in the fence sections. In most cases, it is expected that project design and engineering practices could be implemented to mitigate geologic limitations to site development.

Soils. Short-term minor direct adverse impacts on soils would be expected as a result of implementing the Proposed Action. Soil surveys would need to be conducted to determine the soil associations and engineering limitations in the unmapped areas of the project impact corridor. Soil disturbance and compaction due to grading, contouring, and trenching associated with the installation of the fence, patrol roads, and other tactical infrastructure for all three fence sections, and building of the new levee retaining walls in Section L-1B and L-1A would impact approximately 78.1 acres.

The proposed construction activities would be expected to result in an increase in soil erosion in areas of steep slopes, especially in Section L-1. Soil disturbance on steep slopes has the potential to result in excessive erosion due to instability of the disturbed soils and high runoff energy and velocity. Sediments washed from construction sites would be carried to and deposited in the Rio Grande. In addition, wind erosion has the potential to impact disturbed soils where vegetation has been removed due to the semiarid climate of the region. Construction activities would be expected to directly impact 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 fence, patrol and access roads, and associated utility lines. Following construction activities, the areas disturbed would be revegetated with native species to the maximum extent practicable to reestablish native plant communities and help stabilize soils.

Because proposed construction would result in a soil disturbance of greater than 5 acres, authorization under TCEQ 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 the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

The SWPPP should contain one or more 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 that the discharger will use to address 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 listed on the 303(d) list for sediment. Part III.F 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 scheduled 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.

None of the mapped soil associations were listed as prime farmland soils or appear to be associated with farmland of local, unique, or statewide importance in Hudspeth and Presidio counties. No significant adverse impacts on prime farmland soils would be expected.

Alternative 3: Secure Fence Act Alignment Alternative

The Secure Fence Act Alignment Alternative would result in similar environmental impacts on physiographic, topographic, geologic, and soils resources as described for the Proposed Action. However, the magnitude of the impacts would affect a larger area, due to the additional fence and overall wider corridor. Approximately 195 acres would be impacted.

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

***Hydrology*.** The proposed project corridor is in the Upper Rio Grande drainage basin, which is part of the much larger Rio Grande drainage basin, which includes an area of approximately 355,500 square miles. This area is characterized by a semi-arid climate due to low annual precipitation (8 inches in Hudspeth County and 15 inches in Presidio County). Due to the semi-arid climate, vegetation is sparse. Reduced groundcover along with steep slopes due to local topography can lead to heavy runoff and high erosion potential during precipitation events. In the proposed project corridor, surface runoff generally flows from higher elevations to the north to the Rio Grande which flows west to east to the south of the fence sections. Much of the Upper Rio Grande drainage basin is composed of rural, undeveloped land used primarily for ranching. Water development projects in the Upper Rio Grande Valley have disrupted natural flow regimes, including structures such as Riverside Diversion Dam and International Dam to the west of the proposed project corridor and the Amistad Reservoir, to the east. Substantial quantities of surface water are diverted from the Rio Grande to meet municipal, industrial, and agricultural demands in Texas and Mexico. A significant portion of the Rio Grande flow is used in the Upper Rio Grande Valley for municipal (public and domestic), manufacturing (industrial), steam-electric power, mining (e.g., recovery of crude petroleum), irrigation, and livestock. Most of the water diverted in the Upper Rio Grande Valley is returned as treated, partially treated, or untreated municipal and industrial wastewater that eventually flows back into the Rio Grande (USACE 1994).

The major aquifer underlying the proposed project corridor occurs in the Alluvium and Bolson deposits, which are found in several isolated areas. This aquifer is an important source for irrigation and public water supply. It is an unconfined system consisting of sand, gravel, silt, and clay that ranges in depth from 100 to 1,000 feet, but can extend to depths of more than 3,000 feet. Large capacity wells yield from 500 to 900 gallons per minute with maximum yields exceeding 2,500 gallons per minute. Groundwater is the primary source of drinking water in the project study corridor. Groundwater assessments of the Alluvium and Bolson deposits aquifer in the project study corridor indicate that the most common sources for potential contamination include the following: (1) increased chloride/sulfate concentrations along the Rio Grande that exceed Secondary Drinking Water Standards, (2) higher levels of total dissolved solids with levels exceeding 3,000 to 10,000 milligrams per liter (mg/l), (3) natural/man-made levels of nitrate (41–60 percent) in the counties of Presidio and Hudspeth, and (4) fluoride (0–3 percent) that continually exceed the Federal drinking water standards. In general, Hudspeth and Presidio counties have been determined by the Texas Natural Resource Conservation Commission (TNRCC) to have low to moderately high potential for groundwater contamination. Sources of potential groundwater contaminants include areas of radioactive anomalies or occurrences of radioactive minerals (radium) in Hudspeth and Presidio Counties and feedlots and animal wastes (nitrogen, phosphates, salts, and infectious agents) in Presidio County. Other potential pollution sources result from inadequate treatment facilities for wastewater and industrial/hazardous wastes which might pose a risk in some regions of the U.S./Mexico international border. Discharges from these facilities could impact waters which cross the border or flow into rivers that form the international boundary. Within the project study corridor, the sister cities of Ojinaga and Presidio are considered major contributors of waste discharges into the Rio Grande (USACE 1994).

3.5.3 Environmental Consequences

Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. As a result, there would be no change from baseline conditions, as described in **Section 3.5.1**. Potential adverse effects associated with water contamination due to cross-border violators would continue.

Alternative 2: Proposed Action

Short- and long-term negligible adverse impacts on the hydrology of the Rio Grande would be expected to occur as a result of grading and contouring in the proposed project corridor. Grading and contouring would be expected to alter the topography and remove vegetation on approximately 78 acres within the floodplain of the Rio Grande, which could in turn increase erosion potential and increase runoff during heavy precipitation events. Revegetating the area with native vegetation following construction along with other BMPs to abate runoff and wind erosion could reduce the impacts 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.

Short-term, minor, direct, adverse construction-related impacts on groundwater resources in Hudspeth and Presidio 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 potential for short-term negligible adverse effects on groundwater related to an increase in storm water runoff would also occur. Implementation of storm water and spill prevention BMPs developed consistent with the SWPPPs and other applicable plans and regulations would minimize potential runoff or spill-related impacts on groundwater quality during construction.

Alternative 3: Secure Fence Act Alignment Alternative

Impacts on hydrology under Alternative 3 would be similar, but slightly greater than the impacts described under Alternative 2. The primary and secondary fence sections proposed under Alternative 3 would result in a larger increase in impervious surface.

Impacts on groundwater under Alternative 3 would be slightly greater than the impacts under Alternative 2 because the area of surface disturbance would be greater under this alternative. Disturbance at the ground surface would not affect groundwater aquifers directly, and post-construction runoff patterns could result in minor groundwater recharge.

3.6 SURFACE WATERS AND WATERS OF THE UNITED STATES

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 establishes the NPDES permit program to regulate point source discharges of pollutants into waters of the United States. An NPDES permit sets specific discharge limits for point sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. 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 within the CWA of 1972, as amended. USEPA and the USACE assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-around or have continuous flow at least seasonally, and (4) wetlands that directly abut such tributaries. 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 the 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 that areawide waste treatment management planning processes 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 dredge 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. The USACE regulates 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 include important natural systems and habitats that perform 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).

3.6.1 Affected Environment

Surface Waters. The predominant surface water feature in the project impact corridor is the Rio Grande (called the Rio Bravo in Mexico). The Rio Grande drainage is one of the longest rivers in North America, and its basin is important to both the United States and Mexico. The allocation of Rio Grande water between the two countries is governed by a treaty that was signed in 1944.

Surface water features that could be potentially classified as waters of the United States in the proposed project corridor include irrigation and drainage canals. Some surface water features occur adjacent to, or within the proposed project corridor along all three fence sections. The proposed fence sections follow the USIBWC levee system of the Rio Grande for the majority of their lengths. Arroyos occur in elevated areas adjacent to and to the north of the proposed project corridor for the L-1 fence section in Hudspeth County, but do not appear to be within the corridor. Arroyos are deep, narrow intermittently flooded drainages that flow down bluff faces into the Rio Grande. The only other major surface water feature that occurs in the vicinity of, but not within, the project impact corridor is Cibolo Creek which flows east to west and drains into the Rio Grande between the L-1B and L-1A fence sections.

Wetlands. The National Wetland Inventory (NWI) has the most current information available to identify wetlands within the proposed project corridor (USFWS 2007). However, NWI digital data are not available for the proposed project corridor for any of the three fence sections. Due to the proximity of the Rio Grande and the proliferation of irrigation and drainage canals identified on the topographic quads for these areas, wetlands might be present. Areas of potential wetlands or other waters of the United States will be identified during field surveys in January 2008. Wetland delineations will be conducted in these areas and jurisdictional determinations (JDs) will be obtained from USACE. CBP would obtain CWA Section 404 permits and mitigate the loss of wetlands prior to construction (TopoZone.com 2007).

Surface Water Quality. Surface water quality assessments for the Rio Grande hydrologic region indicate that it is in nonattainment for water quality. The major causes of stream/riverine nonattainment include fecal coliform bacteria, organic enrichment/dissolved oxygen, nutrients, salinity/total dissolved solids/chloride, and toxics (including pesticides, metals, and priority organics). The relative sources of pollutants contributing to the nonattainment status include municipal and industrial point sources, nonpoint sources, natural, and unknown. Other potential pollution sources result from inadequate treatment facilities for wastewater and industrial/hazardous wastes which could pose a risk in some regions of the U.S./Mexico international border. Discharges from these facilities could impact waters that cross the border or flow into rivers that form the international boundary. Within the project study corridor, the sister cities of Ojinaga and Presidio are considered major contributors of waste discharges into the Rio Grande (USACE 1994).

In 1983, formal efforts between the United States and Mexico to protect and improve the environment in the Border Area began with the adoption of the U.S.-Mexico Border Environmental Agreement, which was signed in October 1989. This agreement details the primary objectives of common border environmental cooperation; establishes a mechanism for additional agreements, annexes, and technical actions; and provides for regular high-level meetings and special technical meetings to further promote and encourage environmental cooperation between the two countries. As part of the Agreement efforts, an *Integrated Environmental Plan for the Mexican - U.S. Border Area (First Stage, 1992-1994)* was completed. The surface water implementation plans in this document call for a number of measures (i.e., collection, treatment, and disposal facilities) which should result in improved water quality along the U.S./Mexico international border (USACE 1994).

3.6.2 Environmental Consequences

Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. As a result, there would be no change from baseline conditions, as described in **Section 3.6.1**. Potential adverse effects associated with water contamination due to cross-border violators would continue.

Alternative 2: Proposed Action

Long-term and short-term negligible direct and indirect adverse effects on water quality would be expected as a result of implementing the Proposed Action. Implementation of Alternative 2 would increase impervious surface area and runoff potential. Approximately 78 acres of soil would be disturbed due to grading, contouring, and trenching. Surface water that would be indirectly affected includes the Rio Grande and drainage and irrigation canals.

Construction activities within most of the proposed tactical infrastructure sections associated with Alternative 2 would disturb more than 5 acres of soil, and therefore would require authorization under the Texas Construction General Permits (TXR1500000). The Construction General Permits would require preparation of SWPPPs. The SWPPPs would include erosion and sediment control and storm water BMPs for activities resulting during and after construction. Based on these requirements, adverse effects associated with storm water runoff on surface water quality would be reduced to negligible impacts.

Impacts on surface water and wetlands that are potentially jurisdictional waters of the United States would be avoided to the maximum extent practicable. Impacts that cannot be avoided would be minimized and BMPs would be established to comply with all applicable Federal, state, and local regulations. Potential impacts include filling wetlands and moving the alignment of irrigation canals and drainage ditches. Fences installed in washes/arroyos would be designed and constructed in a manner to ensure that water flow during excessive rain events would not be impeded or ponded.

If effects on waters of the United States cannot be avoided, CBP would obtain a CWA Section 404 Permit and a Rivers and Harbors Act Section 10 Permit, as applicable, from the USACE-Albuquerque District. As part of the permitting process, CBP would develop, submit, and implement a wetlands identification, mitigation, and restoration plan to avoid or minimize impacts and compensate for unavoidable impacts. The plan would be developed in accordance with USACE guidelines and in cooperation with USEPA. The plan would outline BMPs from pre-construction to post-construction activities to reduce impact on wetlands and water bodies. As part of the Section 404 permit application process, CBP will also request certification from the TCEQ under Section 401 (a) of the CWA to ensure that actions will comply with state water quality standards. This certification must be received for the Section 404 authorization to be valid. Based on the NWI database, no coverage was available for the area occupied by the project impact corridor. However, topographic maps showed what appeared to be many irrigation and drainage canals within the project corridor. FEMA floodplain data also showed the entire project impact corridor as occurring in the 100-year floodplain of the Rio Grande. Any unavoidable impacts on waters of the United States and wetlands will be reviewed as part of the USACE 404 permit process, if required.

Alternative 3: Secure Fence Act Alignment Alternative

Alternative 3 would result in impacts on surface waters and waters of the United States similar to those described for Alternative 2. However, the magnitude of the impacts would affect a larger area due to the additional fence and wider corridor. Approximately 195 acres of soils would be disturbed due to grading, contouring, and trenching. As described under Alternative 2, Texas Construction General Permits would be required and would address the development and implementation of SWPPPs with BMPs to reduce the effects of storm water runoff. A larger area of wetlands could also be impacted under this alternative. CWA Section 404, CWA Section 401(a), and Rivers and Harbors Act Section 10 permits would be obtained, as required, for unavoidable impacts on jurisdictional waters of the United States. A wetlands mitigation and restoration plan to compensate for unavoidable impacts would be developed and submitted to the USACE-Albuquerque District Regulatory Branch for approval prior to project implementation, if required. Appropriate mitigation would be developed to compensate for unavoidable impacts.

3.7 FLOODPLAINS

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 proposed project corridor 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 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 (see **Section 1.5** Public Involvement).

3.7.1 Affected Environment

Section L-1 is depicted as occurring in the 100-year floodplain of the Rio Grande, as identified on the November 1, 1985, FEMA FIRM Panel No. 4803611050B for Hudspeth County, Texas. This area is designated as Zone A, an area within the 100-year floodplain where base flood elevations and flood hazard factors were not determined (FEMA 1985a). Low USIBWC levees of undetermined effectiveness run the length of the project corridor and it remains uncertain as to their designation as a floodplain edge.

Sections L-1B and L-1A are depicted as occurring in the 100-year floodplain of the Rio Grande, as identified on the July 3, 1985, FEMA FIRM Panel No. 4805300700B for Presidio County, Texas. This area is also designated as Zone A. Well-defined levees exist and are considered the floodplain edge throughout.

3.7.2 Environmental Consequences

Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. As a result, there would be no change from baseline conditions, as described in **Section 3.7.1**.

Alternative 2: Proposed Action

Short- and long-term minor adverse effects on floodplain resources would occur as a result of constructing and operating the proposed tactical infrastructure. Approximately 78 acres of floodplains would be affected. Impacts associated with floodplains would be avoided to the maximum extent practicable. The proposed concrete retention wall in Sections L-1B and L-1A would not increase the volume of fill on the river side of the current levees. Therefore it is not anticipated that the construction would impact levels of flow within the floodplain, adversely affect flood storage and conveyance, or otherwise impact USIBWC operations. Hydraulic studies and modeling would be conducted to confirm this assessment. Increased impervious areas and loss of vegetation associated with the tactical infrastructure would have minor adverse impacts on groundwater recharge, nutrient cycling, and water quality.

The soil disturbance associated with the Proposed Action would disturb more than 5 acres of soil; therefore, authorization under the TCEQ Construction Stormwater 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.

In accordance with the FEMA Document, *Further Advice on EO 11988, Floodplain Management*, CBP has determined that Sections L-1, L-1B, and L-1A cannot be practicably located outside the floodplain since the floodplain extends northward several miles. To minimize adverse effects on the floodplain, as proposed, Section L-1 would be a “floating fence” and placed atop the levee to minimize the disturbance to current USIBWC operations. The increase in impervious surface associated with Sections L-1, L-1B, and L-1A would have no effect on the USIBWC international drainage. CBP would mitigate unavoidable impacts associated with floodplains using planning guidance developed by the USACE.

Alternative 3: Secure Fence Act Alignment Alternative

Impacts on floodplains in Sections L-1, L-1B, and L-1A under Alternative 3 would be slightly greater than those described under Alternative 2. 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. Section L-1 would affect approximately 4.6 miles of floodplain, Section L-1B would affect approximately 3.1 miles of floodplain, and Section L-1A would affect approximately 3.1 miles of floodplain. The permanent width of the impact area would be 150 feet (see **Figure 2-5**) and would affect approximately 195 acres of floodplains along Sections L-1, L-1B, and L-1A.

3.8 VEGETATIVE RESOURCES

3.8.1 Affected Environment

The proposed project corridor climate is Subtropical Arid 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 average annual precipitation of the Trans-Pecos region recorded in Presidio is 9.6 inches. The distribution of rainfall is irregular but occurs predominantly during the summer months. A long growing season is experienced for the proposed project region, more than 300 days. The evaporation rate during the summer season is high, about twice the amount of precipitation.

The vegetation of the west-Texas deserts has generally been classified under the Dry Domain, Tropical/Subtropical Desert Division of Bailey (1995). The proposed project corridor is more finely classified as the Chihuahuan Desert Province. The TPWD (2007) provides discussion and describes vegetation geography to biotic provinces and natural regions using topographic features, climate, vegetation types, and terrestrial vertebrates. This system places the proposed project corridor in the Chihuahuan Biotic Province; Trans Pecos Natural Region; and the Level III Ecoregion of the Chihuahuan Desert. The vegetative resources section describes and illustrates the existing condition and distribution of vegetation as it occurred in 2007 within the international border fence corridor, as proposed.

In higher elevations, vegetative communities are characterized by trees such as gray oak (*Quercus grisea*), Texas pinyon (*Pinus remota*), and alligator juniper (*Juniperus deppiana*). Intermediate elevations and plateaus support sparse shrub communities of creosote bush (*Larrea tridentata*) and lechuguilla (*Agave angustifolia*). The low-lying plains are characterized by tobosa-black grama grassland communities of blue grama (*Bouteloua gracilis*), sideoats grama (*Bouteloua curtipendula*), hairy grama (*Bouteloua hirsuta*), burrograss (*Schleropogon brevifolius*), bush muhly (*Muhlenbergia porteri*), Arizona cottontop

(*Digitaria californica*), Warnock's javelina bush (*Condalia warnockii*), creosote bush, butterflybush (*Buddleja* sp.), palmella (*Yucca elata*), whitethorn acacia (*Acacia constricta*), cholla (*Cylindropuntia* sp.), broom snakeweed (*Gutierrezia sarothrae*), and rough menodora (*Menodora scabra*) (Wermund 2007).

The existing vegetation types of Sections L-1, L-1A, and L-1B (see **Appendix H**) were examined in October 2007. Plant species recorded for the Sections L-1 (Sierra Blanca), L-1A (Presidio), and L-1B (Presidio) and their wetland indicator status (NRCS 2007), when appropriate, are included in **Table 3.8-1**.

Vegetation in the proposed project corridors for Sections L-1, L-1A, and L-1B consists of native creosotebush and honey mesquite shrublands; native and nonnative forblands, grasslands, shrublands, and woodlands; and agricultural crops and weedy fallow fields. Emergent and shrub-scrub wetland communities occur rarely within the corridor. Project-related impacts on wetlands are presented under **Section 3.6.2**.

3.8.2 Environmental Consequences

Alternative 1: No Action Alternative

Under the No Action Alternative, native creosotebush and honey mesquite shrublands of desert ridges and uplands in Section L-1 would continue to be managed by private landowners and would likely remain unchanged. Honey mesquite woodlands that have become reestablished in abandoned agricultural fields would be managed by private landowners and could be cleared and the lands returned to crop production at some future date. Nonnative salt-cedar woodlands and shrublands with Bermuda grass understory occur in the Rio Grande floodplain and would be managed by the USIBWC where appropriate for flood control and floodwater storage volume needs using mowing, clearing, and grubbing techniques. The Athel tamarisk stand in Section L-1A occurs on private land and would likely be unaffected. Small native shrublands of rabbitbrush, arrow weed, and seepweed are subject to future mowing maintenance under USIBWC management for flood control. Bermuda grass stands occur extensively in the floodplain and are typically managed by the USIBWC by mowing. Where Bermuda grass stands occur on private lands, they are interseeded with bristlegrass and used for grazing livestock forage or they are irrigated, mowed, and baled for cured livestock forage. Forblands dominated by Russian-thistle are mown where they occur on USIBWC-managed lands and are subject to plowing and planting on private lands where fallow agricultural fields are brought into production as crop rotation dictates. Agricultural crops would continue to be grown on private lands and field crops rotated on a regular schedule to maintain soil health.

USIBWC floodplain maintenance activities, including mowing, clearing, and grubbing, and access road maintenance, would result in long-term, negligible to

1 **Table 3.8-1. Plant Species Observed in Sections L-1, L-1A, and L-1B**

Scientific Name/ Common Name	Section			Wetland Indictor Status
	L-1	L-1A	L-1B	
Allionia incarnata/Hierba de la Hormiga, Umbrellawort		X	X	---
Amaranthus retroflexus/Rough Pigweed	X	X		FACU-
Aster sp./Aster	X		X	---
Atriplex canescens/Fourwing Saltbush	X	X	X	UPL
Baccharis glutinosa/Mule's Fat, Seepwillow	X	X	X	FACW
Bothriochloa laguroides/Silver Bluestem	X		X	---
Bouteloua adscencionis/Six-weeks Grama	X			---
Bouteloua hirsute/Hairy Grama	X			---
Cercidium texanum/Paloverde	X			---
Chloris cucullata/Hooded Windmillgrass	X		X	---
Clematis drummondii/Barbas de Chivato, Old Man's Beard	X	X	X	---
Condalia sp./Condalia	X	X		---
Cynodon dactylon/Pato de Gallo, Bermuda Grass	X	X	X	FACU+
Cyperus sp./Flat Sedge	X			---
Dyssodia sp./Dogweed	X			---
Echinocereus triglochidiatus/Hedgehog Cactus	X			---
Ephedra sp./Jointfir		X		---
Ericameria triantha/Rabbitbrush	X			---
Fouquieria splendens/Ocotillo	X			---
Gaura parviflora/Butterfly-weed	X			NI
Gutierrezia (Xanthocephalum) microcephala/Snakeweed	X			---
Helianthus annuus/Annual Sunflower	X	X	X	FAC
Heliotropium curassivicum/Heliotrope			X	FACW
Heterotheca villosa/Hairy Golden-aster	X		X	---
Larrea tridentata/Creosotebush	X		X	---
Leucelene ericoides/White Aster	X		X	---

Scientific Name/ Common Name	Section			Wetland Indictor Status
	L-1	L-1A	L-1B	
Lygodesmia sp./Skeletonweed	X	X		---
Medicago sativa/Alfalfa	X	X		---
Mentzelia sp./Stick-leaf	X			---
Nicotiana glauca/Tree Tobacco	X		X	FAC
Nicotiana longiflora/Annual Tobacco			X	---
Opuntia imbricata/Cane Cholla			X	---
Opuntia leptocaulis/Tasajillo, Christmas Cactus			X	---
Opuntia phaeacantha/Prickly-pear	X		X	---
Opuntia violaceae/Prickly-pear	X			---
Panicum virgatum/Switchgrass	X			---
Parkinsonia aculeata/Retama	X	X	X	FACW-
Parkinsonia texana/Paloverde, Texas Paloverde	X			---
Paspalum dissectum/Mudbank Crowngrass	X			OBL
Pennisetum ciliare (Cenchrus ciliaris)/ Buffelgrass	X	X	X	---
Phoradendron tomentosum/Mistletoe	X	X	X	---
Phragmites australis/Common Reed	X	X	X	FACW
Phyla nodiflora/Frog Fruit		X		FACW
Pluchea (Tessaria) sericea/Arrowweed			X	NI
Polygonum pensylvanicum/Smartweed	X			FACW-
Populus deltoides/Eastern Cottonwood			X	FAC
Portulaca oleracea/Common Purslane	X			---
Prosopis glandulosa/Mesquite, Honey Mesquite	X	X	X	---
Salsola australis/Russian-thistle	X	X	X	FACU
Setaria geniculata/Bristlegrass	X			---
Solanum elaeagnifolium/Trompillo, Silverleaf Nightshade	X			---
Sorghum halepense/Johnsongrass	X	X		FACU

Scientific Name/ Common Name	Section			Wetland Indictor Status
	L-1	**L-1A**	**L-1B**	
Sphaeralcea angustifolia/Narrow-leaved Globe-mallow	X	X		---
Sporobolus airoides/Alkali Sacaton	X			FAC
Sporobolus cryptandrus/Whorled Dropseed	X			FACU-
Sporobolus flexuosus/Mesa Dropseed	X			FAC-
Suaeda depressa/Seepweed	X		X	FACW
Suaeda suffrutescens/Desert Seepweed	X			FACW
Tamarix aphylla/Athel Tamarisk		X		FACW
Tamarix chinensis/Salt Cedar	X	X	X	FACW
Tridens pulchellus/Fluffgrass	X			---
Typha domingensis/Tule, Narrow-leaf Cattail	X	X		OBL
Verbesina encelioides/Cowpen Daisy		X	X	FAC
Xanthium strumarium/Cocklebur	X			FAC-
Total number of species in each Segment	**53**	**24**	**29**	
Total number of FACW- to OBL species per Segment	**21**	**14**	**14**	

Source: NRCS 2007
Notes:
Facultative Upland (FACU) – usually occurs in non-wetlands, but occasionally found in wetlands.
Facultative (FAC) – equally likely to occur in wetlands or non-wetlands.
Facultative Wetland (FACW) – usually occurs in wetlands but occasionally found in non-wetlands.
Obligate Wetland (OBL) – occurs almost always under natural conditions in wetlands.
Obligate Upland (UPL) – occurs almost always under natural conditions, in non-wetlands.
No Indicator (NI) – insufficient information was available to determine an indicator status.
(*) = tentative assignments based on limited information.
(-) = less frequently found in wetlands.

minor adverse effects because native vegetation is unlikely to become reestablished within the extensive non-native stands. Continued private agricultural practices of land cultivation and irrigation for crop production would result in long-term, negligible to moderate, adverse effects on native vegetation establishment due to hosting nonnative, possibly invasive plant species and the potential ignition of wildfires because of concentrations of tumbleweeds as fuel. Fires would result in short- and long-term, low to high, mostly adverse impacts on regional native vegetation. Managed fires designed and controlled to reduce fuel loading and to reduce nonnative or invasive plant species populations would have short- and long-term, minor to moderate, beneficial impacts on native vegetation reintroduction. Dust generated from the existing access roads traveled by a variety of agency, farm, recreation, and illegal vehicles would result in insignificant to minor, short- and long-term, adverse impacts on downwind vegetation due to interference with pollination and photosynthesis.

Alternative 2: Proposed Action

Under the Proposed Action, approximately 78.1 acres of vegetation would be cleared to accommodate the construction of the tactical infrastructure (including fences, access and patrol roads, lights, and construction staging areas). The proposed project corridor would be maintained following construction to support long-term maintenance, sight distance, and USBP and USIBWC activities. During construction, lay-down areas for materials and equipment would be identified within the proposed project corridor.

Within Section L-1, construction grading would occur atop the short levee resulting in approximately 34 acres of vegetation clearing and removal. Vegetation clearing and removal within this segment would result in minor to moderate, short- and long-term, adverse impacts on mostly nonnative shrub, grass, and forb communities dominated by salt-cedar, rabbitbrush, seepweed, arrowweed, Bermuda grass, and Russian-thistle. Within Sections L-1A and L-1B, construction clearing would occur south of and adjacent to the tall levee resulting in approximately 44 acres of vegetation clearing and removal. Vegetation clearing and removal within this section would result in minor to moderate, short- and long-term, adverse impacts on mostly nonnative tree, shrub, grass, and forb communities dominated by salt-cedar, honey mesquite, Bermuda grass, and Russian-thistle. The removal of the non-native species, such as salt-cedar and noxious weed species would be considered a short and long term beneficial impact. Within Sections L-1A and L-1B, in particular, the completed fence would capture Russian-thistle tumbleweeds common in the area and that represent a fire hazard, resulting in low, short- and long-term, adverse impacts on areawide vegetation from wildfire should captured tumbleweeds become ignited and the fires spread. Dust generated from the existing access roads traveled by a variety of agency, farm, recreation, and illegal vehicles would result in negligible to minor short- and long-term, adverse impacts on downwind vegetation due to interference with pollination and photosynthesis.

In accordance with the Noxious Weed Act, CBP would reduce the potential to spread noxious weeds and soil pests by implementing such measures as prohibiting the disposal of soil and plant materials from non-native areas to native areas, washing all construction equipment before beginning work on the project, use of gravel or fill material from weed-free sources for relatively weed-free areas and implementation of post-construction monitoring and treatment of invasive weeds.

Alternative 3: Secure Fence Act Alignment Alternative

Under Alternative 3, approximately 195 acres of vegetation border would be cleared to accommodate the construction of the tactical infrastructure (including fences, access and patrol roads, lights, and construction staging areas). A portion of this proposed project corridor would be maintained following construction to support long-term maintenance, sight distance, and USBP activities. During construction, lay-down areas for materials and equipment would be identified within the proposed project corridor.

Within Section L-1A, construction grading would occur atop the short levee resulting in approximately 84 acres of vegetation clearing and removal. Vegetation clearing and removal within this segment would result in minor to moderate, short- and long-term, adverse impacts on mostly nonnative shrub, grass, and forb communities dominated by salt-cedar, rabbitbrush, seepweed, arrowweed, Bermuda grass, and Russian-thistle. Within Sections L-1A and L-1B, construction clearing would occur south of and adjacent to the tall levee resulting in approximately 111 acres of vegetation clearing and removal. Vegetation clearing and removal within this section would result in minor to moderate, short- and long-term, adverse impacts on mostly nonnative tree, shrub, grass, and forb communities dominated by salt-cedar, honey mesquite, Bermuda grass, and Russian-thistle. Within Sections L-1A and L-1B, in particular, the completed fences would capture Russian-thistle tumbleweeds common in the area and that represent a fire hazard, resulting in minor, short- and long-term, adverse impacts on area-wide vegetation from wildfire should captured tumbleweeds become ignited and the fires spread. Dust generated from the existing access roads traveled by a variety of agency, farm, recreation, and illegal vehicles would result in negligible to minor, short- and long-term adverse impacts 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 include native or naturalized animals and the habitats in which they exist. Identification of the species potentially occurring in the project area was accomplished through literature reviews, coordination with appropriate Federal and state resource managers, other knowledgeable experts, and field surveys.

The MBTA (16 U.S.C. 703–712) as amended, implements various treaties for the protection of migratory birds. Under the Act, taking, killing, or possessing migratory birds is unlawful without a valid permit. Under EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, the USFWS has the responsibility to administer, oversee, and enforce the conservation provisions of the MBTA, which include responsibility for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulations development and enforcement. The MBTA defines a migratory bird as any bird listed in 50 CFR 10.13, which includes nearly every native bird in North America.

The MBTA and EO 13186 require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. If design and implementation of a Federal action cannot avoid measurable negative impact on migratory birds, EO 13186 requires the responsible agency to consult with the USFWS and obtain a Migratory Bird Depredation Permit.

3.9.2 Affected Environment

Wildlife. Hudspeth and Presidio counties are located in far west Texas in the Trans-Pecos Ecoregion of the Chihuahuan Desert (USIBWC 2005). During an October 2007 survey, the following habitats were observed: desert scrub, riparian forest and woodland communities, and nonnative grasslands and forblands (see **Appendix H**). Most of the proposed corridor has been heavily disturbed by agriculture and grazing with high cover of nonnative tree, shrub, grass, and forb species; however, some high-quality habitat was identified. Unique habitat includes wetlands, riparian woodlands, and desert shrublands.

Common reptiles of Hudspeth and Presidio counties are Texas-banded gecko (*Coleonyx brevis*), reticulated gecko *(Coleonyx switaki)*, greater earless lizard *(Cophosaurus texanus),* several species of spiny lizard (*Sceloporus* spp.), fringe-footed lizard *(Uma inornata),* little striped *(Cnemidophorus inornatus*) and marbled whiptails (*Aspidoscelis tigris*), Trans-Pecos ratsnake (*Bogertophis subocularis*), western hooknose snake (*Gyalopion canum*), Texas black-headed snake (*Tantilla cucullata*), whipsnake (*Masticophis* spp.), western diamondback rattlesnake (*Crotalus atrox*), and Bolson tortoise *(Gopherus flavomarginatus*) (USIBWC 2005).

Typical mammals found along the Marfa Sector include desert pocket gopher (*Geomys arenarius*), yellow-faced pocket gopher *(Cratogeomys castanops),* Nelson's kangaroo rat, Nelson's pocket mouse, southern grasshopper mouse *(Onychomys torridus),* Goldman's woodrat (*Neotoma goldmani)*, Texas antelope squirrel *(Ammospermophilus interpres),* desert pocket mouse *(Perognathus longimembris),* desert shrew *(Notiosorex crawfordi),* desert mule deer *(Odocoileus hemionus crooki*), pronghorn (*Antilocapra Americana),* desert bighorn sheep *(Ovis canadensis spp.),* Merriam's kangaroo rat *(Dipodomys merriami),* and desert cottontail (*Sylvilagus audubonii*) (USIBWC 2005).

Bird species that inhabit the riparian areas and shrublands along the levee include scaled quail (*Callipepla squamata*) and white-necked raven (*Corvus cryptoleucus*). Other birds include mourning dove (*Zenaida macroura*), roadrunner (*Geococcyx californianus*), lesser nighthawk (*Chordeiles acutipennis*), Scott's oriole (*Icterus parisorum)*, cactus wren (*Campylorhynchus* *brunneicapillus***)***,* curve-billed thrasher (*Toxostoma curvirostre***)***,* and black-throated sparrow (*Amphispiza bilineata*) (USIBWC 2005).

Wildlife species observed during the field surveys are listed in **Appendix H.** An October 2007 survey recorded 37 species of vertebrates, including 32 bird species, 4 mammal species, and 1 reptile species. The monarch butterfly (*Danaus plexippus*) was the only insect recorded during the wildlife survey.

Aquatic Resources**.** The Rio Grande from El Paso to Presidio contains 22 native fish species and 4 introduced fish species. Common fish include gars, herrings, carps, minnows, suckers, characins, bullhead catfishes, pupfishes, livebearers, and silversides (USIBWC 2005).

A survey of the Rio Grande done by the USIBWC in 1977 for Hudspeth and Presidio counties found the following fish species: red shiner (*Notropis lutrensis*), common carp, gizzard shad, mosquitofish, and green sunfish. The most common fish was the red shiner. Catfish, sunfish, and white bass were also observed. The section of the Rio Grande near Presidio, Texas, had low diversity and density of fish species likely due to the high salinity of the Rio Grande and periodic drought conditions that influenced river flows (USIBWC 2005).

A 1978 invertebrate study of Hudspeth and Presidio counties found 10 species of aquatic snails, 4 species of mollusks, and 1 species of terrestrial crustacean. Along the Rio Grande floodplains, 9 species of xeric land snails were observed. The study observed that the Rio Grande in Hudspeth and Presidio counties has low diversity of aquatic invertebrates possibly for the same reasons that fish diversity is low (USIBWC 2005).

3.9.3 Environmental Consequences

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 Marfa Sector. The No Action Alternative would not directly impact wildlife. However, wildlife species and their habitat would continue to be indirectly impacted through habitat alteration and loss due to illegal trails and erosion.

Alternative 2: Proposed Action

Wildlife. Potential adverse impacts on wildlife along the Marfa 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 loss of wildlife could occur, wildlife populations within the proposed project corridor would not be significantly impacted by implementation of the Proposed Action.

Noise created during construction would be anticipated to result in short-term, moderate, adverse impacts on wildlife. 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 detection, or habitat avoidance. More intense impacts, potentially resulting with intense pulses of noise associated with blasting during construction, 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 fence and associated tactical infrastructure constructed, and temporarily dispersed from areas adjacent to the proposed project corridors during construction periods. See **Section 3.2.2** for additional details on expected noise levels associated with the Proposed Action.

Lights along the fence corridor could behaviorally exclude nocturnal wildlife from the illuminated zone, while potentially providing additional food sources for insectivorous bats. As such, lights would have minor to moderate, adverse and beneficial impacts on nocturnal wildlife depending on the species examined.

The 34 acres of vegetation removed for Section L-1 is dominated by nonnative shrub, grass, and forb communities dominated by salt-cedar, rabbitbrush, seepweed, arrowweed, Bermuda grass, and Russian-thistle. This vegetation removal would result in short- and long-term, minor adverse impacts on wildlife due to loss of habitat.

The 44 acres of vegetation removed for Sections L-1A and L-1B are dominated by salt-cedar, honey mesquite, Bermuda grass, and Russian-thistle. This vegetation removal would result in short- and long-term, minor adverse impacts on wildlife due to loss of habitat.

Impacts on migratory birds could be substantial and is highly dependent upon the timing of fence construction. Implementing a series of BMPs to avoid or minimize adverse impacts could markedly reduce their intensity. The following is a list of BMPs recommended for reduction or avoidance of impacts on migratory birds:

- 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 potential impact area. 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 qualified biologist.

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

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

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 within the Rio Grande.

Alternative 3: Secure Fence Act Alignment Alternative

Wildlife. Impacts of Alternative 3 would be similar to those of Alternative 2; however, the area impacted would be greater. Increased threats to wildlife in these areas include barrier to movement, interruption of corridors, increased human activity, loss of habitat, and increased traffic mortality; all of which would result in short-term, moderate, adverse impacts on wildlife.

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 within the Rio Grande.

3.10 THREATENED AND ENDANGERED SPECIES

3.10.1 Definition of the Resource

Impacts on 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 might 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 2007).

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 2007).

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 2007).

3.10.2 Affected Environment

Six species listed as federally threatened or endangered have the potential to occur within the proposed project corridor (see **Table 3.10-1**). An additional eight species that are listed by the State of Texas as threatened or endangered have the potential to be present (see **Table 3.10-1**). Brief habitat descriptions for each species are provided in **Table 3.10-1**. Further information on the natural history of the federally listed species is presented in (see **Appendix H**).

Primary pedestrian surveys to document biological resources within the potential impact corridors were conducted in November 2007. No state- or Federal-listed species were observed during these surveys. Additionally, potential habitat for state- and Federal-listed species was determined to be absent from the survey corridors.

3.10.3 Environmental Consequences

Section 7 of the ESA requires Federal agencies to consult with the USFWS when actions could affect federally listed species or designated critical habitat. Pre-consultation coordination with USFWS occurred for this project. The USFWS provided critical feedback on the location and design of fence sections to avoid, minimize, or mitigate potential impacts on listed species or designated critical habitat. Due to the lack of suitable habitat within the proposed project corridor, the Proposed Action would have no affect to federally listed species in Hudspeth or Presidio counties. A Listed Species/Habitat No Effect Determination is included in **Appendix H**.

Potential impacts on state and federally listed species would be due to direct mortality during construction and operation, and loss of habitat (quality or quantity).

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 Marfa Sector. There would be no direct impacts on threatened and endangered species and there would be no loss or alteration of habitat due to construction.

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	Habitat
Plants					
Hinckley oak	*Quercus hinckleyi*	P	**T**	**T**	Arid limestone slopes at mid elevations in Chihuahuan Desert
Fish					
Blue sucker	*Cycleptus elongates*	P		**T**	Larger portions of major rivers in Texas; usually in channels and flowing pools with a moderate current; bottom type usually of exposed bedrock, perhaps in combination with hard clay, sand, and gravel; adults winter in deep pools and move upstream in spring to spawn on riffles
Chihuahua shiner	*Notropis Chihuahua*	P		**T**	Rio Grande basin, Big Bend region; clear, cool water that is often associated with nearby springs; often in pools with slight current or riffles over a gravel or sand bottom where vegetation might be present
Conchos pupfish	*Cyprinodon eximius*	P		**T**	Rio Grande and Devils River basins; sloughs, backwaters, and margins of larger streams, channels of creeks, and mouths
Mexican stoneroller	*Campostoma ornatum*	P		**T**	In Texas, Big Bend region; clear, fast riffles, chutes, and pools in small to medium-sized creeks with gravel or sand bottoms
Reptiles					
Chihuahuan Desert lyre snake	*Trimorphodon vilkinsonii*	H		**T**	Mostly crevice-dwelling in predominantly limestone-surfaced desert northwest of the Rio Grande from Big Bend to the Franklin Mountains, especially in areas with jumbled boulders and rock faults/fissures

Common Name	Scientific Name	County	Federal Status	State Status	Habitat
Reptiles (continued)					
Mountain short-horned lizard	*Phrynosoma hernandesi*	H		**T**	Open, shrubby, or openly wooded areas with sparse vegetation at ground level; soil can vary from rocky to sandy
Texas horned lizard	*Phrynosoma cornutum*	H		**T**	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil can vary in texture from sandy to rocky
Birds					
American peregrine falcon	*Falco peregrines anatum*	H	**DL**	**E**	Nests in tall cliff eyries; migratory stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands
Arctic peregrine falcon	*Falco peregrines tundrius*	H	**DL**	**T**	Migratory stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands
Interior least tern	*Sterna antillarum athalassos*	H	**E**	**E**	Nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (e.g., inland beaches, wastewater treatment plants, gravel mines)
Mexican spotted owl	*Strix occidentalis lucida*	H	**T**	**T**	Remote, shaded canyons of coniferous mountain woodlands (pine and fir)
Northern aplomado falcon	*Falco femoralis septentrionalis*	H, P	**E**	**E**	Open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus
Southwestern willow flycatcher	*Empidonax traillii extimus*	H, P	**E**		Thickets of willow, cottonwood, mesquite, and other species along desert streams
Yellow-billed cuckoo	*Coccyzus americanus*	H, P	**C; NL**		Deciduous woodlands with cottonwoods and willows; dense understory foliage is important for nest site selection; nests in willow, mesquite, cottonwood, and hackberry; forages in similar riparian woodlands

Common Name	Scientific Name	County	Federal Status	State Status	Habitat
Mammals					
Black bear	*Ursus americanus*	H	**T/SA;NL**	**T**	Bottomland hardwoods and large tracts of inaccessible forested areas
Mexican long-nosed bat	*Leptonycteris nivalis*	P	**E**	**E**	Cave-dwelling species that usually inhabits deep caverns; nectivorous, with *Agave* spp. Preferred

Sources: TPWD 2007, USFWS 2007

Notes: E = Endangered, T = Threatened

C = Candidate, DL = De-Listed, NL = Not listed

T/SA = Threatened due to similar appearance

H = Hudspeth County (Section L-1)

P = Presidio County (Section L-1A and L-1B)

Alternative 2: Proposed Action

Under the Proposed Action, approximately 78 acres of vegetation would be cleared to accommodate the construction of the tactical infrastructure (including fences, access and patrol roads, lights, and construction staging areas). Within Section L-1, construction grading would occur atop the short levee resulting in approximately 34 acres of vegetation clearing and removal. Within Sections L-1A and L-1B, construction clearing would occur south of and adjacent to the tall levee resulting in approximately 44 acres of vegetation clearing and removal. Vegetation clearing and removal within these sections is anticipated to have no impact on state- and Federal-listed species and their habitats. Lights proposed for Sections L-1A and L-1B are not anticipated to have impacts on any state and Federal-listed species. No direct mortality of listed species is anticipated.

Alternative 3: Secure Fence Act Alignment Alternative

Under Alternative 3, approximately 195 acres of vegetation would be cleared to accommodate the construction of the tactical infrastructure Within Section L-1, construction grading would occur atop the short levee resulting in approximately 84 acres of vegetation clearing and removal. Within Sections L-1A and L-1B, construction clearing would occur south of and adjacent to the tall levee resulting in approximately 111 acres of vegetation clearing and removal. Vegetation clearing and removal within these sections is anticipated to have no effect upon listed species or their habitats. No direct mortality of listed species is anticipated.

3.11 CULTURAL, HISTORIC, AND ARCHAEOLOGICAL RESOURCES

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 ARPA (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 southern California, archaeological resources dating to the prehistoric period (prior to European contact) typically consist of deposits of artifacts, such as flaked and ground stone tools; bone or shell ornaments or tools; dietary refuse such as bone, shells, or burned seeds; and occasionally features such as house floors, hearths, bedrock milling elements, or 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, 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.

The Area of Potential Effect (APE) for cultural resources consists of the approximately 11-mile corridor of proposed tactical infrastructure along the U.S./Mexico international border in the Marfa Sector of the USBP including any construction-related areas. The project is entirely within Texas, in the vicinity of the town of Sierra Blanca (Hudspeth County) and the City of Presidio (Presidio County). The proposed tactical infrastructure would consist of primary pedestrian fence, lights, and supporting patrol roads and other protection elements over three sections. Individual sections would range from approximately 2.4 to 19.3 miles in length. The APE for cultural resources concerns was determined to be a corridor with a width of 300 feet to the north of the U.S./Mexico international border, with the border as the southern limit. This corridor was determined based on the construction needs and description provided. The APE was defined to be sufficiently large to include all of the anticipated activities for access, construction and ongoing maintenance of the proposed infrastructure.

3.11.1 Affected Environment

Information presented in this section on the cultural, historic, and archaeological resources is based on data gathered from the THC 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. A project-specific cultural resources survey was also conducted (see **Appendix I**). 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. No archaeological sites considered eligible for the NRHP were found within the proposed project corridor. An architectural survey is being conducted and the results will be included in the Final EA.

***Area of Potential Effect*.** According to 36 CFR Part 800, the APE of a Federal undertaking is defined as the geographical area within which impacts on historic properties might occur if such properties hypothetically exist. The APE should account for both direct and indirect impacts. 36 CFR 800.5(a)(2) specifically cites visual impacts and changes to the setting of a historic property where the setting contributes to the significance of the property as adverse. Other possible adverse impacts include damage or destruction of historic properties due to grading, construction, noise, or vibrations.

An APE larger than the proposed construction corridor has been developed for both Alternatives 2 and 3 for impacts on architectural resources. Several Native American tribes with ancestral ties to lands within the Marfa Sector have been contacted for input into the cultural resources survey as required under NHPA (see **Appendix C**).

***Known Resources*.** Archaeological sites, historic districts, and individual properties listed in the NRHP in or near the APE are described. These descriptions are based on information contained in the THC Texas Historic Sites Atlas and Texas Archaeological Sites Atlas.

There are no cultural resources reported within one mile of Section L-1. However, three prehistoric sites have been recorded approximately 150–300 feet north and east of the northernmost portion of the section. These sites consist of two Late Prehistoric open camp/lithic scatters and one lithic scatter of unknown age.

Sections L-1A and L-1B extends through the La Junta de los Rios Archaeological District near Presidio, Texas. The La Junta area is probably the oldest continuously cultivated farmland in Texas and was listed as an archaeological district in 1978. The district includes prehistoric sites, graves, and early historic period sites including 17th-century Spanish missions. There are five sites within one mile of Sections L-1A and L-1B; three of these are within the La Junta de los Rios Archaeological District.

Sections L-1A and L-1B extend through the southwestern boundary of the La Junta de los Rios Archaeological District. Three sites in the district are within one mile of Section L-1A. One is a prehistoric open camp and the ruins of a probable Spanish mission. The other two are poorly documented. Two additional sites lie outside of the archaeological district but still within one mile of the section. Both have poor records at the THC Atlas Database. The cultural affiliation is unknown for one and the other is a cemetery.

***Historic Property Surveys*.** An archaeological survey of the proposed project corridor was conducted. An architectural survey is in progress. The goal of these surveys is to identify historic properties potentially affected by the Proposed Action. The completed surveys and findings will be provided in the Final EA. Information about previously recorded archaeological, historical, and architectural sites within APE 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 impacts) (see **Appendix C**).

3.11.2 Environmental Consequences

Alternative 1: No Action Alternative

Under the No Action Alternative, proposed tactical infrastructure would not be built and there will be no change in fencing, access roads, or other facilities along the prescribed border sections in the USBP Marfa Sector. Since there would be no tactical infrastructure built, impacts on cultural, historical, and archaeological resources, including historic properties, would continue to be affected by cross-border violator activities.

Alternative 2: Proposed Action

No cultural resource sites were found within the proposed project corridor; therefore, no adverse impact would be expected. An architectural survey is also being conducted. Elements of the proposed tactical infrastructure could result in adverse impacts on historic properties outside the proposed project corridor but within the APE for architectural resources. The proposed tactical infrastructure might constitute elements out of character with a historic property and change its use or physical features of its setting that contribute to its significance. Access to historic properties or to the Rio Grande might also be made more difficult in many instances.

Sections L-1, L-1A, and L-1B pass through no known historic properties. Therefore, if no newly discovered historic properties result from the architectural surveys, or through consultation with Native American tribes, there would be no significant impact upon cultural resources.

Alternative 3: Secure Fence Act Alignment Alternative

Under Alternative 3 of the Proposed Action, additional visual impacts on historic properties would occur because the infrastructure would consist of a double-layered fence with the patrol road in the median. A 150-foot-wide corridor would present greater impacts on architectural resources. This alternative would present greater visual impacts on historic properties, and would separate properties from the river to a greater degree.

3.12 AESTHETICS AND VISUAL RESOURCES

3.12.1 Definition of the Resource

CBP does not have a standard methodology for analysis and assessment of impacts on visual resources. Accordingly a standard methodology developed by another Federal agency was adopted for the analysis and assessment of impacts 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 impacts on visual resources within a given parcel is tied to the management priorities for those parcels).

The following discussion 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 proposed project corridor, 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 assessments 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 those features (e.g., water, vegetation, type of man-made development) that dominate the land within a given parcel. Examples of land cover would include an agricultural field, housing development, airport, forest, grassland, or 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 occur throughout a region can be considered landscape types. To provide a framework for comparing the visual impacts 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 the proposed project corridor involves identification 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 memorability 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 impacts 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 in residential, recreational, and industrial areas. 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.

3.12.2 Affected Environment

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

***Visual Environment*.** Based on the Physiographic Map of Texas (University of Texas 2006), the proposed project corridor lies within the Basin and Range Province. The Basin and Range Province contains eight mountain peaks that are higher than 8,000 feet. Mountain ranges generally trend nearly north-south and rise abruptly from barren rocky plains. Plateaus in which the rocks are nearly horizontal and less deformed commonly flank the mountains. Large flows of volcanic ash and thick deposits of volcanic debris flank the slopes of most former volcanoes. Eroded craters, where the cores of volcanoes collapsed and subsided, are abundant. Gray oak, pinyon pine, and alligator juniper drape the highest elevations. Creosote bush and lechuguilla shrubs sparsely populate plateaus and intermediate elevations. Tobosa black grama grassland occupies the low basins.

Primary landform types present within the APEs include the narrow Rio Grande channel and floodplain, cutoff meander loops (most still containing water), arroyos, and gentle ridges and swales within the floodplain. The City of Presidio lies on the toeslope of an alluvial fan. The levee (man-made landform) is almost invisible at Neely’s Crossing, but a substantive linear feature in Sections L-1A and L-1B.

Land cover overlying these landforms can be simplified into three primary types: agriculture, developed, and undeveloped. For the most part, these land cover types parallel the Rio Grande, with developed lands situated farthest from the river channel, and developed and undeveloped lands alternating next to the river channel. The primary encroachment of one land cover type into another is at the Presidio POE, where development intersects the river channel. 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) or flood control features (e.g., the levee system).

At the macro level of analysis, the Basin and Range province is a distinct land unit. Within that larger land unit, combinations of landform types with the range of land cover types form smaller land units:

- <u>Rural land unit</u>. This unit includes the floodplain of the Rio Grande and the intersecting arroyos where they are overlain by agriculture and range lands; however, the character of the underlying landforms is still clearly visible and plays a role in the placement of overlying features (see **Figure 3.12-1**). Typical features include field breaks, irrigation features, unpaved roads, occasional farmsteads or ranches, occasional water towers, and larger metal utility towers.

Figure 3.12-1. Photograph View of Typical Rural Land Unit (Section L-1)

- <u>Urban/Industrial land unit</u>. This unit includes the floodplain of the Rio Grande and the toeslope of the adjacent alluvial fan in Sections L-1A and L-1B where they are overlain by the City of Presidio (see **Figure 3.12-2**). 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 more organic road networks (primarily paved); planned park areas (often near water sources); open paved areas (e.g., parking areas); the Presidio POE; 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 land units within the Marfa 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**). Within Section L-1, where the levee is only a few feet high, the Rio Grande channel can be seen from a distance, except where it is obscured by vegetation. In Sections L-1A and L-1B, the levee typically obscures the view of the Rio Grande channel except at the Presidio POE, although the greater elevations within the city center might allow residents and businesses to see over the levee in places. Additionally, the amount of visual clutter between the viewer and the proposed project corridor increases with distance.

Figure 3.12-2. Photograph View of Presidio (Section L-1B)

Table 3.12-1. Character of Visual Resources within Typical Marfa Sector Land Units (Current Conditions)

	Rural	Urban/Industrial
Line	Primarily horizontal lines (fields, roads, canals), with occasional vertical elements (water towers, utility towers, tree lines, buildings)	Vertical lines more prominent than horizontal
Color	Earthy colors (bare earth and crops, open ground, sparse vegetation)	Often a high variety of colors associated with buildings, signs, green spaces
Form	Mixture of angled and curved forms (roads and buildings vs. rolling hills and meandering river)	Primarily rectilinear forms but can be punctuated by curves from more elaborate architecture or organic shapes of natural elements
Texture	Relatively subtle variations in texture (mostly bare earth or crops)	Variety of textures related to different building materials against natural textures in green spaces

Table 3.12-2. Quality of Visual Resources within Typical Marfa Sector Land Units (Current Conditions)

	Vividness	Intactness	Unity	Rating
Rural	Moderate/High	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 land 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 land unit type was used.

In addition to these averaged assessments of visual character and quality of resources within each land 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:

- Neely Ranch
- La Junta de los Rios Archaeological District
- Marfa Lights
- Neely Arroyo
- Mimbrosa Arroyo
- Presidio.

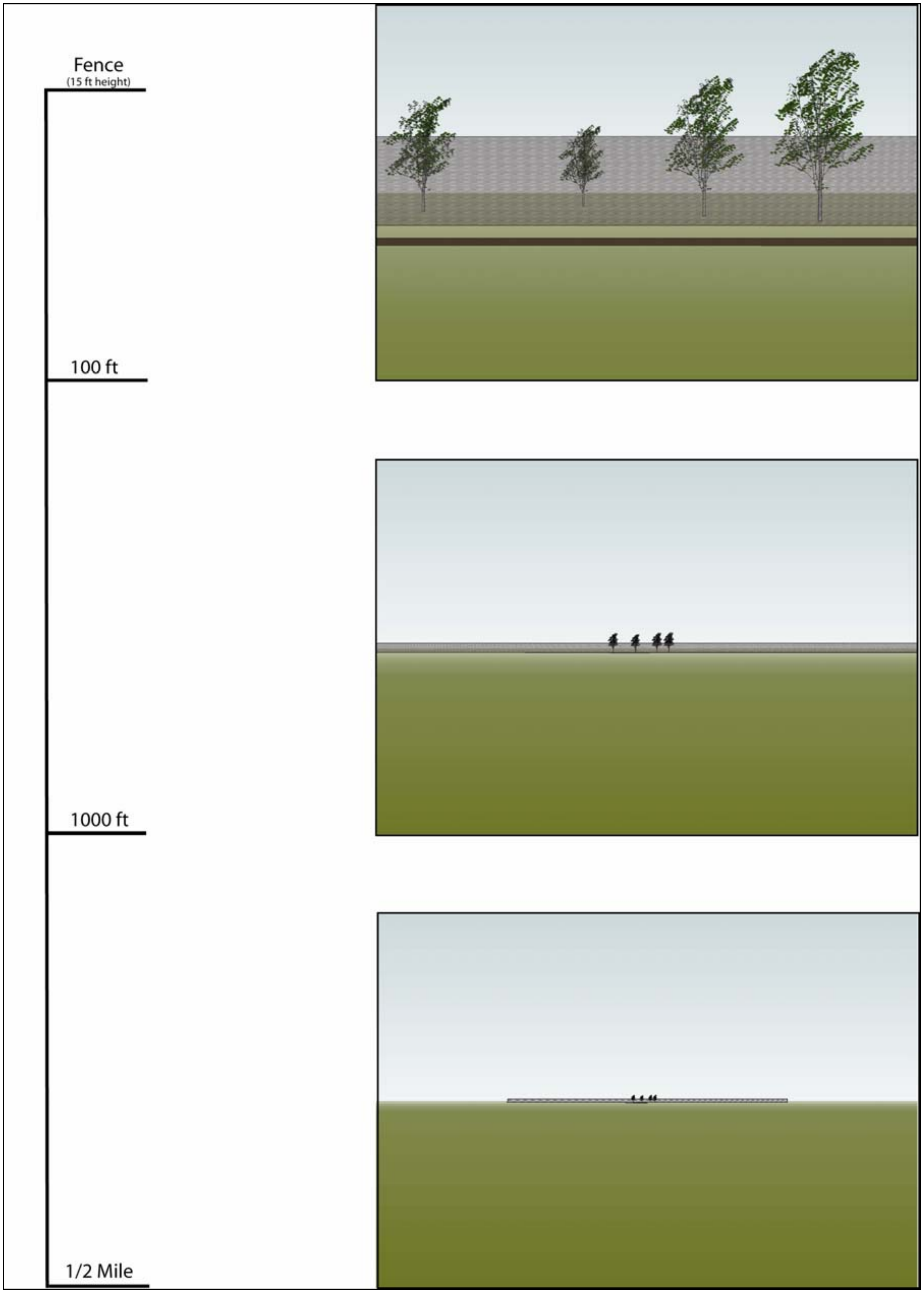


Figure 3.12-3. Schematic Showing Visibility of Fencing at Various Distances

Viewer Response. The pool of viewers making up the affected environment includes single individuals, such as rural landowners on whose property the fence would be constructed, and groups of individuals such as residents and business owners within the City of Presidio, 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. For the purposes of this analysis, the pool of affected viewers will be grouped into the following general categories:

- Residential viewers

  Rural landowners, primarily farmers and ranchers
  - Urban residents

- Commercial viewers

  Rural farms, ranches, and isolated businesses
  - Urban businesses

- Industrial viewers

  Rural industries (e.g., pump stations, pipeline monitors)
  - Urban industries

- 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, railroad operators, ferry operator).

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 will be impacted differently than a residential viewer who lives several streets away and already has an obstructed view of those resources. Similarly, a viewer that only views a resource such as the Rio Grande from the highway as they pass through the region will have a different viewer response relative to that resource than a viewer that regularly walks along the levee overlooking the river.

3.12.3 Environmental Consequences

The Proposed Action would adversely impact visual resources both directly and indirectly. Construction of tactical infrastructure would result in the introduction of new 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, as well as demolition of buildings and structures within the proposed project corridor, would result in the removal of visual elements from existing viewsheds. Finally, the fence sections would create a physical barrier potentially preventing access to some visual resources.

Impacts on aesthetic and visual resources would include short-term impacts associated with the construction phase of the project and use of staging areas, recurring impacts associated with monitoring and maintenance, and long-term impacts associated with the completed action. Impacts can range from minor, such as the impacts on visual resources adjacent to the proposed project corridor when seen from a distance or when views of fences are obstructed by intervening elements (e.g., trees, buildings) to major, such as the intrusion of fence sections into high-quality views of the Rio Grande. The nature of the impacts 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 fence at close distances. Beneficial impacts are also possible (e.g., addition of the fence increases the unity or dramatic impact of a view, removal of visual clutter within the proposed project corridor can clarify a view, or a viewer positively associates the fence with a feeling of greater security), but are considered to be less common.

Alternative 1: No Action Alternative

Under the No Action Alternative, 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 Marfa Sector. Therefore, there would be no adverse impacts attributable to construction, operation, or maintenance of the proposed tactical infrastructure. Conversely, the potential beneficial impacts of unifying a cluttered landscape in some areas would not be realized, however minor or subjective this beneficial impact might be.

Alternative 2: Proposed Action

The primary introduced visual elements associated with the Proposed Action in Section L-1 are the single line of fencing, gates, patrol roads, access roads, and construction clutter (stockpiles of supplies and heavy equipment during construction), and lighting (Sections L-1A and L-1B). The Proposed Action would also potentially remove existing visual elements, such as buildings, vegetation, and portions of landforms (e.g. straightening of the levee face for construction of the retaining wall in Sections L-1A and L-1B) that occur within the 60-foot permanent impact area. Finally, the 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 (e.g., views from the tops of levees).

Of these, addition of the line of fencing and the associated patrol road, removal of existing elements from the proposed project corridor in Section L-1, and the loss of access to specific visual resources due to the fact that the fence is a barrier would have long-term impacts on visual resources, while the remaining elements would have temporary or short-term impacts limited to the period of construction. The nature (adverse or beneficial) and degree (minor to major) of the long-term impacts 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 L-1 would also constitute a long-term impact. Where the existing element adds to the visual character and quality of the resource, the impact of its removal would be adverse. Where the existing element detracts from the visual character and quality of the resource (e.g., rusted equipment or dead trees), the impact of removal could be beneficial. In all cases, removal of existing elements would have the net result of exposing more of the fence, patrol road, and other tactical infrastructure; in settings where the addition of the fence is considered to have a major adverse impact on visual resources, any benefit accruing from removal of existing elements would be outweighed by the more dominant adverse visual impact of the fence.

The impacts associated with the loss of access to specific visual resources in Section L-1 can be affected primarily by the placement of the 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. Proposed gate locations are described in **Appendix D**.

In Sections L-1A and L-1B, the tactical infrastructure would consist of a retaining wall on the river side of the existing levee, topped with a typical guard rail. The patrol road would be the existing road on top of the levee. Apart from the guard rail, the only new addition to the corridor will be lighting poles, placed at approximately 50-foot intervals along the levee in each of these sections. No clearing or removal of visual elements is anticipated in Sections L-1A and L-1B.

Visual Resource Concerns. In **Section 3.12.1**, **Tables 3.12-1** and **3.12-2** provide a summary of the character and quality associated with visual resources currently present within the proposed project corridor. **Tables 3.12-3** and **3.12-4** list how implementation of Route A would likely alter the character and quality of existing visual resources within each land unit. **Figures 3.12-4** and **3.12-5** provide examples of typical impacts; these images illustrate the impacts 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 fence and patrol road to these viewsheds.

In rural land units in Section L-1, the fence would add an additional linear feature, but will generally be taller than any existing feature in the immediate viewshed. Accordingly, the impact in Section L-1 would be negative to the owners of Neely Ranch and to casual viewers of this section of the Rio Grande that use Rancho Road. In the rural land units within Sections L-1A and L-1B, the version of the fence that would be used (retaining wall behind levee and guard rail) would typically be lost from view once the viewer moves more than a few hundred feet from the guard rail. Even in relatively close proximity, the impact on the views from on top of the levee would be minor and typically neutral.

The lighting associated with the patrol road is likely to be the most visually intrusive element of the Proposed Action, with the degree of impact during daylight hours tied to the number and height of lighting poles, and the degree of impact during night hours tied to the brightness and extent of illumination created by the lights. From the vantage point of the City of Presidio, which is set back several hundred or more feet from the levee, except at the Presidio POE, the addition of a guard rail along the top of the levee would hardly be visible. The impact would be greater for those residences and businesses closest to the river or at high points within the city, and less for those lying further inside the city, as there would be greater screening of the lights and lighted areas from other buildings and visual elements of the urban landscape. For this land unit, therefore, impacts would range from minor to major, and neutral to adverse.

Finally, with respect to the impacts on the specific visual resources listed in **Section 3.12.1**, implementation of the Proposed Action would likely have short- or long-term adverse impacts on the settings of those resources. The greater the distance between the resource and the intrusive visual elements (primarily the fence), and the more intervening visual elements between them, the less severe of an impact. For example, construction of the fence at a distance of 60 feet from a historic building would typically constitute a major adverse impact, while construction of the fence several hundred feet from the resource with intervening vegetation or buildings would reduce the impact 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 impact on that resource.

1 **Table 3.12-3. Impact on the Character of Visual Resources**
2 **within Typical Marfa Sector Land Units**

	Rural	Urban/Industrial
Line	In Section L-1, the horizontal line of the fence would blend to some extent with other linear features; however, due to its height, the fence would become the dominant linear element in the viewshed. In Sections L-1A and L-1B, the guard rail will blend with the levee even at short distances; however, the lights would contrast with the generally horizontal lines in these areas except where they co-occur with other vertical features such as electric poles. The patrol road and access roads also should blend, both at short and long distances.	For viewers in the City of Presidio that have a clear view of the levee or the Rio Grande, the addition of the guard rail would blend with the linear feature of the levee. The lighting poles might be discordant except where they co-occur with other vertical linear features.
Color	The current fence design parameters call for fencing to be black in Section L-1. Although some of the vegetation trunks are black, the height and massive quality of the fence will be completely discordant with the other colors in Section L-1. In Sections L-1A and L-1B, the color of the guard should have no impact. For rural landowners, the same comments regarding lighting noted for urban/industrial viewers are also valid.	The “color” parameter of most importance in the urban/industrial land unit is that of the pool of light created by the lights in the corridor between dusk and dawn. Although the POE has lights, most of the area towards the river is rural and any pools of light would contrast with the normal nighttime views in that direction.
Form	The fence and patrol road are rectilinear in form and will result in greater domination of rectilinear forms compared to organic forms in Section L-1. In Sections L-1A and L-1B, the form of the guard rail would be lost against that of the more dominant levee.	In Sections L-1A and L-1B, the form of the guard rail would be lost against that of the more dominant levee.
Texture	As a man-made, synthetic element, the fence would contrast with the dominant textures of this land unit in Section L-1. In Sections L-1A and L-1B, the guard rail also represents a contrast, but would contrast no more than similar existing features such as the POE bridge and the levee.	Because this land unit contains a variety of textures, the texture of the guard rail, lights, and patrol road are more likely to blend with the textures of this land unit at least at a distance.

3

Table 3.12-4. Quality of Visual Resources within Typical Marfa Sector Land Units After Proposed Construction

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

Figure 3.12-4. Typical Views Towards Proposed Construction Corridor, Section L-1

Figure 3.12-5. Typical Views Towards Proposed Project Corridor, Sections L-1A and L-1B

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 impact.

With respect to the potential impacts on viewing of the phenomenon known as the Marfa Lights, the primary element of the Proposed Action that has the potential to negatively impact the viewer experience is lighting. CBP is working with the University of Texas to identify lighting configurations that would minimize the ambient glow of the lights onto the patrol road and fence, including use of down-lights and shielding.

Viewer Response Concerns. In **Section 3.12.1**, the pool of potential viewers was grouped into several general categories. As noted in that discussion, any single viewer would have some responses to the alteration to the visual resources in each land unit that are based on their own personal experiences and ties to those resources, and other responses tied to more common experiences (group sentiment).

In many respects, the principle of “not in my backyard” has a strong correlation with the responses of viewers for whom view of the tactical infrastructure would be regular or constant (i.e., residential, commercial, or industrial viewers). Where the fence would directly impact private property, the viewer response from the landowner is likely to be that it would represent a major adverse impact on visual resources visible from their property. In the case of the properties in Presidio, however, the use of a retaining wall and short guard rail on the back of the existing levee might be considered less of an impact than the lighting used to illuminate the patrol road. 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 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, particularly in the case of Sections L-1A and L-1B where the primary visual element will be a guard rail, unless the fence obscures a visual resource considered to be of high quality or cultural importance (e.g., a view of the Rio Grande in Section L-1). 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 observe the tactical infrastructure on a less regular basis (i.e., recreational viewers, special interest viewers, intermittent viewers), viewer responses would be tied to perception of how the tactical infrastructure has altered 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 the levees or from settings other than parks or refuges, the construction of the fence 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 impact for those viewers.

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 fencing (permanent element, long-term impact) and remove a greater number of existing visual elements due to the larger proposed project corridor. In general, however, having two lines of fencing amplifies the overall visual impact of Alternative 2, as does the larger proposed project corridor. Impacts related to the physical characteristics of Alternative 3 are, therefore, likely to be major and adverse compared to those of Alternative 2.

Visual Resource Concerns. Implementation of Alternative 3 would also amplify the impacts on the character and quality of visual resources within each of the land units compared to Alternative 2. The broader proposed project corridor and additional line of fencing 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 fencing would potentially add more visual unity to some settings. Long-term impacts on the visual environment associated with Alternative 3 (permanent construction elements) would range from neutral to adverse, and moderate to major. Short-term impacts 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 the viewers with constant or close proximity exposure, a double line of fencing 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 would further complicate access to visual resources behind the far line of fencing. For viewers with less regular exposure, Alternative 3 would still likely be perceived as having a greater impact than Alternative 2, simply because it makes impacts on various visual resources more difficult to avoid.

3.13 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

3.13.1 Definition of the Resource

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Socioeconomic data shown 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. Bureau of Economic Analysis' Regional Economic Information System).

There are no Federal regulations specifically addressing socioeconomics; however there are two EOs that are included in the socioeconomics analysis because they relate to specific socioeconomic groups. 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 establishes that each agency has a responsibility to ensure that its policies, programs, activities, and standards address risk to children that result from environmental health risks or safety risks.

3.13.2 Affected Environment

Socioeconomic Resources. The Proposed Action includes the construction, operation and maintenance of tactical infrastructure along the U.S./Mexico international border in Hudspeth County, Texas (Section L-1) and Presidio County, Texas (Sections L-1A and L-1B). Section L-1 would occur in a rural/undeveloped area approximately 16.5 miles southwest of Sierra Blanca, Texas, while Sections L-1A and L-1B would occur within the vicinity of Presidio, Texas, and adjacent to Ojinaga, Chihuahua, Mexico, which is characterized by agricultural, residential, and commercial uses. The most current census tract data are from Census 2000. Section L-1 is within Hudspeth County Census Tract 9502, and Sections L-1A and L-1B are within Presidio County Census Tract 9502 (although numbered the same, these are different census tracts). For the purposes of this project, Census Tracts 9502 in both counties are considered the Region of Influence (ROI).

The largest employment type in Census Tract 9502 (Presidio County), Presidio County, and Texas is educational, health, and social services (23.9, 22.0, and 19.3 percent, respectively) (see **Table 3.13-1**). The largest employment type in Census Tract 9502 (Hudspeth County) is public administration; agriculture, forestry, fishing, and hunting; retail trade; and educational, health, and social services (U.S. Census Bureau 2002).

In 2006, Hudspeth and Presidio counties had unemployment rates of 7.4 percent and 10.7 percent, respectively, compared to a 4.9 percent unemployment rate for all of Texas (Fedstats 2007a, 2007b). **Table 3.13-2** shows demographic data and economic indicators of the ROI, Hudspeth and Presidio counties, and Texas.

The population of the City of Ojinaga is approximately 30,000; however Presidio is heavily influenced by Ojinaga and its economy (City of Presidio 2007). Presidio's economy depends on sales from Mexican immigrants seeking residency and citizenship in the United States (City of Presidio 2007). The Presidio POE which connects Ojinaga and Presidio is the only POE along 490 miles of Texas border between El Paso and Del Rio (TxDOT 2007).

Environmental Justice, Protection of Children, and Safety. The affected census tracts are 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.

Table 3.13-1. Employment Type of Residents in Census Tracts, Hudspeth and Presidio Counties, and the State of Texas (Percent)

Economic and Social Indicators	Census Tract 9502 (Hudspeth County)	Hudspeth County	Census Tract 9502 (Presidio County)	Presidio County	State of Texas
Employed Persons in Armed Forces	0.0	0.0	0.0	< 0.001	0.7
Employed Persons in Civilian Labor Force (By Industry)					
Agriculture, forestry, fishing and hunting, and mining	10.5	18.0	11.2	11.4	2.7
Construction	4.8	6.5	13.2	10.1	8.1
Manufacturing	0.6	10.3	2.1	3.4	11.8
Wholesale trade	8.2	3.8	3.5	3.7	3.9
Retail trade	12.7	8.1	12.0	10.4	12.0
Transportation and warehousing, and utilities	1.4	6.6	3.6	5.5	5.8
Information	1.4	2.9	0.7	1.0	3.1
Finance, insurance, real estate, and rental and leasing	3.4	1.6	2.4	3.5	6.8
Professional, scientific, management, administrative, and waste management services	2.3	1.9	2.5	3.2	9.5
Educational, health and social services	12.4	14.3	23.9	22.0	19.3
Arts, entertainment, recreation, accommodation and food services	11.9	6.3	9.9	9.4	7.3
Other services (except public administration)	3.4	4.3	4.4	4.2	5.2
Public administration	27.1	15.5	10.6	12.3	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 the Census Tracts, Hudspeth and Presidio Counties, and the State of Texas

	Census Tract 9502 (Hudspeth County)	Hudspeth County	Census Tract 9502 (Presidio County)	Presidio County	Texas
Total Population	772	3,344	4,645	7,304	20,851,820
Percent White	87.8	87.2	81.9	85.0	71.0
Percent Black or African American	0.0	0.3	0.1	0.3	11.5
Percent American Indian Alaska Native	3.0	1.4	0.2	0.3	0.57
Percent Asian	0.1	0.2	0.1	0.1	2.7
Percent Native Hawaiian and Other Pacific Islander	0.0	0.0	<0.1	<0.1	0.07
Percent "Some other race"	4.7	8.8	16.7	13.5	11.7
Percent Reporting 2 or more races	4.4	2.1	1.0	0.9	2.5
Percent Below Poverty	18.2	35.8	43.7	36.4	15.4
Per Capita Income	$13,296	$9,549	$7,166	$9,558	$19,617
Median Household Income	$28,333	$21,045	$17,515	$19,860	$39,927

Source: U.S. Census Bureau 2002

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

Census tract 9502 in Presidio County has a higher percentage of minority and low-income populations than the county (see **Table 3.13-2**). In addition, 43.7 percent of the residents in census tract 9502 (Presidio County) live below the poverty line, as compared to 36.4 percent in the county and 15.4 percent in the State of Texas. A larger proportion of residents living in Census Tract 9502 (Hudspeth County) also live below the poverty line compared to the statewide average. Therefore, both census tracts will be evaluated further for environmental justice impacts.

3.13.3 Environmental Consequences

Alternative 1: No Action Alternative

Alternative 1 would result in continuation of the existing baseline socioeconomic conditions, as discussed in **Section 3.13.1**. 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. If Alternative 1 were implemented, short-term local employment benefits from the purchase of construction materials and the temporary increase in construction jobs would not occur. Furthermore, money from construction payrolls that would circulate within the local economy would not be available.

Alternative 2: Proposed Action

Socioeconomic Resources. Short-term, minor, direct, beneficial effects would be expected as a result of construction associated with Alternative 2. The construction activities would occur over FY 2008. Some local materials and supplies would be used, providing a minor beneficial impact on the local economy through new jobs and increased local spending. For example, the Presidio Cement Plant could benefit from supplying the project with cement to be used during construction. As stated in **Section 2.2.2**, 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 1 mile of tactical infrastructure per month. Based upon U.S. Census data, there are 73 and 227 construction workers in Hudspeth and Presidio counties, respectively, which represents approximately 103 percent and 33 percent of the number of workers required to construct the proposed tactical infrastructure in Hudspeth and Presidio counties, respectively (U.S. Census Bureau 2002). Due to the limited number of construction workers in Hudspeth County, and to a lesser degree in Presidio County, it would be necessary for workers from other locations to participate in the construction activities. The temporary nature of the construction (approximately 11 miles) and new employment (up to 75 workers) associated with Alternative 2 would cause a temporary influx of construction workers that would create a negligible increase in local population, and a minor, indirect, beneficial effect on local businesses and the local economy.

In addition, long-term, minor, indirect beneficial effects could be expected as a result of the presence of a primary pedestrian fence along Section L-1 where grazing occurs, and along Sections L-1A and L-1B where agricultural operations exist. The decrease of cross-border violators in this area would reduce the occurrence of littering, trampled vegetation and crops, tampering of gates and buildings, hurt or killed cattle, and stolen property, thereby improving the economic outcome of the existing grazing and agricultural operations.

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

Property owners and residents would be adversely affected by restricted access to the Rio Grande, visual impacts, noise and disruption during construction, and, in some cases, loss of property. In several proposed locations along Sections L-1A and L-1B in Presidio, the proposed tactical infrastructure would be located on or immediately adjacent to private property. The affected properties could be owned by minority or low-income residents. In cases where properties would be acquired or substantially impaired, the adverse impact would be mitigated through purchase of land at a fair value.

The proposed tactical infrastructure under Alternative 2 would have short- to long-term direct beneficial impacts on children and safety in the surrounding areas. The addition of tactical infrastructure could increase the safety of USBP agents in the USBP Marfa Sector. In addition, this alternative would help to deter cross-border violators in the immediate area, which in turn could prevent drug smugglers, terrorists, and terrorist weapons from entering nearby neighborhoods.

Alternative 3: Secure Fence Act Alignment Alternative

Socioeconomic Resources. Short-term, minor, direct, beneficial effects would be expected as a result of the construction, operation, and maintenance of Alternative 3. The potential effects of Alternative 3 on socioeconomic indicators are expected to be similar to Alternative 2; however the effects on the local economy would be slightly greater due to the construction of two layers of primary 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 and agricultural operations in the area.

Environmental Justice. Impacts under Alternative 3 would be similar to those discussed for Alternative 2. Direct beneficial impacts on safety and the protection of children would be expected as Alternative 3 would be designed with two layers of primary 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 slightly greater for Alternative 3 than for Alternative 2. Alternative 3 has a wider corridor and 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.

3.14.2 Affected Environment

Section L-1. The area surrounding Neely's Crossing at the Sierra Blanca patrol station is in an unpopulated area in southwestern Hudspeth County, Texas. No known underground utilities exist in the area. Information provided by the USACE indicated one pump for a private landowner, and water access right issues for cattle ranching known to exist in the area. The project corridor would be located on USIBWC lands (CBP 2007). The Hudspeth County Water Control and Improvement District does not supply water outside the city limits of Sierra Blanca (Marquez 2007). Therefore, it is assumed that water is supplied by wells and from surface waters from the Rio Grande.

Sections L-1A and L-1B**.** The area surrounding each side of the Presidio POE is in an urban area of Presidio County, Texas. The project corridor would be located on both USIBWC and private lands.

Utilities. Electrical power for Presidio, Texas, and the surrounding area is provided through aboveground utility lines. Field photographs show utility lines run between Presidio, Texas, and Ojinaga, Mexico, within the project corridor.

Solid Waste Management. 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.

According to TCEQ, there are three active landfills in Hudspeth County, and five active landfills in Presidio County. In Hudspeth County, the closest landfill is in Sierra Blanca. The City of Presidio operates the closest landfill to the project corridor in Presidio County. Both landfills are permitted to accept arid-exempt municipal solid waste (TCEQ 2007).

Water Supply Systems. The principal source of water for irrigation and municipal water in the project corridor is the Rio Grande. There are several private water pumps within the project corridor and water access could become an issue for some private landowners (CBP 2007). No underground utilities are known to exist in the proposed project corridor, and no outfalls were seen during site visits.

Municipal Sanitary Sewer Systems. Municipal water and Sanitary Sewer Systems in the Lower Rio Grande Valley take raw water from the water distribution networks of irrigation districts. Some municipal sanitary sewer systems in the proposed project corridor discharge into the Rio Grande. However, no known municipal sanitary sewer infrastructure is within the proposed project corridor.

3.14.3 Environmental Consequences

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 the Proposed Action.

Alternative 2: Proposed Action

Waste Supply Systems. No adverse impacts on the Marfa Sector irrigation and municipal water supply systems would be expected since the proposed project corridor is not located near irrigation and municipal water supply infrastructure. Private water supply infrastructure would be identified prior to construction, and impacts on these systems would be avoided to the maximum extent practical. Temporary interruptions in irrigation might be experienced when this infrastructure is moved. No long-term impacts would be expected.

Drainage Systems. No adverse impacts on irrigation and storm water drainage systems would be expected. Adherence to proper engineering practices, and applicable codes and ordinances would reduce storm water runoff-related impacts. In addition, erosion and sedimentation BMPs would be in place during construction to reduce and control siltation or erosion impacts on areas outside of the construction site. Storm water drainages would be identified prior to construction and impacts on these systems would be minimal.

Municipal Sanitary Sewer Systems. No adverse impacts on municipal sanitary systems would be expected. There is no known infrastructure in the proposed project corridor. Should infrastructure be identified prior to construction, impacts on these systems would be avoided to the maximum extent practical. Any outfall pipes that would be affected by the proposed construction would be moved. No long-term impacts would be expected.

Solid Waste Management. Short-term minor adverse impacts 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 practical. Nonrecyclable construction debris would be taken to one or more of the Hudspeth or Presidio county landfills permitted to take this type of waste. Solid waste generated associated with the Proposed Action would be expected to be negligible compared to the solid waste currently generated in these areas, and would not exceed the capacity of any landfill.

Electrical and Natural Gas Systems. No adverse impacts on the electrical and natural gas systems would be expected. All electrical and natural gas infrastructure would be identified prior to construction and impacts on these systems would be avoided to the maximum extent practical. Any electrical transmission or natural gas distribution lines impacted by construction would be moved. Temporary interruptions in electrical power transmission and natural gas distribution could be experienced when this infrastructure is moved. No long-term impacts would be expected.

Alternative 3: Secure Fence Act Alignment Alternative

The potential impacts of Alternative 3 on infrastructure and utilities are expected to be similar to the potential impacts of Alternative 2. However, the proposed project corridor for Alternative 3 is 2.5 times wider. The construction of two fences would generate more solid waste from construction debris than the construction of one fence under Alternative 2.

3.15 ROADWAYS AND TRAFFIC

3.15.1 Definition of the Resource

Roadways and traffic consists of the transportation systems and physical structures that enable a population to move through and within a specified area. Similar to non-transportation infrastructure, the availability of transportation infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area.

3.15.2 Affected Environment

The Texas Department of Transportation (TxDOT), in cooperation with local and regional officials, is responsible for planning, designing, building, operating, and maintaining the state's transportation system. CBP intends to use existing roadways to construct, operate, and maintain the proposed infrastructure sections. Unimproved surfaces would be built up as necessary to accommodate construction equipment.

Section L-1 would be situated southwest of Sierra Blanca, Texas. There are two primary roads leading to the proposed project corridor: FM 192 and FM 111. FM 192 crosses I-10 between McNary, Texas, and Esperanza, Texas. Traveling west to the project location from I-10, FM 192 traverses the towns of Ninety, Esperanza, and Fort Quitman. FM 111 crosses I-10 in the City of Sierra Blanca, Texas. From I-10 to the project location, FM 111 travels south and west where it eventually splits into Quitman Canyon Pass Road and Red Light Draw Road. Quitman Canyon continues southwest to the proposed project corridor. There are no roads crossed by FM 111 from Sierra Blanca, Texas, to the proposed project corridor (Texas Atlas and Gazetteer 2003). Dirt roads and jeep trails also occur along the project corridor.

Sections L-1B and L-1A would be situated on either side of the Rio Grande East POE west of Presidio, Texas. Presidio is accessed from the north by U.S. Route 67, from Marfa, Texas. State Route 310 divides from U.S. Route 67 directly to Presidio and then meets again south of Presidio just before the U.S./Mexico international border where the name changes to MEX 16. FM 170 travels along the U.S./Mexico international border from Presidio, Texas, northwest to the proposed project corridor through the town of La Junta, Texas. The South Orient Railroad Company operates the railroad. The line runs from the north to the U.S./Mexico international border (Texas Atlas and Gazetteer 2003, TTMCRO undated). Dirt roads and jeep trails also occur along the project corridor.

3.15.3 Environmental Consequences

Alternative 1: No Action Alternative

Under Alternative 1, there would be no effect on roadways or traffic.

Alternative 2: Proposed Action

Short-term minor adverse impacts would be expected from the temporary increases in traffic volume associated with proposed construction activities. Heavy vehicles are frequently driven on local transportation systems. Therefore, the vehicles necessary for construction would not be expected to adversely impact local transportation systems. No road or lane closures would be anticipated. However, if roadways or lanes are required to be closed, CBP would coordinate with TxDOT and local municipalities.

No long-term adverse impacts on transportation systems would be expected. The proposed construction would require delivery of materials to and removal of debris from the construction sites. Construction traffic would make up 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.

Alternative 3: Secure Fence Act Alignment Alternative

The potential effects of Alternative 3 on roadways and traffic would be expected to be similar to Alternative 2. However, the duration of construction traffic would be longer due to the construction of two layers of primary pedestrian fence rather than one.

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SECTION 4

Cumulative and Other Impacts

4. CUMULATIVE AND OTHER IMPACTS

CEQ defines cumulative impacts as the "impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

This cumulative impacts analysis summarizes expected environmental effects from the combined impacts of past, current, and reasonably foreseeable future projects in accordance with CEQ regulations implementing NEPA and CEQ guidance on cumulative effects (CEQ 1997, 2005). The geographic scope of the analysis varies by resource area. For example, the geographic scope of cumulative impacts on resources such as noise, visual resources, soils, and vegetation is very narrow and focused on the location of the resource. The geographic scope of air quality, wildlife and sensitive species, and socioeconomics is much broader and considers more county- or region-wide activities. Projects that were considered for this analysis were identified by reviewing CBP documents, news releases, and published media reports, and through consultation with planning and engineering departments of local governments, and state and Federal agencies. Projects that do not occur in close proximity (i.e., within several miles) to the proposed infrastructure would not contribute to a cumulative impact and are generally not evaluated further.

Cumulative Fencing, Southern Border. There are currently 62 miles of landing mat fence at various locations along the U.S./Mexico international border (CRS 2006); 14 miles of single, double, and triple fence in San Diego, California; 70 miles of new primary pedestrian fence approved and currently under construction at various locations along the U.S./Mexico international border; and fences at POE facilities throughout the southern border. In addition, 225 miles of proposed new fence (including the 11 miles proposed under the action considered in this EA) are being studied for Texas, New Mexico, Arizona, and California.

***Past Actions*.** Past actions are those within the cumulative effects analysis areas that have occurred prior to the development of this EA. Past actions have shaped the current environmental conditions around the Proposed Action. Therefore, the effects of these past actions are now part of the existing environment, and are generally included in the affected environment described in **Section 3**. For example, development of Presidio has altered the natural environment.

***Present Actions*.** Present actions include current or funded construction projects, USBP or other agency operations in close proximity to the proposed fence locations, and current resource management programs and land use activities within the affected areas. Ongoing actions considered in the cumulative effects analysis include the following:

- Texas Department of Transportation. TxDOT has one ongoing road transportation system project in the vicinity of the Proposed Action. The area of impacts would tend to be low, as the majority of any potential work would be within existing ROW. The project is the *La Entrada al Pacifico Corridor Feasibility Study*. This corridor was designated a High Priority Corridor on the National Highway System by the Safe, Accountable, Flexible, Efficient, Transportation Equity Act. It is an international project between Mexico and the United States that designates a trade route, thereby increasing the efficiency of transportation of goods and people from the Port of Topolobampo in Sinaloa, Mexico, to Midland-Odessa, Texas. The goal of the feasibility study is to determine the most efficient location for the potential route. The currently proposed corridor would utilize the Presidio POE at the U.S./Mexico international border, and follow U.S. Highway 67 through Presidio, Texas. A Corridor Development Plan is expected to be completed in March 2008 (NADB 2007).

***Reasonably Foreseeable Future Actions*.** Reasonably foreseeable future actions consist of activities that have been proposed or approved and can be evaluated with respect to their effects. The following are reasonably foreseeable future actions that are related to securing the southern international border:

- SBI*net* is a comprehensive program focused on transforming border control through technology and infrastructure. The goal of the program is to field the most effective proven technology, infrastructure, staffing, and response platforms, and integrate them into a single comprehensive border security suite for DHS. Potential future SBI*net* projects include deployment of sensor technology, communications equipment, command and control equipment, fencing, barriers capable of stopping a vehicle, and any required road or components such as lighting and all-weather access roads (Boeing 2007). Within the next 2 years, 225 miles of primary fence are proposed for construction (including the 11 miles proposed in this EA). The first phase of construction would occur in areas that have already been developed (e.g., currently contains permanent vehicle barriers or temporary vehicle barriers) and, thus, little or no additional environmental impacts would be expected. The second phase of construction would generally occur in more remote areas.
- North American Development Bank (NADB). The NADB is funding several projects in Ojinaga, Chihuahua, Mexico, which is south of the City of Presidio, Texas, across the Rio Grande (NADB 2007). The

construction of the project will overlap temporally with that of the Proposed Action.

- Improvements to the Wastewater Collection and Treatment Systems and Construction of a Wastewater Treatment Plant. Construction of a wastewater treatment plant and force main were completed in October 2006. Construction of one collector is underway, and bidding for additional sewer works is expected to begin in the first quarter of 2008. The improved collection/treatment system will reduce the contamination of local aquifers and land, and ensure that the effluent discharged into the Rio Grande complies with established environmental standards.
- South Orient Rail Line. The South Orient line is one of only seven rail gateways between the United States and Mexico, and crosses the U.S./Mexico international border at the City of Presidio. The 391-mile-long line has not had significant rehabilitation since the early 1980s, and has only seen limited use since July 1998 when regular operations over the western end of the line were allowed to be discontinued by the Surface Transportation Board. However, this line is currently being operated by Texas Pacifico Transportation Limited (TXPF), and limited operations over the border at Presidio resumed in March 2005. Increased traffic over the line would contribute to the rapid deterioration of the infrastructure, and a substantial rehabilitation program is necessary to sustain operations along the entire line. TXPF has begun the rehabilitation of the line to improve service and begin operations to the border, with an initial rehabilitation expenditure of roughly $9 million (TxDOT 2005).

Cumulative Analysis by Resource Area. This section presents the resource-specific impacts related to the past, present, and reasonably foreseeable actions discussed above. Only those actions that are additive to the potential impacts associated with the Proposed Action are considered. **Table 4.0-1** presents the cumulative effects by resource area that might occur from implementation of the Proposed Action when combined with other past, present, and future activities that are discussed in more detail below.

4.1 AIR QUALITY

Minor, short-term, adverse cumulative impacts on air quality are expected from the construction of proposed tactical infrastructure in combination with other reasonably foreseeable future actions. As discussed in **Section 3.1.2**, emissions from construction, operation, and maintenance activities would not contribute to or affect local or regional attainment status with the NAAQS, and would be below thresholds established by the USEPA for CAA cumulative impacts analysis. Construction equipment would temporarily increase fugitive dust and operation emissions from combustion fuel sources. Since there would be no substantive change in USBP operations, emissions from vehicles would remain constant and there would be no cumulative impact on air quality.

Table 4.0-1. Summary of Potential Cumulative Effects

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Air Quality	Attainment criteria for all criteria pollutants.	Existing emissions sources continue to adversely affect regional air quality.	Fugitive dust and combustion emissions generated during construction.	Existing emission sources continue to adversely affect regional air quality. No new major sources identified in Marfa Sector.	Continued attainment.
Noise	Commercial and residential development, vehicles dominate ambient noise near urban areas.	Commercial and residential development, vehicles dominate ambient noise near urban areas.	Short-term noise from construction equipment and increased traffic.	Commercial and residential development near Presidio contributes to ambient noise.	Existing sources would be the dominant noise source. Negligible cumulative impacts.
Land Use	Some agricultural lands impacted by development.	Minor development of open and agricultural lands.	CBP purchase of land or easements to construct tactical infrastructure. Natural areas developed for tactical infrastructure.	La Entrada al Pacifico Corridor might stimulate development and alter land use. Development permanently alters natural areas and agricultural lands.	Minor contribution to change in natural and agricultural land use.

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Geology and Soils	Installation of infrastructure and other features.	Installation of infrastructure; continued cross-border violators activities adversely affect soils.	Minor grading and recontouring would disturb soils; installation of fence might affect geology.	Continued cross-border violator's activities adversely affect soils. Installation of infrastructure near Presidio.	Minor long-term impact from construction of additional infrastructure.
Hydrology and Groundwater	Degradation of aquifers to historical pollution.	Continued degradation of aquifers from pollution.	None.	Improvements to the wastewater collection system should reduce current adverse impacts on water quality.	None.
Surface Water and Waters of the United States	Point and nonpoint discharges including wastewater treatment effluent, agricultural runoff, and storm water have impacted water quality. Removal of wetland vegetation and fill of waters of the United States, including wetlands.	Point and nonpoint discharges including wastewater treatment effluent, agricultural runoff, and storm water have impacted water quality.	Construction erosion and sediment runoff, potential oil spills and leaks. Removal of wetland vegetation, fill of wetlands, and temporary degradation of water quality.	Improvements to the wastewater collection system should reduce current adverse impacts on water quality. Continued development could adversely affect surface waters from erosion and sedimentation.	Moderate impacts from construction activities, including potential impacts on wetlands. Minor short-term impacts from erosion. Mitigation of wetlands and construction BMPs should reduce impacts to insignificant levels.

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Floodplains	Permanently altered by development and safety features such as levees and dams.	Various storm water and floodplain management practices when activities are proposed in or near floodplains.	Adverse impacts due to installation of tactical infrastructure in floodplain.	New development could add impervious areas and alter peak flow or floodplain capacity during high-volume storm events.	Minor contribution to cumulative impacts from construction of tactical infrastructure in floodplain.
Vegetation Resources	Degraded historic habitat of sensitive and common wildlife species.	Continued minor urbanization results in loss of native species.	Minor loss of native species and habitat.	Development causes minor loss of native species and habitat.	Minor contribution to adverse impacts on native habitats and vegetation.
Wildlife and Aquatic Resources	Urbanization and loss of green corridors impacted habitat and food sources.	Minor loss of green corridor for wildlife.	Minor loss of green corridor and water access for wildlife.	Loss of green corridor for wildlife.	Minor loss of green corridor and water access for wildlife.
Threatened and Endangered Species	Degraded water quality and urbanization impacted sensitive species.	Urbanization and agricultural development degraded habitat for sensitive species.	No direct adverse impact expected. Minor loss of habitat.	Development reduces suitable habitat for sensitive species and degrades water quality.	Current and future activities would continue to delete green corridor and water access for wildlife.

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Cultural, Historic, and Archaeological Resources	Development and infrastructure improvements adversely affected cultural resources.	Development and infrastructure improvements adversely affect cultural resources.	No adverse impacts would be expected.	Continued development and infrastructure improvements adversely affect cultural resources.	No adverse impacts would be expected.
Aesthetics and Visual Resources	Past development affected natural viewshed.	Development of natural areas for community and industry infrastructure.	Constant static visual interruption at fixed points.	Constant static visual interruption at fixed points.	Minor to moderate long-term impacts from permanent infrastructure.
Socioeconomics, Environmental Justice, and Protection of Children	Commercial and residential development around Presidio affected local economies.	Commercial and residential development around Presidio.	Minor, short-term contribution to local construction industry.	Infrastructure development to support future commercial and residential development around Presidio.	Minor stimulation of local economy from construction activities. No adverse impact on environmental justice, children, or human health and safety.
Utilities and Infrastructure	Historical development and maintenance of utilities and infrastructure in area.	Utilities and infrastructure have been upgraded as necessary.	Minor short-term adverse impacts on local utilities and infrastructure during construction.	Continued development and maintenance of utilities and infrastructure in area.	None.

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Roadways and Traffic	Construction and maintenance of roadways in area.	Roadways have been upgraded as necessary.	Minor short-term adverse impacts on traffic during construction	Continued development and maintenance of roadways in area.	None.

4.2 NOISE

Minor cumulative impacts on ambient noise are expected from the additive impacts of construction, operation, and maintenance of tactical infrastructure and anticipated development activities and infrastructure improvement projects that would occur near the proposed project corridor. Noise intensity and duration from construction, operation, and maintenance of tactical infrastructure would be similar to construction activities from other development, or road construction and maintenance. Because noise attenuates over distance, a gradual decrease in noise levels occurs the further a receptor is away from the source of noise. Construction, operation, and maintenance of tactical infrastructure would be distant from other substantial noise-generating activities in urban areas in Presidio. Increased noise from construction of tactical infrastructure could combine with existing noise sources or other construction activities to produce a temporary cumulative impact on sensitive noise receptors. Construction noise would not be louder, but might be heard over a greater distance or over a longer time period.

4.3 LAND USE

Construction of tactical infrastructure would result in minor changes to land use. Recent activities that have most affected land use near the proposed tactical infrastructure are development of agricultural and open lands in the Presidio area. Minor cumulative impacts on land use are expected from the additive effects of the past, present, and reasonably foreseeable future actions, but changes in local land use would continue to be dominated by development in Presidio. For example, the designation of the La Entrada al Pacifico corridor could spur additional development in Presidio. Residential areas and agricultural lands would be displaced by the Proposed Action. Future development of residential areas would further alter the current land use.

4.4 GEOLOGY AND SOILS

Additive effects include minor changes in topography due to grading, contouring, and trenching; minor soil disturbance; and a minor increase in erosion. Construction of the tactical infrastructure would not be in close proximity to other development and would not interact to cumulatively affect geological resources, including soils. However, each present or reasonably foreseeable future action identified has the potential for temporary erosion from construction activities.

4.5 HYDROLOGY AND GROUNDWATER

Minor impacts on hydrology and groundwater would occur from the construction of tactical infrastructure when combined with other past, present, and reasonably foreseeable future actions due to increased erosion and stream sedimentation.

4.6 SURFACE WATERS AND WATERS OF THE UNITED STATES

Minor impacts on surface water and waters of the United States could occur from increased erosion and stream sedimentation. Disturbance from construction and operation of the tactical infrastructure along with other development activities have the potential for additional erosion and stream sedimentation and adverse cumulative effects. However, as discussed in **Section 3.6.2**, a Texas Construction General Permit would be obtained to include a SWPPP and sediment control and storm water BMPs to minimize potential impacts. Past actions, including sewage, agricultural runoff, and industrial discharges have generally degraded the quality of water in the upper Rio Grande and have resulted in long-term direct moderate impacts on water quality. The Rio Grande is a CWA Section 303(d) impaired water. Upgrades to existing wastewater facilities and construction of new facilities in Ojinaga, Mexico, could produce a moderate beneficial effect on water quality of the Rio Grande.

Wetland losses in the United States have resulted from draining, dredging, filling, leveling, and flooding for urban, agricultural, and residential development. According to the NWI database, there is no wetland information available for the proposed project corridor for any of the three fence sections. However, due to the proximity of the Rio Grande and the identification of irrigation and drainage canals on the topographic quads for these areas, wetlands might be present within all three sections of the proposed project corridor. Areas of potential wetlands or other waters of the United States will be identified during field surveys. If wetlands are identified in the proposed project corridor, effects would be avoided to the maximum extent practicable. CBP would obtain CWA Section 404 permits and mitigate the loss of wetlands. The cumulative impacts on wetlands would be long-term and moderate.

4.7 FLOODPLAINS

Floodplain resources can be adversely impacted by development, increases in impervious areas, loss of vegetation, changes in hydrology, and soil compaction. Construction, operation, and maintenance of tactical infrastructure has the potential for minor impacts on floodplains from further loss of vegetation, soil compaction on access roads and patrol roads, and the placement of structures in the floodplains. Floodplains were previously impacted by the construction of the levee system which controls the flow of water over low-lying areas. When added to other past, present, and reasonably foreseeable future actions, impacts from the new tactical infrastructure would be minor due to the relatively small impact within floodplains. As discussed in **Sections 1.5** and **3.7**, CBP would follow the FEMA process to floodproof the structures and minimize adverse impacts on floodplain resources.

4.8 VEGETATIVE RESOURCES

Minor impacts on native species vegetation and habitat are expected from the additive effects of past, present, and reasonably foreseeable future actions. There has not been much development in the vicinity of the Proposed Action in the past and there are very few existing or future projects planned. However, Presidio has likely seen minor urbanization development, which has directly reduced habitat for sensitive flora species. Indirect impacts from urbanization include changes in floodways, water quality, and the introduction of nonnative species.

Minor development of land for urban use in the Presidio area would continue at an unknown pace resulting in the loss of some farmland and of wildlife habitat. Construction of tactical infrastructure would contribute to this development issue. Water rights issues could become important and affect agricultural and urban acreages and planning efforts.

4.9 WILDLIFE AND AQUATIC RESOURCES

Minor impacts on wildlife and species are expected from the additive effects of the past, present, and reasonably foreseeable future actions. Some urbanization of the Presidio area has effectively reduced green corridor and water access for wildlife. Cumulative impacts would mainly result from loss of habitat as described in **Section 4.8**, habitat disturbance and degradation, construction traffic, and permanent loss of green corridors. Displaced wildlife would move to adjacent habitat if sufficient habitat exists. Because the development in the Presidio area could increase due to the designation of a trade route, the amount of potentially suitable habit could continue to decrease, producing a long-term, minor to major adverse cumulative effect. Wildlife could also be adversely impacted by noise during construction, operational lighting, and loss of potential prey species. Species could also be impacted by equipment spills and leaks. The permanent lighting could have minor, adverse cumulative impacts on migration, dispersal, and foraging activities of nocturnal species.

4.10 THREATENED AND ENDANGERED SPECIES

As discussed in **Section 3.10**, CBP conducted Section 7 preconsultation coordination with the USFWS regarding potential impacts on listed species or designated critical habitat. Due to the lack of suitable habitat within the proposed project corridor, the Proposed Action would have no cumulative effect to federally listed species in Hudspeth or Presidio counties. A Listed Species/Habitat No Effect Determination is included in **Appendix H**.

Cumulative, adverse impacts on migratory birds could be substantial due to the potential timing of fence construction. Implementation of BMPs presented in **Section 3.10** could reduce their intensity. However, past loss of habitat combined with potential construction has the potential for long-term, major, adverse cumulative impacts.

4.11 CULTURAL, HISTORIC, AND ARCHAEOLOGICAL RESOURCES

Past, current, and future development; improvements to infrastructure such as highway and irrigation projects; and the clearing of land for other development projects in the Presidio area have adversely impacted on cultural resources. Cultural resources surveys have been conducted to identify and evaluate properties listed in or eligible for listing in the NRHP that might be affected by the proposed tactical infrastructure. No archaeological sites considered eligible for the NRHP were found within the proposed project corridor. Consultation with Native American tribes would ensure that properties of religious and cultural significance to the tribes are addressed. An unanticipated discovery plan would also be developed and implemented.

4.12 AESTHETICS AND VISUAL RESOURCES

Minor to moderate impacts on aesthetics and visual resources are expected from the additive effects of past, present, and reasonably foreseeable future actions. The presence of construction equipment would produce a short-term adverse impact on visual resources. Once installed, the tactical infrastructure would create a permanent and fixed visual interruption at fixed points. Adverse cumulative effects could include temporary construction impacts and the introduction of light poles and increased night illumination during and after construction. Other development in Presidio would introduce night illumination into previously open or agricultural lands. Recreational activities such as star-gazing would be adversely affected by this cumulative impact in night illumination.

4.13 SOCIOECONOMIC RESOURCES, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

Short-term beneficial impacts on local and regional socioeconomic resources are expected from the additive effects of past, present, and reasonably foreseeable future actions. Economic benefits would be realized by construction companies, their employers and suppliers, and by Hudspeth and Presidio counties through a minor increase in tax receipts for the purchase of goods and services. Construction of tactical infrastructure has the potential for beneficial effects from temporary increases in construction jobs and the purchase of goods and services in Hudspeth and Presidio counties. Approximately 315 workers are employed in the construction industry in the two counties, and an increase of 75 construction jobs would represent 25 percent of construction jobs, so the cumulative effect could be moderate. However, since the construction jobs would be temporary, negligible cumulative effects on population growth, income, or other services would be expected.

The conversion of 78.1 acres to support tactical infrastructure is a minimal cumulative effect because most of the land is publicly owned by the USIBWC. The USIBWC-owned land does not support any active land uses and has restrictions on any development occurring within the USIBWC ROW.

The cumulative impacts of USBP activities to reduce the flow of illegal drugs, terrorists, and terrorist weapons into the United States and the concomitant effects upon the Nation's health and economy, drug-related crimes, community cohesion, property values, and traditional family values would be long-term and beneficial, both nationally and locally. Residents of the border towns would benefit from increased security, a reduction in illegal drug-smuggling activities and the number of violent crimes, less damage to and loss of personal property, and less financial burden for entitlement programs. This would be accompanied by the concomitant benefits of reduced enforcement and insurance costs. There could be an adverse cumulative effect on agriculture and other employers of low-income workers if the labor pool of illegal aliens was substantially reduced. Operation and maintenance of the tactical infrastructure has little potential for cumulative impacts on socioeconomic resources.

As discussed in **Section 3.3**, some tactical infrastructure would be constructed on or adjacent to private property. At several proposed locations along Sections L-1, L-1A, and L-1B the proposed tactical infrastructure would encroach on privately-owned land. Census tract 9502 in Presidio County, which encompasses Sections L-1A and L-1B, has a higher portion of minority and low-income residents. However, the number of potential minority and low-income residents in close proximity to the proposed project corridor that would be affected would be low. Therefore, while Census Tract 9502 in Presidio County does have disproportionately higher minority and low-income residents, all residents along the construction corridor would be equally impacted (no disproportionate impacts). The number of residents that could be affected by the Proposed Action could be small, and the overall effects of the proposed tactical infrastructure on these populations would be minor.

4.14 UTILITIES AND INFRASTRUCTURE

The construction, operation, and maintenance of tactical infrastructure would have minimal demand for utilities and infrastructure, combining to produce a minimal adverse cumulative impact.

4.15 ROADWAYS AND TRAFFIC

Minor impacts on roadways and traffic are expected from the additive effects of past, present, and reasonably foreseeable future actions.

4.16 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of nonrenewable resources, and effects that loss will have on future generations. For example, if prime farmland is developed there would be a permanent loss of agricultural productivity. Construction, operation, and maintenance of tactical infrastructure involves the irreversible and irretrievable commitment of material resources and energy, land and wetland resources, biological resources, and human resources. The impacts on these resources would be permanent.

***Material Resources*.** Material resources irretrievably utilized for the Proposed Action include steel, concrete, and other building materials (for construction of fence). Such materials are not in short supply, would not limit other unrelated construction activities, and their irretrievable use would not be considered significant.

Energy Resources. Energy resources utilized for the Proposed Action would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel) and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. USBP operations would not change and the amount of fuel used to operate government-owned vehicles might decrease slightly due to increased operational efficiencies. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant impacts would be expected.

Land Resources. The Proposed Action would result in the irretrievable loss of alternative uses of the land within the proposed 60-foot corridor. Residential, industrial, commercial, and undeveloped lands within the proposed impact corridor would not be available for future development. This loss would not be of significance since the acreage is small and because the land is already constrained in use by USIBWC easements.

***Biological Resources*.** The Proposed Action would result in the irretrievable loss of vegetation and wildlife habitat. In the long term, construction of the tactical infrastructure would result in the loss of approximately 78 acres of potential wildlife habitat, force the relocation of wildlife, and require the removal of natural vegetation. This result would be a permanent loss or conversion of decreasing open spaces. An unknown amount of wetlands could be permanently impacted by the Proposed Action. CBP would obtain CWA Section 404 permits and mitigate the loss of wetlands. The cumulative impacts on wetlands would be long-term and adverse.

Human Resources. The use of human resources for construction is considered an irretrievable loss only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities, and is considered beneficial.

4.17 RELATIONSHIP BETWEEN THE SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Short-term uses of the biophysical components of the human environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of the human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss. Activities that could result in short-term resource uses that compromise long-term productivity include filling of wetlands and loss of habitat.

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SECTION 5

Mitigation and Best Management Practices

5. MITIGATION AND BEST MANAGEMENT PRACTICES

CBP applied various design criteria to reduce adverse environmental impacts associated with the Proposed Action, including selecting a route that would avoid or minimize effects on environmental and cultural resources. Nonetheless, CBP has determined that construction, operation, and maintenance of tactical infrastructure in USBP Marfa Sector would result in adverse environmental impacts. These impacts would be most adverse during the period of construction. CBP has concluded, however, that the Proposed Action would be an environmentally acceptable action and overall would result in insignificant environmental impacts. Although many factors were considered in this determination, the principal reasons are as follows:

- An SPCC Plan would be developed and implemented to avoid impacts associated with hazardous materials and wastes (see **Section 3**).
- A Dust Control Plan would be implemented to minimize fugitive dust emissions (see **Section 3.1**).
- BMPs and an SWPPP would be implemented to minimize effects on soils, hydrology, ground water, surface waters, waters of the United States, floodplains, and storm water (see **Sections 3.4.3**, **3.5.3**, **3.6.3**, and **3.7.3)**. Authorization under TCEQ Construction Storm Water Permit (TXR 150000) would be required.
- Effects, including physical disturbance and construction of solid barriers, on wetlands, riparian areas, streambeds, and floodplains would be avoided or mitigated.
- A compensatory mitigation plan would be implemented to reduce and compensate for unavoidable effects on waters of the United States (see **Section 3.6.3**). CBP would obtain necessary CWA Section 404 and Rivers and Harbors Act Section 10 permits and a CWA Section 401 permit from TCEQ.
- A Fire Prevention and Suppression Plan and an Unanticipated Discovery Plan to protect natural and cultural resources would be utilized.
- Additional BMPs would be used to avoid, minimize, or mitigate impacts on biological resources including potential impacts on migratory birds (see **Sections 3.9.3** and **3.10.3**).
- CBP would complete appropriate consultations with the USFWS, the TPWD, TCEQ, the SHPO for the State of Texas, and Native American tribes to determine all necessary mitigation measures before construction would begin in any given area.
- Fair market value would be paid for all property that would need to be acquired or for property that would be substantially impaired by the Proposed Action (see **Section 3.13.3**).

- An environmental inspection, CM&R Plan, and Mitigation and Monitoring Plan would be prepared to ensure compliance with all mitigation measures.

SECTION 6

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SECTION 7

List of Preparers

7. LIST OF PREPARERS

This EIS has been prepared under the direction of CBP and the U.S. Army Corps of Engineers, Fort Worth District ECSO. The individuals who assisted in resolving and providing agency guidance for this document are:

Christopher Oh
Chief, CBP Environmental Branch

Charles H. McGregor, Jr.
USACE Fort Worth District ECSO

This EIS has been prepared by engineering-environmental Management, Inc. (e²M) under the direction of CBP. The individual contractors that contributed to the preparation of this document are listed below.

Domenick Alario
B.A. Geography
Years of Experience: 2

Louise Baxter
M.P.A. Public Administration
B.S. Political Science
Years of Experience: 7

Don Beckham
M.P.A. Public Administration
B.S. Engineering Physics
Years of Experience: 33

David Boyes, REM, CHMM
M.S. Natural Resources
B.S. Applied Biology
Years of Experience: 31

Suanne Collinsworth
M.S. Environmental Sciences and Engineering
B.S. Geology
Certificate of Water Quality Management
Years of Experience: 10

Shannon Cauley
B.S. Geology
USACE Certified Wetland Delineator
Certified Professional Soil Scientist
Years of Experience: 23

Laurence D. Gale
Michael Baker Corporation
M.S. Marine Biology
B.S. Natural Resources
Years of Experience: 20

Megan Griffin
B.S. Environmental Studies
M.S. Biology
Years of Experience: 3

Sue Goodfellow, Ph.D.
Ph.D. Anthropology
B.A. Anthropology and Archaeology
Years of Experience: 21

Stuart Gottlieb
B.A. Geography
GIS Professional Certificate
Years of Experience: 5

Shawn Gravatt
M.S. Environmental Studies
B.S. Earth Science and Geography
Years of Experience: 10

Leigh Hagan
M.E.S.M. Environmental Science and Management
B.S. Biology
Years of Experience: 4

Gustin Hare
B.S. Environmental Science
Registered Environmental Professional
Years of Experience: 12

Jeff Hokanson
M.A. Anthropology
Years of Experience: 15

Brian Hoppy
B.S. Biology
Certificate of Environmental Management
Years of Experience: 17

David Kilby
M.A. Anthropology
Years of Experience: 17

Daniel Koenig
B.S. Environmental Policy and Planning
Years of Experience: 3

Ronald E. Lamb, CEP
M.S. Environmental Science
M.A. Political Science/International Economics
B.A. Political Science
Years of Experience: 22

Sean McCain
M.B.A. Business Administration
B.S. Forestry and Natural Resources Management
Years of Experience: 11

Michael Moran, Ph.D.
Ph.D. Biochemistry
B.S. Chemistry
Registered Environmental Manager
Years of Experience: 23

Cheryl Myers
A.A.S. Nursing
Years of Experience: 17

Margie Nowick
M.S. Historic Preservation
M.S. Anthropology
B.S. Anthropology
Years of Experience: 24

Tanya Perry
B.S. Environmental Science
B.A. Communications
Years of Experience: 6

Andrea Poole
B.S. Environmental Science
B.A. Business Administration
Years of Experience: 9

Steve Pyle, J.D.
J.D. with Certificate in Environmental Law
B.S. Natural Resource Management
Years of Experience: 11

Christopher Roche
B.S. Environmental Studies
Years of Experience: 8

Devin Scherer
B.S. Biology
Years of Experience: 4

Cheryl Schmidt, Ph.D.
Ph.D. Biology
M.S. Biology
B.S. Biology
Years of Experience: 22

Sue Sill, Ph.D.
Ph.D. Botany
B.S. Biology
Years of Experience: 24

Sarah Smith
B.S. Geography
Years of Experience: 2

Sarah Spratlen
B.S. Biology
M.S. Engineering
Years of Experience: 5

Karen Stackpole
M.S. Environmental Science and Education
B.S. Biology
Years of Experience: 9

Charles Thornton-Kolbe
M.S. in Public Policy
B.A. Economics and Political Science
Years of Experience: 14

Adam Turbett
B.S. Environmental Studies
Years of Experience: 3

Jim Von Loh
M.S. Biology
B.S. Biology
Years of Experience: 32

Lauri Watson
B.S. Environmental Science
Years of Experience: 5

Jeffrey Weiler
M.S. Resource Economics/Environmental Management
B.A. Political Science
Years of Experience: 32

Valerie Whalon
M.S. Fisheries Science
B.S. Marine Science
Years of Experience: 12

7-4

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APPENDIX A

Standard Design for Tactical Infrastructure

APPENDIX A

STANDARD DESIGN FOR TACTICAL INFRASTRUCTURE

A properly designed tactical infrastructure system is an indispensable tool in deterring those attempting to illegally cross the U.S. border. Tactical infrastructure is also integral to maintaining USBP's flexibility in deploying agents and enforcement operations. A formidable infrastructure acts as a force multiplier by slowing down illegal entrants and increasing the window of time that agents have to respond. Strategically developed tactical infrastructure should enable USBP managers to better utilize existing manpower when addressing the dynamic nature of terrorists, illegal aliens, and narcotics trafficking (INS 2002).

USBP apprehension statistics remain the most reliable way to codify trends in illegal migration along the border. Based on apprehension statistics, in a 2006 report on border security, the Congressional Research Service concluded that "the installation of border fencing, in combination with an increase in agent manpower and technological assets, has had a significant effect on the apprehensions made in the San Diego sector" (CRS 2006).

Since effective border enforcement requires adequate scope, depth, and variety in enforcement activity, any single border enforcement function that significantly depletes USBP's ability to satisfactorily address any other enforcement action creates exploitable opportunities for criminal elements. For example, the intense deployment of personnel resources necessary to monitor urban border areas without tactical infrastructure adversely affects the number of agents available for boat patrol, transportation check points, patrolling remote border areas, and other tasks. Tactical infrastructure reduces this effect by reinforcing critical areas, allowing the agents to be assigned to other equally important border enforcement roles (INS 2002).

Fencing

Two applications for fencing have been developed in an effort to control illegal cross-border traffic: primary pedestrian fences that are built on the border, and secondary fences that are constructed parallel to the primary pedestrian fences. These fences present a formidable physical barrier which impede cross-border violators and increases the window of time USBP agents have to respond (INS 2002).

There are several types of primary pedestrian fence designs USBP can select for construction depending on various site conditions and law enforcement tactics employed. Each option offers relative advantages and disadvantages. Fencing composed of concrete panels, for example, is among the more cost-effective options, but USBP agents cannot see through it. USBP prefers fencing structures offering visual transparency, allowing observation of activities developing on the other side of the border.

Over the past decade, USBP has deployed a variety of types of fencing, such as primary pedestrian fence (see **Figures A-1** through **A-4**), primary pedestrian fence with wildlife migratory portals (see **Figures A-5** and **A-6**), and bollard fencing (see **Figure A-7**).

Figure A-1. Typical Primary pedestrian fence Foundation

Figure A-2. Typical Primary pedestrian fence Design

Figure A-3. Typical Primary pedestrian fence Design

Figure A-4. Typical Primary pedestrian fence Design

Figure A-5. Primary pedestrian fence with Wildlife Migratory Portals

Figure A-6. Wildlife Migratory Portals

Figure A-7. Bollard Fence

Bollard fencing has been effective in its limited deployment and can also be seen through. However, it is expensive to construct and to maintain. Landing mat fencing is composed of Army surplus carbon steel landing mats which were used to create landing strips during the Vietnam War. Chain-link fencing is relatively economical, but more easily compromised. In selecting a particular fencing design, USBP weighs various factors such as its effectiveness as a law enforcement tool, the costs associated with construction and maintenance, potential environmental impacts, and other public interest concerns. USBP continues to develop fence designs to best address these objectives and constraints.

Patrol Roads

Patrol roads provide USBP agents with quick and direct access to anyone conducting illegal activity along the border, and allow agents access to the various components of the tactical infrastructure system. Patrol roads typically run parallel to and a few feet north of the primary pedestrian fence. Patrol roads are typically unpaved, but in some cases “all-weather” roads are necessary to ensure continual USBP access (INS 2002).

Lighting

Two types of lighting (permanent and portable) might be constructed in specific urban locations. Illegal entries are often accomplished by using the cover of darkness, which would be eliminated by lighting. Lighting acts as a deterrent to cross-border violators and as an aid to USBP agents in capturing illegal aliens, smugglers, terrorists, or terrorist weapons after they have entered the United States (INS 2001). Lighting locations are determined by USBP based on projected operational needs of the specific area.

The permanent lighting would be stadium-type lights on approximately 30- to 40-foot high poles with two to four lights per pole. Each light would have a range of 400 to 1,000 watts, with lower-wattage bulbs used where feasible. Wooden poles, encased in concrete and steel culvert pipe to prevent them from being cut down, would most often be used, although steel poles with concrete footings might also be used. The poles might be existing poles or they might need to be installed. Electricity would be run in overhead lines unless local regulations require the lines to be underground (DHS 2004). Lights would operate from dusk to dawn. Light poles adjacent to U.S. IBWC levees would be coordinated with and approved by the U.S. IBWC. The final placement and direction of lighting has been and would continue to be coordinated with the USFWS, with the USFWS having final review over both placement and direction along each fence section.

Portable lights are self-contained units with generators that can be quickly moved to meet USBP operational requirements. Portable lights are powered by a 6-kilowatt self-contained diesel generator. Portable lights would generally operate continuously every night and would require refueling every day prior to the next night's operation. The portable light systems can be towed to the desired location by USBP vehicles, but they are typically spaced approximately 100 to 400 feet apart, depending upon topography and operational needs. Each portable light would have a light fan directed toward the fence to produce an illuminated area of 100 ft^2. The lighting systems would have shields placed over the lamps to reduce or eliminate the effects of backlighting. Effects from the lighting would occur along the entire corridor where they could be placed; however, in reality, only parts of the fence would be illuminated at a given time since the portable lights would be periodically relocated to provide the most effective deterrent and enforcement strategy (INS 2001).

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APPENDIX B

Applicable Laws and Executive Orders

Table B-1. Applicable Laws and Executive Orders [1]

Title, Citation	Summary
Archaeological and Historical Preservation Act, 16 U.S.C. 469	Protects and preserves historical and archaeological data. Requires Federal agencies to identify and recover data from archaeological sites threatened by a proposed action(s).
Clean Air Act, 42 U.S.C. 7401–7671q, as amended	Establishes Federal standards for air pollutants. Prevents significant deterioration in areas of the country where air quality fails to meet Federal standards.
Clean Water Act, 33 U.S.C. 1251–1387 (also known as the Federal Water Pollution Control Act)	Comprehensively restores and maintains the chemical, physical, and biological integrity of the nation's waters. Implemented and enforced by the U.S. Environmental Protection Agency (USEPA).
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601–9675 (also known as "Superfund")	Provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and cleanup of inactive hazardous substances disposal sites. Establishes a fund financed by hazardous waste generators to support cleanup and response actions.
Endangered Species Act of 1973, 16 U.S.C. 1531–1543, as amended	Protects threatened, endangered, and candidate species of fish, wildlife, and plants and their designated critical habitats. Prohibits Federal action that jeopardizes the continued existence of endangered or threatened species. Requires consultation with U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) Fisheries and a biological assessment when such species are present in an area affected by government activities.
Fish and Wildlife Coordination Act, 16 U.S.C. 661–667e, as amended	Authorizes the Secretaries of the Interior and Commerce to provide assistance to and cooperate with Federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. The 1946 amendments require consultation with the USFWS and the state fish and wildlife agencies involving any waterbodies that are proposed or authorized, permitted, or licensed to be impounded, diverted, or otherwise controlled or modified by any agency under a Federal permit or license.
Migratory Bird Treaty Act, 16 U.S.C. 703–712	Implements various treaties for protecting migratory birds; the taking, killing, or possession of migratory birds is unlawful.

Title, Citation	Summary
National Environmental Policy Act of 1969, 42 U.S.C. 4321–4370e, as amended	Requires Federal agencies to use a systematic approach when assessing environmental impacts of government activities. Proposes an interdisciplinary approach in a decisionmaking process designed to identify unacceptable or unnecessary impacts to the environment.
National Historic Preservation Act, 16 U.S.C. 470–470x-6	Requires Federal agencies to consider the effect of any federally assisted undertaking or licensing on any district, site, building, structure, or object eligible for inclusion, or listed in the National Register of Historic Places (NRHP). Provides for the nomination, identification (through NRHP listing), and protection of significant historical and cultural properties.
Noise Control Act of 1972, 42 U.S.C. 4901–4918	Establishes a national policy to promote an environment free from noise that jeopardizes health and welfare. Authorizes the establishment of Federal noise emissions standards and provides relevant information to the public.
Occupational Safety and Health Act of 1970, 29 U.S.C. 651–678	Establishes standards to protect workers, including standards on industrial safety, noise, and health standards.
Resource Conservation and Recovery Act, 42 U.S.C. 6901–6992k	Establishes requirements for safely managing and disposing of solid and hazardous waste and underground storage tanks.
Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, July 14, 1982, 47 FR 30959 (6/16/82), as supplemented	Requires Federal agencies to consult with state and local governments when proposed Federal financial assistance or direct Federal development impacts interstate metropolitan urban centers or other interstate areas.
EO 12898, *Environmental Justice,* February 11, 1994, 59 FR 7629 (2/16/94), as amended	Requires certain Federal agencies, to the greatest extent practicable permitted by law, to make environmental justice part of their missions by identifying and addressing disproportionately high and adverse health or environmental effects on minority and low-income populations.

Title, Citation	Summary
EO 13148, *Greening the Government Through Leadership in Environmental Management*, April 21, 2000, 65 FR 24595 (4/26/00)	Designates the head of each Federal agency to ensure that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes, across all agency missions, activities, and functions. Establishes goals for environmental management, environmental compliance, right-to-know (informing the public and their workers of possible sources of pollution resulting from facility operations) and pollution prevention, and similar matters.
EO 13175*, Consultation and Coordination with Indian Tribal Governments,* November 6, 2000, 65 FR 67249 (11/09/00)	Requires Federal agencies to establish an accountable process that ensures meaningful and timely input from tribal officials in developing policies that have tribal implications.
EO 13186*, Responsibilities of Federal Agencies to Protect Migratory Birds,* January 10, 2001, 66 FR 3853 (1/17/01)	Requires each agency to ensure that environmental analyses of Federal actions (required by the National Environmental Policy Act or other established environmental review processes) evaluate the effects of actions and agency plans on migratory birds, emphasizing species of concern. Agencies must support the conservation intent of migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities, and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
EO 11593, *Protection and Enhancement of the Cultural Environment*, May 13, 1971, 36 FR 8921 (5/15/71)	Requires all Federal agencies to locate, identify, and record all cultural resources, including significant archeological, historical, or architectural sites.

Note: [1] This table only reflects those laws and EOs that might reasonably be expected to apply to the Proposed Action and alternatives addressed in this EIS.

Other laws and Executive Orders potentially relevant to the construction, maintenance, and operation of tactical infrastructure include, but are not limited to, the following:

- American Indian Religious Freedom Act, 42 U.S.C. 1996, et seq.
- Antiquities Act, 16 U.S.C. 433, et seq.; Archeological Resources Protection Act, 16 U.S.C. 470 aa-ll, et seq.
- Architectural Barriers Act, 42 U.S.C. 4151, et seq.

- Community Environmental Response Facilitation Act, 42 U.S.C. 9620, et seq.
- Department of Transportation Act, P.L. 89-670, 49 U.S.C. 303, Section 4(f), et seq.
- Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11001–11050, et seq.
- Environmental Quality Improvement Act, P.L. 98-581, 42 U.S.C. 4371, et seq.
- Farmlands Protection Policy Act, P.L. 97-98, 7 U.S.C. 4201, et seq.
- Federal Insecticide, Fungicide, and Rodenticide Act, P.L. 86-139, 7 U.S.C. 135, et seq.
- Federal Records Act, 44 U.S.C. 2101-3324, et seq.
- Fish and Wildlife Act of 1956, P.L. 85-888, 16 U.S.C. 742, et seq.
- Flood Disaster Protection Act, 42 U.S.C. 4001, et seq.
- Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001, et seq.
- Pollution Prevention Act of 1990, 42 U.S.C. 13101-13109, et seq.
- Safe Drinking Water Act, P.L. 93-523, 42, U.S.C. 201, et seq.
- Toxic Substances Control Act, 7 U.S.C. 136, et seq.
- Wild and Scenic Rivers Act, P.L. 90-542, 16 U.S.C. 1271, et seq.
- EO 12114, dated January 9, 1979, Environmental Effects Abroad of Major Federal Actions, 44 FR 1957
- EO 12088, dated October 13, 1978, *Federal Compliance with Pollution Control Standards*, 43 FR 47707, as amended by EO 12580, dated January 23, 1987, and revoked (in part) by EO 13148, dated April 21, 2000
- EO 13132, dated August 4, 1999, *Federalism*, 64 FR 43255
- EO 11988, dated May 24, 1977, *Floodplain Management and Protection*, 42 FR 26951, as amended by EO 12148, dated July 20, 1979, 44 FR 43239
- EO 13007, dated May 24, 1996, *Historic Sites Act*, 16 U.S.C. 46, et seq.; Indian Sacred Sites, 61 FR 26771
- EO 12372, dated July 14, 1982, *Intergovernmental Review of Federal Programs*, 47 FR 30959, as amended by EO 12416, April 8, 1983, 48 FR 15587; supplemented by EO 13132, August 4, 1999, 64 FR 43255
- EO 13112, dated February 3, 1999, *Invasive Species*, 64 FR 6183, as amended by EO 13286, February 28, 2003, 68 FR 10619

- EO 11514, dated March 5, 1970, *Protection and Enhancement of Environmental Quality*, 35 FR 4247, as amended by EO 11541, July 1,1970, 35 FR 10737 and EO 11991, May 24, 1977, 42 FR 26967
- EO 13045, dated April 21, 1997, *Protection of Children from Environmental Health and Safety Risks*, 62 FR 19885, as amended by EO 13229, October 9, 2001, 66 FR 52013 and EO 13296, April 18, 2003, 68 FR 19931
- EO 11990, dated May 24, 1977, *Protection of Wetlands*, 42 FR 26961, as amended by EO 12608, September 9, 1987, 52 FR 34617

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APPENDIX C

Public Involvement and Agency Coordination

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

November 5, 2007

Mr. Charles McGregor
United States Army Corps of Engineers
Fort Worth District
Engineering Construction Support Office
P.O. Box 17300
Fort Worth, TX 76102-0300

Dear Mr. McGregor:

Reference is made to various letters dated October 18, 2007, from Mr. Robert F. Janson, U.S. Customs and Border Protection, requesting us to become a cooperating agency with regard to the development of National Environmental Policy Act (NEPA) environmental documentation for the proposed construction, maintenance, and operation of tactical infrastructure throughout the international boundary. According to the letters, the following projects are being considered:

1) Environmental Impact Statement for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol San Diego Sector;

2) Environmental Assessment for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol San Diego Sector;

3) Environmental Assessment for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol El Centro Sector;

4) Environmental Assessment for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Yuma Sector;

5) Supplemental Environmental Assessment for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol El Paso Sector;

6) Environmental Assessment for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Marfa Sector;

The Commons, Building C, Suite 310 • 4171 N. Mesa Street • El Paso, Texas 79902
(915) 832-4100 • (FAX) (915) 832-4190 • http://www.ibwc.state.gov

7) Environmental Assessment for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Del Rio Sector; and

8) Environmental Impact Statement for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Rio Grande Valley Sector.

The United States Section, International Boundary and Water Commission (USIBWC) accepts your request to become a cooperating agency in the NEPA process. We look forward to working with you on issues related to the international boundary, specifically international treaties and agreements, issues related to USIBWC jurisdiction, and USIBWC real property. Due to the overwhelming list of Border Patrol initiatives along the international boundary, I have designated Mr. Richard Peace, Division Engineer, Operations and Maintenance Division, as the agency single point of contact for matters related to these projects. Mr. Peace can be reached at (915) 832-4158 for overall project coordination. If you have any questions feel free to contact me at (915) 832-4101.

Sincerely,

Carlos Marin, P.E.
Commissioner

U.S. Department of Homeland Security
Washington, DC 20229

U.S. Customs and
Border Protection

OCT 18 2007

Commissioner Carlos Marin
International Boundary and Water Commission
U.S. Section
4111 North Mesa, Suite C-100
El Paso, TX 79902-1441

Subject: Environmental Assessment (EA) for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Marfa Sector

Dear Commissioner Marin:

While no final decisions on the fence locations have been made, U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP), a component of the Department of Homeland Security, is preparing an Environmental Assessment (EA) to address the potential environmental impacts and feasibility of constructing, maintaining, and operating tactical infrastructure in segments totaling approximately 11 miles in length within USBP Marfa Sector, Texas. In preparing the EA, CBP will be working directly with the United States Army Corps of Engineers, Fort Worth District (USACE), who will provide technical expertise and other support to CBP.

To assist USBP in gaining and maintaining operational control of the border, CBP proposes to construct, maintain, and operate tactical infrastructure to include primary pedestrian fence and access and patrol roads in 3 segments along the U.S./Mexico international border. Individual segments would range from approximately 3.1 miles to 4.6 miles in length. Maps presenting the proposed project sites are enclosed.

Based on Congressional and Executive mandates, CBP and USBP are assessing operational requirements and land issues along the entire Southwest border. Preparing the EA does not necessarily mean the 11 miles of tactical infrastructure will be installed within USBP Marfa Sector. Rather, this effort is a prudent part of the planning process needed to assess any environmental concerns in accordance with the National Environmental Policy Act of 1969 (NEPA), the National Historic Preservation Act (NHPA), the Clean Water Act (CWA), and other applicable environmental laws and regulations.

Your agency has been identified as a Federal authority with responsibilities for resources that may be affected by the Proposed Action. In accordance with the Council on Environmental Quality (CEQ) regulations addressing cooperating agencies (40 CFR 1501.6 and 1508.5) and CEQ's January 30, 2002, guidance, CBP is inviting you to participate in the development of the EA as a cooperating agency. Please contact Mr. Charles McGregor of the USACE, Fort Worth District, Engineering Construction Support Office by mail at P.O Box 17300, Forth Worth, Texas 76102-0300 if your agency would like to be a cooperating agency.

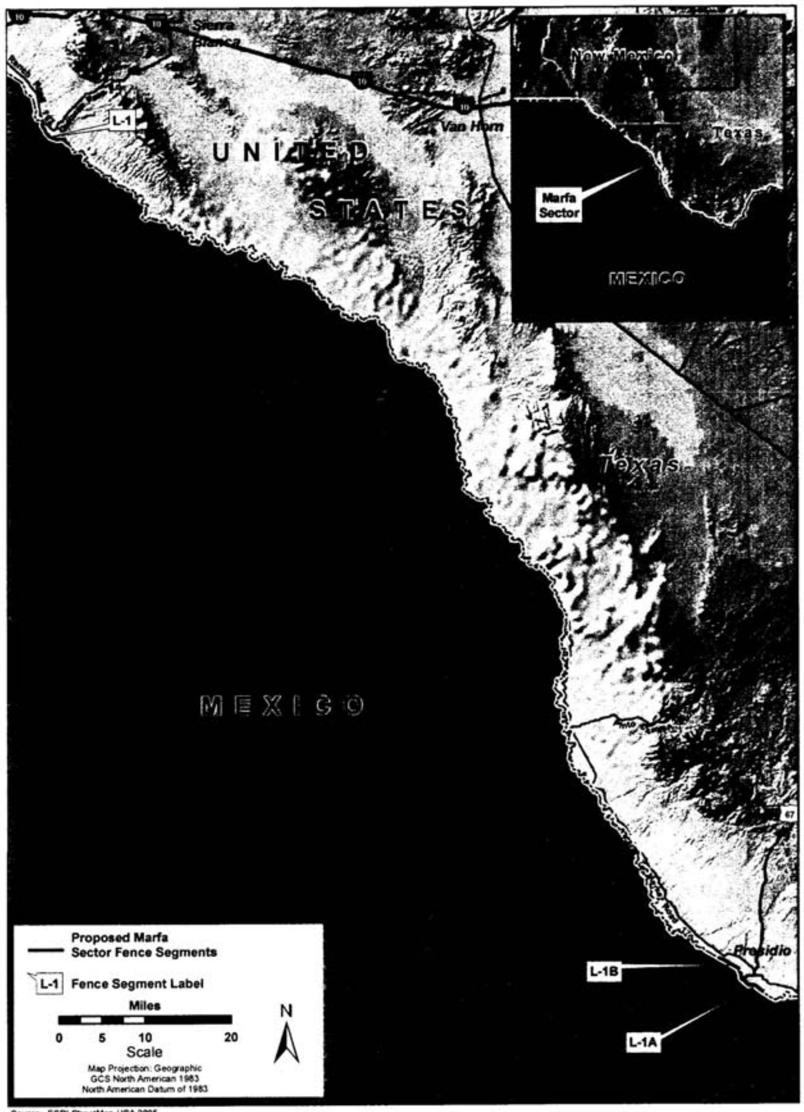
Your prompt attention to this request would be greatly appreciated. If you have any questions, please call Mr. Charles McGregor at (817) 886-1585 or Assistant Chief Patrol Agent Dan Harris, USBP Marfa Sector at (432) 729-5200.

Sincerely,

RJanson

Robert F. Janson
Acting Executive Director
Asset Management
U.S. Customs and Border Protection

Enclosure


Sierra Blanca
L-1
Van Horn
UNITED STATES
New Mexico
Texas
Marfa Sector
MEXICO
Texas
MEXICO
Presidio
L-1B
L-1A
Proposed Marfa Sector Fence Segments
L-1 Fence Segment Label
Miles
0 5 10 20
Scale
Map Projection: Geographic
GCS North American 1983
North American Datum of 1983
N
Source: ESRI StreetMap USA 2005

U.S. Department of Homeland Security
Washington, DC 20229

U.S. Customs and
Border Protection

LTC Bruce Estok
U.S. Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza NE
Albuquerque, NM 87109

OCT 1 9 2007

Subject: Environmental Assessment (EA) for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Marfa Sector

Dear LTC Estok:

While no final decisions on the fence locations have been made, U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP), a component of the Department of Homeland Security, is preparing an Environmental Assessment (EA) to address the potential environmental impacts and feasibility of constructing, maintaining, and operating tactical infrastructure in segments totaling approximately 11 miles in length within USBP Marfa Sector, Texas. In preparing the EA, CBP will be working directly with the United States Army Corps of Engineers, Fort Worth District (USACE), who will provide technical expertise and other support to CBP.

To assist USBP in gaining and maintaining operational control of the border, CBP proposes to construct, maintain, and operate tactical infrastructure to include primary pedestrian fence and access and patrol roads in 3 segments along the U.S./Mexico international border. Individual segments would range from approximately 3.1 miles to 4.6 miles in length. Maps presenting the proposed project sites are enclosed.

Based on Congressional and Executive mandates, CBP and USBP are assessing operational requirements and land issues along the entire Southwest border. Preparing the EA does not necessarily mean the 11 miles of tactical infrastructure will be installed within USBP Marfa Sector. Rather, this effort is a prudent part of the planning process needed to assess any environmental concerns in accordance with the National Environmental Policy Act of 1969 (NEPA), the National Historic Preservation Act (NHPA), the Clean Water Act (CWA), and other applicable environmental laws and regulations.

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Your prompt attention to this request would be greatly appreciated. If you have any questions, please call Mr. Charles McGregor at (817) 886-1585 or Assistant Chief Patrol Agent Dan Harris, USBP Marfa Sector at (432) 729-5200.

Sincerely,

RJanson

Robert F. Janson
Acting Executive Director
Asset Management
U.S. Customs and Border Protection

Enclosure

U.S. Department of Homeland Security
Washington, DC 20229

U.S. Customs and Border Protection

Mr. Richard Greene
Regional Administrator, Region 6
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

OCT 18 2007

Subject: Environmental Assessment (EA) for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Marfa Sector

Dear Mr. Greene:

While no final decisions on the fence locations have been made, U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP), a component of the Department of Homeland Security, is preparing an Environmental Assessment (EA) to address the potential environmental impacts and feasibility of constructing, maintaining, and operating tactical infrastructure in segments totaling approximately 11 miles in length within USBP Marfa Sector, Texas. In preparing the EA, CBP will be working directly with the United States Army Corps of Engineers, Fort Worth District (USACE), who will provide technical expertise and other support to CBP.

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Based on Congressional and Executive mandates, CBP and USBP are assessing operational requirements and land issues along the entire Southwest border. Preparing the EA does not necessarily mean the 11 miles of tactical infrastructure will be installed within USBP Marfa Sector. Rather, this effort is a prudent part of the planning process needed to assess any environmental concerns in accordance with the National Environmental Policy Act of 1969 (NEPA), the National Historic Preservation Act (NHPA), the Clean Water Act (CWA), and other applicable environmental laws and regulations.

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Your prompt attention to this request would be greatly appreciated. If you have any questions, please call Mr. Charles McGregor at (817) 886-1585 or Assistant Chief Patrol Agent Dan Harris, USBP Marfa Sector at (432) 729-5200.

Sincerely,

RF Janson

Robert F. Janson
Acting Executive Director
Asset Management
U.S. Customs and Border Protection

Enclosure

U.S. Department of Homeland Security
Washington, DC 20229

U.S. Customs and Border Protection

Dr. Benjamin Tuggle
Regional Director
U.S. Fish and Wildlife Service
Southwest Region
P.O. Box 1306
Albuquerque, NM 87103-1306

OCT 18 2007

Subject: Environmental Assessment (EA) for Proposed Construction, Maintenance, and Operation of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol Marfa Sector

Dear Dr. Tuggle:

While no final decisions on the fence locations have been made, U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP), a component of the Department of Homeland Security, is preparing an Environmental Assessment (EA) to address the potential environmental impacts and feasibility of constructing, maintaining, and operating tactical infrastructure in segments totaling approximately 11 miles in length within USBP Marfa Sector, Texas. In preparing the EA, CBP will be working directly with the United States Army Corps of Engineers, Fort Worth District (USACE), who will provide technical expertise and other support to CBP.

To assist USBP in gaining and maintaining operational control of the border, CBP proposes to construct, maintain, and operate tactical infrastructure to include primary pedestrian fence and access and patrol roads in 3 segments along the U.S./Mexico international border. Individual segments would range from approximately 3.1 miles to 4.6 miles in length. Maps presenting the proposed project sites are enclosed.

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Your prompt attention to this request would be greatly appreciated. If you have any questions, please call Mr. Charles McGregor at (817) 886-1585 or Assistant Chief Patrol Agent Dan Harris, USBP Marfa Sector at (432) 729-5200.

Sincerely,

RJanson

Robert F. Janson
Acting Executive Director
Asset Management
U.S. Customs and Border Protection

Enclosure

Cc: Mike Horton

White Mountain Apache Tribe Heritage Program
PO Box 507 Fort Apache,AZ 85926

To: **Dan Harris, USBP Assistance Chief Patrol Agent**
Date: **December 06, 2007**
Proposed Project: **Proposed construction, maintenance, and operation of Tactical Infrastructure, U.S. Dept of Homeland Security, U.S. CBP, U.S. Border Patrol , Marfa Sector.**

....

The White Mountain Apache Historic Preservation Office (THPO) appreciates receiving information on the proposed project, dated October 25, 07 In regards to this, please attend to the checked items below;

► There is no need to send additional information unless project planning or implementation results in the discovery of sites and/or items having known or suspected Apache Cultural affiliation.

☐ The proposed project is located within an area of probable cultural or historical importance to the White Mountain Apache Tribe (WMAT). As part of the effort to identify historical properties that maybe affected by the project we recommend an ethnohistorical study and interviews with Apache Elders. The Cultural Resource Director, ***Mr. Ramon Riley*** would be the contact person at (928) 338-4625 should this become necessary.

☐ The proposed project is located within or adjacent to a known historic property of cultural concern and/or historical importance to the White Mountain Apache Tribe and will most likely result in adverse affect to said property. Considering this, please refrain from further steps in project planning and/or implementation.

☐ Please refer to the attached additional notes in regards to the proposed project:

We have received and reviewed the information regarding the proposed construction, maintenance, and operation of Tactical Infrastructure in segments totaling approximately **11** miles within the USBP Marfa Sector, Texas, and we have determined the proposed project ***will not have an effect*** on the tribe's Traditional Cultural Properties (TCPs) and/or historic properties. The project may proceed with the understanding that all ground disturbance be monitored and in the event subsurface materials or human remains are encountered all construction activities are to be stopped and the proper authorities and/or affiliated tribe(s) be notified to evaluate the situation.

We look forward to continued collaborations in the protection and preservation of places of cultural and historical significance.

Sincerely,

Mark T. Altaha
White Mountain Apache Tribe
Historic Preservation Officer
1 (928) 338-3033 Fax: 338-6055

APPENDIX D

Public Comments on the Draft EA

(Reserved Space)

COMMENTS ON THE DRAFT EA WILL BE INCLUDED IN THIS APPENDIX ONCE RECEIVED.

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APPENDIX E

Air Quality Information

APPENDIX E

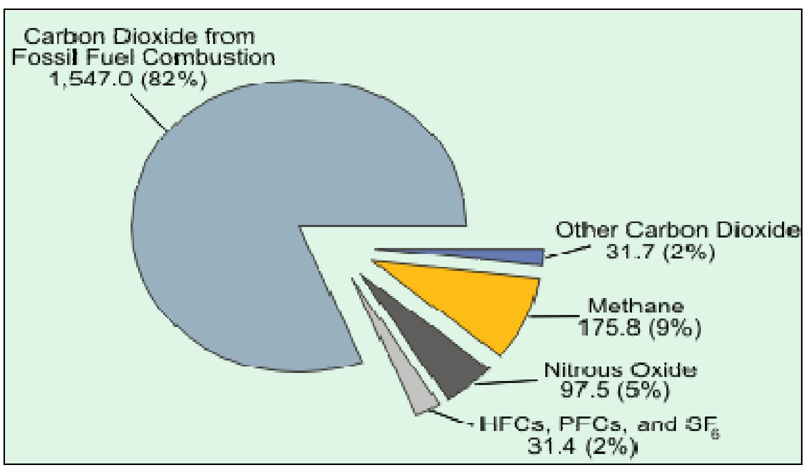
AIR QUALITY INFORMATION

Greenhouse Gases

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

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.

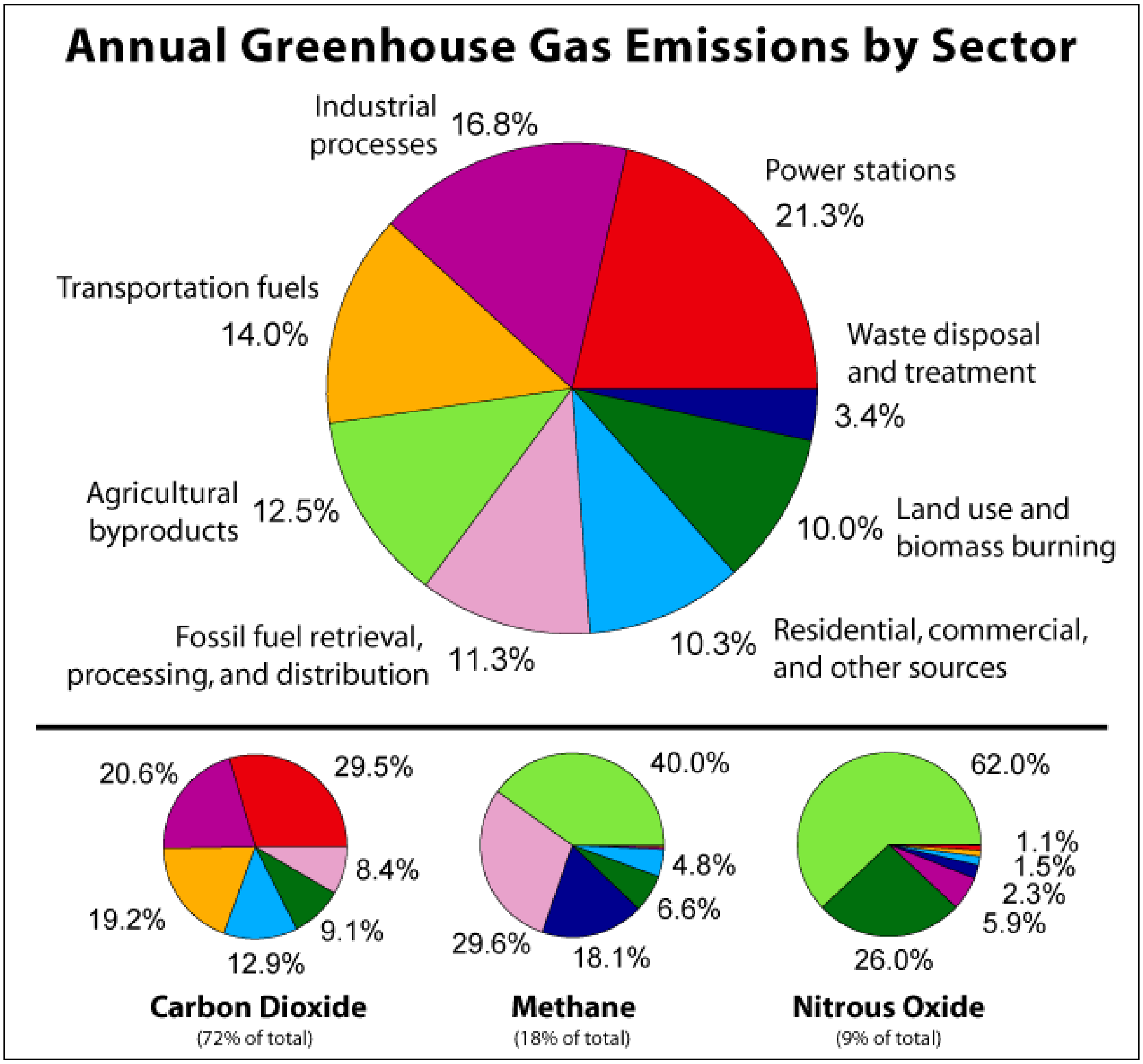
Many gases exhibit these "greenhouse" properties. The sources of the majority of greenhouse gases come mostly from natural sources but are also contributed to by human activity and are shown in **Figure E-1**. It is not possible to state that a specific gas causes a certain percentage of the greenhouse effect because the influences of the various gases are not additive.



Source: Energy Information Administration 2003

Figure E-1. Greenhouse Gas Emissions From Burning of Gas (Million Metric Tons of Carbon Equivalent)

Figure E-2 displays the annual greenhouse gas emissions by sector in the United States. Most government agencies and military installations are just beginning to establish a baseline for their operations and their impact on the greenhouse effect. Since the USEPA has not promulgated an ambient standard or *de minimis* level for CO_2 emissions for Federal actions, there is no standard value to compare an action against in terms of meeting or violating the standard. Hence, we shall attempt to establish the effects on air quality as a result of the amount of CO_2 produced by the Federal action and what could be done to minimize the impact of these emissions.



Source: Rosmarino 2006

Figure E-2. Annual Greenhouse Gas Emissions by Sector

References

Energy Information Administration. 2003. "Greenhouse Gases, Climate Change, and Energy." EIA Brochure. 2003. Available online: <*http://www.eia.doe.gov/oiaf/1605/ggccebro/chapter1.html*>. Last updated April 2, 2004. Accessed November 4, 2007.

Tanyalynnette Rosmarino, Director of Field Engineering, Northeast, BigFix, Inc. 2006. "A Self-Funding Enterprise Solution to Reduce Power Consumption and Carbon Emissions." Slide presentation for the NYS Forum's May Executive Committee Meeting Building an Energy Smart IT Environment. 2006. Available online: <*http://www.nysforum.org/documents/html/2007/execcommittee/may/enterprisepowerconsumptionreduction_files/800x600/slide1.html*>. Accessed November 4, 2007.

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Summary	Summarizes total emissions by calendar year.
Combustion	Estimates emissions from non-road equipment exhaust as well as painting.
Fugitive	Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions
Maintenance Emissions	Estimates the total emissions from future maintenance of fencelines and access roads from mowers.
Generator Emissions	Estimates the total emissions from emergency generators to power construction equipment.
AQCR Tier Report	Summarizes total emissions for the El Paso-Las Cruces-Alamogordo Interstate AQCR Tier Reports for 2001, to be used to compare project to regional emissions.

Air Quality Emissions from Proposed Action

		NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)
CY2008	Construction Combustion	11.333	1.689	13.239	0.227	0.380
	Construction Fugitive Dust	0.000	0.000	0.000	0.000	96.098
	Maintenance Emissions	0.042	0.005	0.021	0.010	0.005
	Generator Emissions	22.777	1.859	4.907	1.498	1.601
	TOTAL CY2008	34.153	3.554	18.167	1.735	98.084

Since future year budgets were not readily available, actual 2001 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

El Paso-Las Cruces-Alamogordo Interstate AQCR

	Point and Area Sources Combined				
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)
2001	54,477	43,267	347,384	4,569	149,894

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 13 November 2007.

Determination Significance (Significance Threshold = 10%) for Construction Activities

	Point and Area Sources Combined				
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)
Minimum - 2001	54,477	43,267	347,384	4,569	149,894
2008 Emissions	34.153	3.554	18.167	1.735	98.084
Proposed Action %	**0.063%**	**0.008%**	**0.005%**	**0.038%**	**0.065%**

Construction Combustion Emissions for CY 2008

Combustion Emissions of VOC, NO_x, SO_2, CO and PM_{10} Due to Construction

Includes:

100% of Construct Pedestrian Fences and Patrol Road	3,399,264	ft^2

Assumptions:

Total ground disturbance for pedestrian fence and patrol road would be 10.73 miles long by 60 feet wide (3,399,264 ft^2).
No grading would be required in construction staging areas.
Patrol road would be graded and lined with gravel. No paving would be included in Alternative 2.
Construction would occur between March and December 2008 for a total of 190 working days.

Total Building Construction Area:	0	ft^2	(none)
Total Demolished Area:	0	ft^2	(none)
Total Paved Area:	0	ft^2	(none)
Total Disturbed Area:	3,399,264	ft^2	
Construction Duration:	1.0	year(s)	
Annual Construction Activity:	190	days/yr	

Emission Factors Used for Construction Equipment

Reference: Guide to Air Quality Assessment, SMAQMD, 2004

Emission factors are taken from Table 3-2. Assumptions regarding the type and number of equipment are from Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Bulldozer	1	29.40	3.66	25.09	0.59	1.17
Motor Grader	1	10.22	1.76	14.98	0.20	0.28
Water Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	3	60.51	9.02	70.69	1.21	2.03

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Paver	1	7.93	1.37	11.62	0.16	0.22
Roller	1	5.01	0.86	7.34	0.10	0.14
Total per 10 acres of activity	2	12.94	2.23	18.96	0.26	0.36

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Loader	1	7.86	1.35	11.52	0.16	0.22
Haul Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	2	28.75	4.95	42.14	0.58	0.80

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Stationary						
Generator Set	1	11.83	1.47	10.09	0.24	0.47
Industrial Saw	1	17.02	2.12	14.52	0.34	0.68
Welder	1	4.48	0.56	3.83	0.09	0.18
Mobile (non-road)						
Truck	1	20.89	3.60	30.62	0.84	0.58
Forklift	1	4.57	0.79	6.70	0.18	0.13
Crane	1	8.37	1.44	12.27	0.33	0.23
Total per 10 acres of activity	6	67.16	9.98	78.03	2.02	2.27

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Air Compressor	1	6.83	0.85	5.82	0.14	0.27
Total per 10 acres of activity	1	6.83	0.85	5.82	0.14	0.27

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activitiy, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC.

c) The SMAQMD 2004 reference does not provide SO_2 emission factors. For this worksheet, SO_2 emissions have been estimated based on approximate fuel use rate for diesel equipment and the assumption of 500 ppm sulfur diesel fuel. For the average of the equipment fleet, the resulting SO_2 factor was found to be approximately 0.04 times the NOx emission factor for the mobile equipment (based upon 2002 USAF IERA "Air Emissions Inventory Guidance") and 0.02 times the NOx emission factor for all other equipment (based on AP-42, Table 3.4-1)

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	SMAQMD Emission Factors (lb/day)				
		NO_x	VOC	CO	SO_2**	PM_{10}
Grading Equipment	8	3777.584	563.110	4413.112	75.552	126.731
Paving Equipment	1	0.000	0.000	0.000	0.000	0.000
Demolition Equipment	1	0.000	0.000	0.000	0.000	0.000
Building Construction	1	0.000	0.000	0.000	0.000	0.000
Air Compressor for Architectural Coating	1	0.000	0.000	0.000	0.000	0.000
Architectural Coating**			0.000			

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 ac*((total disturbed area/43560)/10))*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	3,399,264	78.04	6	(from "CY2008 Grading" worksheet)
Paving:	0	0.00	0	
Demolition:	0	0.00	0	
Building Construction:	0	0.00	0	
Architectural Coating	0	0.00	0	(per the SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition.
The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}
Grading Equipment	22,665.51	3,378.66	26,478.67	453.31	760.39
Paving	-	-	-	-	-
Demolition	-	-	-	-	-
Building Construction	-	-	-	-	-
Architectural Coatings	-	-	-	-	-
Total Emissions (lbs):	**22,665.51**	**3,378.66**	**26,478.67**	**453.31**	**760.39**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}
Total Project Emissions (lbs)	22,665.51	3,378.66	26,478.67	453.31	760.39
Total Project Emissions (tons)	11.33	1.69	13.24	0.23	0.38

CO2 Emissions

It is assumed that 15 vehicles consisting of bulldozer, grader, forklift, cranes, rollers, and light duty trucks would be usefor this project.

It is further assumed that the total approximate average miles per day per vehicle would be 10 miles

It is assumed that the average vehicle will produce 19.5 pounds of CO2 per gallon of gas used. (www.eia.doe.gov/oiaf/1605/coefficients)

15 vehicles x 10 miles/day/vehicle x 190 days working x 1 gal/10 miles x 19.5 lb co2/gal x ton/2000lb = 27.9 tons CO2

Estimate emissions of CO2 for MSAI AQCR region is 1,695,000 tons per year

Construction Fugitive Dust Emissions for CY 2008

Calculation of PM_{10} Emissions Due to Site Preparation (Uncontrolled).

<u>User Input Parameters / Assumptions</u>

Acres graded per year:	78.04	acres/yr	(From "CY2008 Combustion" worksheet)
Grading days/yr:	5.59	days/yr	(From "CY2008 Grading worksheet)
Exposed days/yr:	90	assumed days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	50	%	(http://www.cpc.noaa.gov/products/soilmst/w.shtml)
Annual rainfall days, p:	70	days/yr rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)	
Wind speed > 12 mph %, I:	17	%	Ave. of wind speed at El Paso, TX (ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/texas/el_paso/)
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	23.41	vehicles	(From "CY2008 Grading worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM_{10} Adjustment Factor k	1.5	lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor a	0.9	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor b	0.45	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

TSP - Total Suspended Particulate
VMT - Vehicle Miles Traveled

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	0.6	hr/acre	
Bulldozer mileage per acre	1	VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	117	VMT/day	
Construction VMT per acre	8.4	VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-1, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-1,
Vehicle Traffic (unpaved roads)	$[(k(s/12)^{a}\,(W/3)^{b})]\;[(365\text{-}P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM_{10} Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.08 lbs/hr	0.6 hr/acre	0.00 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.80 lbs/acre
Vehicle Traffic (unpaved roads)	2.85 lbs/VMT	8.4 VMT/acre	24.00 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993.

Soil Piles EF = 1.7(s/1.5)[(365 - p)/235](I/15)(J) = (s)(365 - p)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 6.9 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.69 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM_{10} Emissions

Source	Emission Factor		Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.00	lbs/acre	78.04	NA	0	0.000
Grading	0.80	lbs/acre	78.04	NA	62	0.031
Vehicle Traffic	24.00	lbs/acre	78.04	NA	1,873	0.936
Erosion of Soil Piles	0.69	lbs/acre/day	78.04	90	4,846	2.423
Erosion of Graded Surface	26.40	lbs/acre/day	78.04	90	185,414	92.707
TOTAL					192,196	96.10

Soil Disturbance EF: 24.80 lbs/acre
Wind Erosion EF: 27.09 lbs/acre/day

Back calculate to get EF: 440.95 lbs/acre/grading day

Construction (Grading) Schedule for CY 2008

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 78.04 acres/yr (from "CY2008 Combustion" Worksheet)
Qty Equipment: 23.41 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	78.04	9.75
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	78.04	38.15
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	39.02	39.34
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	39.02	16.14
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	78.04	27.37
TOTAL								130.76

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 130.76
Qty Equipment: 23.41
Grading days/yr: 5.59

Maintenance Activities Emissions for CY 2008

Combustion Emissions of VOC, NO_x, SO_2, CO and PM_{10} Due to Maintenance Activities

The fenceline and access road would require mowing approximately two times per year to maintain vegetation height and allow enhanced visibility and security.

Assumptions:
Approximately 78.04 acres of land would be mowed twice per year.
Two agricultural mowers (40 horsepower) would operate for approximately 14 days.
Each working day would be 8 hours.
Agricultural mowers operate at 43% load capacity (17.2 horsepower).

Emission Factors Used for Maintenance Equipment

Reference: USAF IERA "Air Emissions Inventory Guidance", July 2001, Table 7-6. Criteria Pollutant Emission Factors for Nonroad Diesel Engines.

Equipment	Rated Power (hp)	Loading Factor (% of Max Power)	Operating Time (hr/yr)	BSFC (lb/hp-hr)	Emission Factors NO_x (g/hp-hr)	VOC (g/hp-hr)	CO (g/hp-hr)	SO_2 (g/hp-hr)	PM_{10} (g/hp-hr)
Agricultural Mower (Diesel)	40	43	224	0.408	5.0	0.6	2.5	1.19	0.6

BSFC = Brake Specific Fuel Consumption

Results: Total Maintenance Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}
Total Maintenance Emissions (lbs)	84.954	10.195	42.477	20.219	10.195
Total Maintenance Emissions (tons)	0.042	0.005	0.021	0.010	0.005

Example:
Total Maintenance Emissions (lbs of NO_x) =
(Rated power output of equipment engine)*(Loading Factor/100)*(Operating Time)*(Number of Equipment)*(Emission Factor)*(Conversion factor)

Total Maintenance Emissions (lbs of NO_x) = (40 hp)*(43/100)*(224 hr/yr)*(2 Equipment)*(5.0 g/hp-hr)*(0.002205 lb/g) = 84.95 lbs/yr

Emissions from Diesel Powered Generators for Construction Equipment

The Proposed Action would require six diesel powered generators to power construction equipment. These generators would operate approximately 8 hours per day for 190 working days.

Number of Generators	6	
Maximum Hours of Operation	8	hrs/day
Number of Construction Days	190	

Total Generator Capacity	75	hp
Hourly Rate	0.5262	MMBtu/hr
Annual Use	4,799	MMBtu/yr

Example: 1hp=0.002546966 MMBtu/Hr
Hourly Rate (MMBtu) = (75 Hp/0.363)*(0.002546699 MMBtu/hr) =0.5262 MMBtu/hr
Annual Use (MMBtu) = (Number of Generator * Hours Operation/Day * Number of Construction Days) = (6*8*190*0.5262) = 4,799 MMBtu/yr

Note: Generators horsepower output capacity is only 0.363 percent efficient (AP-42 Chapter 3.3).
Source: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

Generator Emission Factors (Diesel)

NO_x	4.41	lb/MMBtu
VOC	0.36	lb/MMBtu
CO	0.95	lb/MMBtu
SO_x	0.29	lb/MMBtu
PM_{10}	0.31	lb/MMBtu

Emissions (Diesel)

NO_x	10.581	tpy
VOC	0.864	tpy
CO	2.279	tpy
SO_x	0.696	tpy
PM_{10}	0.744	tpy

Example: Total NOx Emissions = (Annual MMBtu/year*(EF)/2000 = (4,799*4.41)/2000 = 10.581 tpy

Source: Emission Factors: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

Emissions from Diesel Powered Generators for Portable Lights

The Proposed Action would require **30** portable light units to meet USBP operational requirements. These portable lights are powered by a 6-kilowatt self-contained diesel generators. Portable lights would generally operate continuously every night (approximately 12 hours) 365 days per year.

Number of Generators	30	
Maximum Hours of Operation	12	hrs/day
Number of Operational Days	365	

Total Generator Capacity	6	hp
Hourly Rate	0.0421	MMBtu/hr
Annual Use	5,531	MMBtu/yr

Example: 1hp=0.002546966 MMBtu/Hr
Hourly Rate (MMBtu) = (75 Hp/0.363)*(0.002546699 MMBtu/hr) =0.5262 MMBtu/hr
Annual Use (MMBtu) = (Number of Generator * Hours Operation/Day * Number of Construction Days) = (6*8*190*0.5262) = 4,799 MMBtu/yr

Note: Generators horsepower output capacity is only 0.363 percent efficient (AP-42 Chapter 3.3).
Source: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

Generator Emission Factors (Diesel)

NO_x	4.41	lb/MMBtu
VOC	0.36	lb/MMBtu
CO	0.95	lb/MMBtu
SO_x	0.29	lb/MMBtu
PM_{10}	0.31	lb/MMBtu

Emissions (Diesel)

NO_x	12.196	tpy
VOC	0.996	tpy
CO	2.627	tpy
SO_x	0.802	tpy
PM_{10}	0.857	tpy

Example: Total NOx Emissions = (Annual MMBtu/year*(EF)/2000 = (5,531*4.41)/2000 = 12.196 tpy

Source: Emission Factors: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

El Paso-Las Cruces-Alamogordo Interstate Air Quality Control Region

			Area Source Emissions						Point Source Emissions					
Row # SORT	State	County	CO	NOx	PM10	PM2.5	SO2	VOC	CO	NOx	PM10	PM2.5	SO2	VOC
1	TX	Brewster Co	6,795	838	2,697	790	79.6	713	0	0	0	0	0	0
2	TX	Culberson Co	11,856	2,101	1,193	418	107	1,119	90.2	516	0.07	0.07	3.86	8.49
3	TX	El Paso Co	143,118	20,272	13,472	4,093	1,089	19,706	3,753	4,119	519	476	902	1,117
4	TX	Hudspeth Co	18,792	3,409	2,548	680	163	1,394	54.5	315	0	0	0.24	2.92
5	TX	Jeff Davis Co	4,878	1,003	1,564	463	68.2	422	0	0	0	0	0	0
6	TX	Presidio Co	4,880	900	2,518	669	73.6	495	0	0	0	0	0	0
1	NM	Dona Ana Co	83,671	11,398	67,737	11,440	1,211	10,199	790	2,155	112	94.4	151	554
2	NM	Lincoln Co	19,476	2,202	16,984	3,527	207	1,791	65.1	469	0.75	0.75	0.18	100
3	NM	Otero Co	28,647	2,906	31,921	5,873	273	3,472	381	123	132	125	119	167
4	NM	Sierra Co	20,137	1,751	8,300	1,843	121	2,007	0	0	196	110	0	0
Grand Total			342,250	46,780	148,934	29,796	3,392	41,318	5,134	7,697	960	806	1,176	1,949

SOURCE:
http://www.epa.gov/air/data/geosel.html
USEPA - AirData NET Tier Report
*Net Air pollution sources (area and point) in tons per year (2001)
Site visited on 13 November 2007.

El Paso-Las Cruces-Alamogordo Interstate AQCR (40 CFR 81.82):
In the State of Texas: Brewster County, Culberson County, El Paso County, Hudspeth County, Jeff Davis County, and Presidio County
In the State of New Mexico: Dona Ana County, Lincoln County, Otero County, and Sierra County

Summary	Summarizes total emissions by calendar year.
Combustion	Estimates emissions from non-road equipment exhaust as well as painting.
Fugitive	Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions
Maintenance Emissions	Estimates the total emissions from future maintenance of fencelines and access roads from mowers.
Generator Emissions	Estimates the total emissions from emergency generators to power construction equipment.
AQCR Tier Report	Summarizes total emissions for the El Paso-Las Cruces-Alamogordo Interstate AQCR Tier Reports for 2001, to be used to compare project to regional emissions.

Air Quality Emissions from Proposed Action

		NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)
CY2008	Construction Combustion	70.830	10.558	82.746	1.417	2.376
	Construction Fugitive Dust	0.000	0.000	0.000	0.000	240.245
	Maintenance Emissions	0.127	0.015	0.064	0.030	0.015
	Generator Emissions	22.777	1.859	4.907	1.498	1.601
	TOTAL CY2008	93.735	12.433	87.716	2.945	244.237

Since future year budgets were not readily available, actual 2001 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

El Paso-Las Cruces-Alamogordo Interstate AQCR

	Point and Area Sources Combined				
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)
2001	54,477	43,267	347,384	4,569	149,894

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 13 November 2007.

Determination Significance (Significance Threshold = 10%) for Construction Activities

	Point and Area Sources Combined				
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)
Minimum - 2001	54,477	43,267	347,384	4,569	149,894
2008 Emissions	93.735	12.433	87.716	2.945	244.237
Proposed Action %	**0.172%**	**0.029%**	**0.025%**	**0.064%**	**0.163%**

Construction Combustion Emissions for CY 2008

Combustion Emissions of VOC, NO_x, SO_2, CO and PM_{10} Due to Construction

Includes:

100% of Construct Pedestrian Fences and Patrol Road	8,498,160	ft^2

Assumptions:

Total ground disturbance for pedestrian fence and patrol road would be 10.73 miles long by 150 feet wide (8,498,160 ft^2).
No grading would be required in construction staging areas.
Patrol road would be graded and lined with gravel. No paving would be included in Alternative 3.
Construction would occur between March and December 2008 for a total of 190 working days.

Total Building Construction Area:	0	ft^2	(none)
Total Demolished Area:	0	ft^2	(none)
Total Paved Area:	0	ft^2	(none)
Total Disturbed Area:	8,498,160	ft^2	
Construction Duration:	1.0	year(s)	
Annual Construction Activity:	190	days/yr	

Emission Factors Used for Construction Equipment

Reference: Guide to Air Quality Assessment, SMAQMD, 2004

Emission factors are taken from Table 3-2. Assumptions regarding the type and number of equipment are from Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Bulldozer	1	29.40	3.66	25.09	0.59	1.17
Motor Grader	1	10.22	1.76	14.98	0.20	0.28
Water Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	3	60.51	9.02	70.69	1.21	2.03

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Paver	1	7.93	1.37	11.62	0.16	0.22
Roller	1	5.01	0.86	7.34	0.10	0.14
Total per 10 acres of activity	2	12.94	2.23	18.96	0.26	0.36

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Loader	1	7.86	1.35	11.52	0.16	0.22
Haul Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	2	28.75	4.95	42.14	0.58	0.80

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Stationary						
Generator Set	1	11.83	1.47	10.09	0.24	0.47
Industrial Saw	1	17.02	2.12	14.52	0.34	0.68
Welder	1	4.48	0.56	3.83	0.09	0.18
Mobile (non-road)						
Truck	1	20.89	3.60	30.62	0.84	0.58
Forklift	1	4.57	0.79	6.70	0.18	0.13
Crane	1	8.37	1.44	12.27	0.33	0.23
Total per 10 acres of activity	6	67.16	9.98	78.03	2.02	2.27

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Air Compressor	1	6.83	0.85	5.82	0.14	0.27
Total per 10 acres of activity	1	6.83	0.85	5.82	0.14	0.27

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activitiy, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC.

c) The SMAQMD 2004 reference does not provide SO_2 emission factors. For this worksheet, SO_2 emissions have been estimated based on approximate fuel use rate for diesel equipment and the assumption of 500 ppm sulfur diesel fuel. For the average of the equipment fleet, the resulting SO_2 factor was found to be approximately 0.04 times the NOx emission factor for the mobile equipment (based upon 2002 USAF IERA "Air Emissions Inventory Guidance") and 0.02 times the NOx emission factor for all other equipment (based on AP-42, Table 3.4-1)

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	SMAQMD Emission Factors (lb/day)				
		NO_x	VOC	CO	SO_2**	PM_{10}
Grading Equipment	20	23609.902	3519.440	27581.953	472.198	792.069
Paving Equipment	1	0.000	0.000	0.000	0.000	0.000
Demolition Equipment	1	0.000	0.000	0.000	0.000	0.000
Building Construction	1	0.000	0.000	0.000	0.000	0.000
Air Compressor for Architectural Coating	1	0.000	0.000	0.000	0.000	0.000
Architectural Coating**			0.000			

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 ac*((total disturbed area/43560)/10))*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	8,498,160	195.09	6	(from "CY2008 Grading" worksheet)
Paving:	0	0.00	0	
Demolition:	0	0.00	0	
Building Construction:	0	0.00	0	
Architectural Coating	0	0.00	0	(per the SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition.
The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}
Grading Equipment	141,659.41	21,116.64	165,491.72	2,833.19	4,752.41
Paving	-	-	-	-	-
Demolition	-	-	-	-	-
Building Construction	-	-	-	-	-
Architectural Coatings	-	-	-	-	-
Total Emissions (lbs):	**141,659.41**	**21,116.64**	**165,491.72**	**2,833.19**	**4,752.41**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}
Total Project Emissions (lbs)	141,659.41	21,116.64	165,491.72	2,833.19	4,752.41
Total Project Emissions (tons)	70.83	10.56	82.75	1.42	2.38

CO2 Emissions

It is assumed that 30 vehicles consisting of bulldozer, grader, forklift, cranes, rollers, and light duty trucks would be usefor this project.

It is further assumed that the total approximate average miles per day per vehicle would be 10 miles

It is assumed that the average vehicle will produce 19.5 pounds of CO2 per gallon of gas used. (www.eia.doe.gov/oiaf/1605/coefficients)

30 vehicles x 10 miles/day/vehicle x 190 days working x 1 gal/10 miles x 19.5 lb co2/gal x ton/2000lb = 55.5 tons CO2

Estimate emissions of CO2 for MSAI AQCR region is 1,395,000 tons per year

Construction Fugitive Dust Emissions for CY 2008

Calculation of PM_{10} Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	195.09	acres/yr	(From "CY2008 Combustion" worksheet)
Grading days/yr:	5.59	days/yr	(From "CY2008 Grading worksheet)
Exposed days/yr:	90	assumed days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	50	%	(http://www.cpc.noaa.gov/products/soilmst/w.shtml)
Annual rainfall days, p:	70	days/yr rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)	
Wind speed > 12 mph %, I:	17	%	Ave. of wind speed at El Paso, TX (ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/texas/el_paso/)
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	58.53	vehicles	(From "CY2008 Grading worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM_{10} Adjustment Factor k	1.5	lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor a	0.9	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor b	0.45	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

TSP - Total Suspended Particulate
VMT - Vehicle Miles Traveled

Emissions Due to Soil Disturbance Activities

<u>Operation Parameters (Calculated from User Inputs)</u>

Grading duration per acre	0.2	hr/acre	
Bulldozer mileage per acre	1	VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	293	VMT/day	
Construction VMT per acre	8.4	VMT/acre	(Travel on unpaved surfaces within site)

<u>Equations Used (Corrected for PM10)</u>

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-1, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-1,
Vehicle Traffic (unpaved roads)	$[(k(s/12)^{a}(W/3)^{b})]\ [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

<u>Calculation of PM_{10} Emission Factors for Each Operation</u>

Operation	Emission Factor (mass/ unit)		Operation Parameter		Emission Factor (lbs/ acre)	
Bulldozing	0.08	lbs/hr	0.2	hr/acre	0.00	lbs/acre
Grading	0.77	lbs/VMT	1	VMT/acre	0.80	lbs/acre
Vehicle Traffic (unpaved roads)	2.85	lbs/VMT	8.4	VMT/acre	24.00	lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993.

Soil Piles EF = 1.7(s/1.5)[(365 - p)/235](I/15)(J) = (s)(365 - p)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 6.9 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.69 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM_{10} Emissions

Source	Emission Factor		Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.00	lbs/acre	195.09	NA	0	0.000
Grading	0.80	lbs/acre	195.09	NA	156	0.078
Vehicle Traffic	24.00	lbs/acre	195.09	NA	4,682	2.341
Erosion of Soil Piles	0.69	lbs/acre/day	195.09	90	12,115	6.058
Erosion of Graded Surface	26.40	lbs/acre/day	195.09	90	463,536	231.768
TOTAL					480,489	240.24

Soil Disturbance EF: 24.80 lbs/acre
Wind Erosion EF: 27.09 lbs/acre/day

Back calculate to get EF: 440.95 lbs/acre/grading day

Construction (Grading) Schedule for CY 2008

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 195.09 acres/yr (from "CY2008 Combustion" Worksheet)
Qty Equipment: 58.53 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	195.09	24.39
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	195.09	95.38
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	97.55	98.36
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	97.55	40.35
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	195.09	68.42
TOTAL								326.90

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 326.90
Qty Equipment: 58.53
Grading days/yr: 5.59

Maintenance Activities Emissions for CY 2008

Combustion Emissions of VOC, NO_x, SO_2, CO and PM_{10} Due to Maintenance Activities

The fenceline and access road would require mowing approximately two times per year to maintain vegetation height and allow enhanced visibility and security.

Assumptions:
Approximately 195.09 acres of land would be mowed twice per year.
Six agricultural mowers (40 horsepower) would operate for approximately 14 days.
Each working day would be 8 hours.
Agricultural mowers operate at 43% load capacity (17.2 horsepower).

Emission Factors Used for Maintenance Equipment

Reference: USAF IERA "Air Emissions Inventory Guidance", July 2001, Table 7-6. Criteria Pollutant Emission Factors for Nonroad Diesel Engines.

Emission Factors

Equipment	Rated Power (hp)	Loading Factor (% of Max Power)	Operating Time (hr/yr)	BSFC (lb/hp-hr)	NO_x (g/hp-hr)	VOC (g/hp-hr)	CO (g/hp-hr)	SO_2 (g/hp-hr)	PM_{10} (g/hp-hr)
Agricultural Mower (Diesel)	40	43	224	0.408	5.0	0.6	2.5	1.19	0.6

BSFC = Brake Specific Fuel Consumption

Results: Total Maintenance Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}
Total Maintenance Emissions (lbs)	254.863	30.584	127.431	60.657	30.584
Total Maintenance Emissions (tons)	0.127	0.015	0.064	0.030	0.015

Example:
Total Maintenance Emissions (lbs of NO_x) =
(Rated power output of equipment engine)*(Loading Factor/100)*(Operating Time)*(Number of Equipment)*(Emission Factor)*(Conversion factor)

Total Maintenance Emissions (lbs of NO_x) = (40 hp)*(43/100)*(224 hr/yr)*(6 Equipment)*(5.0 g/hp-hr)*(0.002205 lb/g) = 254.863 lbs/yr

Emissions from Diesel Powered Generators for Construction Equipment

The Proposed Action would require six diesel powered generators to power construction equipment. These generators would operate approximately 8 hours per day for 190 working days.

Number of Generators	6	
Maximum Hours of Operation	8	hrs/day
Number of Construction Days	190	

Total Generator Capacity	75	hp
Hourly Rate	0.5262	MMBtu/hr
Annual Use	4,799	MMBtu/yr

Example: 1hp=0.002546966 MMBtu/Hr
Hourly Rate (MMBtu) = (75 Hp/0.363)*(0.002546699 MMBtu/hr) =0.5262 MMBtu/hr
Annual Use (MMBtu) = (Number of Generator * Hours Operation/Day * Number of Construction Days) = (6*8*190*0.5262) = 4,799 MMBtu/yr

Note: Generators horsepower output capacity is only 0.363 percent efficient (AP-42 Chapter 3.3).
Source: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

Generator Emission Factors (Diesel)

NO_x	4.41	lb/MMBtu
VOC	0.36	lb/MMBtu
CO	0.95	lb/MMBtu
SO_x	0.29	lb/MMBtu
PM_{10}	0.31	lb/MMBtu

Emissions (Diesel)

NO_x	10.581	tpy
VOC	0.864	tpy
CO	2.279	tpy
SO_x	0.696	tpy
PM_{10}	0.744	tpy

Example: Total NOx Emissions = (Annual MMBtu/year*(EF)/2000 = (4,799*4.41)/2000 = 10.581 tpy

Source: Emission Factors: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

Emissions from Diesel Powered Generators for Portable Lights

The Proposed Action would require **30** portable light units to meet USBP operational requirements. These portable lights are powered by a 6-kilowatt self-contained diesel generators. Portable lights would generally operate continuously every night (approximately 12 hours) 365 days per year.

Number of Generators	30	
Maximum Hours of Operation	12	hrs/day
Number of Operational Days	365	

Total Generator Capacity	6	hp
Hourly Rate	0.0421	MMBtu/hr
Annual Use	5,531	MMBtu/yr

Example: 1hp=0.002546966 MMBtu/Hr
Hourly Rate (MMBtu) = (75 Hp/0.363)*(0.002546699 MMBtu/hr) =0.5262 MMBtu/hr
Annual Use (MMBtu) = (Number of Generator * Hours Operation/Day * Number of Construction Days) = (6*8*190*0.5262) = 4,799 MMBtu/yr

Note: Generators horsepower output capacity is only 0.363 percent efficient (AP-42 Chapter 3.3).
Source: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

Generator Emission Factors (Diesel)

NO_x	4.41	lb/MMBtu
VOC	0.36	lb/MMBtu
CO	0.95	lb/MMBtu
SO_x	0.29	lb/MMBtu
PM_{10}	0.31	lb/MMBtu

Emissions (Diesel)

NO_x	12.196	tpy
VOC	0.996	tpy
CO	2.627	tpy
SO_x	0.802	tpy
PM_{10}	0.857	tpy

Example: Total NOx Emissions = (Annual MMBtu/year*(EF)/2000 = (5,531*4.41)/2000 = 12.196 tpy

Source: Emission Factors: USEPA AP-42 Volume I, Stationary Internal Combustion Sources, Table 3.3-1 (http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf)

El Paso-Las Cruces-Alamogordo Interstate Air Quality Control Region

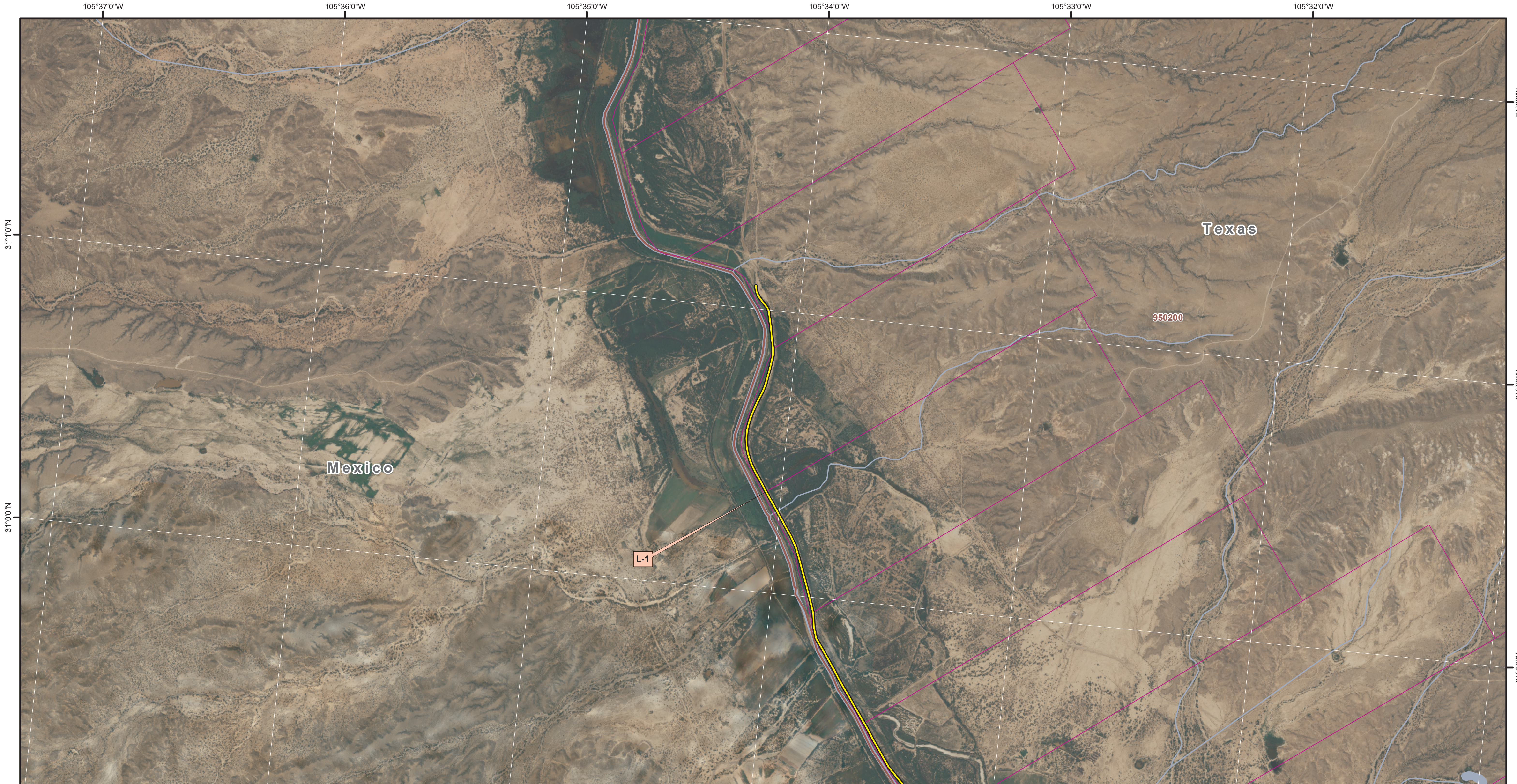
			Area Source Emissions						Point Source Emissions					
Row # SORT	State	County	CO	NOx	PM10	PM2.5	SO2	VOC	CO	NOx	PM10	PM2.5	SO2	VOC
1	TX	Brewster Co	6,795	838	2,697	790	79.6	713	0	0	0	0	0	0
2	TX	Culberson Co	11,856	2,101	1,193	418	107	1,119	90.2	516	0.07	0.07	3.86	8.49
3	TX	El Paso Co	143,118	20,272	13,472	4,093	1,089	19,706	3,753	4,119	519	476	902	1,117
4	TX	Hudspeth Co	18,792	3,409	2,548	680	163	1,394	54.5	315	0	0	0.24	2.92
5	TX	Jeff Davis Co	4,878	1,003	1,564	463	68.2	422	0	0	0	0	0	0
6	TX	Presidio Co	4,880	900	2,518	669	73.6	495	0	0	0	0	0	0
1	NM	Dona Ana Co	83,671	11,398	67,737	11,440	1,211	10,199	790	2,155	112	94.4	151	554
2	NM	Lincoln Co	19,476	2,202	16,984	3,527	207	1,791	65.1	469	0.75	0.75	0.18	100
3	NM	Otero Co	28,647	2,906	31,921	5,873	273	3,472	381	123	132	125	119	167
4	NM	Sierra Co	20,137	1,751	8,300	1,843	121	2,007	0	0	196	110	0	0
Grand Total			342,250	46,780	148,934	29,796	3,392	41,318	5,134	7,697	960	806	1,176	1,949

SOURCE:
http://www.epa.gov/air/data/geosel.html
USEPA - AirData NET Tier Report
*Net Air pollution sources (area and point) in tons per year (2001)
Site visited on 13 November 2007.

El Paso-Las Cruces-Alamogordo Interstate AQCR (40 CFR 81.82):
In the State of Texas: Brewster County, Culberson County, El Paso County, Hudspeth County, Jeff Davis County, and Presidio County
In the State of New Mexico: Dona Ana County, Lincoln County, Otero County, and Sierra County

APPENDIX F

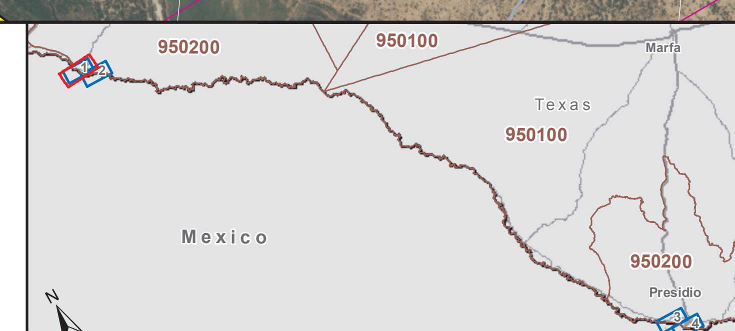
Detailed Maps of the Proposed Tactical Infrastructure Sections



Proposed Action Route
Land Parcels
Census Tracts
Surface Water

Feet
0 500 1,000 2,000
Scale

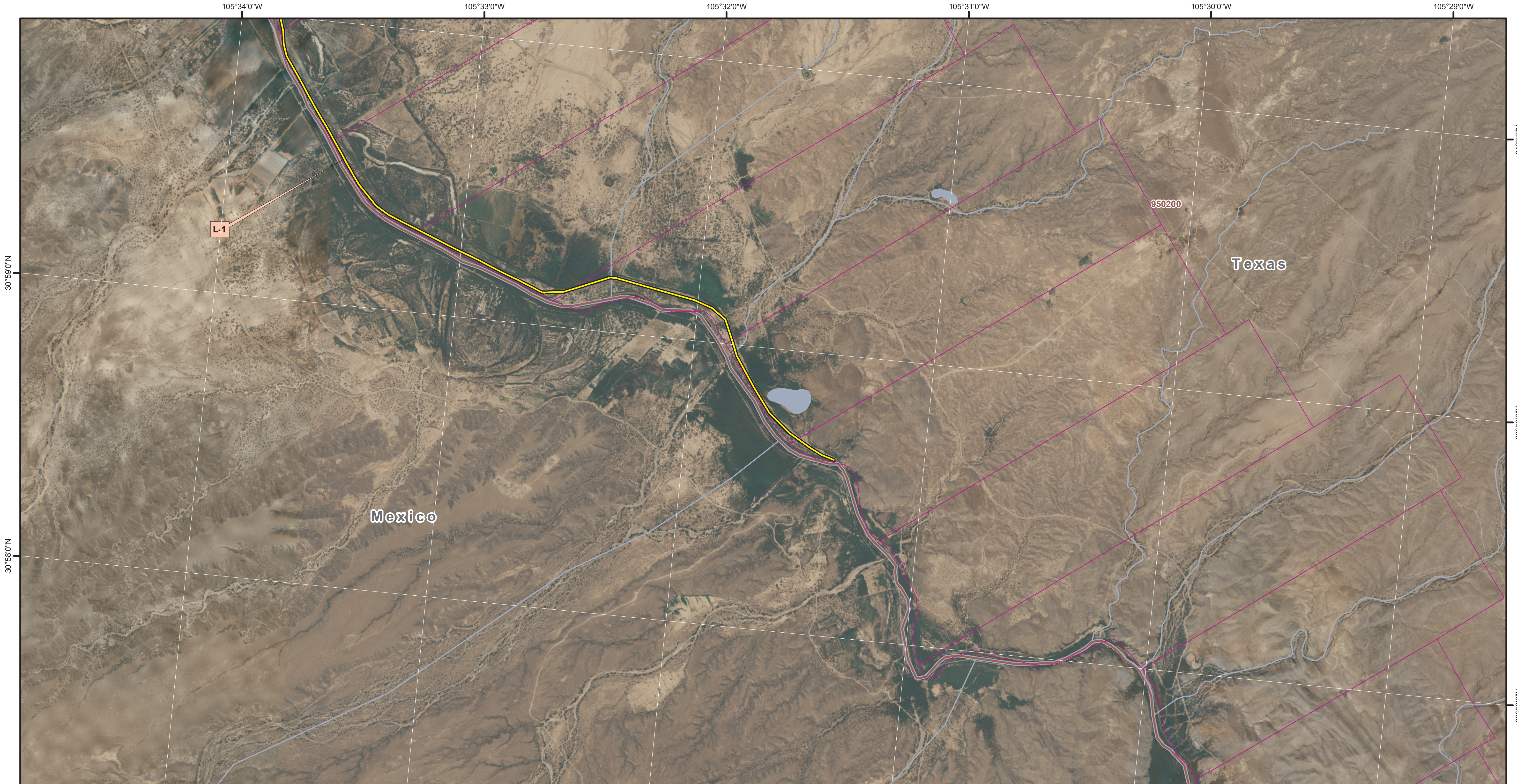
N



USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Details Proposed
Fence Section Maps

Projection: Albers
USA Contiguous Albers Equal Area Conic
North American Datum of 1983

December 2007	Scale 1" = 2000'	Map 1 of 4



Proposed Action Route
Land Parcels
Census Tracts
Surface Water

Feet
0 500 1,000 2,000
Scale

N

USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Details Proposed
Fence Section Maps

Projection: Albers
USA Contiguous Albers Equal Area Conic
North American Datum of 1983

December 2007	Scale 1" = 2000'	Map 2 of 4

Proposed Action Route
Surface Water
Nickel-Delnorte-Canutio-Badland (s7234)

Feet
0 500 1,000 2,000
Scale

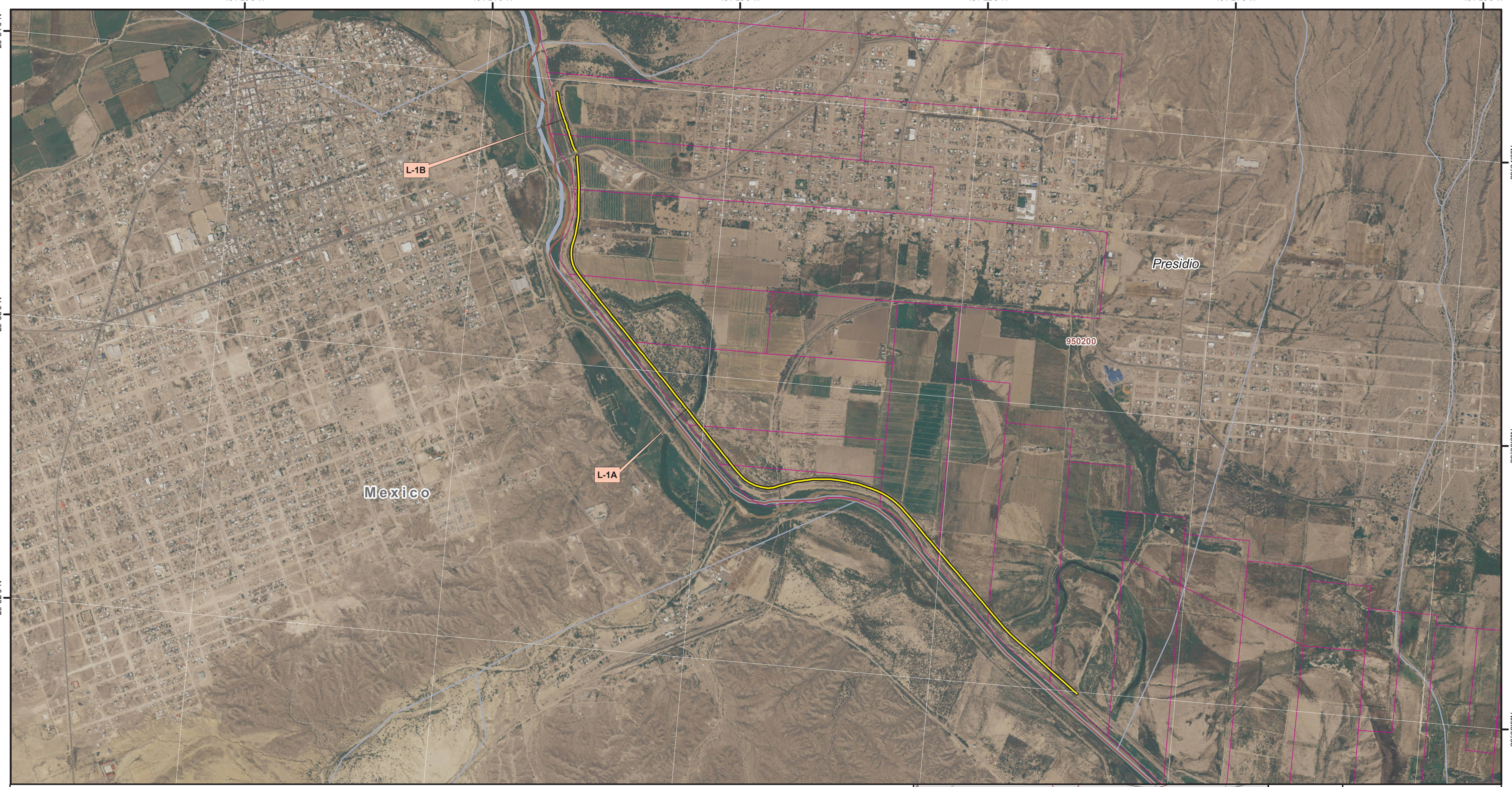
N

e2M
Solutions Today for a Sustainable Tomorrow

USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Soil Maps

Projection: Albers
USA Contiguous Albers Equal Area Conic
North American Datum of 1983

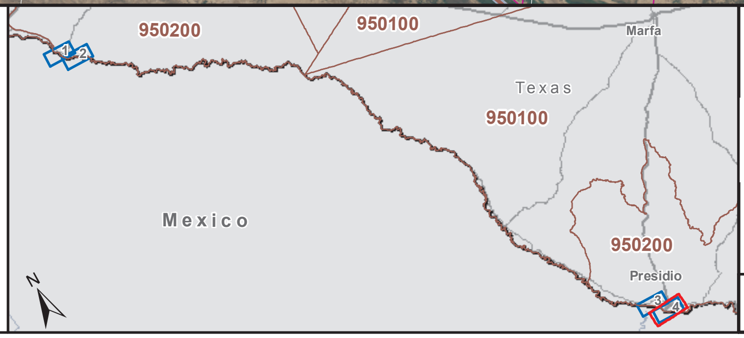
November 2007 | Scale 1" = 2000' | Marfa 3 of 4



Proposed Action Route
Land Parcels
Census Tracts
Surface Water

Feet
0 500 1,000 2,000
Scale

N



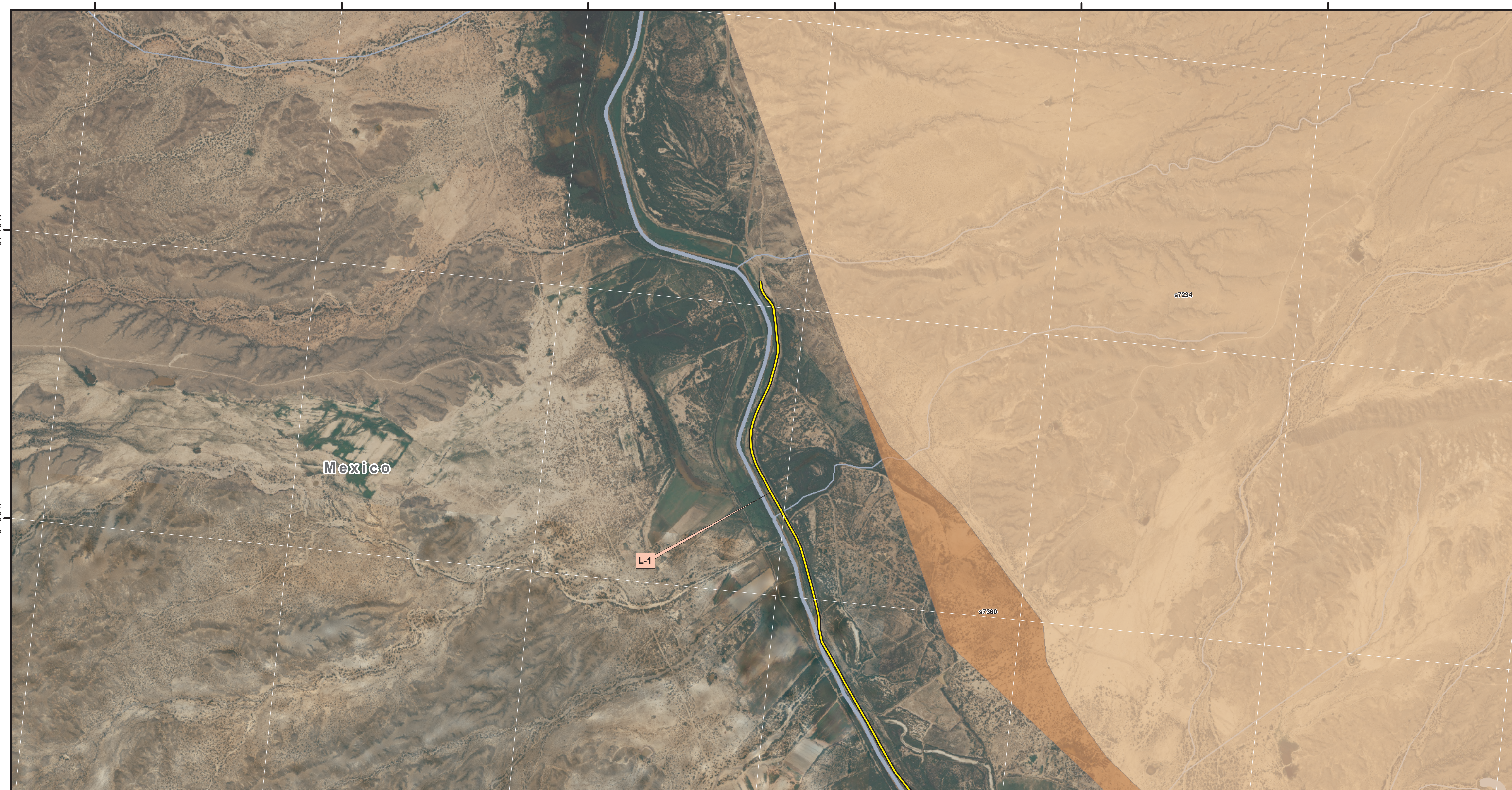
USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Details Proposed
Fence Section Maps

Projection: Albers
USA Contiguous Albers Equal Area Conic
North American Datum of 1983

December 2007	Scale 1" = 2000'	Map 4 of 4

APPENDIX G

Detailed Maps of the Proposed Tactical Infrastructure Sections Showing Soils



Proposed Action Route

Surface Water

Soil Types

Nickel-Delnorte-Canutio-Badland (s7234)

Tigua-Harkey-Glendale-Gila (s7360)

Feet

0 500 1,000 2,000

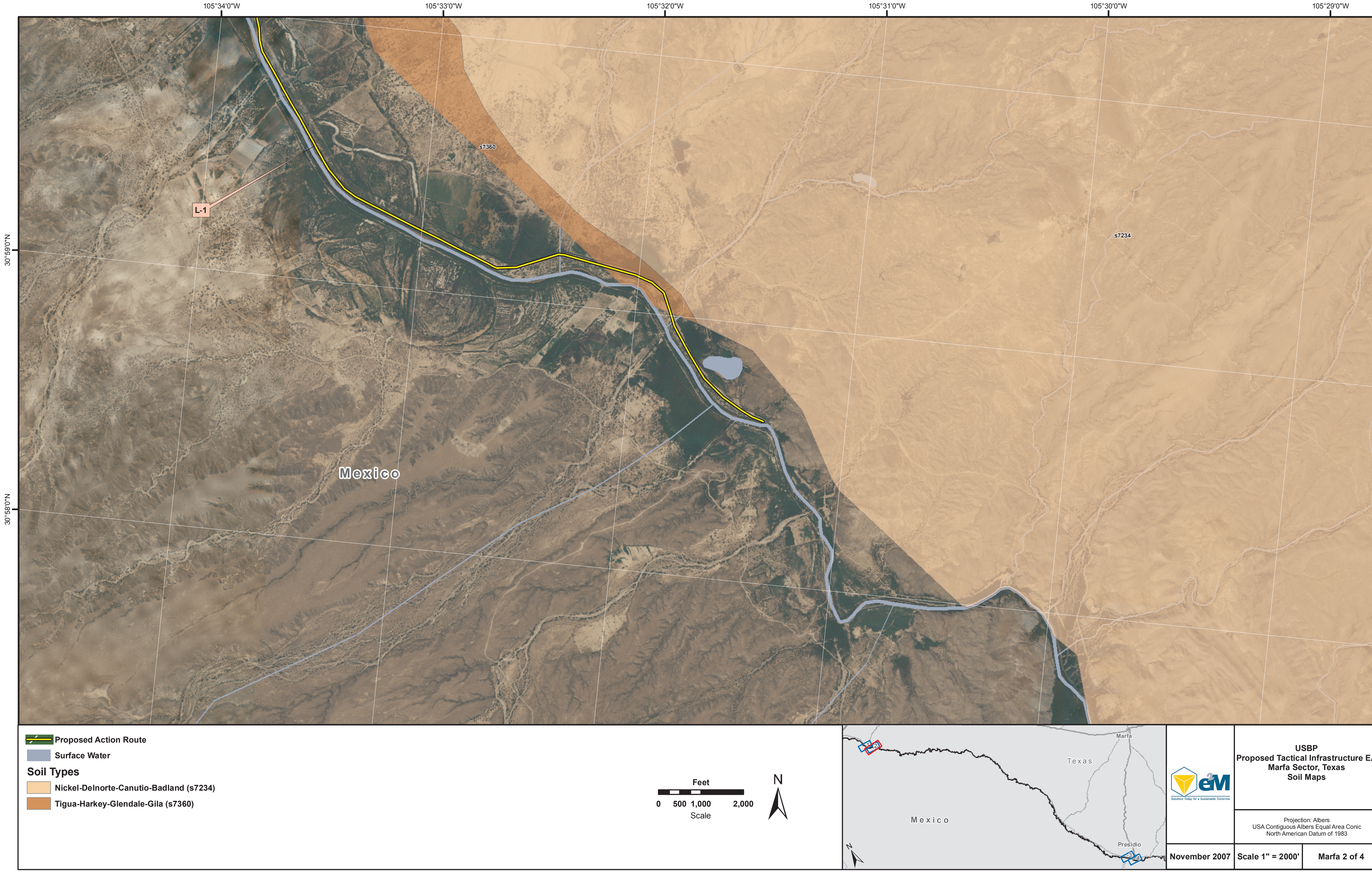
Scale

N

USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Soil Maps

Projection: Albers
USA Contiguous Albers Equal Area Conic
North American Datum of 1983

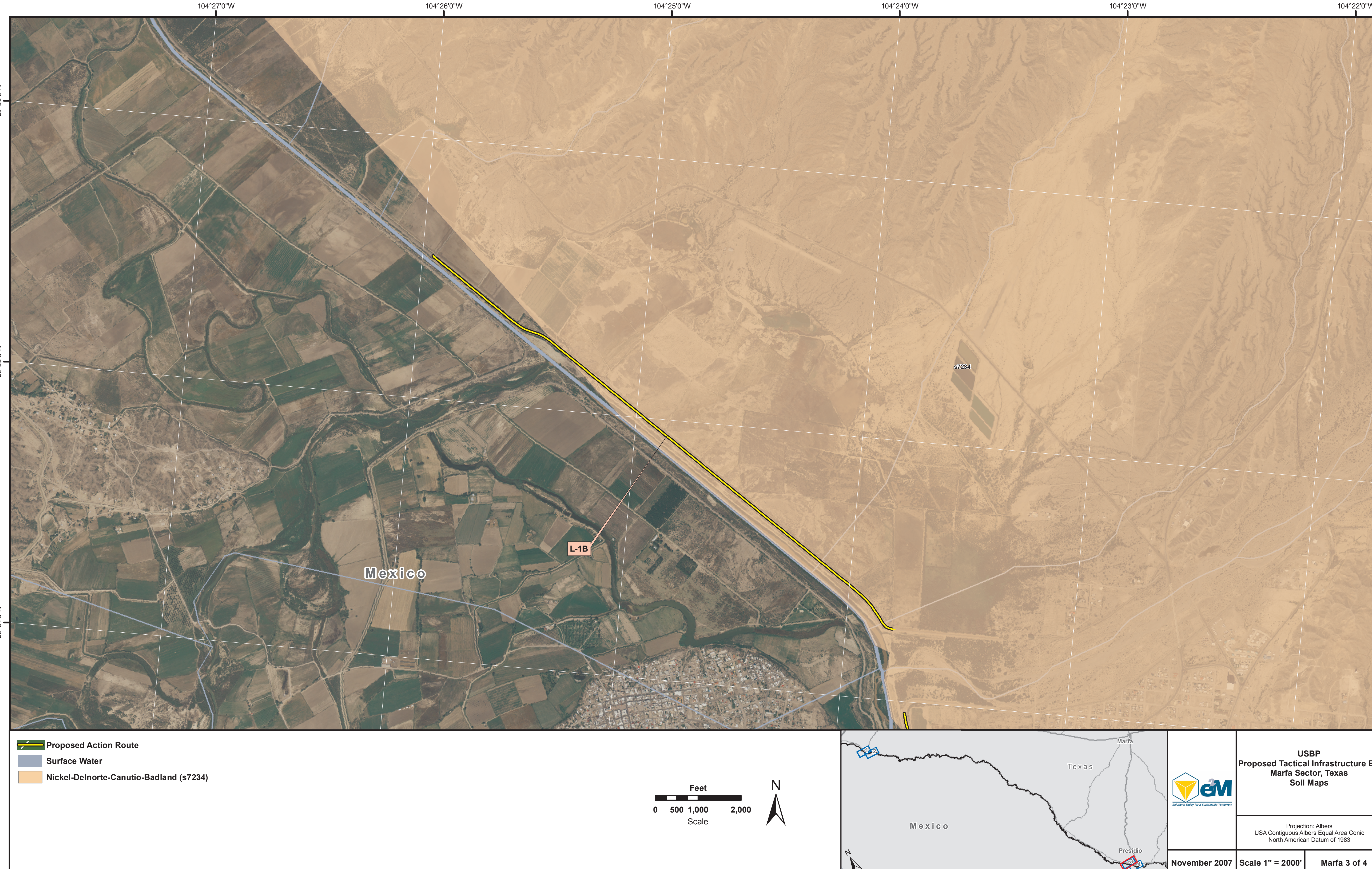
November 2007	Scale 1" = 2000'	Marfa 1 of 4



USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Soil Maps

Projection: Albers
USA Contiguous Albers Equal Area Conic
North American Datum of 1983

November 2007 | Scale 1" = 2000' | Marfa 2 of 4


104°27'0"W
104°26'0"W
104°25'0"W
104°24'0"W
104°23'0"W
104°22'0"W
29°36'0"N
29°35'0"N
29°34'0"N
s7234
L-1B
Mexico
Marfa
Texas
Mexico
Presidio
Proposed Action Route
Surface Water
Nickel-Delnorte-Canutio-Badland (s7234)
Feet
0 500 1,000 2,000
Scale
N
e²M
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USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Soil Maps
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USA Contiguous Albers Equal Area Conic
North American Datum of 1983
November 2007
Scale 1" = 2000'
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Proposed Action Route

Surface Water

Nickel-Delnorte-Canutio-Badland (s7234)

Feet

0 500 1,000 2,000

Scale

N

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USBP
Proposed Tactical Infrastructure EA
Marfa Sector, Texas
Soil Maps

Projection: Albers
USA Contiguous Albers Equal Area Conic
North American Datum of 1983

November 2007	Scale 1" = 2000'	Marfa 4 of 4

APPENDIX H

Draft Biological Survey Report

DRAFT

BIOLOGICAL SURVEY REPORT

SUPPORTING THE

ENVIRONMENTAL ASSESSMENT FOR

CONSTRUCTION, MAINTENANCE, AND OPERATION OF TACTICAL INFRASTRUCTURE

MARFA SECTOR, TEXAS

Prepared for

U.S. Customs and Border Patrol

Prepared by

Solutions Today for a Sustainable Tomorrow

JANUARY 2008

ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
CBP	U.S. Customs and Border Protection
CWA	Clean Water Act
DHS	U.S. Department of Homeland Security
EA	Environmental Assessment
ESA	Endangered Species Act
IBWC	International Boundary and Water Commission
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NWR	National Wildlife Refuge
POE	Port of Entry
ROE	Right of Entry
SFA	Secure Fence Act
TPWD	Texas Parks and Wildlife Department
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Draft

BIOLOGICAL SURVEY REPORT
SUPPORTING THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CONSTRUCTION, OPERATION AND MAINTENANCE OF TACTICAL INFRASTRUCTURE, U.S. BORDER PATROL MARFA SECTOR, TEXAS.

PF225 MARFA SECTIONS L-1, L-1A, AND L-1B (PRESIDIO AND HUDSPETH COUNTIES, TEXAS)

U.S. DEPARTMENT OF HOMELAND SECURITY
CUSTOMS AND BORDER PROTECTION
U.S. BORDER PATROL

JANUARY 2008

DRAFT BIOLOGICAL SURVEY REPORT
SUPPORTING THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CONSTRUCTION OPERATION AND MAINTENANCE OF TACTICAL INFRASTRUCTURE U.S. BORDER PATROL MARFA SECTOR, TEXAS.

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1. Introduction

This biological survey report synthesizes information collected by engineering-environmental Management, Inc (e²M) from a variety of sources, including field surveys, to describe the biological resources of the project areas associated with the proposed construction, operation and maintenance of tactical infrastructure at the U.S./Mexico international border, Marfa Sector, Texas. Information was gathered from publicly available literature, data provided by relevant land management agencies, review of aerial photography and U.S. Geological Survey (USGS) topographic maps, data from NatureServe, the National Wetlands Inventory (NWI), and field surveys conducted on November 7 and 8, 2007. Best management practices (BMPs) for avoiding or reducing impacts to the identified resources are included in this report.

This report was developed to support National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) requirements for analysis of potential impacts to biological resources resulting from the proposed project. This report was developed as an independent document but will be included as an appendix in the environmental assessment developed for this project.

2. Project Description

U.S. Border Patrol (USBP) within the Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP), is proposing to install and operate tactical infrastructure consisting of pedestrian, aesthetic, or hybrid fence; access roads; patrol roads; lights; and other tools along the U.S./Mexico international border within the Marfa Sector, Texas. **Figure 2-1** and **Figure 2-2** illustrate the general proposed location of the new tactical infrastructure within the USBP Marfa Sector. USBP Marfa Sector has identified both of these high-priority areas for improvements that will help it gain operational control of the border. These improvements include installation of “primary pedestrian fence” sections (i.e., areas of the border that are not currently fenced). Under the Secure Fence Act of 2006 (SFA) (Public Law 109-367), Congress has appropriated funds for constructing pedestrian fence along the U.S./Mexico international border. Construction of other tactical infrastructure might occur as Congress appropriates additional funds. **Table 2-1** provides the location of general tactical infrastructure and length for each section in the Marfa Sector.

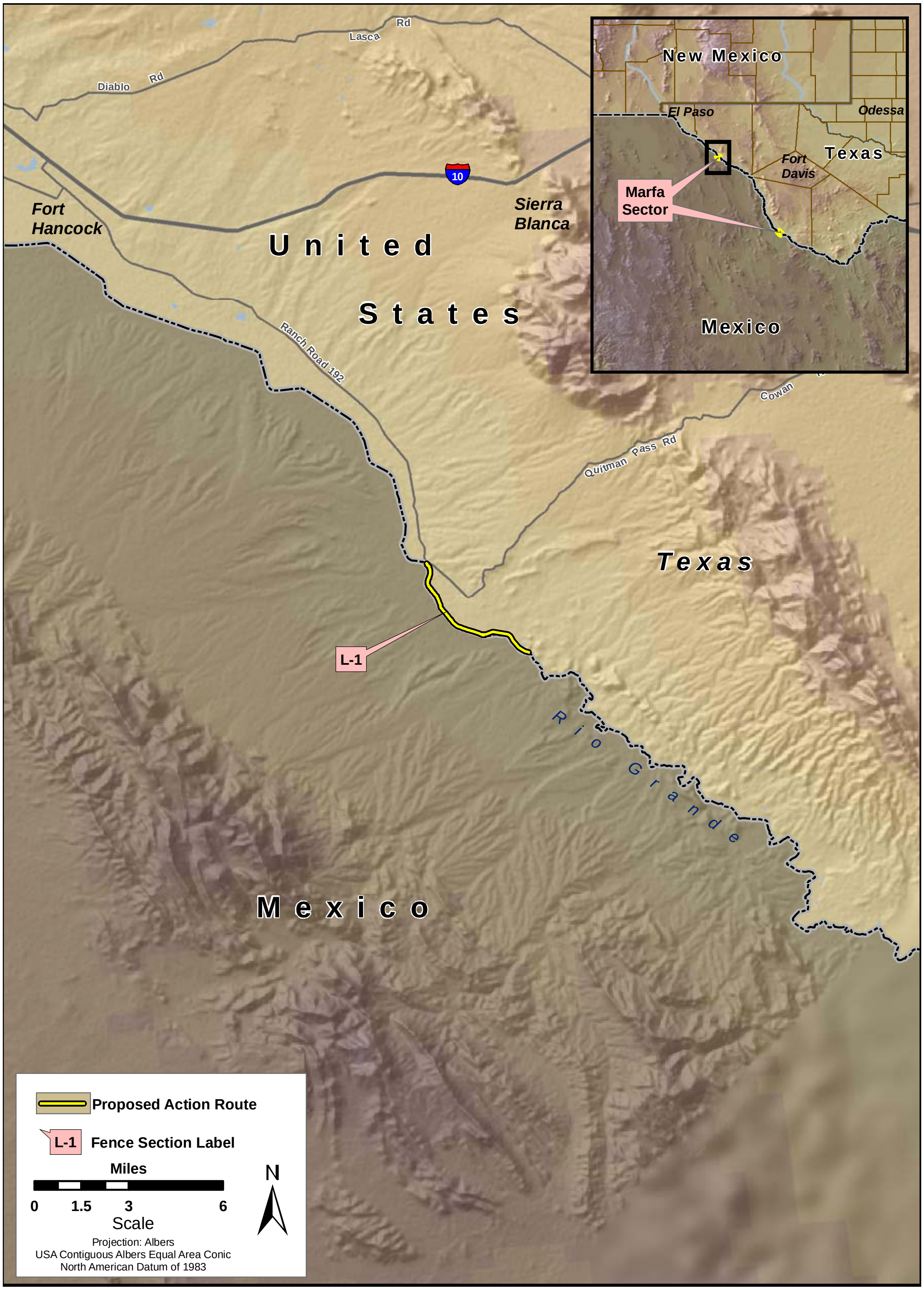
Table 2-1. Tactical Infrastructure Sections, Marfa Sector

Section Number	USBP Station	General Location	Land Ownership	Length of Section (miles)
L-1	Sierra Blanca	Neely’s Crossing	Public (IBWC)	4.63
L-1A	Presidio	Rio Grande East of POE	Public (IBWC) and private	3.05
L-1B	Presidio	Rio Grande West of POE	Public (IBWC) and private	3.05
			Total	10.73

Note: IBWC = International Boundary and Water Commission; POE = Port of Entry

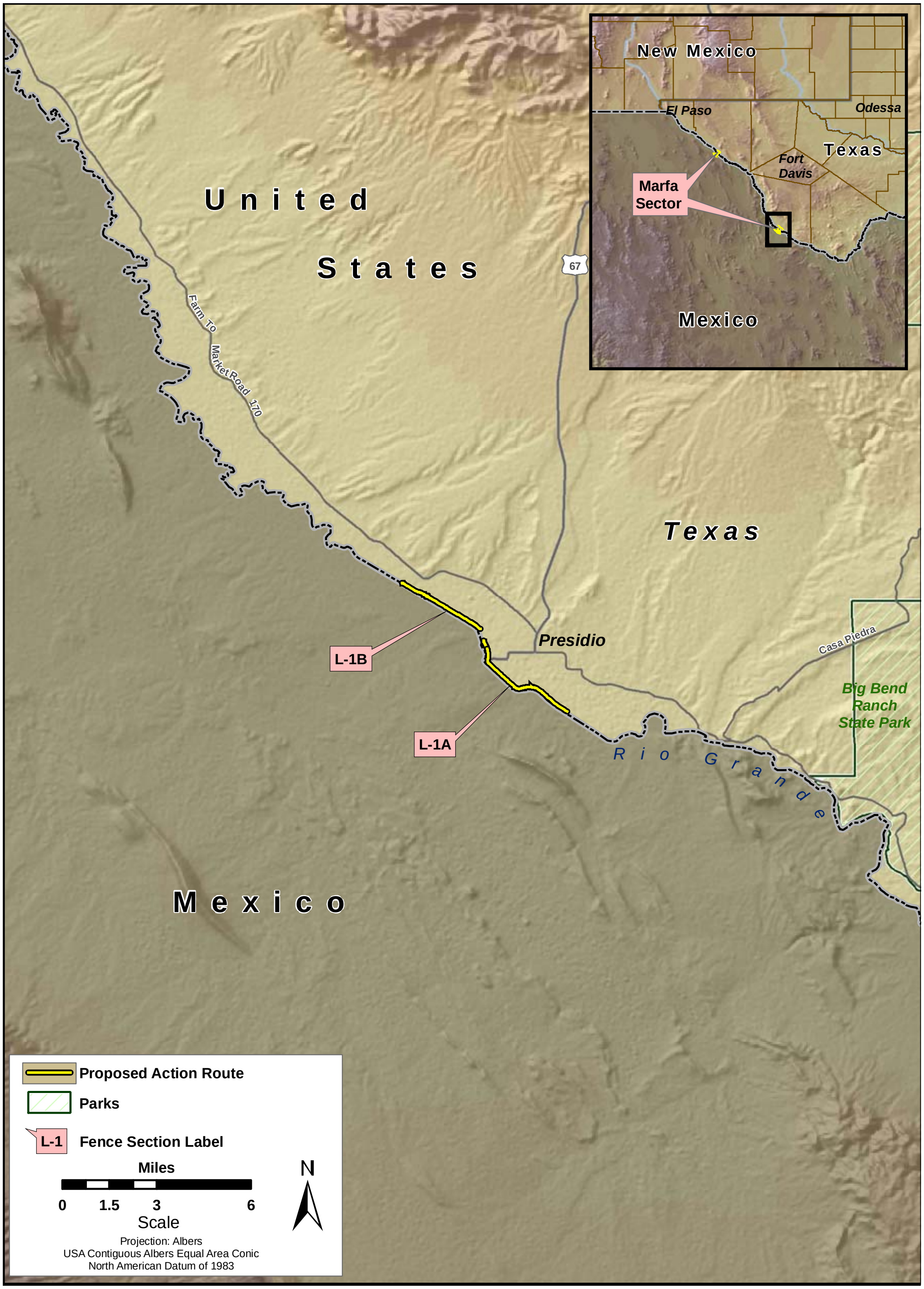
Three tactical infrastructure sections are proposed within the Marfa Sector. A general description of each section and the alternative routes are described below.

The proposed tactical infrastructure would follow the International Boundary and Water Commission (IBWC) levee system for the majority of its length. In Sierra Blanca, Section L-1 would be constructed as a “floating fence” and placed atop the levee. This configuration would allow the majority of the proposed infrastructure to be placed on property owned by the IBWC without major disturbance to current IBWC operations or USBP patrol roads. In Presidio (Sections L-1A and L-1B), the proposed section alignments along the IBWC levee would be constructed as new levee retaining walls on the side of the levee facing the Rio Grande (See **Figure 2-2** in EA). Where Section L-1B encounters Cibolo Creek, there will be a break in the fence and a patrol road will be inserted



Source: ESRI StreetMap USA 2005

Figure 2-1. General Location of Proposed Tactical Infrastructure



Source: ESRI StreetMap USA 2005

Figure 2-2. General Location of Proposed Tactical Infrastructure

that will be located around the perimeter of the creek crossing at a suitable point upstream.

The proposed tactical infrastructure would impact an approximately 60-foot wide corridor along each fence section. This corridor would include fences, access roads, patrol roads, and construction staging areas. Vegetation would be cleared and grading may occur where needed.

3. Survey Methods and Limitations

To provide flexibility in placement of tactical infrastructure within these section corridors, and to ensure consideration of potential impacts due to construction and use, surveys were conducted in an area extending 150 feet north and 60 feet south of the proposed alignment. Surveys extended at least 0.5 miles past the proposed ends of each section.

Intuitive controlled surveys of the potential impact areas were conducted by James Von Loh (Senior Ecologist, e²M), Valerie Whalon (Biologist, e²M), and Karen Stackpole (Senior Ecologist, e²M) on November 7 and 8, 2007. Surveyors walked most of the length of the proposed project corridor and examined in more detail areas containing species compositions or habitat that might be conducive to sensitive species. Plot data (e.g., GPS coordinates, photographs, and plant community composition) were recorded at regular intervals along the corridor and where plant communities presented substantial shifts in species composition. These data were used to generate vegetation classifications and maps to support delineation of habitat types, analysis of potential sensitive species occurrences, and analysis of potential project impacts to biological resources. Although the surveyors did not conduct protocol surveys, they did specifically look for evidence indicating the presence of state and federal listed species (see **Table 3-1**), and habitats that might support them. **Appendix A** contains a description of each federally listed species.

3.1 Environmental Setting

The potential impact areas extend 150 feet north and 60 feet south from the proposed alignment. The 210-foot corridor allows sufficient room to accommodate temporary construction impacts, permanent impacts from installation, and use of tactical infrastructure.

The project area climate is Subtropical Arid within the Modified Marine climatic type, meaning that summers are long and hot and winters are short, dry, and mild (Larkin and Bomar,1983; Bailey 1995). The marine climate results from 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. In the project area, summertime precipitation anomalies related to the mountain relief of the Trans-Pecos region occur.

Temperatures in El Paso occur in an average annual minimum and maximum of 52°F and 77°F, respectively (NOAA 2007). The lowest and highest temperatures recorded for El Paso are -8°F and 114°F. The average annual precipitation of the Trans-Pecos region recorded in Presidio is 9.6 inches and in El Paso 9.4 inches. The distribution of rainfall throughout the year is irregular but occurs predominantly during the summer months. A long growing season occurs in the proposed project region, over 300 days. The evaporation rate during the summer season is high, about twice the amount of precipitation.

Table 3-1. Federal- and State-Listed Species Potentially Occurring in the Project Area

Common Name	Scientific Name	County	Federal Status	State Status	Habitat
Plants					
Hinckley oak	*Quercus hinckleyi*	P	T	T	Arid limestone slopes at mid elevations in Chihuahuan Desert
Fish					
Blue sucker	*Cycleptus elongates*	P		T	Larger portions of major rivers in Texas; usually in channels and flowing pools with a moderate current; bottom type usually of exposed bedrock, perhaps in combination with hard clay, sand, and gravel; adults winter in deep pools and move upstream in spring to spawn on riffles
Chihuahua shiner	*Notropis Chihuahua*	P		T	Rio Grande basin, Big Bend region; clear, cool water that is often associated with nearby springs; often in pools with slight current or riffles over a gravel or sand bottom where vegetation may be present
Conchos pupfish	*Cyprinodon eximius*	P		T	Rio Grande and Devils River basins; sloughs, backwaters, and margins of larger streams, channels of creeks, and mouths
Mexican stoneroller	*Campostoma ornatum*	P		T	In Texas, Big Bend region; clear, fast riffles, chutes, and pools in small to medium-sized creeks with gravel or sand bottoms

Common Name	Scientific Name	County	Federal Status	State Status	Habitat
Reptiles					
Chihuahuan Desert lyre snake	*Trimorphodon vilkinsonii*	H		T	Mostly crevice-dwelling in predominantly limestone-surfaced desert northwest of the Rio Grande from Big Bend to the Franklin Mountains, especially in areas with jumbled boulders and rock faults/fissures
Mountain short-horned lizard	*Phrynosoma hernandesi*	H		T	Open, shrubby, or openly wooded areas with sparse vegetation at ground level; soil may vary from rocky to sandy
Texas horned lizard	*Phrynosoma cornutum*	H		T	Open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky
Birds					
American peregrine falcon	*Falco peregrines anatum*	H	DL	E	Nests in tall cliff eyries; migratory stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands
Arctic peregrine falcon	*Falco peregrines tundrius*	H	DL	T	Migratory stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands
Interior least tern	*Sterna antillarum athalassos*	H	E	E	Nests along sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.)
Mexican spotted owl	*Strix occidentalis lucida*	H	T	T	Remote, shaded canyons of coniferous mountain woodlands (pine and fir)

Common Name	Scientific Name	County	Federal Status	State Status	Habitat
Birds (continued)					
Northern aplomado falcon	*Falco femoralis septentrionalis*	H, P	E	E	Open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus
Southwestern willow flycatcher	*Empidonax traillii extimus*	H, P	E		Thickets of willow, cottonwood, mesquite, and other species along desert streams
Yellow-billed cuckoo	*Coccyzus americanus*	H, P	C; NL		Deciduous woodlands with cottonwoods and willows; dense understory foliage is important for nest site selection; nests in willow, mesquite, cottonwood, and hackberry; forages in similar riparian woodlands
Mammals					
Black bear	*Ursus americanus*	H	T/SA;NL	T	Bottomland hardwoods and large tracts of inaccessible forested areas
Mexican long-nosed bat	*Leptonycteris nivalis*	P	E	E	Cave-dwelling species that usually inhabits deep caverns; nectivorous, with *Agave* spp. preferred

Sources: Texas Parks and Wildlife Department (TPWD) 2007; U.S. Fish and Wildlife Service (USFWS) 2007.

Notes: DL = De-Listed

E=Endangered

T=Threatened

C = Species for which the Service has on file enough substantial information to warrant listing as threatened or endangered

NL= Not listed

T/SA= Threatened due to similar appearance

H= Hudspeth County (Fence Section L-1)

P= Presidio County (Fence Section L-1A and L-1B)

4. Biological Resources

4.1 Vegetation Classification

4.1.1 Vegetation Overview

The vegetation of the west-Texas deserts has generally been classified under the Dry Domain (300), Tropical/Subtropical Desert Division (320) of Bailey (1995). The project area is more finely classified as the Chihuahuan Desert Province (321). The Texas Parks and Wildlife Department (2007) provides discussion and describes vegetation geography to biotic provinces and natural regions using topographic features, climate, vegetation types, and terrestrial vertebrates. This system places the project area in the Chihuahuan Biotic Province; Trans-Pecos Natural Region; and the Level III Ecoregion of the Chihuahuan Desert. The vegetative habitat section describes and illustrates the existing condition and distribution of vegetation as it occurred in 2007 within the proposed project corridor.

4.1.2 Vegetation Classification

NatureServe (2007) has defined ecological systems to represent recurring groups of biological communities that are found in similar physical environments and are influenced by similar dynamic ecological processes such as fire or flooding. Ecological systems represent classification units that are readily identifiable by conservation and resource managers in the field. The ensuing vegetation description for the project area was prepared in the framework of ecological systems that include:

1. Chihuahuan Creosotebush Desert Scrub (CES302.731);
2. Chihuahuan Mixed Salt Desert Scrub (CES302.017); and
3. North American Arid West Emergent Marsh (CES300.729).

This chapter provides a brief description of each plant community that surveyors observed within the proposed sections. Communities are distinguished using the NatureServe Vegetation Alliance level of classification or an approximation (provisional community name).

Classification of existing vegetation within these corridor sections was achieved by accessing nearly the entire proposed project corridor, sampling observation points, and relating them to the NatureServe Explorer classification database (2007). At the coarsest level, the above-named ecological systems were determined and local vegetation types placed into the national system. A finer level of classification equaling or approximating the vegetation alliance level of the National Vegetation Classification System (NatureServe 2007) was used to prepare the discussion of plant communities under each ecological system. Unclassifiable vegetation stands and patches sampled within the proposed project corridor typically consisted of non-native species, including: Athel

Tamarisk (*Tamarix aphylla*) Woodland; Salt-cedar (*Tamarix chinensis*) Woodland and Shrubland; Bermuda Grass (*Cynodon dactylon*) Semi-Natural Herbaceous Vegetation; and Russian-thistle (*Salsola australis*) Semi-Natural Herbaceous Vegetation.

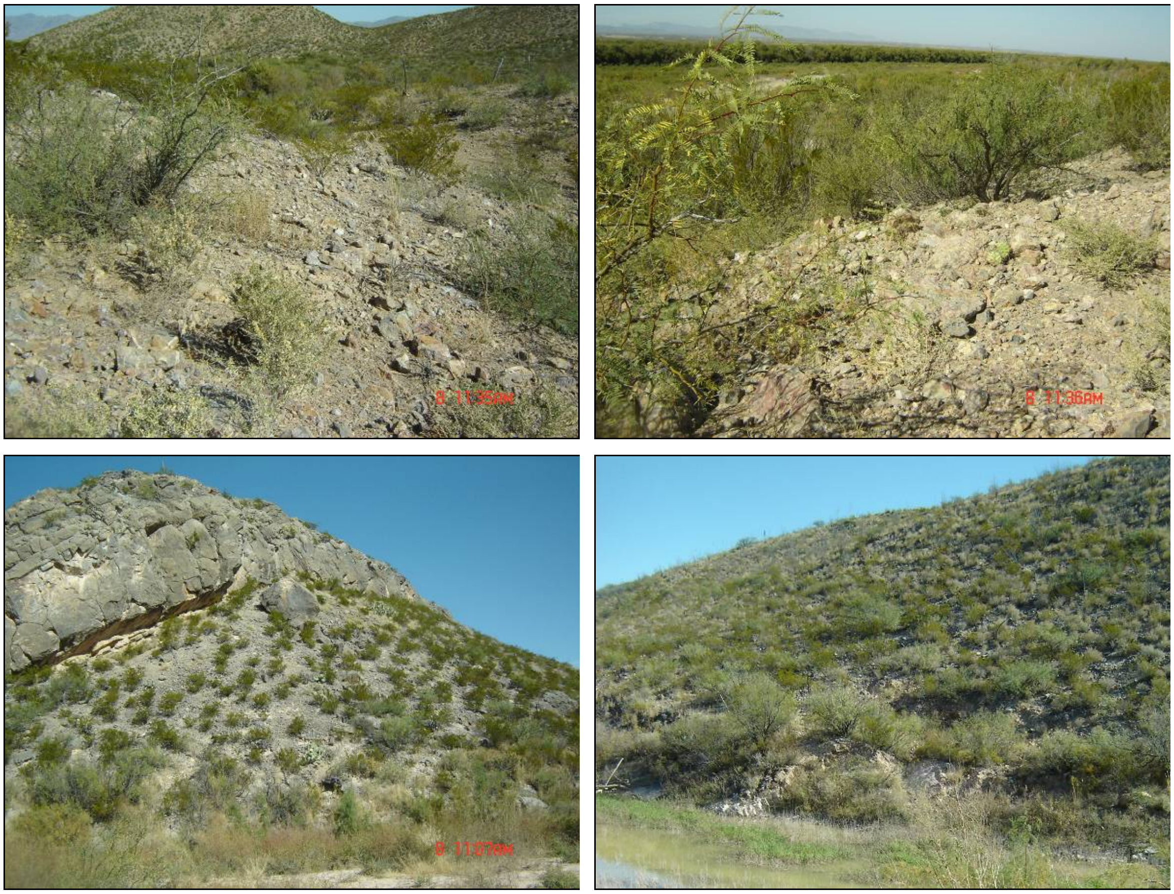
4.1.3 Vegetation Description

Habitats observed, sampled, and photographed within the project corridor ranged from desert scrub of uplands and creeks to riparian forest and woodland communities in the Rio Grande floodplain, and non-native grasslands and forblands. Much of the vegetation cover along the sections consisted of non-native tree, shrub, grass, and forb species that are themselves dominant. Agricultural fields occur along much of the proposed project corridor near Presidio, where they typically lie fallow and support stands of annual Russian-thistle forbs. Where actively farmed, the fields produce hay crops, principally alfalfa, sorghum, and Bermuda grass.

To the extent possible, each community is illustrated and supported by representative ground photographs and foliar cover information for dominant species. Some vegetation patches and stands are introduced non-native species and do not readily fit into a recognized vegetation alliance or ecological system designed for native vegetation; they are discussed at the end of this section.

4.1.3.1 Chihuahuan Creosotebush Desert Scrub (CES302.731)

Creosotebush—Honey Mesquite Shrubland. This community occurs within Section L-1 near Sierra Blanca. The ends of bedrock ridges with gravelly slopes on the east end of the proposed corridor and a small area of gravelly upland slopes on the west end support 2–5 meters tall creosotebush and honey mesquite shrubs that provide 10–20 percent and 10–12 percent cover, respectively (see **Photograph 4-1**). These sites have moderately high diversity and support low cover of several succulents (*Opuntia* spp.) and the short shrub four-wing saltbush. The herbaceous layer is diverse and contributes sparse to low cover, up to 6 percent cover, of hairy grama, fluffgrass, hairy golden aster, and Russian-thistle.



Photograph 4-1. Photographs of Representative Creosotebush—Honey Mesquite Shrubland Habitat

4.1.3.2 North American Warm Desert Riparian Woodland and Shrubland (CES302.753)

Honey Mesquite Woodland. Honey mesquite woodlands characterized by small trees 2–5 m tall occur within Sections L-1A and L-1B in the vicinity of Presidio, where they became established in old agricultural fields or formed a linear band at the levee toe-of-fill (principally at the base of the south levee bank). In the canopy layer, honey mesquite cover ranges from 30–45 percent (see **Photograph 4-2**). The associated canopy tree salt-cedar contributes approximately 15 percent cover in each sampled stand. The herbaceous layer consists of Russian-thistle primarily, which provides 15–50 percent cover.

Photograph 4-2. Photographs of Representative Honey Mesquite Woodland Habitat

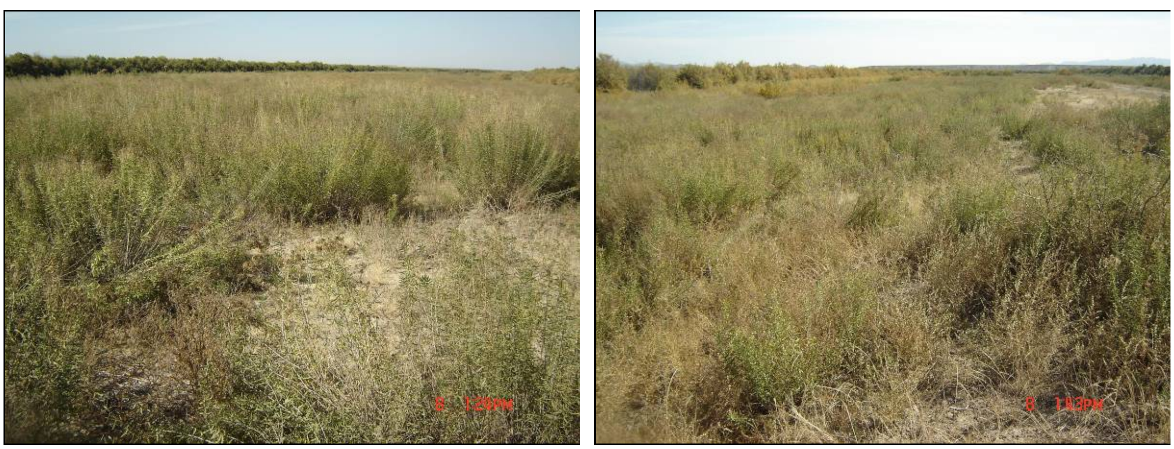
Salt-cedar/Bermuda Grass Shrubland and Shrub Herbaceous Vegetation. Salt-cedar tall shrubs, 2–5 meters tall, have invaded Bermuda grass grasslands within Section L-1 near Sierra Blanca (see **Photograph 4-3**). These stands occupy the narrow floodplain strip or first terrace between the Rio Grande and the access road, which is constructed on a short-stature levee or berm. The tall shrub layer is monotypic and provides approximately 15–35 percent cover. The herbaceous layer contributes dense cover in the stand and is characterized by Bermuda grass (30–70 percent cover) and white aster (3–25 percent cover).

Photograph 4-3. Photographs of Representative Salt-Cedar/Bermuda Grass Shrubland Habitat

Seepwillow Shrub Herbaceous Vegetation. Seepwillow occurs on one site within Section L-1A near Presidio as a shrub herbaceous stand that became established in a small drainage adjacent to an irrigation ditch (see **Photograph 4-4**). The seepwillow shrubs are up to 2–5 meters tall and provide approximately 15 percent cover. The associated herbaceous layer includes approximately 15 percent cover each by Bermuda grass, Johnsongrass, and the annual forb Russian-thistle.

Photograph 4-4. Photographs of Representative Seepwillow Habitat

Rabbitbrush Shrubland. Rabbitbrush short shrubs have become established on roadway fill within the Sierra Blanca Section L-1. On these sites, the fill material supporting rabbitbrush ranges from 30 centimeters to 1 meter deep, and the stands form along both sides of the access road (see **Photograph 4-5**). In the short shrub layer, rabbitbrush contributes 30–55 percent cover, and honey mesquite provides 2–4 percent cover. An herbaceous layer is represented by Bermuda grass, six-weeks grama, dropseeds, and Russian-thistle that provide low cover, up to 13 percent cover in sampled stands.



Photograph 4-5. Photographs of Representative Rabbitbrush Habitat

Seepweed Shrubland. Seepweed short shrubs are common understory associates in several plant communities and rarely form stands within Section L-1 (see **Photograph 4-6**). One such seepweed stand, where seepweed shrubs up to 1 meter tall contribute 40 percent cover, became established in an area with silty soils that received inflow from runoff during precipitation events. The tall shrubs (2–5 meters), honey mesquite, and salt-cedar each provide sparse cover at the stand margin. The herbaceous layer contributes sparse cover and included dropseeds and six-weeks grama. In a second stand within Section L-1, seepweed short shrubs provide 15 percent cover and co-dominate with the tall shrub salt-cedar (12 percent cover) and the short shrub rabbitbrush (8 percent cover). The herbaceous layer, characterized by six-weeks grama and dropseeds, provides low cover, up to 11 percent cover.

Photograph 4-6. Photograph of Representative Seepweed Habitat

Arrowweed Shrubland. One small patch of arrowweed short shrubs has become established along the access road within Section L-1 near Sierra Blanca (see **Photograph 4-7**). Arrowweed short shrubs to 1 meter tall provide approximately 40 percent cover over an area of approximately 200 square meters within a matrix of Bermuda grass.

Photograph 4-7. Photograph of Representative Arrowweed Habitat

4.1.3.3 North American Arid West Emergent Marsh Ecological System (CES300.729)

Common Reed Semipermanently Flooded Herbaceous Vegetation. Resacas located south of Presidio retain water sufficiently on an annual basis to support dense stands of common reed to 5 meters tall (see **Photograph 4-8**). These stands are nearly monotypic, with common reed providing 75–80 percent cover, while low cover, up to 10 percent cover, is contributed by narrowleaf cattail and

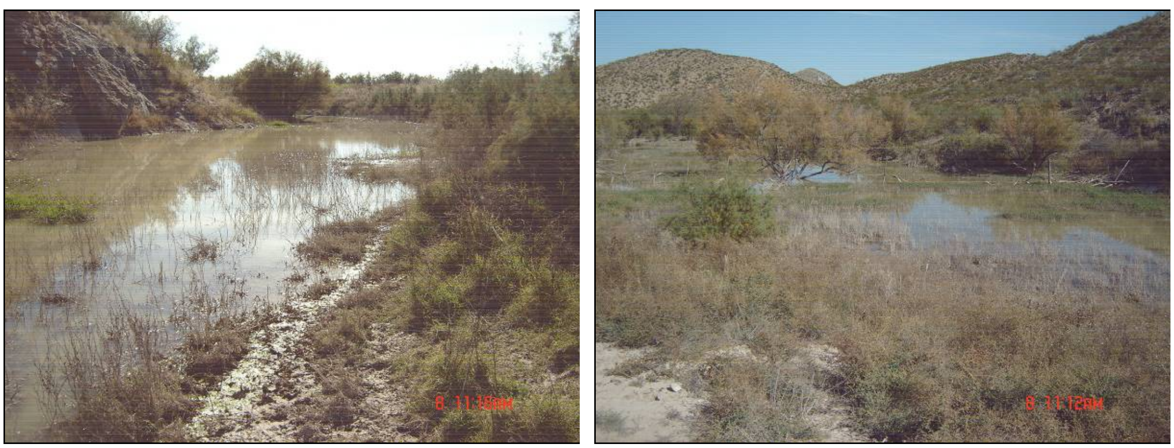
Russian-thistle. Small stands of common reed are often intermingled with tree and shrub species along the Rio Grande, where they provide low to moderate cover. In one such stand, common reed provides 35 percent cover, while seepwillow tall shrubs contribute approximately 10 percent cover, in addition to sparse cover by honey mesquite and salt-cedar trees.

Photograph 4-8. Photographs of Representative Common Reed Habitat

Narrowleaf Cattail—Common Reed Semipermanently Flooded Herbaceous Vegetation. One resaca located south of Presidio is sufficiently flooded annually to support approximately 50 percent cover by the tall graminoid, narrowleaf cattail (see **Photograph 4-9**). A band of common reed providing up to 45 percent cover has become established on saturated soils surrounding the narrowleaf cattail stand within the ponded water. A species of green algae occupies approximately 5 percent of the open water within the resaca. The tall shrubs honey mesquite and salt-cedar provide up to 10 percent cover on the upper wetland margin.

Photograph 4-9. Photograph of Representative Narrowleaf Cattail Habitat

Crowngrass—Bermuda Grass Semipermanently Flooded Herbaceous Vegetation. A ponded area near the end of Section L-1 in the vicinity of Sierra Blanca supports shoreline cover by herbaceous vegetation (see **Photograph 4-10**). Crowngrass and Bermuda grass have become established in the shallow shoreline substrate and on small islands within the pond, contributing 15 percent and 4 percent cover, respectively. The tall shrub layer contributes approximately 12 percent cover and is characterized by salt-cedar to 5 meters tall. A species of green algae provides approximately 4 percent cover within the pond.



Photograph 4-10. Photograph of Representative Crowngrass—Bermuda Grass Habitat

4.1.3.4 Non-Native Woodland, Shrubland, and Herbaceous Vegetation Alliances and Associations

Athel Tamarisk Woodland. A small stand of very large and old Athel tamarisk trees occurs near Presidio within the proposed Section L-1A, amid a broader disturbed area supporting Russian-thistle (see **Photograph 4-11**). These trees provide 75 percent cover, are up to 30 meters tall, are multiple branched from low on the trunk, and have very large basal diameters. A few honey mesquite and four-wing saltbush shrubs providing low cover occur around the perimeter of the woodland stand. Russian-thistle stands that occur adjacent to the Athel tamarisk trees provide approximately 55 percent cover. This site was formerly a homestead, thus accounting for the establishment of these large trees.

Photograph 4-11. Photograph of Representative Athel Tamarisk Stand

Salt-cedar Species Semi-Natural Temporarily Flooded Woodland/Shrubland Alliance. Salt-cedar has become established as small trees with basal diameters to 35 centimeters and as multiple-stemmed tall shrubs. Stands have formed on the banks of the Rio Grande, the adjacent floodplain, the levee toe-of-fill, and around low-lying areas that flood following precipitation events (see **Photograph 4-12**). In the canopy layer, salt-cedar ranges from 3–10 meters tall and provides 45–80 percent cover. Associated canopy trees and shrubs include honey mesquite and rarely tree tobacco and seepwillow, which provide low cover, up to 15 percent cover. The herbaceous layer is characterized by low cover, from 5–15 percent cover, of grasses and forbs, including Bermuda grass and Russian-thistle.

Photograph 4-12. Photographs of Representative Salt-cedar Habitat

Bermuda Grass Semi-Natural Herbaceous Vegetation. Large stands of Bermuda grass have become established between the levee toe-of-fill and the Rio Grande along the Marfa Sector sections (see **Photograph 4-13**). The stands range from 20–75 meters wide along much of the L-1 sections located near Presidio and Sierra Blanca. This non-native rhizomatous grass provides 55–90 percent cover in most stands. The commonly associated forb Russian-thistle provides 1–15 percent cover in the remaining herbaceous layer. Sparse cover by honey mesquite short shrubs occasionally occurs, and one stand supports 10 percent cover by salt-cedar tall shrubs. Near Presidio, Bermuda grass stands are maintained by mowing as part of the levee and adjacent floodplain maintenance schedule, which reduces the invasion of this type by shrubs.

Bermuda Grass—Bristlegrass Semi-Natural Herbaceous Vegetation. Near Sierra Blanca, pastures have been introduced north of the access road and include moderate to dense cover, up to 65 percent cover, by bristlegrass, Bermuda grass, and dropseeds (see **Photograph 4-14**). The forb cocklebur is common to these pastures and contributes up to 10 percent cover in most stands. Moderate to heavy grazing by cattle had occurred prior to sampling this vegetation type.

Bermuda Grass—Russian-thistle Semi-Natural Herbaceous Vegetation. Stands with co-equal dominance of Bermuda grass and Russian-thistle, approximately 15 percent cover for each species respectively, occur between the levee toe-of-fill and the Rio Grande south of Presidio. Sites on the river side of the levee are typically dominated by Bermuda grass, but recent disturbance by bulldozers used in floodplain maintenance activities is evident (see **Photograph 4-15**). Bulldozers are used routinely to widen access roads, remove salt-cedar shrubs and trees from the levee toeslope, and repair damage to crossings of creeks and washes following flood events.

Russian-thistle Semi-Natural Herbaceous Vegetation. The non-native annual forb Russian-thistle, a notorious tumbleweed, has become established on soils disturbed for levee and road construction and also in adjacent agricultural fields lying fallow. Stands are common on levees and fields within the Presidio sections, but rare within the Sierra Blanca project portion, becoming established as stands only on the road template. Russian-thistle plants range from 15–90 percent cover. They are maintained by mowing the levee banks, resulting in plants a few centimeters tall to persisting up to 1 meter tall in agricultural fields (see **Photograph 4-16**). The short shrub layer provides sparse to low cover (up to 5 percent cover) on the levee banks and includes four-wing saltbush, seepweed, and honey mesquite. Low cover of Bermuda grass is occasionally present. The large, spherical Russian-thistle forbs break off at the base when mature and become tumbleweeds blowing into large mats or rafts against fencing and buildings. As such, they represent a fire hazard during the fall and winter months.

Photograph 4-13. Photographs of Representative Bermuda Grass Habitat

Photograph 4-14. Photographs of Representative Bermuda Grass—Bristlegrass Habitat

Photograph 4-15. Photographs of Representative Bermuda Grass—Russian-thistle Habitat

Photograph 4-16. Photographs of Representative Russian-thistle Habitat

Alfalfa—Russian-thistle Semi-Natural Herbaceous Vegetation. One agricultural field near Presidio formerly planted with alfalfa and then allowed to lay fallow now supports moderate cover of alfalfa and Russian-thistle forbs (10 percent cover for each species) adjacent to the levee (see **Photograph 4-17**). Sparse cover by rough pigweed also occurs at this site. The adjacent levee bank, toe-of-fill, and fence row is dominated by moderate to dense Russian-thistle (up to 40 percent cover).

Photograph 4-17. Photograph of Representative Alfalfa—Russian-thistle Habitat

4.2 Plant Species Identified

Table 4-1 lists all plant species identified during the field surveys, including their wetland status and the fence section in which they were identified.

Table 4-1. Plant Species Observed in Marfa Sector Sections L-1, L-1A, and L-1B

Section			Scientific Name/ Common Name	Wetland Indictor Status
L-1	**L-1A**	**L-1B**		
	X	X	*Allionia incarnata*/Hierba de la Hormiga, Umbrellawort	—
X	X		*Amaranthus retroflexus*/Rough Pigweed	FACU-
X		X	*Aster* sp./Aster	—
X	X	X	*Atriplex canescens*/Four-wing Saltbush	UPL
X	X	X	*Baccharis glutinosa*/Mule’s Fat, Seepwillow	FACW
X		X	*Bothriochloa laguroides*/Silver Bluestem	—
X			*Bouteloua adscencionis*/Six-weeks Grama	—
X			*Bouteloua hirsuta*/Hairy Grama	—
X			*Cercidium texanum*/Paloverde	—
X		X	*Chloris cucullata*/Hooded Windmillgrass	—
X	X	X	*Clematis drummondii*/Barbas de Chivato, Old Man’s Beard	—
X	X		*Condalia* sp./Condalia	—
X	X	X	*Cynodon dactylon*/Pato de Gallo, Bermuda Grass	FACU+
X			*Cyperus* sp./Flat Sedge	—
X			*Dyssodia* sp./Dogweed	—
X			*Echinocereus triglochidiatus*/Hedgehog Cactus	—
	X		*Ephedra* sp./Joint-fir	—
X			*Ericameria triantha*/Rabbitbrush	—
X			*Fouquieria splendens*/Ocotillo	—
X			*Gaura parviflora*/Butterfly-weed	NI
X			*Gutierrezia (Xanthocephalum) microcephala*/Snakeweed	—
X	X	X	*Helianthus annuus*/Annual Sunflower	FAC
		X	*Heliotropium curassivicum*/Heliotrope	FACW
X		X	*Heterotheca villosa*/Hairy Golden-aster	—
X		X	*Larrea tridentata*/Creosotebush	—

Section			Scientific Name/ Common Name	Wetland Indictor Status
L-1	**L-1A**	**L-1B**		
X		X	*Leucelene ericoides*/White Aster	—
X	X		*Lygodesmia* sp./Skeletonweed	—
X	X		*Medicago sativa*/Alfalfa	—
X			*Mentzelia* sp./Stick-leaf	—
X		X	*Nicotiana glauca*/Tree Tobacco	FAC
		X	*Nicotiana longiflora*/Annual Tobacco	—
		X	*Opuntia imbricata*/Cane Cholla	—
		X	*Opuntia leptocaulis*/Tasajillo, Christmas Cactus	—
X		X	*Opuntia phaeacantha*/Prickly-pear	—
X			*Opuntia violaceae*/Prickly-pear	—
X			*Panicum virgatum*/Switchgrass	—
X	X	X	*Parkinsonia aculeata*/Retama	FACW-
X			*Parkinsonia texana*/Paloverde, Texas Paloverde	—
X			*Paspalum dissectum*/Mudbank Crowngrass	OBL
X	X	X	*Pennisetum ciliare (Cenchrus ciliaris)*/Buffelgrass	—
X	X	X	*Phoradendron tomentosum*/Mistletoe	—
X	X	X	*Phragmites australis*/Common Reed	FACW
	X		*Phyla nodiflora*/Frog Fruit	FACW
		X	*Pluchea (Tessaria) sericea*/Arrow-weed	NI
X			*Polygonum pensylvanicum*/Smartweed	FACW-
		X	*Populus deltoides*/Eastern Cottonwood	FAC
X			*Portulaca oleracea*/Common Purslane	—
X	X	X	*Prosopis glandulosa*/Mesquite, Honey Mesquite	—
X	X	X	*Salsola australis*/Russian-thistle	FACU
X			*Setaria geniculata*/Bristlegrass	—
X			*Solanum elaeagnifolium*/Trompillo, Silverleaf Nightshade	—
X	X		*Sorghum halepense*/Johnsongrass	FACU
X	X		*Sphaeralcea angustifolia*/Narrow-leaved Globe-mallow	—
X			*Sporobolus airoides*/Alkali Sacaton	FAC
X			*Sporobolus cryptandrus*/Whorled Dropseed	FACU-
X			*Sporobolus flexuosus*/Mesa Dropseed	FAC-

Section			Scientific Name/ Common Name	Wetland Indictor Status
L-1	L-1A	L-1B		
X		X	*Suaeda depressa*/Seepweed	FACW
X			*Suaeda suffrutescens*/Desert Seepweed	FACW
	X		*Tamarix aphylla*/Athel Tamarisk	FACW
X	X	X	*Tamarix chinensis*/Salt-Cedar	FACW
X			*Tridens pulchellus*/Fluffgrass	—
X	X		*Typha domingensis*/Tule, Narrow-leaf Cattail	OBL
	X	X	*Verbesina encelioides*/Cowpen Daisy	FAC
X			*Xanthium strumarium*/Cocklebur	FAC-
53	**24**	**29**	**Total number of species in each section**	
21	**14**	**14**	**Total number of FACW- to OBL species per section**	

Notes:
Wetland Indicator Status (NRCS 2007): Facultative Upland (FACU)—usually occurs in non-wetlands, but occasionally found in wetlands; Facultative (FAC)—equally likely to occur in wetlands or non-wetlands; Facultative Wetland (FACW)—usually occurs in wetlands but occasionally found in non-wetlands; Obligate Wetland (OBL)—occurs almost always under natural conditions in wetlands; Obligate Upland (UPL)—occurs almost always under natural conditions, in non-wetlands; No Indicator (NI)—insufficient information was available to determine an indicator status.
(*) = tentative assignments based on limited information, (-) = less frequently found in wetlands).

4.3 Wildlife Observed

Table 4-2 below lists wildlife observed during the field surveys. The table can provide a general indication of species richness in each section.

Table 4-2. Wildlife Observed During Natural Resources Surveys Conducted November 5 and 6, 2007

Common Name	Scientific Name	Species Status	Section		
			L-1	L-1A	L-1B
Insects					
Monarch Butterfly	*Danaus plexippus*	C		X	
Birds					
American Coot	*Fulica americana*	C	X	X	
American Kestrel	*Falco sparverius*	C		X	X
Barn Swallow	*Riparia riparia*	C		X	X

Common Name	Scientific Name	Species Status	Section		
			L-1	L-1A	L-1B
Bell's Vireo	*Vireo bellii*	C		X	
Birds (continued)					
Cardinal	*Cardinalis cardinalis*	C	X		
Cattle Egret	*Bubulcus egret*	C	X		
Chipping sparrow	*Spizella passerina*	C		X	X
Curved Billed Thrasher	*Toxostoma curvirostre*	C	X		
Flycatcher	*Empidonax sp.*	C	X	X	
Gadwall	*Anas Strepera*	C			X
Gambel's Quail	*Callipepla gambelli*	C	X		
Gray flycatcher	*Empidonax wrightii*	C			X
Great Blue Heron	*Ardea herodias*	C		X	
Great Egret	*Ardea alba*	C	X		
Great-tailed Grackle	*Quiscalus mexicanus*	C		X	
Greater Roadrunner	*Geococcyx californianus*	C	X	X	
House Sparrow	*Passer domesticus*	C		X	
Loggerhead Shrike	*Lanius ludovicianus*	C	X	X	X
Mockingbird	*Mimus polyglottos*	C			X
Mourning Dove	*Zenaida macroura*	C		X	X
Northern Harrier	*Circus cyaneus*	C	X	X	X
Red-tailed Hawk	*Buteo jamaicensis*	C		X	
Red-Winged Blackbird	*Agelaius phoeniceus*	C	X	X	X
Ring-necked duck	*Aythya collaris*	C		X	
Rock Pigeon	Columba livia	C			X
Rufous-Sided Towhee	*Pipilo erythrophthalmus*	C	X		
Say's Phoebe	*Sayornis saya*	C		X	
Teal	*Anas sp.*	C	X	X	
Western Kingbird	*Tyrannus verticalis*	C	X	X	X
Western Meadowlark	*Sturnella neglecta*	C	X	X	

Common Name	Scientific Name	Species Status	Section		
			L-1	**L-1A**	**L-1B**
Western wood peewee	*Contopus sordidulus*	C		X	
Birds (continued)					
White-winged Dove	*Zenaida asiatica*	C			X
Mammals					
Collared Peccary (Javelina)	*Pecari tajacu*	C	X		
Coyote	*Canis latrans*	C	X		X
Deer	*Odocoileus* sp.	C			X
Mexican Ground Squirrel	*Spermophilus mexicanus*	C	X		
Round-tailed Horned Lizard	*Phrynosoma modestum*	C	X		

Note: C = Common

5. Avoidance and Minimization Measures

[Preparer's note: Add Texas BMPs once approved by CBP and USFWS.]

6. Permits, Technical Studies, and Notifications

To comply with state and federal regulations, the following permit applications should be investigated or conducted to assess whether regulatory requirements have been met. It should be noted that additional permits, studies, or notifications not listed herein may also be required.

Permits			
Permit Type	**Issuing Agency**	**Reason**	**Legislation**
404 Permit	USACE	Wetland and waters of the United States (WOUS) delineation	Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers (USACE) to issue permits regulating the discharge of dredged or fill material into the waters of the United States, including wetlands. General permits are often issued by USACE for categories of activities that are similar in nature and would have only minimal individual or cumulative adverse environmental effects. A general permit can also be issued on a programmatic basis ("programmatic general permit") to avoid duplication of permits for state, local or other federal agency programs.

Permits			
Permit Type	**Issuing Agency**	**Reason**	**Legislation**
401 Water Quality Certification	Texas Commission on Environmental Quality (TCEQ)	Wetland and WOUS delineation	Section 401(a)(1) of the Clean Water Act (CWA) specifies that any applicant for a Federal license or permit to conduct any activity, including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters, shall provide the federal licensing or permitting agency a certification from the state in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act (SWRCB 2007).
Section 7 (ESA) Consultation	USFWS	Allow the proposed action to proceed while avoiding impacts to listed species	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 the management of federal lands as well as other federal actions that may affect listed species, such as federal approval of private activities through the issuance of federal funding, permits, licenses, or other actions.

Permits			
Permit Type	**Issuing Agency**	**Reason**	**Legislation**
Migratory Bird Treaty Act (MBTA) coordination (Migratory Bird Depredation Permit)	USFWS	Fence constructed during breeding season	The MBTA established a federal prohibition, unless permitted by regulations, to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird,. . . or any part, nest, or egg of any such bird. The Migratory Bird Depredation Permit is USFWS Form 3-200-13.
Take Permit	State of Texas, Texas Parks and Wildlife Department	Texas Endangered Species Act compliance	Animals: Laws and regulations pertaining to endangered or threatened animal species are contained in Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code and Sections 65.171 - 65.176 of Title 31 of the Texas Administrative Code (TAC). Plants: Laws and regulations pertaining to endangered or threatened plant species are contained in Chapter 88 of the TPW Code and Sections 69.01 - 69.9 of the TAC.

Notification	
Agency	**Contact Information**
USFWS—Regional	Larisa Ford, PhD, MPA Fish & Wildlife Biologist, Ecological Services United States Fish & Wildlife Service Texas A&M University at Corpus Christi 6300 Ocean Drive, USFWS -Unit 5837 Corpus Christi, TX 78412-5837 361-994-9005 361-994-8262 (fax)
Texas Department of Parks and Wildlife	No contact available at this time.

Additional Studies	
Agency	**Study**
USACE	Wetland Delineation and Determination

7. List of Preparers

Domenick Alario
B.A. Geography
Years of Experience: 2

Stuart Gottlieb
B.A. Geography
GIS Professional Certificate
Years of Experience: 5

Shawn Gravatt
M.S. Environmental Studies
B.S. Earth Science and Geography
Years of Experience: 10

Brian Hoppy
B.S. Biology
Certified Environmental Manager
Years of Experience: 17

Ronald E. Lamb
M.S. Environmental Science
M.A. Political Science/International Economics
B.A. Political Science
Years of Experience: 22

Cheryl Myers
A.A.S. Nursing
Years of Experience: 17

Cheryl Schmidt, Ph.D.
B.S. Biology
M.S. Biology
Ph.D. Biology
Years of Experience: 22

Sarah Spratlen
Masters of Engineering
Years of Experience: 5

Karen Stackpole
B.S. Biology
M.S. Environmental Science and Education
Years of Experience: 9

Jim Von Loh
B.S. Biology
M.S. Biology
Years of Experience: 32

Lauri Watson
B.S. Environmental Science
Years of Experience: 5

Valerie Whalon
M.S. Fisheries Science
B.S. Marine Science
Years of Experience: 12

8. References

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TPWD 2007	Texas Parks and Wildlife. 2007. State of Texas Threatened and Endangered Species. Available on-line at: *http://www.tpwd.state.tx.us/huntwild/wild/species/endang/regulations/texas/index.phtml* Accessed 15 November 2007.
USFWS 2007	U.S. Fish and Wildlife Service, Southwest Region. 2007. List entitled: For Customs and Border Protection, Federally Listed as Threatened and Endangered Species Potentially Occurring Within 25 Miles of the Border.

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BIOLOGICAL SURVEY
APPENDIX A

DESCRIPTION OF FEDERALLY LISTED SPECIES

Black-footed Ferret (*Mustela nigripes*)

Hudsputh County

The black-footed ferret was listed as a federally endangered species on March 11, 1967.

Distribution: The black-footed ferret is found in shortgrass prairies. Historically, the black-footed ferret was found in the Trans-Pecos region of Texas, as well as other regions of Texas, however, the black-footed ferret has not been observed in Texas since 1963.

Natural History: This carnivore is shaped like a mink, but the dorsal color is yellowish brown or buff, with a brownish wash on the back; belly is slightly paler; tail tip and feet are black or at least dark; the face has a dark mask around the eyes, with white on the face above and below the mask (Whitaker 1996) (NatureServe).

Black-footed ferrets rely on prairie dogs for food and shelter. Prairie dogs make up 90 percent of their diet. Ferrets hunt mostly at night. They live in burrows made by prairie dogs. Approximately 100 acres of prairie dog colony are needed to support one ferret family (a female and her young).

Habitat: Shortgrass prairies are ideal habitat for black-footed ferrets.

Threats: The primary threat to black-footed ferrets is habitat loss due to agriculture. In addition, their main prey, the prairie dog, has been severely reduced through trapping and hunting to protect grasslands for livestock.

NatureServe. 2007. Black-footed ferret Ecology. Accessed on-line at: *www.Natureserve.org*

Hinkley's Oak (Quercus hinkleyi)

Presidio County

Hinkley's oak was listed as a federally threatened species on August 26, 1988.

Distribution: Hinkley's oak is found in the Trans-Pecos region of west Texas.

Natural History: Hinckley's oak is a dwarf, evergreen, multi-branched shrub that forms thickets about 1.2 meters tall. It has small, waxy, gray-green leaves less than a approximately 15 centimeters long. The leaves are round or oval with wavy margins and coarse spiny teeth.

This unique shrub produces small acorns in the fall. The acorns are solitary or paired, oval, brown, and about 15 centimeters wide. Reasons for the decline of this species include limited distribution, climate change, and low reproduction.

Habitat: Hinkley's oak grows on dry, rocky limestone slopes in desert scrub communities of west Texas.

Threats: Hinkley's oak has declined within its range due to limited distribution, climate change, and low reproduction.

Texas Parks and Wildlife Department. Accessed on-line at: *http://www.tpwd.state.tx.us/huntwild/wild/species/hinkley/*

Gray Wolf (Canis lupus)

Hudsputh County

The gray wolf was listed as federally endangered on March 11, 1967.

Distribution: Currently extirpated from Texas.

Natural History: The gray wolf is a close relative of domestic dogs. Its thick fur ranges in color from creamy white to reddish-brown and shades of gray and black. Gray wolves are the largest species of wolf and may be 22 – 40 kilograms in weight and about 1.2 – 1.5 meters long. Adult males are larger than adult females.

Gray wolves breed once a year. They mate in late winter, and pups are born in the spring. Dens are usually ground burrows excavated in slopes where rocks will function to support the roof of the tunnel and burrow. Both parents and other pack members, if present, will bring food to the young, which average about five pups in a litter. The bond between mated wolves is very strong and commonly lasts their lifetime. Gray wolves can live up to 15 years.

Gray wolves are carnivores that prey on large herbivores such as deer and Pronghorn antelope, but they will also eat rabbits, ground squirrels, and mice. The decline of the gray wolf has been attributed mostly to predator control by humans. In the late 1800s and early 1900s, ranchers killed wolves to prevent loss of livestock and wild ungulates such as deer. In those days, even people living in the towns and cities feared wolves and applauded their demise. Predator control was so successful that few individuals remained. Reintroduction efforts of captive-bred individuals have been difficult to initiate due to residual fears for livestock and people, as well as a lack of large, remote tracts of suitable habitat.

Habitat: Gray wolves are found in forests, brushlands, or grasslands where suitable cover and denning sites are available.

Threats: The primary reasons that the gray wolf was extirpated from its range was loss of habitat and widespread hunting, both for sport and to protect livestock.

Texas Parks and Wildlife Department. 2007. *Gray Wolf Species Profile.* Accessed on-line at: *http://www.tpwd.state.tx.us/huntwild/wild/species/graywolf/*

Interior Least tern (Sterna antillarum athalassos)

Hudsputh County

The interior population of the least tern was listed as endangered on June 27, 1985.

Distribution: The historic breeding range of the least tern included the Mississippi and Red Rivers and the Rio Grande. The breeding range extended from Texas to Montana and from eastern Colorado and New Mexico to southern Indiana. Currently, the least tern maintains breeding grounds on all these river systems, although suitable habitat has dwindled. In Texas, populations have been observed on the Red River system and along the Texas/Oklahoma border as far east as Burkburnett, Texas. Least terns have been observed on three reservoirs (including Amistad Reservoir in Val Verde County) along the Rio Grande and along the Pecos River at the Bitter Lake National Wildlife Refuge, New Mexico (USFWS 1990).

Habitat: Along river systems such as the Rio Grande, least terns nest on sparsely vegetated sand and gravel bars along a wide, unobstructed river channel or salt flats along lake shorelines. Least terns also have been observed to nest on artificial habitats such as sand and gravel pits and dredge islands (USFWS 1990).

Breeding: Least terns reside on the breeding grounds for 4–5 months arriving from late April to early June. Nests are shallow depressions in open, sandy areas, gravelly patches, or exposed flats. The tern nests in colonies. Clutch size is usually two or three eggs, which are laid by late May. Incubation lasts 20–25 days, and fledging occurs after three weeks. Parental attention continues until migration at the end of the breeding season (USFWS 1990).

Diet: The least tern is a fish eater that hunts in the shallow waters of rivers, streams, and lakes. Fish prey is small-sized and include the following genera: *Fundulus, Notropis, Campostoma, Pimephales, Gambusia, Blonesox, Morone, Dorosoma, Lepomis* and *Carpiodes.* They usually hunt near their nesting sites (USFWS 1990).

Threats: The taming of wild river systems for irrigation, navigation, hydroelectric power, and recreation has altered the river channels that the least tern depends on for breeding grounds. Stabilized river systems eliminate most of the sandbars that terns utilize for breeding grounds by channeling wide, braided rivers into single, narrow navigation channels.

U.S. Fish and Wildlife Service. 1990. *Recovery Plan for the Interior Population of the Least Tern (Sterna Antillarum).* U.S. Fish and Wildlife Service, Twin Cities, Minnesota. 90 pp.

Greater Long-Nosed Bat (Also called Mexican Long-Nosed Bat) (*Leptonycteris nivalis*)

Presidio County

The Mexican long-nosed bat was designated as a federally endangered species on March 30, 1988.

Distribution: The range of the Mexican long-nosed bat includes medium to high elevations in northern and central Mexico, southwestern Texas (southern Brewster and Presidio counties), and southwestern New Mexico. They typically exist at elevations of approximately 500 to 3,000 meters.

In Texas, the species is known from the Big Bend National Park and Chinati Mountain area. The only colonial roost in the United States is a cave at Emory Peak, at an elevation of 2,290 meters in the Chisos Mountains, Texas (NatureServe).

Habitat: Habitats include desert scrub, open conifer-oak woodlands, and pine forests in the Upper Sonoran and Transition Life Zones, generally arid areas where agave plants are present (USFWS 1994). Colonies roost in caves (or similar mines and tunnels), sometimes in culverts, hollow trees, or unused buildings. Roosting habitat requirements are not well known.

Breeding: Litter size normally is 1. Young are born apparently in spring (April-June) in Mexico before females arrive in Texas; no records exist of pregnant females from Texas. In Texas, lactating females have been observed in June-July, flying juveniles in late June. Weaned in July or August (NatureServe).

Diet: The Mexican long-nosed bat mainly eats nectar and pollen of saguaro and organ pipe cacti, and paniculate agaves. They also east insects associated with flowers, and probably some fruits, especially in the south.

In Texas, nectar of the mescal and Chisos agave flowers probably are the main food. This bat emerges to feed relatively late in the evening.

Threats: Although the Mexican long-nosed bat is widely distributed in southern Texas, southwestern New Mexico, and Mexico, it is declining; however, population trends are not well documented. They are threatened primarily by the disturbance of roosts and loss/degradation of foraging habitat (NatureServe).

NatureServe. 2007. Mexican Long-Nosed Bat. Accessed on-line at *www.Natureserve.org*.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Hudspeth and Presidio County

The southwest willow flycatcher was designated as a federally endangered species on March 29, 1995.

Habitat: The southwestern willow flycatcher occurs in dense riparian habitats along streams, rivers, and other wetlands. At low elevations, the flycatcher breeds in stands of dense cottonwood, willow, and tamarisk thickets, as well as other lush woodland areas near water

Breeding: The southwestern willow flycatcher is present on breeding grounds by mid-May. By late May, nests are built, usually in a branched tree fork near the water. Typically, three eggs are laid and then incubated for 12–13 days. Breeding success is heavily affected by predation and brown-headed cowbird parasitism.

Diet: The southwestern willow flycatcher is an insectivore, taking insects from the air, or picking them from the foliage.

Threats: Populations throughout its range are severely impacted by the destruction and loss of riparian habitats through development.

Northern Aplomado Falcon (Falco femoralis septentrionalis)

Hudspeth County

The northern aplomado falcon was designated as a federally endangered species on March 27, 1986.

Distribution: The geographic distribution of the northern aplomado falcon includes most of South America from Tierra del Fuego to Ecuador, and from sea level to 3,000 meters in the Andes. The falcon also inhabits areas in most of Latin America. The historic range includes areas of Texas, New Mexico, and Arizona. In Texas, they are still observed in south Texas and the Trans-Pecos region (USFWS 1990).

Habitat: In populations found in the United States, northern aplomado falcons inhabited yucca-covered sand ridges in coastal prairies, riparian woodlands in open grasslands, and in desert grasslands with scattered mesquite (*Hilaria belangeri*) and yucca. They do not construct their own stick platform nests and must use abandoned nests of other species, including the Swainson's hawk (*Buteo swainsoni*), crested caracara (*Caracara cheriway*), and the Chihuahuan raven (*Corvus cryptoleucus*) (USFWS 1990).

Breeding: Most clutches are laid during April and May with a clutch size of 2–3 eggs. The incubation period is 31–32 days. The nestlings fled at 32–40 days and are dependent on their parents for an additional four weeks after fledging (USFWS 1990).

Diet: Northern aplomado falcons prey on a variety of small birds, insects, rodents, and reptiles. Preferred bird species include doves, cuckoos, woodpeckers, blackbirds, flycatchers, thrushes, and other fringillids that feed in trees. Common insect species include grasshoppers, beetles, dragonflies, cicadas, crickets, butterflies, moths, wasps, and bees (USFWS 1990).

Threats: Populations in the United States experienced a severe decline due to loss of habitat from over-grazing and encroachment of agricultural lands on traditional northern aplomado falcon habitat. The use of DDT during the 1970s also caused a decline in populations due to the inability of falcons to produce viable eggs. Overall, the greatest threat to populations in the United States is habitat loss through development (USFWS 1990).

U.S. Fish and Wildlife Service. 1990. *Northern Aplomado Falcon Recovery Plan.* U.S. Fish and Wildlife Service. Albuquerque, New Mexico. 56 pp.

Mexican Spotted Owl (Strix occidentalis lucida)

Hudspeth County

The Mexican spotted owl was designated as a federally threatened species on March 16, 1993. In the state of Texas, it is also designated as a threatened species.

Distribution: In Texas, Mexican spotted owls occur in the Guadalupe Mountains near the New Mexico border. In 1990, it was estimated that the Mexican spotted owl population for the southwestern United States was 2,160 birds, extremely rare and local in Texas.

Natural History: Mexican spotted owls have dark eyes. They are an ashy-chestnut brown color with white and brown spots on their abdomen, back, and head. Their brown tails are marked with thin white bands.

Woodrats, mice, pocket gophers, birds, and insects make up the Mexican spotted owl's diet. These owls hunt at night, moving from tree to tree, pausing to look and listen for prey. Their nests consist of stick platforms made by other birds, in tree cavities, and on cliff ledges, and they lay 1 to 3 eggs during March or April. Most owlets (baby owls) leave the nest in June, about 35 days after hatching. Owlets are unable to fly very well when they first leave the nest, and their parents continue to feed them until they become fully independent, usually by October. The owls prefer the coolest part of the forest, often choosing nest trees on the northern or eastern-facing slopes. Nests on cliffs in Texas are at 5,000 to 7,000 feet elevation in deep, cool canyons.

Threats: The Mexican spotted owl has declined because of habitat loss and alteration. Harvest of old-growth timber stands, even-aged timber harvest systems, and wildfires have contributed to loss of habitat.

Rio Grande silvery minnow (*Hybognathus amarus)*

Maverick County

The Rio Grande silvery minnow was listed as a federally endangered fish on July 20, 1994.

Distribution: Historically the Rio Grande silvery minnow occurred in the Rio Grande and Pecos River systems in Texas, New Mexico, and Mexico. The range of the Rio Grande silvery minnow is currently drastically reduced and occurs only in perennial sections of the Rio Grande in New Mexico (NatureServe).

Habitat: The Rio Grande silvery minnow prefers large freshwater streams with slow to moderate current over mud, sand, or gravel bottoms, perennial sections of the Rio Grande, and irrigation canals (Sublette et al. 1990). It spawns probably in still waters over sandy-silt bottoms (Sublette et al. 1990) (NatureServe).

Diet: The diet of the Rio Grande silvery minnow is assumed to be the same as others in the Genus Hybognathus: diatoms, algae, larval insect skins, and plant material scraped from ooze in bottom sediment (Sublette et al. 1990) (NatureServe).

Threats: Survival continues to be threatened by habitat degradation and flow modifications, introduction of non-native fishes, and lack of adequate refugia during periods of low or no flow (NatureServe).

NatureServe. 2007. Rio Grande silvery minnow. Accessed on-line at: *http://www.natureserve.org*

U.S. Fish and Wildlife Service. 2007. *Draft Revised Recovery Plan.* Accessed on-line at: *http://ecos.fws.gov/docs/recovery_plan/070118a.pdf*

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BIOLOGICAL SURVEY
APPENDIX B

NO EFFECT DETERMINATION

Listed Species/Habitat
No Effect Determination

Proposed Construction, Maintenance, and Operation of Tactical Infrastructure for:

L-1. Neely's Crossing, Sierra Blanca Station, fence
L-1A. Presidio POE to 3.2 mi E of POE, Presidio Station, fence
L-1B. Presidio POE to 3.2 mi W of POE, Presidio Station, fence

Hudspeth and Presidio Counties, Texas

December 31, 2007

U.S. Department of Homeland Security
U.S. Customs and Border Protection
U.S. Border Patrol Marfa Sector
Sierra Blanca Station
Presidio Station

Customs and Border Protection and the US Border Patrol are proposing to install and operate tactical infrastructure consisting of pedestrian fence and associated patrol roads, access roads, and lights along three segments along the U.S./Mexico international border in Hudspeth and Presidio Counties, Texas.

The following federally-listed species and habitats are known to occur within twenty-five miles of the international border in Hudspeth County:

SPECIES	**LISTING STATUS**	**DETERMINATION**
Least tern, *Sterna antillarum*	endangered	no effect
Whooping crane, *Grus Americana*	endangered	no effect
Whooping crane, critical habitat	designated	no effect
Piping plover, *Charadrius melodus*	endangered	no effect
Piping plover, critical habitat	designated	no effect
Northern aplomado falcon, *Falco femoralis septentrionalis*	endangered	no effect
Southwestern willow flycatcher, *Empidonax trailii extimus*	endangered	no effect
Southwestern willow flycatcher, critical habitat	proposed	no effect
Mexican spotted owl, *Strix occidentalis lucida*	threatened	no effect

The following federally-listed species and habitats are known to occur within twenty-five miles of the international border in Presidio County:

SPECIES	**LISTING STATUS**	**DETERMINATION**
Northern aplomado falcon, *Falco femoralis septentrionalis*	endangered	no effect
Whooping crane, *Grus Americana*	endangered	no effect
Whooping crane, critical habitat	designated	no effect
Piping plover, *Charadrius melodus*	endangered	no effect
Piping plover, critical habitat	designated	no effect
Least tern, *Sterna antillarum*	endangered	no effect
Southwestern willow flycatcher, *Empidonax trailii extimus*	endangered	no effect
Southwestern willow flycatcher, critical habitat	proposed	no effect
Mexican long-nosed bat, *Leptonycteris nivalis*	endangered	no effect
Hinckley oak, *Quercus hinckleyi*	threatened	no effect
Lloyd’s Mariposa cactus, *Sclerocactus mariposensis*	threatened	no effect

Determination

The Service identified species that are listed under the ESA that occur in Hudspeth and Presidio Counties, Texas. These species are: least tern, Northern aplomado falcon, southwestern willow flycatcher, piping plover, whopping crane, Mexican spotted owl, Mexican long-nosed bat, Lloyd's Mariposa cactus, and Hinckley oak. Documented below are anticipated effects to listed species if the proposed action is implemented.

The species listed above are known to occur in the area however the location of the fencing in the Marfa Project, segments L-1, L-1A, L-1B, will be on an existing levee. Prior construction of this levee resulted in the loss of any potential habitat for these species in the project area. In addition, the levee has ongoing maintenance and operations disturbances that prevent restoration of any habitat in the area and there is an existing road on the top of the levee where the fence will be placed. The levee is subject to frequent border patrolling and any disturbance from this activity is not expected to increase disturbances to the species beyond those disturbances that are already occurring.

Based on the information above and the description of the project as follows, we have determined that there will be no effect to the species listed in Hudspeth and Presidio Counties, Texas for the Marfa Sector.

Project Description

The proposed action includes the construction and operation of tactical infrastructure to include primary pedestrian fence and associated access and patrol roads along approximately 10.73 miles of the U.S./Mexico international border in Hudspeth and Presidio Counties, Texas. The proposed action will be implemented in 3 distinct segments, ranging from approximately 3.05 miles and 4.63 miles in length. The proposed corridor would impact approximately 60 feet and includes the fence and patrol roads. Vegetation would be cleared and grading would occur as necessary. A permanent impact area of 78 acres will occur

Design criteria that have been established based on US Border Patrol operational needs specify that, at a minimum, any fencing must meet the following requirements:

- Built 15 to 18 feet high extend below ground
- Capable of withstanding vandalism, cutting, or various types of penetration
- Semi transparent, as dictated by operational need
- Designed to survive extreme climate changes
- Designed to reduce or minimize impacts on small animal movements
- Engineered to not impede the natural flow of surface water
- Aesthetically pleasing to the extent possible.

For segment L-1, the fence construction will be a "floating" fence and placed atop the levee. For segments L-1A and L-1B, the proposed fencing would include the construction of new levee retaining wall on the side of the existing levee facing the Rio

Grande River. There will be a break in the fence at Cibolo Creek. A patrol road will be inserted that will run around the perimeter of the creek crossing at a suitable point

APPENDIX I

Preliminary Cultural Resources Findings

PRELIMINARY CULTURAL RESOURCES FINDINGS

ADDRESSING THE

CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE MARFA SECTOR, TEXAS

Prepared for

U.S. Customs and Border Patrol

Prepared by

engineering-environmental Management, Inc. (e²M)
2751 Prosperity Avenue, Suite 200
Fairfax, VA 22031

e²M Project No.: 4100-989

NOVEMBER 2007

Preliminary Cultural Resources Findings
Marfa Tactical Infrastructure EA

Table of Contents

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1. INTRODUCTION

The information provided below is a portion of the final Cultural Resources survey which is currently under development:

Information presented in this section on the cultural, historical, and archaeological resources is based largely upon data gathered from the Texas Historical Commission's (THC) 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 National Register of Historic Places (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 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 may not reflect the results of recent archaeological surveys, and additional recorded archaeological sites, as well as previously unrecorded archaeological resources, are expected. Further research and cultural resources surveys are being conducted at this time.

1.1 REGIONAL CULTURAL SEQUENCE

The prehistory and history of the Marfa 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. The Trans-Pecos region, the location of the study area, is bounded to the west by El Paso, to the north by the Texas-New Mexico border, to the south by the Rio Grande, and to the east by the Pecos River. The Trans-Pecos region is divided into three subregions: the Pueblo subregion, the Plains subregion, and the Interior subregion. The Marfa study area falls within the Interior subregion.

The Interior subregion's prehistory can be divided into three periods: Paleoindian, Archaic, and Late Prehistoric. Transitions between these periods are generally identified by changes in artifacts, especially projectile point styles. The Paleoindian period is defined by the presence of basally ground lanceolate projectile points, especially the highly distinctive Clovis and Folsom types. The period marks the first documented human settlement of the western hemisphere. Paleoindian economy appears focused upon large mammal hunting, but certainly included smaller game and the gathering of plant resources. Clovis, the earliest Paleoindian occupation in the proposed project corridor, dates to approximately 10,000–9,500 B.C. Only a small number of Clovis points have been found in the proposed project corridor (Hester, et al. 1989; Simmons, et al. 1989; Winchell, Brown, and Edwards 1992). Folsom, the next Paleoindian subperiod, is also poorly documented in the area. The Folsom sub-period began about 9,500 B.C. Folsom is more common in the study area than Clovis, and include a cluster of sites near Van Horn (Simmons, et al. 1989). Folsom sites have also been encountered in the Big Bend area and in the Guadalupe Mountains. The late Paleoindian period is associated with a change in projectile point styles, with unfluted Plainview, Golondrina, Meserve, Angostura, and Lerma points replacing Folsom points in the archaeological record. Late Paleoindian peoples also developed an expanded suite of fiber technologies including sandals, baskets, mats, and cord. The rarity of Paleoindian sites means they are unlikely to be encountered during the project, and no Paleoindian sites have been identified near the proposed project corridors.

The long Archaic period in southern Texas is divided into Early, Middle, and Late subperiods. The Archaic period economy is marked by the continuation of hunting and gathering, but also by the utilization of a greater range of plant and animal resources and geographic settings. The Archaic period is also characterized by adaptations to changes in climate. Specifically, the Early and Middle Archaic periods overlap with the Altithermal (ca. 6000-2000 B.C.), a warm and dry climate episode. By the Late Archaic, modern climate conditions prevailed.

The Early Archaic (approximately 6,900–3,500 B.C.) is identified primarily by the occurrence of new corner- or side-notched projectile point styles. In the Trans-Pecos region, Early Archaic points include Lerma, Baker/Uvalde, Martindale, and Early Barbed for the period from 6500-4500 B.C. and Pandale, Bulverde, Travis, and Nolan points for the period from 4500-3500 B.C. (Hester, et al. 1989; Winchell, Brown, and Edwards 1992). The environmental trends begun in the late Paleoindian period continue into the Early Archaic, resulting in continued drying and replacement of woodlands and plains with desert environments. Although more common than Paleoindian sites, Early Archaic sites are rare in the area. In the Trans-Pecos, burned rock middens have been observed in Early Archaic occupations in rock shelters, where they are associated with prickly pear remains (Winchell, Brown, and Edwards 1992). These features show a continuation of the trend in the late Paleoindian period toward exploitation of a wide range of foodstuffs beyond big game.

As with preceding periods, the Middle Archaic is defined primarily by a change in projectile point style to large stemmed, corner- or side-notched points, and some basally notched points. In the Trans-Pecos, Middle Archaic points include Langtry and Val Verde points from 3000-1750 B.C. and Shumla, Marcos, Almagre, Williams, Conejo, Lange, Tortugas, Montell, Castroville points from 1750-500 B.C. There is evidence for increasing use of desert succulents and other xeric flora and fauna (Hester et al. 1989; Mallouf 1981). During the Middle Archaic, some parts of the Trans-Pecos may have seen greater interaction with plains groups to the north (Simmons et al. 1989). Trans-Pecos Middle Archaic sites are often located along higher-elevation ridgelines, benches, and stream terraces (Winchell, Brown, and Edwards 1992).

The beginning of the Late Archaic (1,000 B.C.–A.D. 1000) is defined by the appearance of smaller side- and corner-notched point styles. In the Trans-Pecos, these points include Ensor, Palmillas, Paisano, Frio, Edgewood, Ellis, Darl, and Figeroa (Simmons et al. 1989). The Late Archaic is also associated with a sharp increase in the frequency of ground stone artifacts (Mallouf 1985). Toward the very end of the Late Archaic, cultigens appear in the Trans-Pecos region. The limited evidence suggests that the area was the easternmost extent of the spread of cultigens, although they appear from their rarity in the archaeological record to be rare at best outside of the Pueblo area near El Paso, where pithouses also appear relatively early (Simmons et al. 1989). Late Archaic sites are relatively common in the Trans-Pecos and Lower Pecos regions (Hester et al. 1989; Simmons et al. 1989; Winchell, Brown, and Edwards 1992), making it relatively likely that they will be encountered in the APEs for Alternatives 2 and 3.

The Late Prehistoric period begins with the arrival of the bow and arrow, accompanied by a change in projectile point styles. For much of the study area, the Late Prehistoric also includes the first appearance of ceramics and the wider dispersal of horticulture, although the timing varies dramatically. The period ends with sustained Spanish contact around A.D. 1600.

The El Paso area saw the first arrival of horticulture, the bow and arrow, and semi-sedentary settlement patterns. This period, associated with the Jornada Mogollon, begins as early as A.D. 200 (Simmons et al. 1989; Winchell, Brown, and Edwards 1992). The Mogollon cultivated maize, squash, beans, and bottle gourds, lived at least part of the year in pithouse communities, and made El Paso brownware ceramics. The last occupation of the El Paso area, the El Paso phase of A.D. 1200-1400, is distinguished by the appearance of above-ground adobe roomblocks and trade with the Casas Grandes culture to the south. The El Paso area was largely abandoned by A.D. 1400.

The Puebloan occupation begins and ends later south of El Paso in the La Junta area near Presidio, Texas, an area in the proposed project corridor that has been classified as an archaeological district. Centered on the confluence of the Rio Conchos and the Rio Grande, this Bravo Valley aspect and its fully sedentary settlement pattern appears around A.D. 1000-1100. At its peak, it extended 15 kilometers (km) down the Rio Grande from the Rio Conchos, and as much as 65 km up the Rio Conchos and its tributaries. This area is within the USBP Marfa Sector EA study area. Late Prehistoric sites are very likely to be observed during the project, which runs through the La Junta Archaeological District.

In the nearly 500 years since initial Spanish exploration, the area has been claimed and influenced by four nations: Spain, Mexico, Republic of Texas, and the United States. Each has pursued its own interests and left their mark as historic landmarks or patterns of land uses. A permanent Spanish presence did not come to the Trans-Pecos region until 1659, when El Paso was founded. The settlement grew slowly until 1680, when the Pueblos of New Mexico unified to drive Spanish colonists and their allies from the colony. A presidio, or garrison, was founded in 1760 at La Junta to solidify Spanish claims to the area and at the request of local indigenous populations seeking protection from the Apache groups.

The Mexican Period (ca. 1621–1636), which began with Mexican independence from Spain, likely left little trace in the Lower Pecos region. The weak Mexican government and the lack of official incentives to settle western Texas gave indigenous and Hispanic populations little reason to establish settlements here. Where settlements did exist along the Rio Grande, they became increasingly independent of Mexico (Winchell, Brown, and Edwards 1992).

The Republic of Texas and American Periods (1636–present) are characterized by increased economic stabilization of the region and increasing permanent settlement, trends that were facilitated by the arrival of the railroad in 1882. Settlement and industry boomed with the arrival of the railroad in 1882. In 1911, the first Candelilla wax factories were established in Big Bend, beginning an industry that survives today (Pospisil 1997). The twentieth century also saw the expansion of cattle, sheep, and goat ranching, still an important element of the area’s economy today. Irrigation agriculture also spread to the area. The U.S. military has also been an important component of the region’s economy. During World War II, Fort Russell and Marfa Army Air Field were established in Presidio County in the proposed project corridor (Thompson 1985; Zeruche 1985).

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