

Final

**PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR PROPOSED TACTICAL INFRASTRUCTURE
OFFICE OF BORDER PATROL
EL PASO SECTOR
NEW MEXICO STATIONS**



**Department of Homeland Security
U.S. Customs & Border Protection
Office of Border Patrol
Washington, D.C.**

October 2006

FINDING OF NO SIGNIFICANT IMPACT
For Proposed Tactical Infrastructure
Office of Border Patrol, El Paso Sector, New Mexico Stations

PROJECT HISTORY: The Office of Border Patrol (OBP) is a law enforcement entity of the United States (U.S.) Customs and Border Protection (CBP) within the U.S. Department of Homeland Security (DHS). The OBP's priority mission is to prevent the entry of terrorists and their weapons of terrorism and to enforce the laws that protect the U.S. homeland by the detection, interdiction, and apprehension of those who attempt to illegally enter or smuggle any person or contraband across the sovereign borders of the U.S.

During recent years, illegal aliens (IA) have cost U.S. taxpayers billions of dollars annually due directly to criminal activities, as well as the cost of apprehension, detention, and incarceration of criminals; and, indirectly in loss of property, illegal participation in government programs, and increased insurance costs. Consequently, the OBP has significantly increased its emphasis on deterrence. Deterrence is achieved only when the OBP has the ability to create and convey the immediate, credible, and absolute certainty of detection and apprehension. As such, tactical infrastructure components, such as roads and vehicle barriers, are a critical element in the current enforcement strategy. Developing trends such as the recognition of environmental preservation concerns and the increase of criminal trans-boundary activities (including trafficking in people, drugs, and terrorism efforts) continue to pose a border enforcement challenge and compound the need for tactical infrastructure along the international border.

PROJECT LOCATION: The study corridor for the Programmatic Environmental Assessment (PEA) is located within the New Mexico portion of the OBP's El Paso Sector Area of Operations (AO). The southern boundary of the study corridor is defined by the U.S.-Mexico border throughout the state of New Mexico. The study corridor extends north to cover New Mexico Highway 9 (NM 9) or no less than 3 miles north of the international border where NM 9 is closer than 3 miles. The study corridor considers the area of potential, direct and indirect impacts resulting from the proposed alternatives by including the immediate border area and lands northward up to NM 9 where illegal activity typically flows east or west. Three OBP stations (Santa Teresa, Deming and Lordsburg) within the El Paso Sector have jurisdiction in the study corridor. The existing and proposed tactical infrastructure (TI) within these three stations shall be the focus of this PEA. No existing or proposed TI occurs outside of this study corridor.

PURPOSE AND NEED: The purpose of the Proposed Action Alternative is to facilitate the OBP's mission to gain, maintain and extend control of the U.S.-Mexico border. The need for improving the OBP's enforcement effectiveness is based upon increased border activity and its associated costs, the limited workforce available to secure the borders, the continued increase of IAs in remote areas, and the inadequacy of the existing TI system in the study corridor.

The need for the Proposed Action Alternative is also to increase deterrence and apprehension of IAs; reduce crime along the border areas by enhancing the effectiveness of OBP agents in their daily operations; provide 24-hour operations through the use of technology as force multipliers; improve access to remote areas along the international border; secure the safety of OBP agents and U.S. residents; and improve the ability of OBP agents to rescue IAs in distress.

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ALTERNATIVES: Three alternatives, the No Action Alternative, the Proposed Action Alternative, and the TI with Cattle Fence Permanent Vehicle Barriers (PVBs) Alternative were analyzed in the PEA.

No Action Alternative: The No Action Alternative would preclude the installation of any additional TI within the Santa Teresa, Deming and Lordsburg stations' AOs. This alternative would allow the routine maintenance and operation associated with existing infrastructure to continue. Existing infrastructure to be maintained includes intermittent dirt and gravel access and patrol roads along the U.S.-Mexico border, an intermittent 6-strand barbed wire fence on the border, a 6-foot chain link fence near the Columbus port of entry (POE), 13 miles of PVBs (10 miles near the Columbus POE and 3 miles west of Santa Teresa POE), seven Remote Video Surveillance Systems (RVSS) near the Columbus POE, and approximately 1 mile of permanent lighting near the border at Sunland Park. Even though this alternative would reduce unavoidable impacts associated with the construction of TI and irretrievable losses of resources related to construction activities, it would greatly limit the OBP's capability to prevent and deter illegal activity along the U.S.-Mexico border.

The No Action Alternative does not meet the purpose and need for the proposed project, but will be carried forward for analysis, as required by the President's Council on Environmental Quality regulations. The No Action Alternative describes the status quo in the absence of any action alternative.

Proposed Action Alternative: The Proposed Action Alternative involves improvements to or construction of 316 miles of border access roads or all-weather patrol roads, 78 miles of drag roads, establishment of 160 miles of PVBs, 7 miles of permanent pedestrian barriers, installation of 30 miles of permanent lights and approximately five RVSS, and construction of ancillary structures (*i.e.*, low water crossings and culverts). It is anticipated that the Proposed Action Alternative would be implemented over the next 10 years.

TI with Cattle Fence PVBs Alternative: This alternative is the only other alternative that meets the purpose and need of this PEA. TI would be deployed exactly as described in the Proposed Action Alternative; however, the PVBs would be constructed to serve as both a barrier to illegal vehicles trying to enter the U.S. and as a cattle fence. During the scoping process, landowners and ranchers with borderland property voiced concerns about the use of PVBs along the boundary of their property and the U.S.-Mexico border without providing a barrier for cattle. PVBs would be installed 2 to 5 feet north of any existing fence on the border and existing barbed wire fence would be left in place. Future maintenance of barbed wire fence would thereby be limited by its position behind the PVB. The modifications of PVBs into cattle fence PVBs would include the installation of four to six strands of barbed wire (or similar device) spanning the distance between the vertical steel pipes.

ENVIRONMENTAL CONSEQUENCES: The total footprint of the Proposed Action Alternative is approximately 1,262 acres, if all infrastructure projects are completed. Of this, approximately 373 acres is currently used to support the existing TI in the study corridor. The previously disturbed area consists of the existing border road, access roads, patrol roads, RVSS

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towers, fencing, lighting structures, and ancillary structures. Approximately 889 acres of soils, vegetation, wildlife habitat, and potential habitat for protected species would be permanently altered. Through the use of environmental design measures and due to the vast amounts of similar habitat surrounding the project corridor these impacts would be insignificant. The Proposed Action Alternative would provide protection for unique and sensitive areas (*i.e.*, recreational opportunities, historical structures) by improving safety and reducing vandalism. Although the infrastructure could be visible from NM 9, the resulting reduction of IA related aesthetic degradation would substantially benefit the study corridor. Air emissions from construction activities would result in temporary adverse air quality impacts in the study corridor. The overall air quality would be improved as all-weather road surfaces would reduce the amount of wind blown dust generated by OBP vehicle traffic. Under the Proposed Action Alternative, increased erosion during construction is possible; however, increased sediment and turbidity would have minimal impacts on water quality. The Proposed Action Alternative would potentially impact previously unrecorded cultural resources, particularly archaeological sites which may not be readily evident. To reduce the level of potential impacts on cultural resources, consultation with the New Mexico State Historic Preservation Officer (NMSHPO) and/or the appropriate Tribal Historic Preservation Officer (THPO) for project-specific areas would be required before construction to identify any known cultural resources that may have been recorded in the area. In addition, if the area has not undergone a previous archaeological survey, an investigation would be conducted in order to locate any cultural resources within the area. If there are cultural resources, particularly historic structures, districts, or sacred sites near the proposed infrastructure the potential exists for a visual impact to those resources. In these instances, a viewshed analysis may be appropriate to determine the extent of that impact. As this is a programmatic document, the impact estimates are based on generic planning level assumptions. Future site-specific documents would more accurately assess specific impacts.

Also, the potential exists for indirect adverse impacts to resources outside of the project corridor resulting from shifts in IA activity. However, these impacts are considered insignificant when compared to the No Action Alternative. Indirect beneficial impacts to land use, unique and sensitive areas, soils, air quality, cultural resources, protected species and their associated habitat, as well as vegetation would result from the implementation of the Proposed Action Alternative.

ENVIRONMENTAL DESIGN MEASURES: Environmental design measures to be implemented by the OBP for the Preferred Action Alternative include:

Soils: Before project specific construction activities can occur that may affect prime farmlands, a Natural Resources Conservation Service (NRCS) Form AD 1006 will be submitted to the NRCS for a farmland conversion rating. Soil erosion control can be greatly enhanced with the use of Best Management Practices (BMP). BMPs are designed to reduce the impacts of non-point source pollution during forestry, construction, agriculture and cultivation activities. BMPs include such things as buffers around water bodies to reduce the risk of siltation, installation of water bars to slow the flow of water down hill, and placement of culverts, low water crossings or bridges where streams need to be traversed. These BMPs would greatly reduce the amount of soil lost to runoff during heavy rain events and ensure the integrity of the construction site. In arid areas, BMPs can

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also reduce impacts to air quality by reducing the amount of airborne soil, sand, and particulate matter.

Vehicular traffic associated with engineering, construction, and patrol activities should remain on established roads to the maximum extent practicable. Previously disturbed routes and locations would be utilized to the maximum extent practicable to reduce soil disturbances. Areas with highly erodible soils would be given special consideration to ensure incorporation of various compaction techniques, aggregate materials, wetting compounds, and revegetation to ameliorate the subsequent soil erosion. Erosion control measures such as waterbars, gabions, hay bales, and reseeded would be implemented during and after construction activities. Revegetation efforts will be needed to ensure long-term recovery of the area and to prevent significant soil erosion problems. Native seeds and plants will be used to assist in the conservation and enhancement of protected species as required by Section 7(a)(1) of the Endangered Species Act (ESA).

Biological Resources: Construction equipment would be cleaned following BMPs described in the Stormwater Pollution Prevention Plan (SWPPP) for each project prior to entering and departing the project corridor to minimize the spread and establishment of non-native invasive plant species. Soil disturbances in temporary impact areas would be rehabilitated. Rehabilitation would include re-vegetating or the distribution of organic and geological materials over the disturbed area to reduce erosion while allowing the area to naturally vegetate. Additionally, the disturbed and restored areas will be monitored for the spread and eventual eradication of non-native invasive plant species as part of periodic maintenance activities.

To minimize vegetation impacts, designated travel corridors would be marked with easily observed removable or biodegradable markers, and travel would be restricted to the project corridor and staging areas. Native seeds or plants, which are compatible with the enhancement of protected species, will be used to the extent practicable, as required under Section 7(a)(1) of the ESA.

Environmental design measures which should be considered, especially in areas that support protected species, include the development of vegetation corridors to avoid habitat fragmentation and the proper placement and size of culverts to adequately convey stormwater and allow wildlife to safely cross roads. The primary option for mitigation of loss of habitat (*e.g.*, potential bat habitat near the International Mines area) or individuals of a protected species is avoidance. Site-specific projects would be planned in such a way as to avoid areas where known protected species occur to the greatest extent practicable. For construction projects where avoidance is impractical, Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) would be conducted to identify conservation measures and reasonable and prudent measures such as, using biologists to monitor construction progress and conduct post-project, long-term monitoring, as deemed necessary.

The Migratory Bird Treaty Act requires that Federal agencies coordinate with the USFWS if a construction activity would result in the take of a migratory bird. If construction or clearing activities are scheduled during the nesting season (March through September) surveys would be performed to identify active nests in the project vicinity including burrows suitable for nesting burrowing owls. If construction activities would result in the take of a migratory bird, then

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coordination with the USFWS, New Mexico Department of Game and Fish and applicable permits would be obtained prior to construction or clearing activities.

Another environmental design measure that would be considered is to schedule all construction activities outside the nesting season negating the requirement for nesting bird surveys. The proposed RVSS and other communication towers would also comply with USFWS guidelines for reducing fatal bird strikes. These guidelines recommend co-locating new antennae arrays on existing towers whenever possible and to build towers as short as possible without guy wires or lighting. White strobe lights should also be used whenever lights are necessary for aviation safety.

Local threatened and endangered species lists and critical habitat information are included in Section 3 of the PEA. Species and habitat surveys would be performed in the proposed study corridors to determine whether any species or habitat may be detrimentally affected prior to the construction of these projects. If so, then Section 7 consultation with the USFWS would be conducted to identify conservation measures.

Proposed construction activities that take place in northern aplomado falcon habitat should be planned to avoid the falcon's breeding season (March through September). In situations where the breeding season cannot be avoided, pre-construction surveys should be conducted to search the area for nests or breeding pairs. If either are found, consultation with USFWS must be immediate and construction must halt.

The range of the New Mexico ridge-nosed rattlesnake is primarily restricted to Indian, Bear, and Spring Canyons in the Animas Mountains of New Mexico. If avoidance is not practicable, vegetation must be maintained or reseeded to serve as ground cover for the snake. A biological monitor may be necessary during construction to ensure the safety of individual snakes.

In the project area, the Chiricahua leopard frog occurs primarily in or near intermittent creeks and stock tanks of the Animas and Peloncillo Mountains of Hildago County. For projects in the Animas and Peloncillo mountains, all necessary water should be hauled in from off-site, as any available water on-site is essential to the frog's survival. A SWPPP must be followed to reduce impacts from altering surface water flows and pollution.

To avoid possible indirect impacts to the lesser long-nosed bat, vegetation, especially ocotillo, paloverde, prickly pears, and agave must be protected, maintained, or re-established in project areas to the greatest extent practicable. The bat is easily disturbed while roosting, so known roosting sites must be avoided.

Hazardous Materials: To minimize potential impacts from solid and hazardous materials, all fuels, waste oils, and solvents will continue to be collected and stored in tanks or drums within secondary containment system that consist of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be allowed only at the existing fuel pump island and all vehicles will have drip pans during storage to contain minor spills and drips. Although it will be unlikely for a major spill to occur, any spill of 5 gallons or more will be contained immediately with the application of an absorbent material (e.g.,

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granular, pillow, sock, etc.). Any major spill of 5 gallons or more of a hazardous or regulated substance will be reported immediately to the on-site environmental personnel who will notify appropriate Federal and state agencies. A designated environmental advisor will be on-site during construction activities in case of such accidents.

All used oil and solvents will continue to be recycled if possible. All non-recyclable hazardous and regulated wastes will continue to be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures.

Water Resources: The installation of infrastructure projects would likely require a SWPPP as part of the National Pollution Discharge Elimination System permit process because the area of disturbance would likely exceed 1 acre.

If jurisdictional waters of the U.S., including wetlands, are located within the study corridor and are unavoidable, early coordination with the regulatory section of the local U.S. Army Corps of Engineers District, Environmental Protection Agency, the county NRCS, and other appropriate agencies would be completed prior to the initiation of the construction activities. Applicable Clean Water Act Section 404/401 permit procedures would be completed prior to any work in these areas and compensatory mitigation implemented, as appropriate. When identified, wetlands would be flagged, and silt fences and hay bales placed around the wetland to eliminate and impede any unnecessary impacts to the wetland areas.

Cultural Resources: Prior to any ground disturbing activities, consultation will be initiated with NMSHPO and the appropriate THPO. Site records checks and archaeological surveys will be conducted at each specific project location in order to determine if there are any cultural resources that will be impacted during construction. If significant cultural resources are discovered within the area to be impacted, the appropriate mitigation measures would be implemented to minimize the impacts to those resources. These mitigation measures would be developed in consultation with NMSHPO and the appropriate THPO along with other interested parties. The preferred mitigation measure would be avoidance if possible.

In areas where RVSS and communication towers would be constructed, sites would be assessed for visual impacts to any cultural resources within eyesight of the new equipment. If there is a potential for significant visual impacts to cultural resources, particularly structures and/or historic districts, then a viewshed analysis would be appropriate in order to determine the extent of the visual impacts.

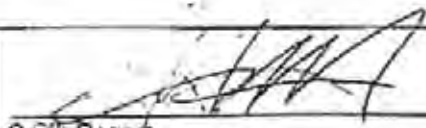
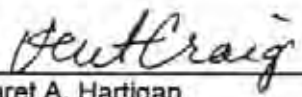

Through all levels of the Section 106 and National Environmental Policy Act (NEPA) process, consultation would be conducted with the appropriate Federally recognized tribes that claim a cultural affinity to the impacted area. These consultations could take the form of formal consultation letters, reviews of the NEPA documents, and reviews of the cultural resources survey reports for the appropriate projects. The construction of RVSS and communication poles and towers can be further expedited through the establishment of Programmatic Agreements (PAs) with the appropriate Native American tribes outlining the types of projects and conditions in which

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direct consultation would be appropriate. These PEAs would be developed in accordance with appropriate Federal laws regarding Native American consultation between the Federal entity and the Native American Tribes.

Aesthetics: Some environmental design measures to minimize potential impacts resulting from RVSS and utility-associated towers would include, but not be limited to, painting the RVSS and utility-associated towers to blend into their background and the use of decorative fencing in urban areas where there is a high aesthetic value. Lighting would be shielded and wattage would be limited to 5 to 6 lumens in order to minimize the extent of impacted areas.

FINDING: Based upon the results of the PEA and the environmental design measures to be implemented, the Proposed Action Alternative would not have a significant adverse effect on the environment. As project-specific plans and funding are identified and committed, site-specific NEPA documents will be prepared and tiered from this document to more accurately assess impacts.

 Garth Rogers Project Proponent El Paso Sector T.I. Coordinator	<u>07/21/06</u> Date
 Mark A. Gable LC-Dallas T.I. Program Manager Environmental Program Manager	<u>21 July 2006</u> Date
<i>for</i>  Margaret A. Hartigan Director Logistics Center-Dallas	<u>8/4/06</u> Date
 Richard L. Balaban Assistant Commissioner Office of Finance	<u>9/25/06</u> Date

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EXECUTIVE SUMMARY

- BACKGROUND:** The Office of Border Patrol (OBP) is a law enforcement entity of the United States (U.S.) Customs and Border Protection (CBP) within the U.S. Department of Homeland Security (DHS). The OBP's priority mission is to prevent the entry of terrorists and their weapons of terrorism and to enforce the laws that protect the U.S. homeland by the detection, interdiction, and apprehension of those who attempt to illegally enter or smuggle any person or contraband across the sovereign borders of the U.S. During recent years, illegal aliens (IA) have cost U.S. taxpayers billions of dollars annually due directly to criminal activities, as well as the cost of apprehension, detention, and incarceration of criminals; and, indirectly in loss of property, illegal participation in government programs, and increased insurance costs. This Programmatic Environmental Assessment (PEA) was prepared in accordance with the National Environmental Policy Act (NEPA) and will analyze the project alternatives and potential impacts to the human and natural environment from these alternatives.
- PURPOSE AND
NEED FOR THE
PROPOSED ACTION:** The purpose of the Proposed Action Alternative is to facilitate the OBP's mission to gain, maintain and extend control of the U.S.-Mexico border. The need for improving the OBP's enforcement effectiveness is based upon increased border activity and its associated costs, the limited workforce available to secure the borders, the continued increase of IAs in remote areas, and the inadequacy of the existing tactical infrastructure (TI) system in the study corridor.
- The need for the Proposed Action Alternative is also to increase deterrence and apprehension of IAs; reduce crime along the border areas by enhancing the effectiveness of OBP agents in their daily operations; provide 24-hour operations through the use of technology as force multipliers; improve access to remote areas along the international border; secure the safety of OBP agents and U.S. residents; and improve the ability of OBP agents to rescue IAs in distress.
- PROPOSED ACTION:** The Proposed Action Alternative involves improvements or construction of 316 miles of border access roads and patrol roads, 78 miles of drag roads, establishment of 160 miles of permanent vehicle barriers (PVB), 7 miles of permanent pedestrian barriers, installation of 30 miles of permanent lights and approximately 5 Remote Video Surveillance Systems (RVSS), and construction of ancillary structures (*i.e.*, low water crossings and culverts). It is anticipated that the Proposed Action Alternative would be implemented over the next 5 to 10 years.

ALTERNATIVES
CONSIDERED:

Three alternatives were considered: The No Action Alternative (Alternative 1), the Proposed Action Alternative (Alternative 2), and the TI as in the Proposed Action with Cattle Fence PVBs Alternative (Alternative 3). Alternative 3 is the same as the Proposed Action Alternative except a barbed wire (or similar) cattle fence would be included in the design of the PVBs installed. Alternative 3 was developed to address concerns identified by landowners and ranchers with property adjacent to the study corridor. The No Action Alternative would preclude any construction activities; thus, illegal vehicle and pedestrian traffic would continue, if not increase, within the study corridor.

ENVIRONMENTAL
IMPACTS OF THE
PROPOSED ACTION
ALTERNATIVE:

The total footprint of the Proposed Action Alternative is approximately 1,262 acres. Of this, approximately 373 acres is currently used to support the existing TI in the study corridor. The previously disturbed area consists of the existing border road, access roads, patrol roads, RVSS towers, fencing, lighting structures, and ancillary structures. Approximately 889 acres of soils, vegetation, wildlife habitat, and potential habitat for protected species would be permanently altered. Through the use of environmental design measures and due to the vast amounts of similar habitat surrounding the project corridor these impacts would be insignificant. As this is a programmatic document, the impact estimates are based on generic planning level assumptions. Future site-specific documents would more accurately assess specific impacts.

Also, the potential exists for indirect adverse impacts to resources outside of the project corridor resulting from shifts in IA activity. However, these impacts are considered insignificant when compared to the No Action Alternative. Indirect beneficial impacts to land use, unique and sensitive areas, soils, air quality, cultural resources, protected species and their associated habitat, as well as vegetation would result from the implementation of the Proposed Action Alternative.

CONCLUSIONS:

Based upon the results of the PEA and the environmental design measures to be implemented, the Proposed Action Alternative would not have a significant adverse effect on the environment. As project-specific plans and funding are identified and committed, site-specific NEPA documents will be prepared and tiered from this document to more accurately assess impacts.

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SECTION 1.0
INTRODUCTION

1.0 INTRODUCTION

The United States (U.S.) Customs and Border Protection (CBP) and Office of Border Patrol (OBP) are preparing two Programmatic Environmental Assessments (PEA). The PEAs address the potential effects, beneficial and adverse, of the proposed installation, operation and maintenance of various existing and proposed tactical infrastructure (TI) in the El Paso Sector (Figure 1-1). This PEA will address proposed TI within the El Paso Sector's area of operation (AO) along the entire New Mexico-Mexico border. The other PEA will address proposed TI along the Texas-Mexico border. The installation of various infrastructure elements is being proposed by the CBP in an effort to enhance the OBP's capability to gain, maintain and extend control of the border in areas between ports of entry (POE). This document describes potential impacts on a programmatic level, which should be used only at the planning level. Site-specific surveys, evaluations, and tiered project-specific National Environmental Policy Act (NEPA) documents would be completed once project-specific designs are identified and funding is available.

This PEA is tiered from the Immigration and Naturalization Service's (INS) Supplemental Programmatic Environmental Impact Statement (PEIS) for INS and Joint Task Force 6 (JTF-6) Activities along the U.S.-Mexico Border (INS 2001). The Supplemental PEIS addressed past and proposed infrastructure for the OBP along the entire southwestern border. Joint Task Force North (JTF-N, formerly JTF-6) was a cooperating agency on the Supplemental PEIS because they provided the labor force and partial funding for many of the border infrastructure projects for the OBP. Future infrastructure projects, such as those described herein, were identified and analyzed in the Supplemental PEIS. A commitment was made in the Supplemental PEIS to prepare subsequent NEPA documents, such as this one, as the need for future projects was identified. This document addresses the possibility of using private contractors, or OBP staff, as well as military units for construction of various TI in the El Paso Sector's New Mexico AO. JTF-N is also a cooperating agency on this PEA. This PEA was prepared in accordance with NEPA and the President's Council on Environmental Quality (CEQ) Regulations for the Implementation of NEPA and Department of Homeland Security (DHS) Management Directive 5100.1, Environmental Planning Program Directive (April 19, 2006) for NEPA compliance and implementation.

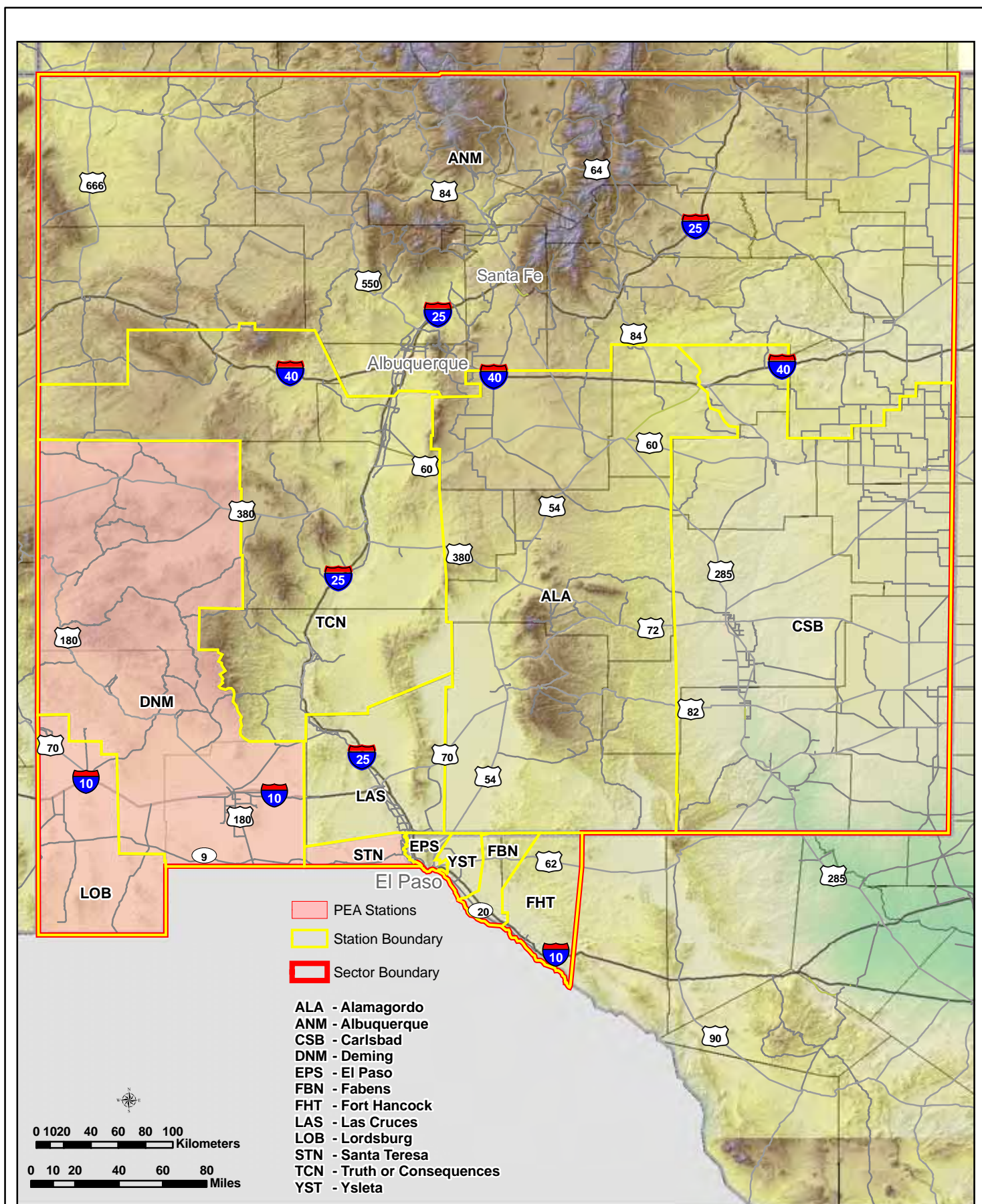


Figure 1-1: El Paso Sector Vicinity Map



1.1 STUDY CORRIDOR LOCATION

The study corridor for this PEA is located within the New Mexico portion of the OBP's El Paso Sector AO. The southern boundary of the study corridor is defined by the U.S.–Mexico border throughout the state of New Mexico (Figure 1-2). The study corridor extends north to cover New Mexico Highway 9 (NM 9) or no less than 3 miles north of the international border where NM 9 is closer than 3 miles. The study corridor considers the area of potential, direct and indirect impacts resulting from the proposed alternatives by including the immediate border area and lands northward up to NM 9 where illegal activity typically flows east or west. Three OBP stations (Santa Teresa, Deming and Lordsburg) within the El Paso Sector have jurisdiction in the study corridor. The existing and proposed TI within these three stations shall be the focus of this PEA (see Figure 1-2). No existing or proposed TI occurs outside of this study corridor.

1.2 CBP HISTORY

In 1924, Congress created the U.S. Border Patrol to serve as the law enforcement entity of the INS, and it did so until November 25, 2002, when Congress transferred all INS responsibilities to the newly created DHS with the passage of the Homeland Security Act of 2002 (Public Law 107-296). The U.S. Border Patrol was officially transferred into the OBP, under the DHS and CBP, on March 1, 2003.

1.3 CBP STRATEGIC INTENT AND STRATEGIES

The priority mission of CBP is to prevent terrorists and terrorist weapons from entering the U.S. This mission involves maintaining a diverse, multi-layered approach, aimed at improving security at the international borders and POEs, and extending the physical zone of security beyond the Nation's physical borders. As part of this mission, CBP has implemented its *National Border Patrol Strategy* (CBP 2004) to identify and seize terrorists' assets and funding sources and enhance support infrastructure.

In addition to carrying out this mission, the CBP must fulfill its traditional missions that include: controlling the sovereign borders of the U.S. by apprehending individuals attempting to enter the U.S. illegally; stemming the flow of illegal drugs and other contraband; protecting the Nation's agriculture and economic interest from harmful pest and diseases; facilitating international trade; collecting import duties; and enforcing U.S. trade, immigration and other laws of the U.S.

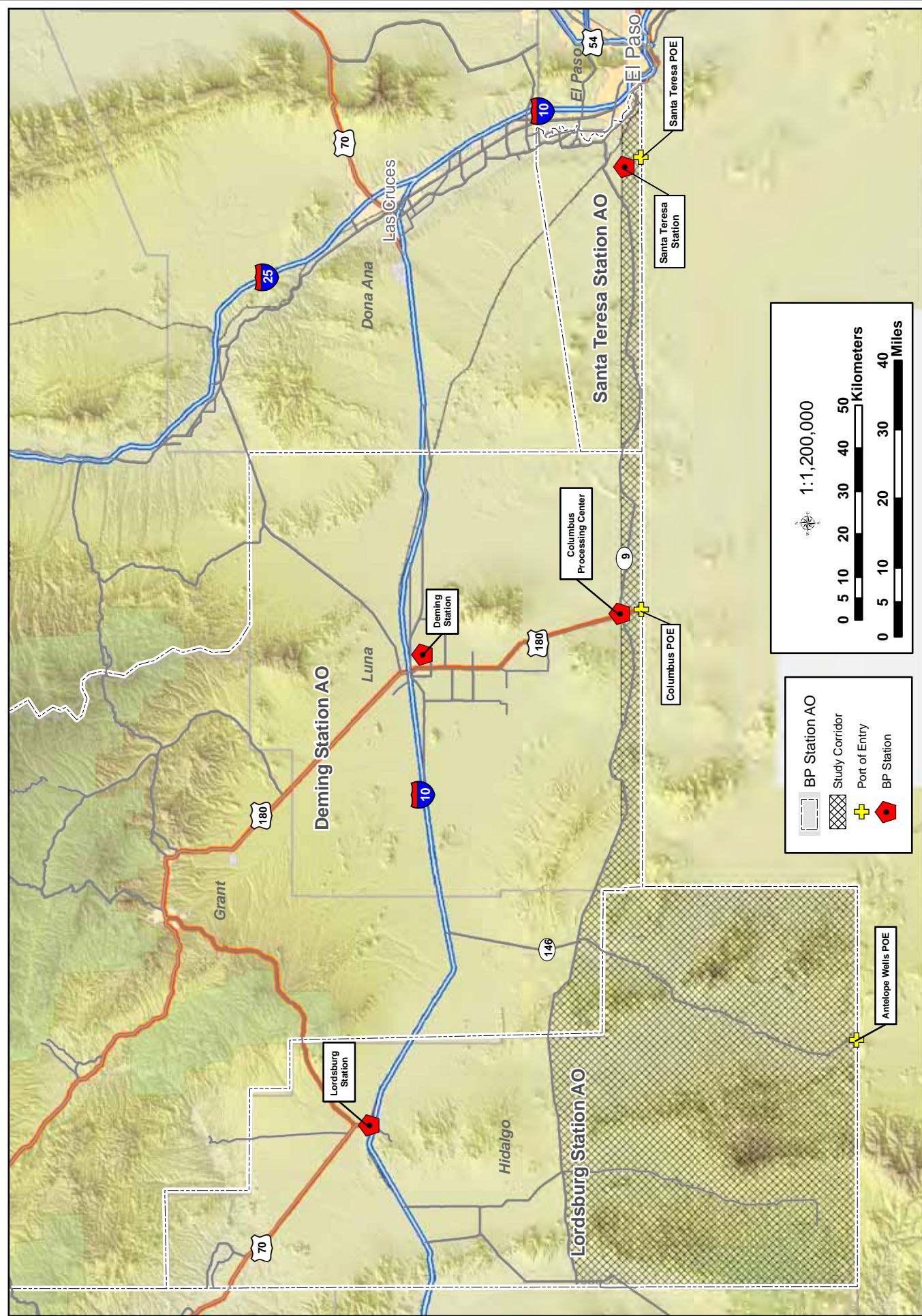


Figure 1-2: El Paso Sector
New Mexico Stations Study Corridor

at and beyond the Nation's borders. Hereinafter, any individual, including terrorists and smugglers, who attempt to illegally enter the U.S. is referred to as an illegal alien (IA).

In the aftermath of the September 11, 2001 terrorist attacks on the U.S. and the subsequent formation of DHS, the OBP has assumed a new priority anti-terrorism mission into its operational environment. The priority mission is to prevent the entry of terrorists and terrorist weapons while fulfilling the OBP's traditional and still very important mission of detecting, interdicting, and apprehending those who attempt to illegally enter or smuggle any person or contraband across sovereign borders of the U.S.

The priority goal of the OBP is to strengthen the U.S. borders to prevent the entry of IAs, terrorist weapons, narcotics and other contraband. The principle objective of the OBP is to apply appropriate levels of OBP personnel, intelligence, technology, and infrastructure resources to increase the level of operational effectiveness until the likelihood of apprehension is sufficient to be an effective deterrent in creating acceptable border-wide control. The intent is to produce a level of deterrence that conveys an absolute certainty of detection and apprehension.

During recent years, the OBP has significantly increased its emphasis on deterrence. Deterrence is achieved only when the OBP has the ability to create and convey the immediate, credible, and absolute certainty of detection and apprehension. As such, TI components, including vehicle barriers and access roads, are a critical element in the current enforcement strategy. Developing trends such as the continued urbanization and industrialization of the immediate border, the recognition of environmental preservation concerns, and the increase of criminal trans-boundary activities (including trafficking in people, drugs, and terrorism efforts) continue to pose a border enforcement challenge and compound the need for TI along the U.S.-Mexico border.

1.4 JOINT TASK FORCE – NORTH MISSION

Military engineer units provided by JTF-N would likely complete all or portions of actions proposed under the Proposed Action Alternative. JTF-N was activated in November 1989, by the Secretary of Defense to support Federal, state and local law enforcement agencies to counter the flow of illegal drugs into the U.S. (JTF-N 2004). JTF-N's mission statement articulates this counterdrug effort:

“JTF-North synchronizes and integrates Department of Defense operational, training and intelligence support to domestic law enforcement agency counterdrug efforts in the continental U.S. to reduce the availability of illegal drugs in the United States; and when directed, provides operational, training and intelligence support to domestic agencies’ efforts in combating terrorism.”

1.5 REGULATORY AUTHORITY

The primary sources of authority granted to OBP agents are the Immigration and Nationality Act (INA), found in Title 8 of the U.S. Code (USC), and other statutes relating to the immigration and naturalization of aliens. The secondary sources of authority are administrative regulations implementing those statutes, primarily those found in Title 8 of the Code of Federal Regulations (8 CFR Section 287), judicial decisions, and administrative decisions of the Board of Immigration Appeals. In addition, the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) and subsequently the Homeland Security Act of 2002, mandates DHS to acquire and improve equipment and technology along the border, hire and train new agents for the border region, and develop effective border enforcement strategies.

Subject to constitutional limitations, OBP agents may exercise the authority granted to them in the INA. The statutory provisions related to enforcement authority are found in Sections 287(a), 287(b), 287(c), and 287(e) [8 USC § 1357(a,b,c,e)]; Section 235(a) [8 USC § 1225]; Sections 274(b) and 274(c) [8 USC § 1324(b,c)]; Section 274(a) [8 USC § 1324(a)]; and Section 274(c) [8 USC § 1324(c)] of the INA. Other statutory sources of authority are Title 18 of the USC (18 USC), which has several provisions that specifically relate to enforcement of the immigration and nationality laws; Title 19 [19 USC § 1401(i)], relating to U.S. Customs Service cross-designation of immigration officers; and Title 21 [21 USC § 878], relating to Drug Enforcement Agency cross-designation of immigration officers.

1.6 PURPOSE AND NEED

The U.S. experiences a substantial influx of IAs and illegal drugs each year. Both of these illegal activities cost U.S. taxpayers billions of dollars annually due directly to criminal activities, as well as the cost of apprehension, detention, incarceration of criminals, and indirectly in loss of property, illegal participation in government programs, and increased insurance costs. In response to these increases in illegal activities, the U.S. Congress passed the IIRIRA in 1996.

Title I, Subtitle A, Section 102 of the IIRIRA states that the Attorney General, in consultation with the Commissioner of INS (now CBP), shall take such actions as may be necessary to install additional physical barriers and roads in the vicinity of the U.S. border to deter illegal crossings in areas of high illegal entry into the U.S. The combination of TI (e.g., physical barriers, remote video surveillance systems [RVSS], and roads), in conjunction with adequate resources (e.g., vehicles, field agents, support personnel), is essential for the safety of the OBP agents and the effective enforcement of the border strategy, and integral to the success of the OBP to gain, maintain, and extend control of the U.S. border. IAs and smugglers have shifted their activities as OBP enforcement operations along other portions of the U.S.-Mexico international border have resulted in greater apprehensions and detections, resulting in IAs taking greater risk to cross the border in areas where the terrain is extremely hard to traverse and has led to the death of a number of IAs.

The purpose of the proposed TI is to improve the OBP's efficiency and probability of IA apprehension to the extent that the TI and OBP's presence serve as deterrence to IAs, terrorists, and other contraband (e.g., drugs, vehicles, weapons) from entering or being brought into the U.S. These improvements would also result in a reduction of associated crimes along the international border and improved safety and welfare of OBP agents. In addition, the proposed TI would reduce impacts to natural and cultural resources and agricultural activities damaged as IAs attempt to enter the U.S. Typical damage to natural resources and infrastructure is shown in Photographs 1-1 and 1-2. The proposed TI components would greatly enhance the operational effectiveness of the OBP by providing quick access to and along the U.S.-Mexico border in areas that have limited access.



Photograph 1-1. Illegal Vehicular Traffic Damage



Photograph 1-2. IA Damage to TI

The need for improving the OBP's enforcement effectiveness is based upon increased border activity and its associated costs, the limited workforce available to secure the borders, the continued increase of IAs in remote areas, and the inadequacy of the existing TI system in the study corridor. The following is a summary of existing TI.

The Santa Teresa Station covers 47 border miles with the following TI:

- 3.1 miles of pedestrian barrier
- 0.7 miles of permanent lighting
- 2.7 miles of permanent vehicle barriers (PVBs)
- Intermittent barbed wire and chain link fence along U.S.-Mexico border

The Deming Station covers 54 border miles with the following TI:

- Dirt and gravel unimproved patrol roads
- 10 miles of intermittent PVBs
- 6-foot chain link fence near Columbus POE
- Seven RVSS
- Intermittent barbed wire fence along U.S.-Mexico border

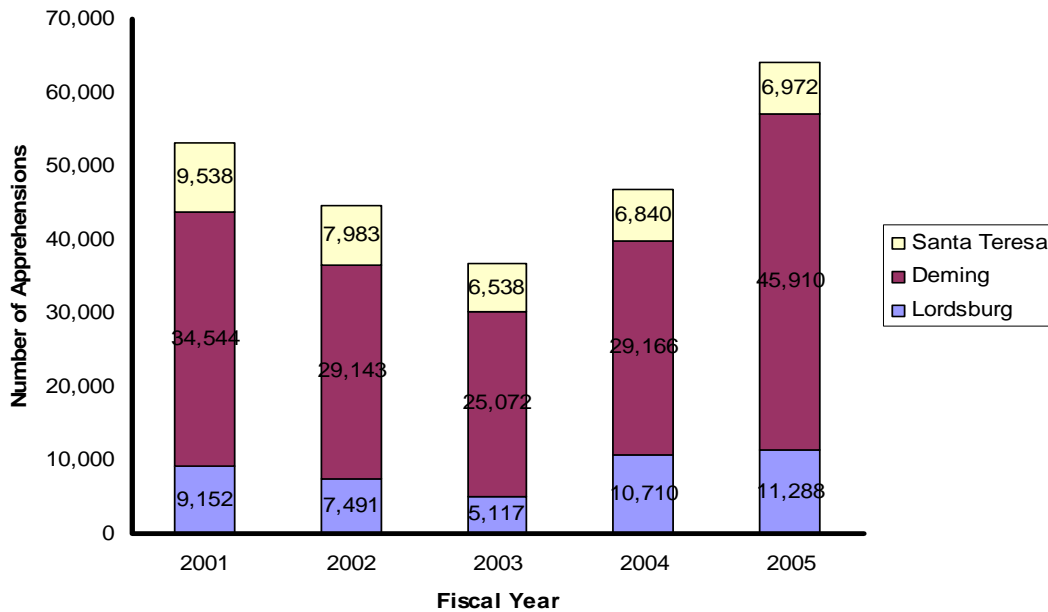
The Lordsburg Station covers 77 miles of border with the following TI:

- Approximately 140 miles of dirt surfaced border access and unimproved patrol roads
- Intermittent barbed wire fence along U.S.-Mexico border

The U.S., and especially the El Paso Sector, experiences a substantial influx of IAs and contraband each year. The OBP has a need to improve response time and secure the safety of IAs attempting to enter the U.S. and the safety of the OBP agents who attempt to apprehend them through a more efficient use of existing man power.

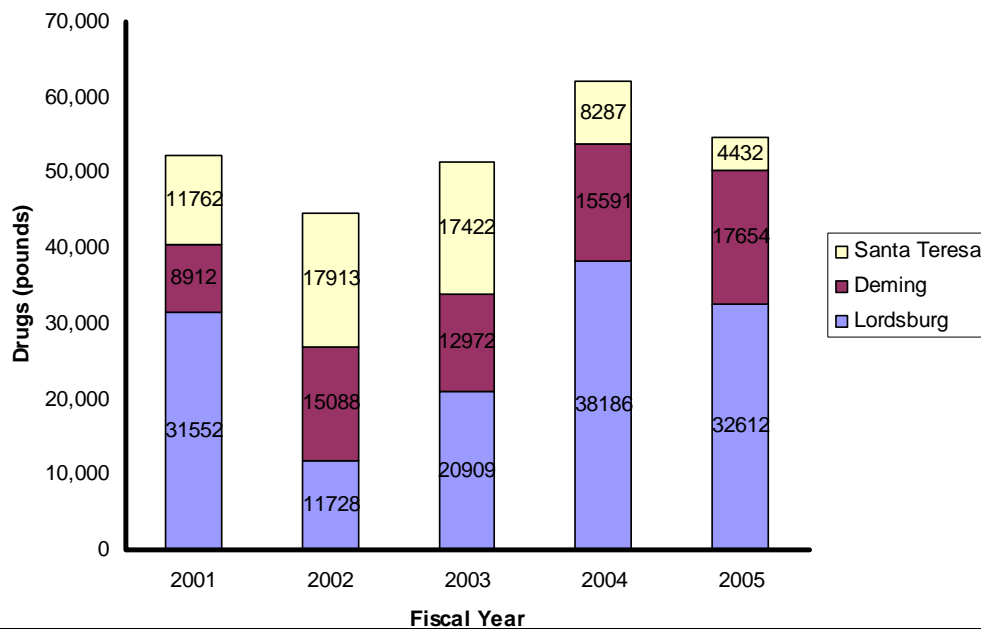
The remoteness of the OBP stations in New Mexico, the harsh desert environment, and the lack of a natural or man-made barrier along the border, have made this portion of the border very active in terms of smuggling and potential health hazards to IAs. During Fiscal Year (FY) 2005 (October 2004 – September 2005) there was a total of 64,170 IA apprehensions in the Santa Teresa, Deming and Lordsburg stations (Figure 1-3). The total number of apprehensions in these stations has increased each year since FY 2003 and has increased approximately 21 percent since FY 2001.

Figure 1-3. Apprehensions from FY 2001 – 2005, For Santa Teresa, Deming, and Lordsburg Stations



Drug seizures are another criteria used to assess the need for increased concentration of infrastructure. Drug seizures for the Santa Teresa, Deming and Lordsburg stations for FY 2001-2005 are shown in Figure 1-4. Since 2001, drug seizures have also increased in the New Mexico stations of the El Paso Sector.

Figure 1-4. Drug Seizures from FY 2001 – 2005 for Santa Teresa, Deming, and Lordsburg Stations



These stations experience high levels of illegal traffic due to the poor quality or absence of TI that typically serve as a deterrent to illegal crossings and enhance the OBP's ability to apprehend IAs. While the number of apprehensions and amount of drug seizures may not be increasing exponentially, these are still substantial numbers that need to be curbed. Without the increase or improvement of TI as proposed, the increasing trend of apprehensions and illegal activities incurred within the New Mexico stations of the El Paso Sector will continue. Given that some stations within the El Paso Sector report well over 100,000 illegal crossings each year, it is highly likely that many of these IAs are ultimately successful in their attempt to enter the U.S. Increasing TI and other resources would result in an increase in apprehension rates and, thus, enhance deterrence.

To summarize, the purpose and need for the proposed program are:

- Increase apprehension of IAs and thus enhance deterrence;
- Reduce crime along the border areas by enhancing the effectiveness of OBP agents in their daily operations;
- Provide 24-hour operations through the use of technology as force multipliers;
- Improve access to remote areas along the international border;
- Secure the safety of OBP agents and U.S. residents; and
- Improve the ability of OBP agents to rescue IAs in distress.

1.8 SCOPE OF THE ANALYSIS

The exact locations, designs, and extent of infrastructure that may be required within the study corridor have not yet been determined. This PEA will analyze the potential impacts associated with installation, construction and maintenance of the proposed infrastructure throughout the study corridor. As this is a programmatic document, the impact estimates are based on generic planning level assumptions. Future site-specific documents would more accurately assess specific impacts. As specific projects are identified, site-specific environmental assessments will be tiered from this PEA, as well as from other related documents. In addition to the analysis of proposed infrastructure and the No Action Alternative, this document will analyze the past, ongoing, and future projects in the area to gain a better understanding of the potential cumulative impacts in the study corridor.

1.9 APPLICABLE ENVIRONMENTAL GUIDANCE, STATUTES, AND REGULATIONS

This PEA was prepared in accordance with, but not limited to the NEPA of 1969; ESA of 1973, as amended; the National Historic Preservation Act (NHPA) of 1966, as amended; and the Archeological and Historical Preservation Act (AHPA) of 1974, as amended. Table 1-1 summarizes the pertinent environmental statutes and regulations and the resource regulated, as well as compliance requirements.

1.10 REPORT ORGANIZATION

This report is organized into nine major sections including this introduction, the description of the purpose and need, and location of the proposed project. Section 2.0 describes all alternatives considered for the project. Section 3.0 discusses the environmental resources potentially affected by the project, while Section 4.0 discusses the environmental consequences for each of the viable alternatives. Environmental design measures are discussed in Section 5.0, and the public involvement discussion is presented in Section 6.0. Sections 7.0, 8.0, and 9.0 present a list of the references cited in the document, a list of the persons involved in the preparation of this document, and a list of acronyms and abbreviations, respectively.

A list of soil types and Prime Farmlands occurring within the study corridor is provided in Appendix A. Appendix B contains the New Mexico Species of Concern Lists for Doña Ana, Luna and Hidalgo counties, which includes a listing of Federally protected plant and wildlife species, the state listed protected species, and Bureau of Land Management (BLM) sensitive species, and the New Mexico Non-native Plants and Noxious Weeds lists. Appendix C contains a list of previously surveyed archaeological sites in the study corridor. Appendix D contains public meeting attendance and comments from both the public meetings and the public comment period. Appendix E contains the correspondence generated during the preparation of this PEA.

Table 1-1. Summary of Relevant Guidance, Statutes, and Regulations Including Compliance Requirements *

Issue	Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review/Status
Soils	Resource Conservation and Recovery Act of 1976, 42 U.S.C. § 6901 <i>et seq.</i> , as amended	U.S. Environmental Protection Agency (EPA)	Proper management, and in some cases, permit for remediation
	Comprehensive, Environmental Response, Compensation, Liability Act of 1980, 42 U.S.C. § 9601 <i>et seq.</i> , as amended	EPA	Development of emergency response plans, notification, and cleanup
	Farm Land Protection Policy Act of 1981, 7 U.S.C. § 4201 <i>et seq.</i>	Natural Resource Conservation Service (NRCS)	NRCS determination via Form AD-1006
Natural Resources	7 CFR 657-658 Prime and unique farmlands	USFWS	Compliance by lead agency and/or consultation to assess impacts and, if necessary, develop mitigation measures
	Endangered Species Act of 1973, 16 U.S.C. § 1531 <i>et seq.</i> , as amended	USFWS	Compliance by lead agency and consultation to assess impacts and, if necessary, develop mitigation measures
	Migratory Bird Treaty Act of 1918, 16 U.S.C. § 703 <i>et seq.</i>	USFWS	Compliance by lead agency and consultation to assess impacts and, if necessary, develop mitigation measures
Cultural/ Archaeological	National Historic Preservation Act of 1966, 16 U.S.C. § 470a <i>et seq.</i>	Advisory Council on Historic Preservation through State Historic Preservation Officer	Section 106 Consultation
	Archaeological Resources Protection Act of 1979, 16 U.S.C. § 470aa <i>et seq.</i>	Affected land-managing agency	Permits to survey and excavate/ remove archeological resources on Federal lands; Native American tribes with interests in resources must be consulted prior to issue of permits
Air	Clean Air Act, and amendments of 1990 (42 U.S.C. § 7401 <i>et seq.</i>)	EPA and New Mexico Environmental Department	Compliance with National Ambient Air Quality Standards (NAAQS) and emission limits and/or reduction measures; Conformity to <i>de minimus</i> thresholds; Preparation of a Record of Non-Applicability (RONA)
Water	Federal Water Pollution Control Act of 1977 (also known as the Clean Water Act) (33 U.S.C. § 1251 <i>et seq.</i>)	EPA	Section 402(b) National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges for Construction Activities-Storm Water Pollution Prevention Plan (SWPPP)

Table 1-1, continued

Issue	Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review/Status
Water	Executive Order 11988 (Floodplain Management), 42 Federal Register (FR) 26,951 (May 24, 1997), as amended.	Water Resources Council, Federal Emergency Management Agency (FEMA), CEQ	Compliance
	Executive Order 11990 (Protection of Wetlands), 42 FR 26,691 (May 24, 1977), as amended	USACE and U.S. Fish and Wildlife Service (USFWS)	Compliance
	Clean Water Act of 1977 (33 U.S.C. § 1341 <i>et seq.</i>)	USACE and New Mexico Environmental Department	Section 404/401 Permit
Social/ Economic	Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) of 1994, 59 FR 7629 (February 11, 1994)	EPA	Compliance
	Executive Order 13045, Protection of Children	EPA	Compliance
Sound/ Noise	Noise Control Act of 1972, 42 U.S.C. § 4901 <i>et seq.</i> , as amended	EPA	Compliance with surface carrier noise emissions
Health and Safety	Occupational Health and Safety Act of 1970, 29 U.S.C. § 651 <i>et seq.</i>	Occupational Safety and Health Administration (OSHA)	Compliance with guidelines including Material Safety Data Sheets
Solid/ Hazardous Waste	Resource Conservation and Recovery Act of 1976. 42 U.S.C. § 6991 <i>et seq.</i>	New Mexico Hazardous Waste Bureau	Compliance

* Not All Inclusive

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SECTION 2.0
ALTERNATIVES

2.0 ALTERNATIVES

Several alternatives were considered during the formulation of the Proposed Action Alternative. Any alternative selected as being viable for analysis in the PEA had to satisfy the purpose and need. Therefore, some alternatives considered will not be carried forward in the PEA because they do not satisfy the purpose and need.

2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE

The No Action Alternative would preclude the installation of any additional TI within the Santa Teresa, Deming and Lordsburg stations' AOs. This alternative would allow the routine maintenance and operation associated with existing infrastructure to continue. Existing infrastructure to be maintained (Figure 2-1) includes intermittent dirt and gravel access and patrol roads along the U.S.-Mexico border, an intermittent 6-strand barbed wire fence on the border, a 6-foot chain link fence near the Columbus POE, 13 miles of PVBs (10 miles near the Columbus POE and 3 miles west of Santa Teresa POE), seven RVSS near the Columbus POE, and approximately 1 mile of permanent lighting near the border at Sunland Park. Even though this alternative would reduce unavoidable impacts associated with the construction of TI and irretrievable losses of resources related to construction activities, it would greatly limit the OBP's capability to prevent and deter illegal activity along the U.S.-Mexico border.

The No Action Alternative does not meet the purpose and need for the proposed project, but will be carried forward for analysis, as required by the CEQ regulations. The No Action Alternative describes the status quo in the absence of any action alternative.

2.2 ALTERNATIVE 2: PROPOSED ACTION ALTERNATIVE

The Proposed Action Alternative involves improvements to or construction of 316 miles of border access roads or all-weather patrol roads, 78 miles of drag roads, establishment of 160 miles of PVBs, 7 miles of permanent pedestrian barriers, installation of 30 miles of permanent lights and approximately five RVSS, and construction of ancillary structures (*i.e.*, low water crossings and culverts) (Figures 2-2a through 2-2c). It is anticipated that the Proposed Action Alternative would be implemented over the next 10 years.

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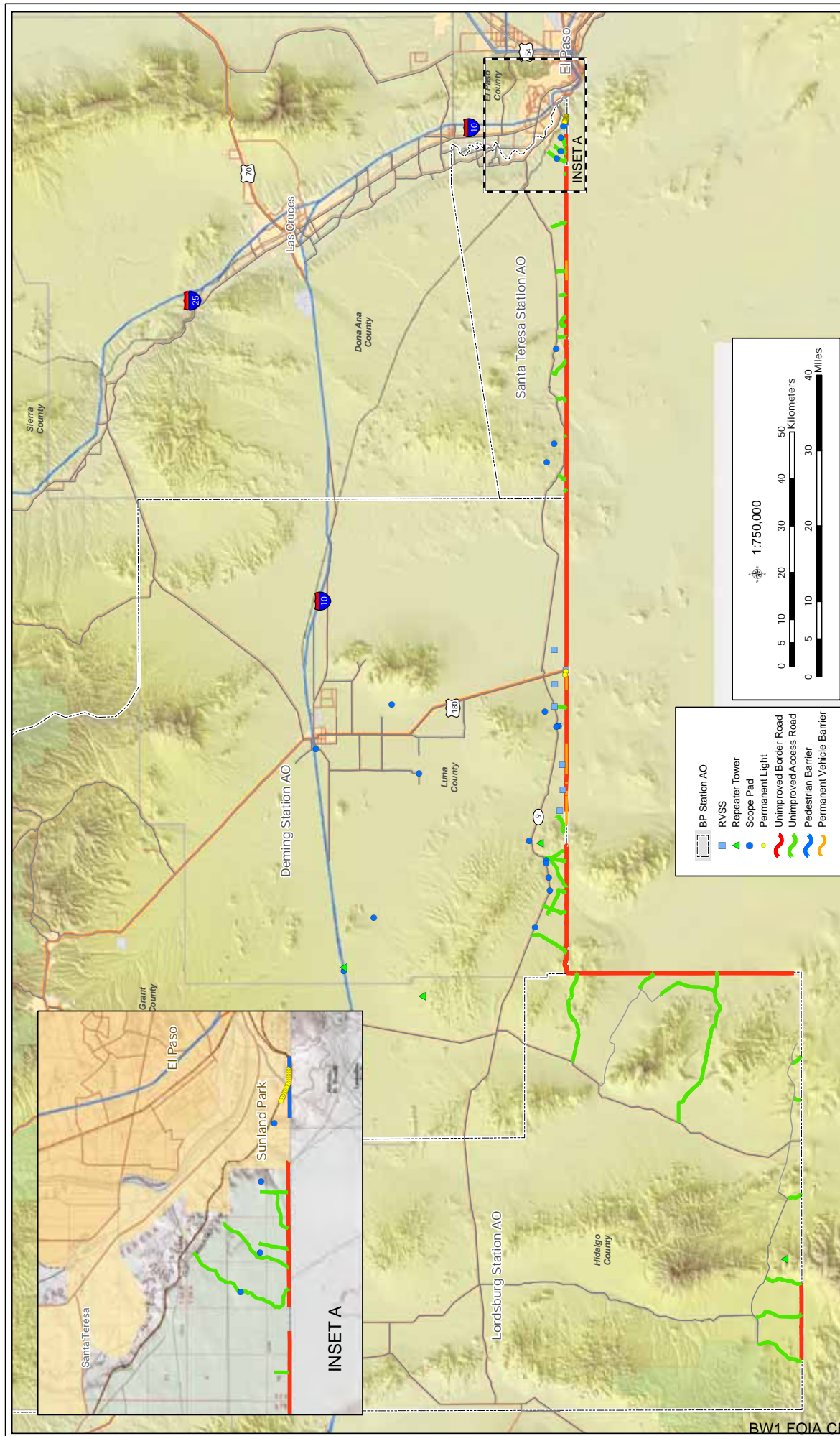


Figure 2-1: El Paso Sector
New Mexico Stations: Existing Tactical Infrastructure

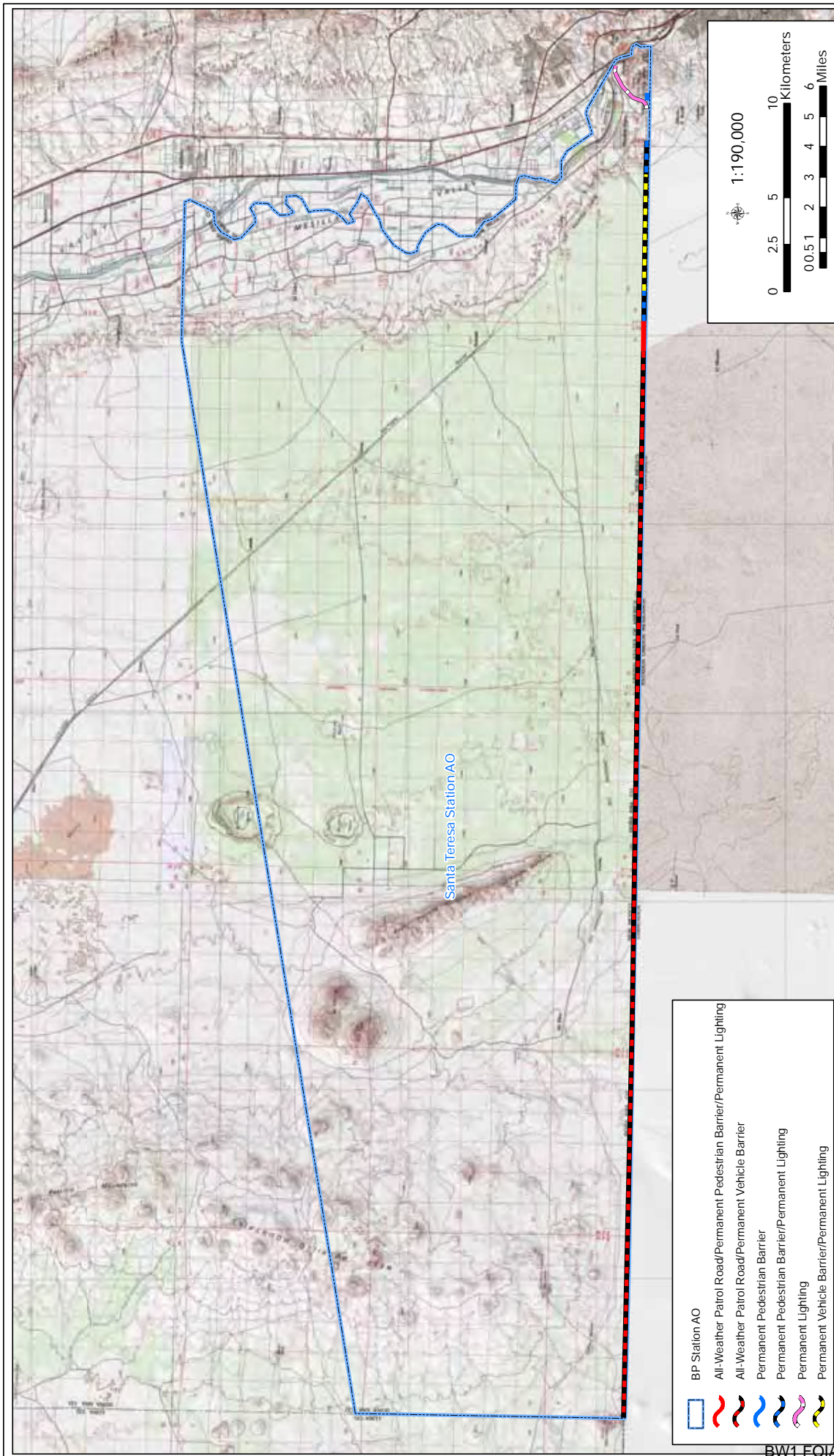


Figure 2-2a: El Paso Sector
Santa Teresa Station: Proposed Tactical Infrastructure

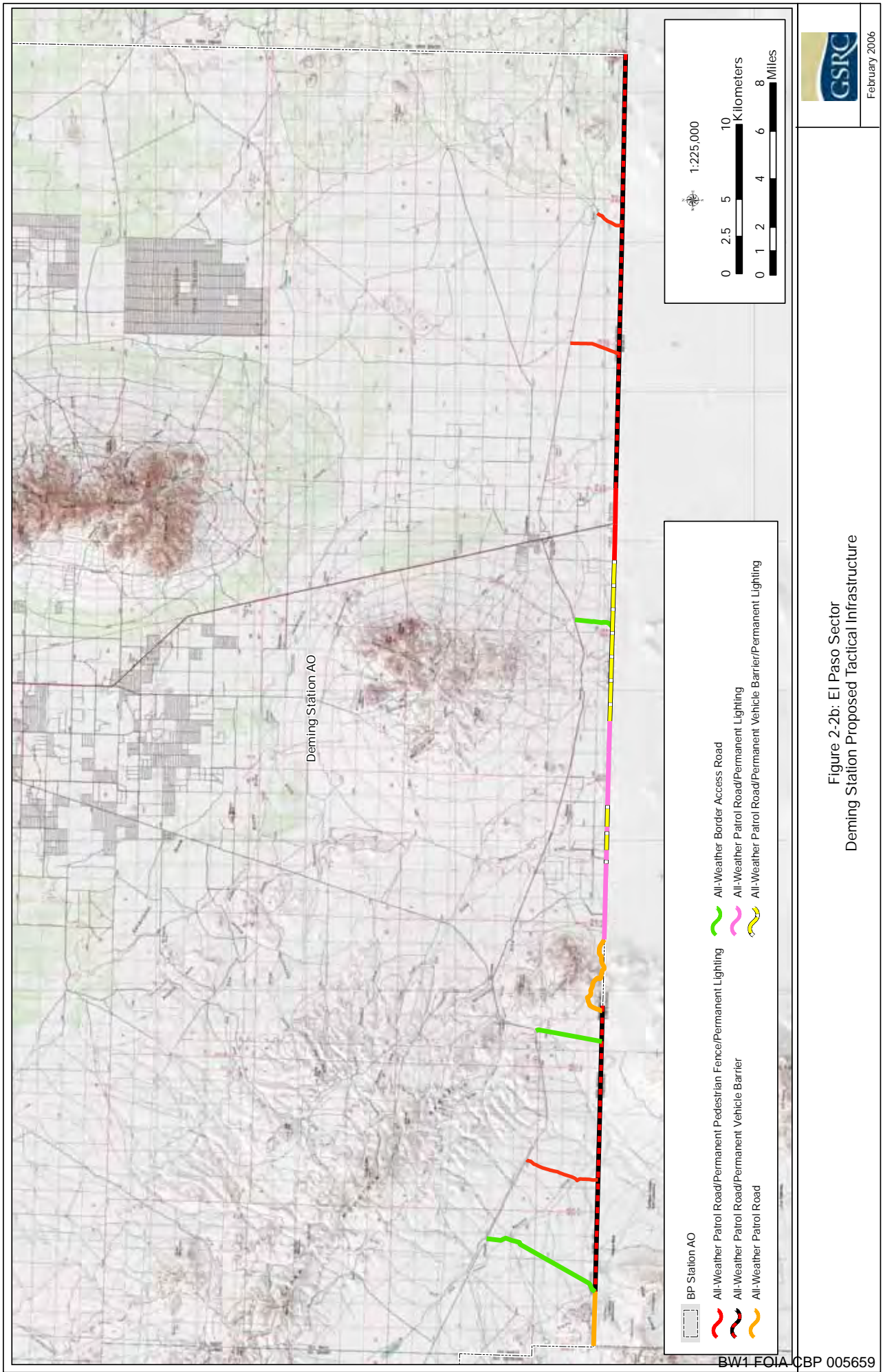


Figure 2-2b: El Paso Sector
Deming Station Proposed Tactical Infrastructure

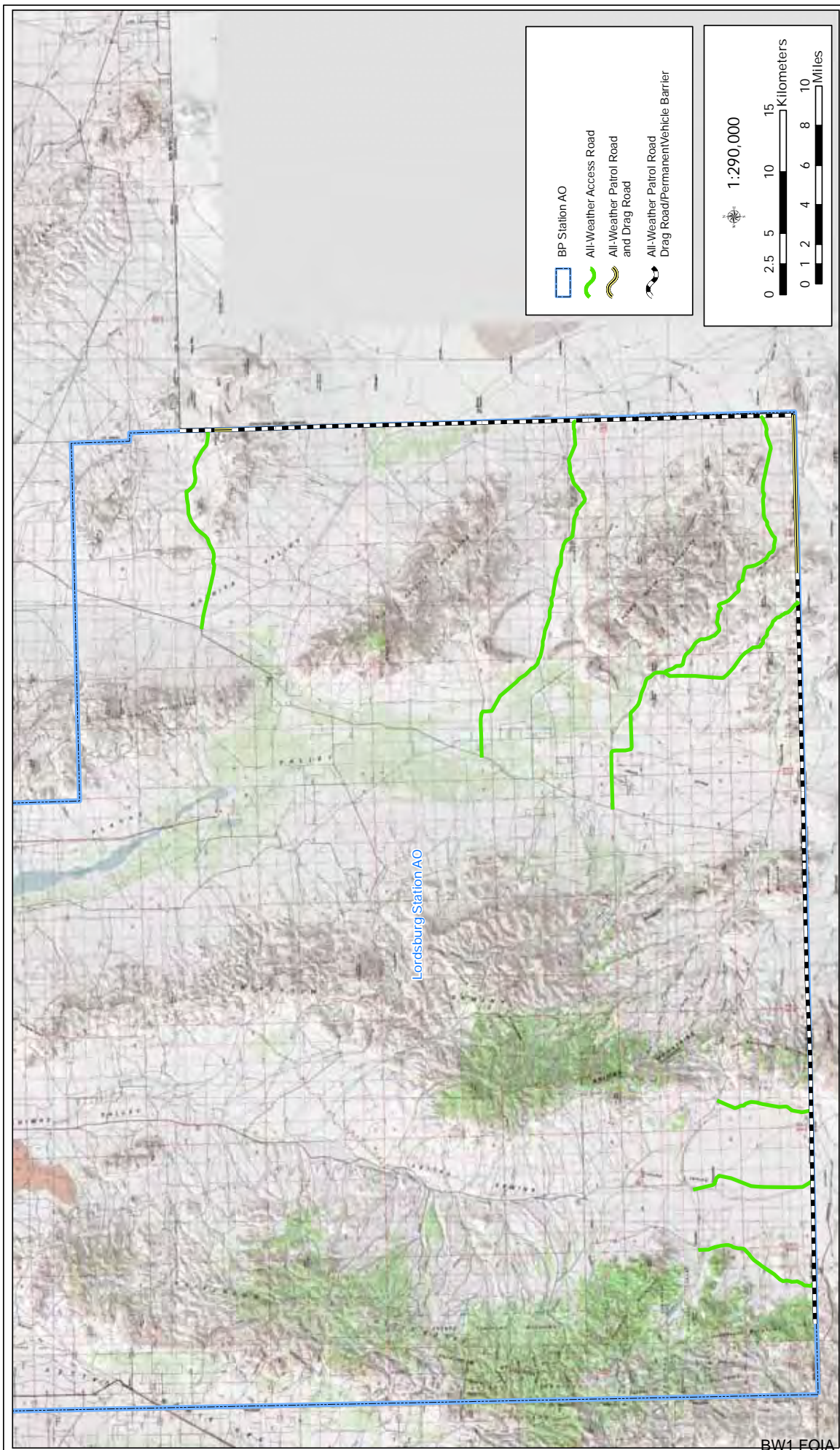


Figure 2-2c: El Paso Sector
Lordsburg Station: Proposed Tactical Infrastructure

The OBP has currently identified one site-specific project. The project was initially identified in 1998, but it was not completed. The project has been reactivated with some modifications to the existing plans due to changes in needs. This project entails the installation of approximately 35 miles of PVBs, 20 miles of permanent pole-mounted lights, 3 miles of permanent pedestrian barrier near the Columbus POE, 58 miles of all-weather patrol roads and drag roads, and 16 miles of border access roads (see Figure 2-2b).

The future locations of the potential TI components would be selected based upon the known high illegal traffic areas and the juxtaposition with existing infrastructure to ensure that the optimum benefits to the OBP's mission would be provided. Locations would be selected based upon the proximity to existing roads, tactical relevance, power sources, condition of current infrastructure, ability to obtain a lease, easement or right-of-way (ROW), and topography. Multiple TI components may be planned for the same sites, for example, over one border mile, it may be necessary to install permanent pedestrian barriers, a patrol road, a drag road and permanent lighting structures. The TI components would work together to enhance the OBP's ability to secure the border. Military engineer units provided by the National Guard and JTF-N, OBP, private contractors, or a combination thereof would complete the actions proposed under this alternative. Typical infrastructure equipment and construction activities that will be analyzed are described below.

2.2.1 Lights

Permanent pole-mounted lights (Photograph 2-1) have been used along the border areas and have aided in the detection of illegal activities, enhanced the missions of the OBP, provided some level of deterrence, and reduced hazardous risks to IAs and OBP agents. The lights would be used both in highly populated areas and in areas where dense vegetation makes spotting IAs difficult. The lights would range from typical streetlights to stadium style lights. The lights would operate from dusk to dawn year-round, typically emitting approximately 5 to 6 foot-candles per square foot of illumination. Lights are typically spaced 100 to 300 feet apart, but light placement depends upon topography, area to be illuminated, and IA routes. Stadium



Photograph 2-1. Typical Permanent Lighting Structure

style lights typically consist of four 1,000-watt metal halide light bulbs; however, the design of these permanent light systems may change in the future. The impact footprint for operation and maintenance of permanent lighting structures would potentially be as wide as 20 feet. The description for permanent lighting systems is only used for planning purposes at a programmatic level; the actual lighting systems, wattage, light shielding, and potential power sources would be disclosed in project-specific NEPA documents tiered from this PEA.

The use of permanent lighting is proposed along approximately 30 miles of the U.S.-Mexico border, 20 miles in the Deming Station AO and 10 miles in the Santa Teresa Station. Lights in Deming would begin 2 miles east of the Columbus POE and extend westward past the POE 18 miles. In the Santa Teresa Station, lighting would be deployed near the Santa Teresa POE and in the Cristo Rey Mountain-Anapra area.

2.2.2 Permanent Pedestrian Barriers

Permanent pedestrian barriers would likely be constructed similar to those in other OBP sectors (e.g., landing mat panel, Photograph 2-2); however, alternative designs such as decorative, or bollard barriers (Photograph 2-3 and 2-4) could be used. Typically in the process of constructing pedestrian barriers, a concrete footing approximately 2 to 4 feet wide and 3 feet deep would be constructed to support the fence posts.



Photograph 2-2. Landing Mat Panel-style Pedestrian Barrier



Photograph 2-3. Typical Bollard-style Pedestrian Barrier



Photograph 2-4. Typical Decorative-style Pedestrian Barrier

In many of the areas where these barriers would be deployed a maintenance road would be necessary to install and later maintain the barriers. The footprint for installation and maintenance of permanent pedestrian barriers would be as much as 20 feet wide.

The Deming Station proposes to install approximately 3 miles of permanent pedestrian barriers near the Columbus POE. The Santa Teresa Station proposes to construct permanent pedestrian barriers to replace the fencing near the Santa Teresa POE and in the Cristo Rey Mountain-Anapra area. The permanent pedestrian barriers would be more difficult to cut, destroy, or vandalize than the type of fencing currently used in these areas. No other pedestrian barriers are proposed in the study corridor at this time. The description of the pedestrian barriers are only used for planning purposes and the actual design and location of pedestrian barriers installed will be described in future project-specific NEPA documents tiered from this PEA.

2.2.3 Permanent Vehicle Barriers (PVB)

PVBs are permanent structures designed to prevent illegal entry of vehicles across the U.S.-Mexico border. As the name implies, PVBs are designed to impede illegal vehicle entry; they do not necessarily preclude pedestrian or wildlife movement. PVBs are typically placed on the north side of the U.S.-Mexico border, as close to the border as physically possible. The design for typical PVBs is to place a steel pipe (approximately 6 to 8 inches in diameter) into the ground approximately 3 feet, fill the pipe with concrete, and weld railroad rails along the tops of the pipes in a horizontal manner. The pipes are placed in the ground on approximately 4-foot centers (Photograph 2-5). Typical construction equipment necessary to complete the installation of the barriers would include: welding machines, diesel generators, auger truck, concrete truck, water truck, crane, road grader, and flatbed truck. Typically, an 8-foot wide impact footprint is necessary for the installation and maintenance of permanent vehicle barriers.



Photograph 2-5. Military-style PVB

Currently, there is a pilot program being tested in the Deming Station AO using the push system for the installation of PVBs. The steel pipes are placed along the border on 4-foot centers, creating bollard-style PVBs. The holes for the pipes are drilled vertically by a directional drilling rig. Sand, soil and rock fragments are pumped out of the hole. The steel pipes are put into the holes and anchored using the removed sand or soil material along with a pre-formed cement core in the hollow of the pipe (Photograph 2-6).

The method of installation for site-specific projects would be determined during the planning stages for each project. PVBs are proposed for installation along the border in all three New Mexico stations AOs: 6 miles in Santa Teresa AO, 43 miles in Deming AO, and 111 miles in Lordsburg AO.



Photograph 2-6. Bollard-style PVB

Permanent physical barriers in remote locations are preferred because of their durability and low maintenance requirements. This is important due to the high levels of illegal vehicle crossings and the remoteness of the study corridor. The distance and time required to travel to remote areas does not allow OBP agents to be present at all times to defend the proposed physical barriers; therefore, the proposed PVB must be able to withstand vandalism and attempts at defeating the barrier. Normandy style barriers may be used in areas of steep terrain where access by heavy equipment is limited. However, temporary vehicle barriers, in lieu of permanent ones, would be difficult to defend, are easily vandalized or removed, and would require constant maintenance.

2.2.4 Roads

Vehicular travel corridors established by local, state, and federal agencies within the study area consist of two-track trails which have not been graded or surfaced, and roads which have been graded or graded and surfaced. Travel corridors which parallel the border and are utilized primarily for patrol activities are termed patrol roads, while travel corridors which trend north to south and are utilized primarily for access to the border are termed access roads. While some patrol and access roads can be dragged, roads which parallel patrol or access roads and are utilized primarily for dragging are termed drag roads. Repair and maintenance of roads includes

grading or resurfacing of existing roads that would not result in a change in functional use or impact a historically significant element or setting. Construction of roads would include the grading or surfacing of two-track trails; creation of new roads through widening or straightening and grading in previously undisturbed areas; or the creation of new alignments in order to provide a strategic advantage, improved line of sight, or decreased distance between roads and the border. Improvement of roads could include the grading, resurfacing, filling with on-site soil or engineered fill (e.g., soil from offsite source that is free of vegetation, rock and lumps larger than 3 inches), lifting and bedding, and installation of proper drainage structures within the existing footprint of the road. The proposed construction and improvements would likely increase the number of motor vehicles in the study area by making the border area more accessible; however, the increase in vehicle traffic would not substantially impact the remote nature of the area.

The construction of new road segments and improvement to existing roads would give OBP agents the ability to patrol the border in a more efficient and effective manner, thus enhancing their capabilities to react to an illegal incursion and provide deterrence to entry attempts. Road construction and improvements would reduce risks to the OBP agents during patrols and reduce vehicle maintenance and downtime associated with poor road conditions. In addition to potential new road segments, three types of road construction or road improvements are proposed herein: grading or surfacing of two-track trails used as patrol or access roads, all-weather surfacing of existing patrol and access roads, and creation of drag roads.

The Proposed Action Alternative involves the construction or improvements of up to 316 miles of all-weather patrol roads and border access roads, construction of 78 miles of drag roads, and the placement of associated drainage structures. While exact designs would differ according to location and specific need, the proposed footprint of the roads is typically 24 feet wide, which includes a 20-foot all-weather driving surface and two 2-foot shoulders. Where planned, a 10-foot wide drag road would parallel the patrol road. Additionally, drainage structures would be added to areas that have periodic surface water flow to prevent roads from washing out and limiting patrol activities during rain events. Site-specific NEPA documents would assess impacts in areas where terrain or other limitations require roads to be constructed beyond the planned footprint.

2.2.5 Remote Video Surveillance Systems (RVSS)

RVSS are one of the most effective detection technologies in the OBP arsenal because of their capability to continuously monitor large areas during the day and night with limited use of personnel. RVSS allow the OBP to more effectively observe a larger area (*i.e.*, a force multiplier), improve response time, and increase the safety of OBP agents and IAs. The RVSS would facilitate the OBP's effort to apprehend IAs in proximity to the border, thereby resulting in a more compact enforcement area to patrol and allow for a greater agent presence.

DHS (2004) estimated that a total of 12 RVSS would be installed within the New Mexico Stations of the El Paso Sector. There are currently seven RVSS in operation in Luna County. It is estimated that approximately five additional RVSS would be constructed over the next 10 years. It should be noted that this number is for planning level analysis only and the actual number of RVSS required will vary depending upon enforcement strategies, topography, and the influx of IAs. The function and deterrence level of RVSS will be evaluated continually on a site-specific basis.

Typical designs for pole mounted RVSS (Photograph 2-7) consist of multiple cameras (low-light and infrared) and transmitters to send the signals to the OBP RVSS operations and control room. Equipment is commonly mounted on 60-foot monopoles or 250-foot towers, depending on the local terrain. The RVSS equipment is mounted on a rectangular or triangular platform that holds the microwave and antennae systems, cameras mounted on pan-and-tilt pedestals, and control equipment. The exact number and type of equipment would depend on the number and types of cameras used, area to be monitored, and other design variables. In addition, one or more solid parabolic antenna is mounted on the platform railings or on a separate antenna mount. The platform would be mounted on steel or concrete poles that are approximately 3 feet in diameter. Typical pole placement is on a foundation that requires a 4-foot diameter by 12-foot deep hole drilled by an auger, but the design is dependent upon subterranean characteristics determined by subsurface investigations. Concrete is placed in the hole and around the pole forming a foundation to anchor the pole in the ground. The area of



**Photograph 2-7.
RVSS Monopole**

potential effect (APE) is between 900 square feet (30 feet x 30 feet) and 2,500 square feet at each site, depending on the power source and height for the RVSS. RVSS that utilize solar power require a larger area for installation of the solar panels and associated equipment (2,500 square feet).

In some instances, towers may be needed to provide line-of-sight to ensure clear transmission signals (Photograph 2-8). The typical design for towers would be a steel three-legged tower ranging in height from 180 feet to 250 feet. The cameras would be installed at a height that would ensure a satisfactory view and provide a clear pathway for transmission of information to relay stations and/or the OBP station. Three circular concrete pilings approximately 3 feet in diameter would be placed at each site to anchor the tower legs in the ground. The tower and associated facilities would disturb an area up to 10,000 square feet (100 feet x 100 feet). Crushed stone would be placed where there is no concrete and an 8-foot chain-link fence would be used to enclose the area.



**Photograph 2-8.
RVSS Tower**

Power to RVSS is generally supplied by aerial lines from adjacent power grids, but solar panels may also be used. As required by the local utility, power would be extended from the service or secondary pole to the RVSS tower utilizing underground conduit. Small propane powered generators with a panel of batteries are used to backup the solar powered systems. Access roads may be required for some RVSS locations. Each RVSS would be evaluated when designs and locations are determined to ensure that adequate access is provided for construction and maintenance. Project-specific NEPA evaluation would occur for all RVSS in accordance with the PEA prepared for RVSS in this region (DHS 2004) or DHS MD 5100.1.

2.3 ALTERNATIVE 3: TI AS IN PROPOSED ACTION WITH CATTLE FENCE PVBs

This alternative is the only other alternative that meets the purpose and need of this PEA. TI would be deployed exactly as described in the Proposed Action Alternative; however, the PVBs would be constructed to serve as both a barrier to illegal vehicles trying to enter the U.S. and as a cattle fence. During the scoping process, landowners and ranchers with borderland property voiced concerns about the use of PVBs along the boundary of their property and the U.S.-

Mexico border. PVBs would be installed 2 to 5 feet north of the existing border. PVBs are designed to exclude vehicular traffic from crossing into the U.S., but they do not inhibit the passage of IA foot traffic or animals. Cattle would be free to roam, causing problems including loss of cattle to open rangeland in Mexico, open pathways for potentially diseased Mexican cattle, and easy access for cattle theft. The modifications of PVBs into cattle fence PVBs would include the installation of four to six strands of barbed wire (or similar device) spanning the distance between the vertical steel pipes. The New Mexico Department of Game and Fish (NMDGF) expressed concerns regarding the design of the cattle fence. The fence design features as suggested by NMDGF include the bottom strand no lower than 16 inches from ground level. Also, the top and bottom wires should be flat, not barbed.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED

Two alternatives were considered but eliminated from further consideration. These alternatives were the Increased Aerial Reconnaissance/Operations Alternative and the Increased Workforce Alternative

Under the Increased Aerial Reconnaissance/Operation Alternative, the use of helicopters, fixed-wing aircraft, and remotely piloted aerial vehicles would be used for surveillance to support the El Paso Sector. This alternative was eliminated from further consideration because it does not fully satisfy the purpose and need of the project in terms of providing an increase to the deterrence, detection, and apprehension. Aerial reconnaissance/operations require highly skilled pilots and can only operate under favorable weather conditions. Aerial reconnaissance/operations also have limited detection capabilities at night and in areas with steep topography or thick vegetation.

This alternative was also eliminated because it does not meet all of the operational criteria. However, aerial reconnaissance/operations are an effective operational strategy for the El Paso Sector when used in combination with various infrastructures. For example, aerial operations have proven highly effective for performing search and rescue missions and during vehicle pursuits. Due to their effectiveness in given situations and specific areas of the El Paso Sector, increasing aerial reconnaissance/operations may be a helpful solution to meet the purpose and need of other OBP activities. Also, unmanned air vehicles are presently being tested for use as high altitude surveillance platforms to provide day-night search and rescue and apprehension

assistance for OBP. This technology is still in its test phase and will be addressed in the cumulative effects section as a foreseeable future project.

Another alternative considered during the preparation of this EA was to increase the workforce at the stations. The Strategic Border Initiative authorized additional agents for the El Paso Sector; however, there is no guarantee that the maximum number of agents would be hired, trained or deployed. Additional OBP agents would be stationed in areas 24 hours per day, 7 days a week. In some areas of the El Paso Sector, road improvements would be imperative, as agents are currently unable to access the border. Without additional infrastructure such as improved roads, vehicle barriers, lighting, and RVSS, this alternative would not provide the same level of deterrence as the Proposed Action Alternative. In addition, the purchase of large amounts of equipment would be necessary to equip OBP agents and their vehicles with infrared cameras or spotting scopes to allow night observations.

Under this increased workforce alternative, patrol roads would not be constructed and remain in the same unimproved condition as they are now. However, due to an increase in workforce, more vehicles would use patrol roads, possibly degrading their current condition and increasing safety risks to OBP agents. Drainage structures and bridges would also be absent from this alternative, limiting accessibility if IAs were detected. Permanent lighting would not be utilized under this alternative; which would also increase the safety risk to OBP agents, due to lack of lighting in remote areas. In addition, the effectiveness of the OBP would not be improved under this alternative since IAs and drug smugglers would continue to travel across the U.S.-Mexico border unrestricted without the assurance of certain apprehension.

2.5 SUMMARY

Only two of the five action alternatives and the No Action Alternative were carried forward for detailed analysis. The other alternatives did not meet the stated purpose and need. The Proposed Action Alternative and Alternative 3 provide several means of enhancing the OBP's capabilities along the border, fully meeting the purpose and need.

Table 2-1 presents a summary matrix of the alternatives compared to the purpose and need. Table 2-1 demonstrates how the Proposed Action Alternative and Alternative 3 fully meet the purpose and need of this PEA. Table 2-2 presents a summary of impacts anticipated to occur

with implementation of the No Action Alternative, Proposed Action Alternative, and TI as in the Proposed Action Alternative with Cattle Fence PVBs alternatives. The definitions for significance and thresholds of significance for the impacts are presented in Section 4.0 of this PEA.

Table 2-1. Alternative Matrix

Purpose and Need	No Action Alternative	Proposed Action Alternative	Cattle Fence/ PVBs	Increased Aerial Reconnaissance/ Operations	Increased Workforce Alternative
Improve the OBP's efficiency and probability of IA apprehension	No	Yes	Yes	Partial	Partial
Reduce illegal crossings and associated crime within the U.S.	No	Yes	Yes	No	Partial
Compensate for limited manpower	No	Yes	Yes	Partial	Yes
Reduce the potential of terrorists and smugglers crossing the U.S.–Mexico border	No	Yes	Yes	Partial	Partial
Meet the requirements of IIRIRA	No	Yes	Yes	No	No
Reduce safety risks to OBP agents	No	Yes	Yes	No	Partial
Provide for 24 hour surveillance and protection support along the U.S.-Mexico border	No	Yes	Yes	No	Partial

Table 2-2. Summary Matrix of Potential Impacts

Affected Environment	No Action Alternative	Proposed Action Alternative	Cattle Fence PVB Alternative
Land Use	<p>The No Action Alternative would not directly affect land use. However, crimes attributable to IA activity would continue to affect urbanized areas. Croplands and pasturelands would continue to be degraded by illegal traffic</p>	<p>The Proposed Action Alternative would substantially reduce illegal traffic and associated impacts. Approximately 762 acres of shrub and brush rangeland, 316 acres of mixed rangeland, 3 acres of nonforested wetland, 5 acres of transitional areas, and 16 acres of evergreen forestland would be impacted by the Proposed Action Alternative.</p> <p>Some sections of the border would remain porous to cattle, which could impact ranching operations by loss of cattle to open rangeland in Mexico, open pathways for potentially diseased Mexican cattle, and easy access for cattle theft.</p>	<p>The effects of reduced illegal traffic and the effects of lost productivity resulting from this alternative would be equal to those described for the Proposed Action Alternative. However, this alternative would greatly reduce the potential for contamination of U.S. cattle by migrating Mexican cattle.</p>
Soils and Prime Farmlands	<p>The No Action Alternative would not result in direct impacts to previously undisturbed soils; however, the OBP would not be as effective in detecting or apprehending IAs. The continuation of illegal traffic and OBP enforcement activities has the potential of impacting soils (<i>i.e.</i>, erosion, compaction) in the study corridor.</p>	<p>The Proposed Action Alternative would directly impact approximately 73 acres of Hondale-Playas, 204 acres of Mohave-Stellar-Forest, 237 acres of Nickel-Upton-Tres Hermanos, 50 acres of Hondale-Mimbres-Bluepoint, 92 acres of Eba-Cloverdale-Eicks, 146 acres of Pintura-Wink and 2 acres of Glendale-Harkey soils. Long-term impacts would result from the loss of biologically productive soils. Temporary impacts would consist of possible soil erosion during construction activities; however, these impacts would be insignificant through the use of erosion control measures. Indirect beneficial impacts would also be realized from possible reduction in disturbance from illegal traffic.</p> <p>As prime farmlands or farmland of statewide importance are impacted, the Natural Resources Conservation Service would determine if mitigation measures would be necessary to offset the impacts of the proposed infrastructure.</p>	<p>Impacts from this alternative would be the same in nature and extent as the Proposed Action Alternative. While minor, some additional benefits could be realized by reducing or eliminating the potential for uncontrolled grazing and ground disturbance by Mexican cattle.</p>

Table 2-2, continued

Affected Environment	No Action Alternative	Proposed Action Alternative	Cattle Fence PVB Alternative
Vegetation Communities	Under this alternative, native vegetation communities would continue to be degraded by illegal vehicle and foot traffic. Erosion and fugitive dust have a minimal effect on vegetation by damaging roots and reducing plant respiration and photosynthesis.	<p>Equipment used during the resurfacing of roads could cause temporary degradation of up to 899 acres of natural vegetation. The infrastructure construction would permanently replace up to 658 acres of Chihuahuan Desertscrub, 307 acres of grasslands and prairies, and 82 acres of woodland communities with man-made surfaces.</p> <p>The impacts of increased fugitive dust (<i>i.e.</i>, reducing respiration and photosynthesis) and potential for erosion would be reduced by environmental design measures. Overgrazing by cattle from Mexico can result in the loss of palatable and native grasses, increased erosion, and irreversible changes to the native ecosystems.</p> <p>The reduction of illegal traffic in the study corridor would benefit natural vegetation communities.</p>	Effects of this alternative on natural vegetation would be the same as those resulting from the Proposed Action Alternative. However, some further minor benefits would be realized by the exclusion of Mexican cattle.
Wildlife Resources	Indirect effects would continue due to IA activities. The intensity of these indirect effects would increase as road conditions deteriorate and OBP efforts to patrol remote areas are increasingly hampered. IA traffic could result in loss and degradation of habitat and could cause incidental take of certain species.	<p>Wildlife species which would potentially be impacted include small mammals, reptiles, and bird species. The impacts to foraging grass habitat and ground nesting habitat would be insignificant due to the actual area disturbed by the Proposed Action Alternative.</p> <p>The long-term effects of an increased photoperiod from lights at night on mobile wildlife species are expected to be insignificant. Short-term impacts of noise from construction may include an increase in heart rate to more damaging effects on metabolism and hormone balance. Long-term exposure to noise can cause excessive stimulation of the nervous system and chronic stress.</p> <p>The reduction of IA activity in the study corridor would indirectly benefit wildlife habitat.</p>	This alternative would have the same impact on all wildlife species as the Proposed Action Alternative with the exception of impact on large mammal species. Vehicle barriers with barbed wire strands could impede movement of deer, pronghorn, or other large wildlife species unable to go under or over the barbed wire strands.

Table 2-2, continued

Affected Environment	No Action Alternative	Proposed Action Alternative	Cattle Fence PVB Alternative
Protected Species and Critical Habitat	Indirect effects would continue due to IA activities. IA traffic could result in loss and degradation of habitat and could cause incidental take of certain species. No new information regarding threatened or endangered species and their habitats would be collected because surveys would not be conducted as part of OBP projects.	<p>Some Federally protected fauna species may potentially be impacted directly or indirectly during the proposed activities. However, through the use of environmental design measures these impacts would be avoided. Therefore, the Proposed Action Alternative would not substantially affect Federally-listed species. Additionally, there would be no impacts to sensitive vegetation.</p> <p>Beneficial impacts to Federal and state listed species and their habitat could occur in the areas surrounding the study corridor by the reduction or possibly elimination of illegal traffic, brush clearing, and fires caused by IAs. However, beneficial impacts would be minimal.</p>	This alternative would likely have no additional impacts on protected species than that of the Proposed Action Alternative. The protected species corridor would not be restricted by barbed wire. An indirect benefit resulting from the fencing of the PVBs would be the prevention of trampling of small species by large ungulate species unable to cross the fence.
Non-Native and Invasive Plants	Illegal vehicular and foot traffic would continue to cross into the study corridor potentially carrying non-native and invasive plant species propagules. Illegal vehicles would continue to disturb soils providing opportunities for non-native and invasive plant species to become established and potentially introducing additional non-native species to the region.	<p>Construction activities would result in up to 1,278 acres of disturbed soils providing opportunities for the establishment of non-native and invasive plant species. OBP vehicles and agents could carry propagules from existing non-native or invasive plants into previously inaccessible areas, due to improved roads and increased patrols. The Proposed Action Alternative would facilitate the spread of these pest plants substantially less than under the No Action Alternative. Measures to prevent the spread of non-native and invasive plant species would be implemented to minimize these impacts.</p>	This alternative would reduce non-native and invasive plant propagules pressure through the exclusion of Mexican cattle. However, similar to the Proposed Action Alternative, OBP vehicles and agents could potentially act as dispersal vectors of non-native propagules.

Table 2-2, continued

Affected Environment	No Action Alternative	Proposed Action Alternative	Cattle Fence PVB Alternative
<p>Unique or Sensitive Areas</p>	<p>The Douglas Ranger District of the Coronado National Forest, Pancho Villa State Park, and Mount Cristo Rey would remain vulnerable to impacts from illegal traffic. IAs can damage natural habitats and detract from the overall recreational and scenic value of these unique areas by creating trails and discarding trash. Furthermore, the general safety of these unique areas would remain questionable at best.</p>	<p>The Coronado National Forest and Pancho Villa State Park would not be directly affected by the Proposed Action Alternative. The construction of permanent pedestrian barriers and installation of permanent lighting would moderately detract from the aesthetic resources of Mount Cristo Rey. Ultimately, the Proposed Action Alternative would provide protection for those resources (recreational opportunity, historical structures) by improving safety and reducing vandalism. The Proposed Action Alternative would result in a substantial reduction of IA degradation of, and presence within, these unique areas.</p>	<p>This alternative would result in the same effects to unique and sensitive areas as those described for the Proposed Action Alternative.</p>
<p>Aesthetics</p>	<p>Under the No Action Alternative illegal vehicle and foot traffic would continue to impact aesthetics within the study corridor. Trash, graffiti, and general vandalism associated with IA traffic would continue to detract from the visual quality of urbanized areas. The trash and trails created by IAs in more remote areas is often not seen by the general public, but detracts from the sense of isolation characteristic of vast, open scrublands and grasslands.</p>	<p>Infrastructure could impact the aesthetic resources where sensitive receptors are present. Permanent vehicle barriers could create a visual break in the continuous expanse of generally undisturbed vegetation. However, permanent vehicle barriers would not be visible from distances greater than 1.5 miles, having a minimal effect on aesthetic resources. Although the infrastructure could be visible from New Mexico Highway 9, the resulting reduction of IA related aesthetic degradation would substantially benefit the study corridor. This alternative would result in an indirect reduction of IA degradation of the aesthetic environment. Impacts related to lighting would be minimized by the use of directional shielding and by limiting wattage.</p>	<p>The effects of this alternative on aesthetic resources would be the same as those described for the Proposed Action Alternative.</p>

Table 2-2, continued

Affected Environment	No Action Alternative	Proposed Action Alternative	Cattle Fence PVB Alternative
Air Quality	<p>Without the proposed infrastructure, increased IA activity and subsequent OBP enforcement actions would exacerbate PM₁₀ within the study corridor. The continued use of dirt patrol roads without roadway improvements or routine maintenance would result in continued degraded conditions and do little to reduce sources of wind blown dust within the region.</p>	<p>Air emissions from construction activities would result in temporary adverse air quality impacts in the study corridor. Routine patrol and maintenance efforts by the OBP would be the only CO and PM₁₀ emissions produced. The overall air quality would be improved as all-weather road surfaces would reduce the amount and magnitude of wind blown dust relative to the No Action Alternative.</p>	<p>Construction activities would be the same in footprint and duration to that of the Proposed Action Alternative. Incorporation of barbed wire on permanent vehicle barriers would result in only minimal construction time or effort and would be accomplished during the construction period.</p>
Water Resources	<p>This alternative would not directly impact water availability or cause contamination of aquifers resultant of overdraft or water level declines. However, without improved efficiency and effectiveness of apprehension, an increase in IA traffic and OBP activities would occur. Contaminants in recharge waters would potentially impact groundwater in the Mesilla basin; however, the Cloverdale, Playas Lake, Animas, and Mimbres basins would not be impacted.</p>	<p>Under the Proposed Action Alternative, increased temporary erosion during construction is possible; however, increased sediment and turbidity would have minimal impacts on water quality. Limited and short-term withdrawal from western basins (Cloverdale, Playas Lake, Animas, Mimbres) would not affect long-term water supplies or groundwater quality. The volume of water withdrawn would not affect the public drinking water supplies, but could indirectly contribute to aquifer contamination from surface runoff. The indirect effects of altered surface drainage and potential consequent erosion would have minimal beneficial and adverse impacts to surface water quality.</p>	<p>The impacts to water resources would be the same for this alternative as those discussed for the Proposed Action Alternative.</p>

Table 2-2, continued

Affected Environment	No Action Alternative	Proposed Action Alternative	Cattle Fence PVB Alternative
Hazardous Wastes	Under the No Action Alternative, solid or hazardous waste would potentially be abandoned without notification by IAs. In this case, a potentially adverse impact would occur because proper disposal/clean up procedures would not be followed.	Site-specific Environmental Baseline Studies or Environmental Site Assessments would be conducted for each project. These studies would identify any environmental liabilities and outline appropriate remediation. Construction personnel would be informed about the potential to encounter hazardous wastes that may be present on the site from illegal dumping and the appropriate procedures to use if suspected hazardous contamination is encountered.	By implementing this alternative, the potential for major spills or coming into contact with hazardous waste is the same as the Proposed Action Alternative.
Noise	No direct impacts, beneficial or adverse, would occur to ambient noise levels as a result of the No Action Alternative because no new construction activities would take place. Noise generated by OBP activities and routine maintenance would remain at the same levels within the study corridor.	This alternative would result in temporary increases in ambient noise levels during construction; however, a noise of 80 dBA would be attenuated to 50 dBA (quiet) at a distance of 1,067 feet (325 meters). Construction activities would also increase ambient noise levels in rural and undeveloped areas, but the absence of human noise receptors in the majority of the study corridor would negate the issue of noise.	Temporary and permanent adverse impacts under this alternative would be the same as in the Proposed Action Alternative. Increased construction noise from the installation of barbed wire would be minimal yet slightly greater than in the Proposed Action Alternative.

Table 2-2, continued

Affected Environment	No Action Alternative	Proposed Action Alternative	Cattle Fence PVB Alternative
Cultural Resources	<p>The No Action Alternative would not result in any direct effects to cultural resources. However, as illegal traffic and the consequent enforcement actions continue, indirect effects to known and undiscovered sites could be incurred.</p>	<p>The Proposed Action Alternative would potentially impact previously unrecorded cultural resources, particularly archaeological sites which may not be readily evident. To reduce the level of potential impacts on cultural resources, consultation with the appropriate SHPO and/or THPO for the area would be required before construction to identify any known cultural resources, including historic structures, archaeological sites, or sacred sites that may have been recorded in the area. In addition, if the area has not undergone a previous archaeological survey, an investigation would be conducted in the APE of the construction in order to locate any unknown cultural resources within the area. If there are cultural resources, particularly historic structures, districts, or sacred sites near the proposed infrastructure the potential exists for a visual impact to those resources. In these instances, a watershed analysis may be appropriate to determine the extent of that impact.</p>	<p>The effects of Alternative 3 on cultural resources would be the same as those resulting from the Proposed Action Alternative.</p>
Socioeconomics	<p>The No Action Alternative would not result in increases to population in the project vicinity. IA activities and their associated costs would continue. Illegal activities cost U.S. taxpayers billions of dollars annually due directly to criminal activities, as well as the cost of apprehension, detention, incarceration of criminals, and indirectly in loss of property, illegal participation in government programs, and increased insurance costs.</p>	<p>The proposed activities would not have impacts on the local employment or income. Proposed construction would not induce a permanent in-migration of people nor would there be additional permanent employees; therefore, there would be no increase in demand for housing. TI would benefit socioeconomics of the area by reducing the costs associated with illegal activity through the OBP's increased deterrence and apprehension capabilities.</p> <p>Indirect impacts to ranchers would potentially occur with the construction of PVBs along the border. In the past, it has been noted that where PVBs are installed, the barbed wire fencing systematically disappears. With no barbed wire fence to contain the cattle, American ranchers could potentially lose many head of cattle to Mexico. Cattle from Mexico could potentially enter American ranches and cause overgrazing or spread unknown diseases.</p>	<p>The effects of Alternative 3 on socioeconomics would be similar to those resulting from the Proposed Action Alternative. However, with the inclusion of barbed wire on the PVBs, the impacts to ranchers would be greatly reduced relative to the Proposed Action Alternative.</p>

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SECTION 3.0
AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

This section of the PEA describes the natural and human environment that exists within the study corridor and Region of Influence (ROI). Only those parameters that have the potential to be affected by the Proposed Action Alternative are described, as per CEQ guidance (40 CFR 1501.7 [3]). Some topics are limited in scope due to the lack of direct effect from the proposed project on the resource, or because that particular resource is not located within the study corridor. Therefore, resources such as utilities, communications, climate, and scenic rivers are not addressed. These resources are not addressed for the following reasons:

- Communications: The Proposed Action Alternative would not affect communications systems in the area.
- Geology: The Proposed Action Alternative involves only disturbances to the topsoil layers. Therefore, geologic resources will not be discussed further
- Climate: The Proposed Action Alternative would not affect nor be affected by the climate.
- Wild and Scenic Rivers: The Proposed Action Alternative would not affect any designated Wild and Scenic Rivers because no rivers designated as such are located within, or near the study corridor.

3.1 LAND USE

Land use was assessed using the U.S. Geological Survey (USGS) land cover/land use map (USGS 1986). Each land use type was categorized as developed, agriculture, or natural. The total area within each station and within the boundaries of the study corridor is summarized in Table 3-1. The vast majority of the land within Lordsburg, Deming, and Santa Teresa stations remains natural and over 81 percent of the study corridor includes barren, undeveloped geographic features (e.g., bare exposed rock, dry salt flats) or natural vegetation. Development is sparse within these stations and accounts for less than 1 percent of the study corridor. Development includes residential, industrial, and commercial areas, as well as transportation and communication infrastructure. The remaining 18 percent of lands are used for agriculture which is primarily pasture lands, but include confined feeding operations and a variety of crop lands.

Table 3-1. Summary of Corridor Land Use within the El Paso Sector

Land Use	Deming (acres)	Santa Teresa (acres)	Lordsburg (acres)	Total
Developed	765	1,966	1,682	4,413
Agriculture	80	44	589	761,380
Natural	166,718	81,646	1,287,064	774,760
Total	167,563	83,656	1,289,334	1,540,553

3.1.1 Santa Teresa Station

Natural area is the predominant land use within the Santa Teresa Station AO, where shrub and brush rangeland and mixed rangeland uses account for nearly 98 percent of the land area (Figure 3-1a). Lands developed for residential, commercial, industrial, and mining purposes account for 2 percent of station lands, while agricultural lands occupy less than 1 percent of the remaining lands.

3.1.2 Deming Station

The majority (99 percent) of lands within the Deming Station study corridor are natural areas, most of which is shrub and brush rangeland (Figure 3-1b). The Deming Station has the lowest percentage of developed lands within the study corridor (much less than 1 percent); however, the Deming Station's AO also contains a substantial area of developed lands outside of the study corridor.

3.1.3 Lordsburg Station

More than 99 percent of the study corridor within the Lordsburg Station remains in a natural condition (Figure 3-1c). These natural lands include 6,700 acres of geologic features (the Chiricahua, Animas, Big Hatchet, and Alamo Hueco Mountains are all found within the study corridor); 8,800 acres of riparian areas; and 1,271,343 acres of forests and rangelands.

Less than 1 percent of lands have been developed for residential, commercial, industrial, transportation, mining and agricultural purposes.

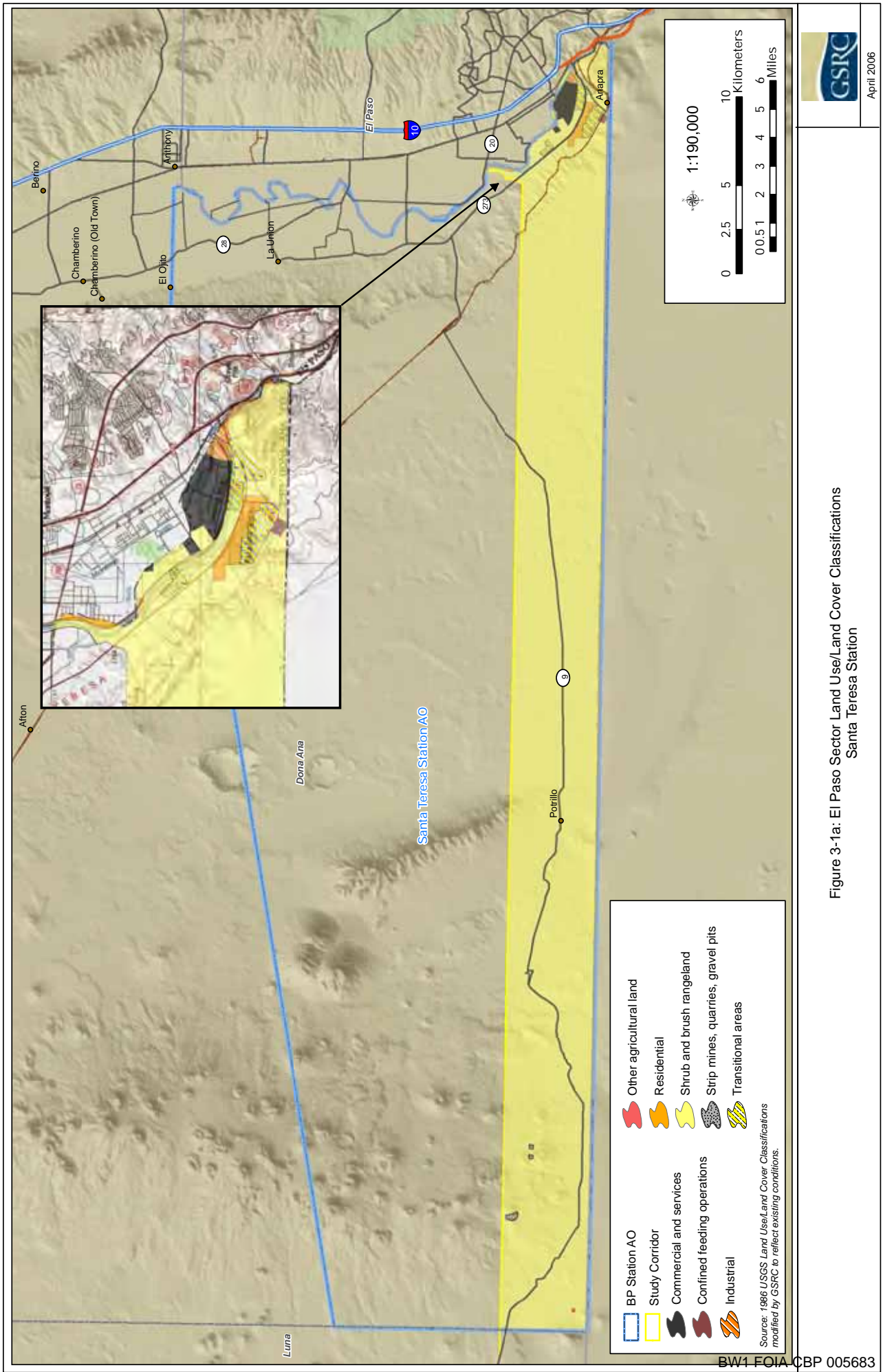


Figure 3-1a: El Paso Sector Land Use/Land Cover Classifications
 Santa Teresa Station

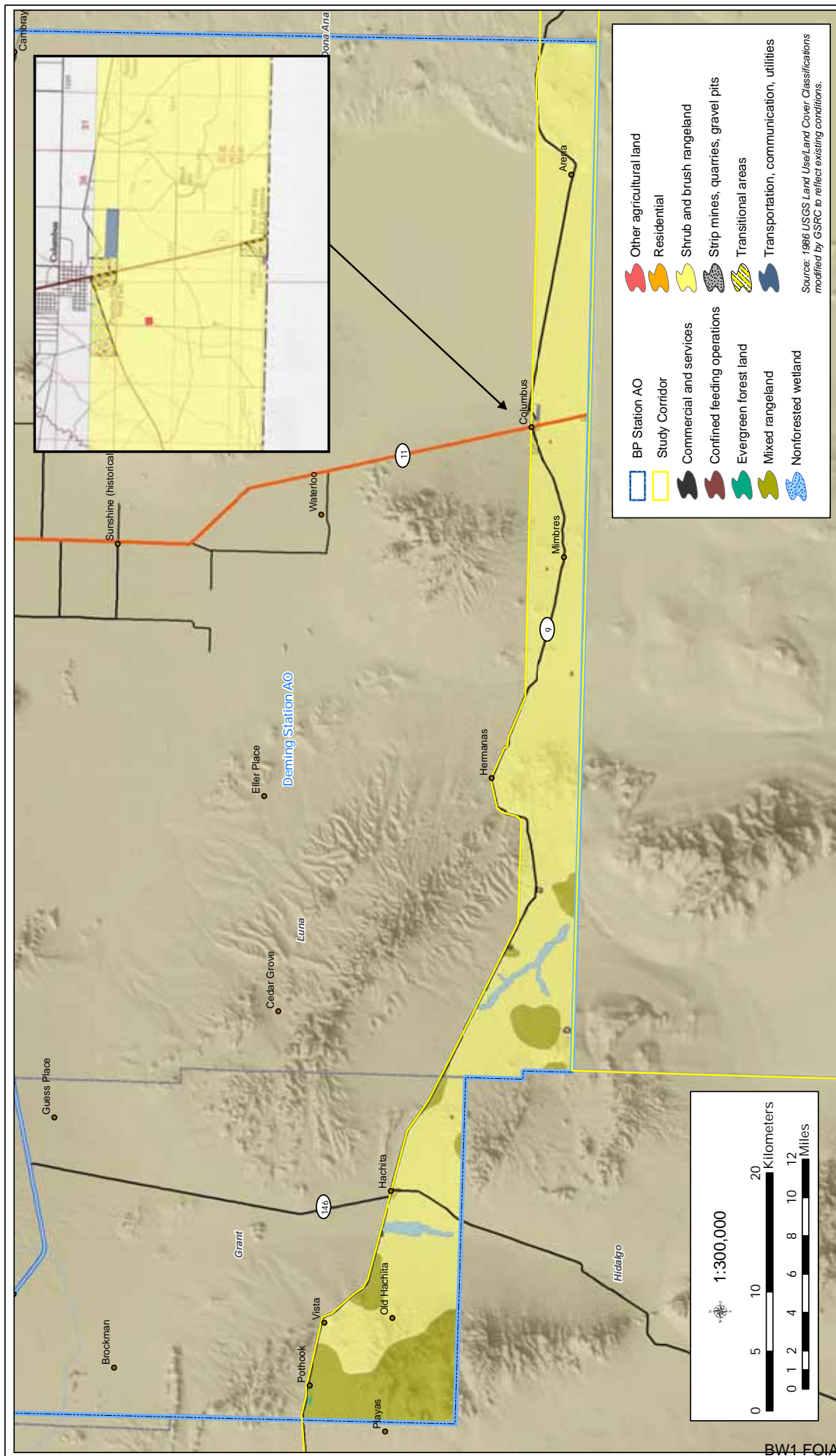


Figure 3-1b: El Paso Sector Land Use/Land Cover Classifications
 Deming Station

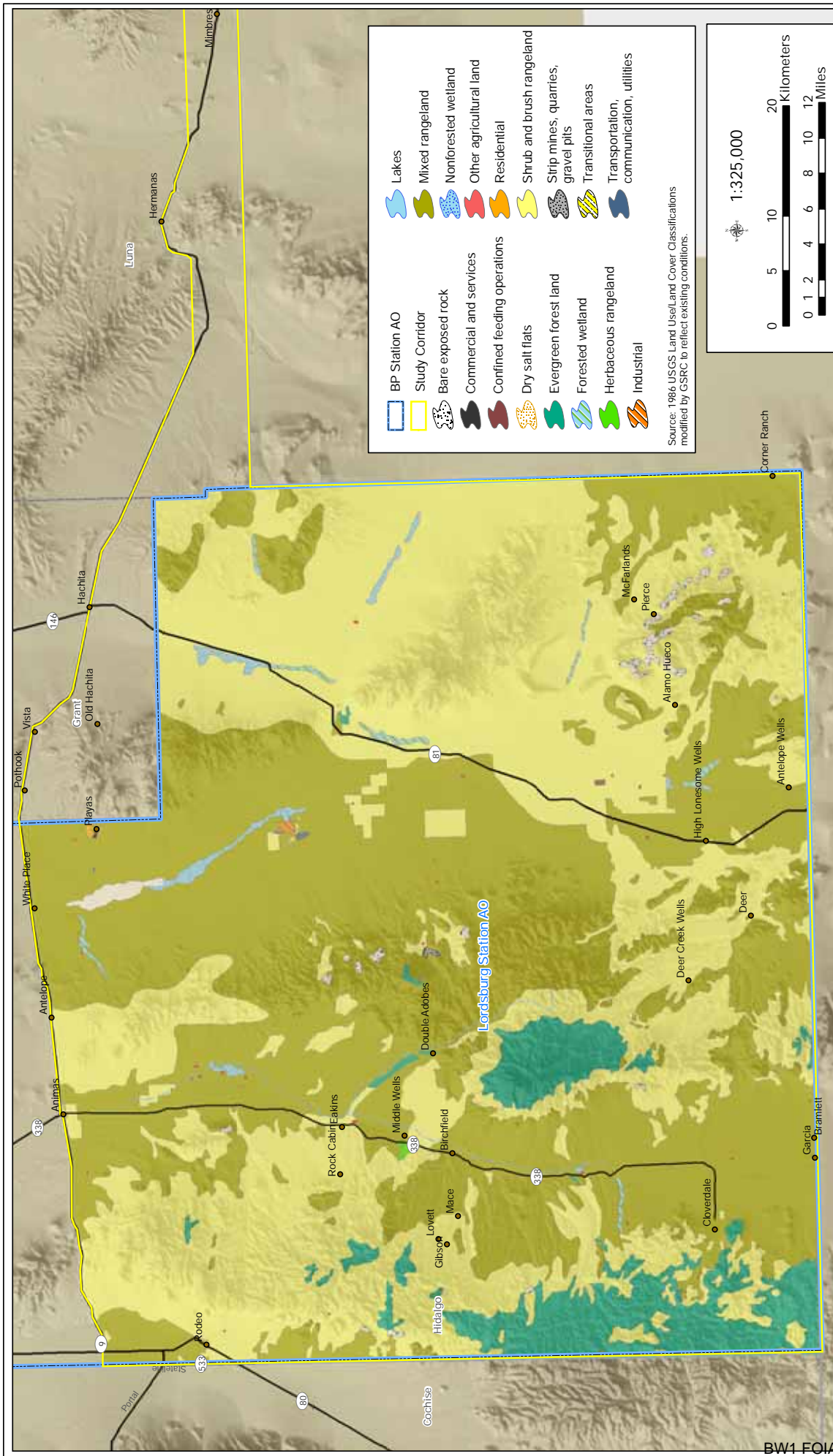


Figure 3-1c: El Paso Sector Land Use/Land Cover Classifications
Lordsburg Station

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3.2 SOILS AND PRIME FARMLAND

The Natural Resource Conservation Service (NRCS) Soil Surveys for Doña Ana, Luna and Hidalgo counties, New Mexico were reviewed to determine general soil types present within the proposed study corridor. A general soil map was used to obtain an overview of the major soil associations. A soil association is defined as a landscape that has a distinctive proportional pattern of soils and is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map, but are shown as one unit (U.S. Department of Agriculture [USDA] 1980a). More detailed maps were used to identify the individual soil types within the study corridor. Soil Survey Geographic (SSURGO) data were used to determine their suitability for pertinent infrastructure. The level of mapping is designed for broad planning and management uses covering state, regional, and multi-state areas. Due to the broad nature of these soil associations, a more detailed discussion would be required for site-specific projects.

3.2.1 Santa Teresa Station

The land surface of Doña Ana County is generally characterized by gently sloping plains areas separated by north-south trending mountain ranges, as well as the Rio Grande Valley to the east (USDA 1980a). The study corridor encompasses three general soil associations, including Glendale-Harkey, Hondale-Mimbres-Bluepoint, and Pintura-Wink associations (USDA 1980a). These soils have developed in a number of combinations of topographic situations: floodplains, basin floors, fans, terraces, valleys, mesas, ridges, and mountains. These three soil associations are briefly described below and the extent to which they occur in the study corridor is provided in Table 3-2 and Figure 3-2a. Specific soil types which occur within these associations in the study corridor are listed in Appendix A.

Table 3-2. Soil Associations in Study Corridor for Santa Teresa Station

Soil Association	Acres in Study Corridor	Acres in Station
Glendale-Harkey association	3,172	26,876
Hondale-Mimbres-Bluepoint association	11,428	57,538
Pintura-Wink association	69,359	216,027
Total	83,958	300,441

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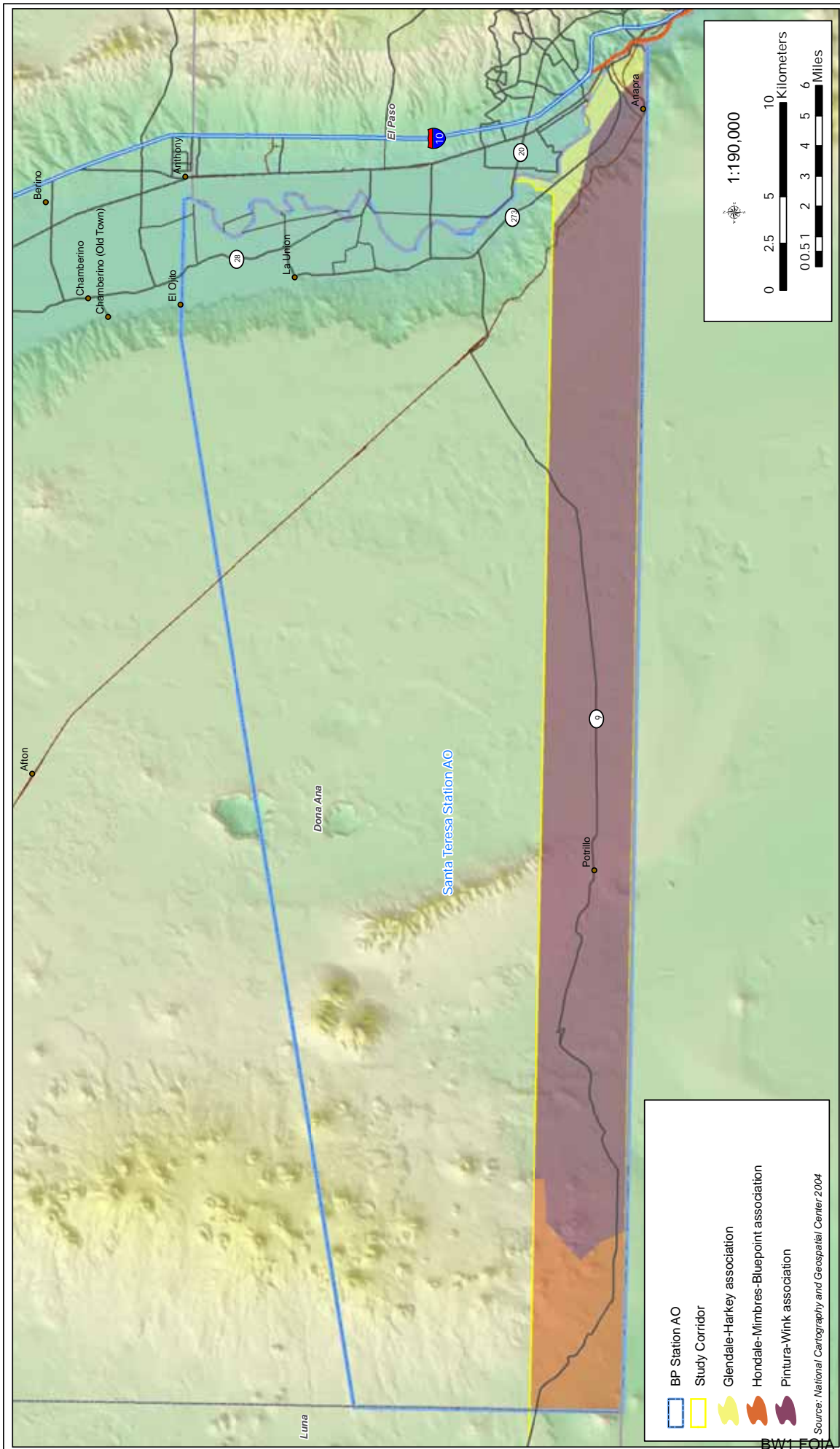


Figure 3-2a: El Paso Sector Soil Classifications
Santa Teresa Station

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Glendale-Harkey is characterized as deep, nearly level soils located on floodplains and tributary terraces of the Rio Grande (USDA 1980a). These soils occur across the eastern portion of the study corridor extending northwest along the Rio Grande floodplain. These soils are generally well suited for irrigated crops, as well as habitat for openland wildlife. Due to the complex pattern and variability of these soils, onsite testing would be needed prior to plans for engineered infrastructure.

Hondale-Mimbres-Bluepoint are deep moderately fine to coarse textured soils that have formed on basin floors and alkali flats (USDA 1980b). These soils can be utilized for irrigated crops and livestock grazing.

Pintura-Wink is the most dominant grouping of soils and is characterized as deep, nearly level undulating soils that are either well drained or excessively drained (USDA 1980a). They are typically located on fans where the landscape gradually flows from high elevations to relatively level valleys. Within the study corridor, these soils occur between the Rio Grande floodplain and the East and West Potrillo Mountains. These soils are typically utilized for rangeland and wildlife habitat.

3.2.2 Deming Station

The land surface of Luna County is generally characterized largely by the basin floor of the Mimbres River system that traverses the county, with north-south trending mountain ranges. The dominant ranges are Cookes Range, Florida Mountains, Tres Hermanas Mountains, Cedar Mountains and Good Sight Mountain (USDA 1980b).

Major soils located within the study corridor in Luna County include Rough broken land-Rock Land-Lehmans, Nickel-Upton-Tres Hermanos, Mohave-Stellar, Hondale-Playas, and Hondale-Mimbres-Bluepoint associations (USDA 1980b). The Hondale-Mimbres-Bluepoint association was discussed in Section 3.2.1. The remaining four soil associations are briefly described below and the extent to which they occur in the study corridor is provided in Table 3-3 and Figure 3-2b. Specific soil types which occur within these associations in the study corridor are listed in Appendix A.

Hondale-Playas associations are deep, moderately fine textured soils on nearly level alkali flats and formed from stream and lake sediments. They consist of well-drained soils or periodically

Table 3-3. Soil Associations in Study Corridor for Deming Station

Soil Association	Acres in Study Corridor	Acres in Station
Hondale-Mimbres-Bluepoint association	12,659	227,210
Hondale-Playas association	24,950	279,618
Mohave-Stellar association	31,136	1,269,478
Rough broken land-Rock Land-Lehmans association	40,319	422,868
Nickel-Upton-Tres Hermanos association	62,117	355,102
Total	171,181	2,554,276

wet playas. These wet playas typically lack vegetation or exhibit very sparse vegetation due to high salinity (USDA 1980b). Only a small portion is utilized as irrigated cropland.

Mohave-Stellar are deep moderately fine textured soils typically located in alluvial fans. They are well drained soils in mountain valleys. These soils formed in alluvial valley fill from a mix of parent material sources (USDA1980b).

Rough broken land-Rock Land-Lehmans are shallow to very shallow and medium to very stony textured soils. These soils exist in very thin layers on bedrock and are located primarily on hills and mountains. The underlying bedrock is primarily igneous rock with some limestone and basalt (USDA1980b).

Nickel-Upton-Tres Hermanos soils are very shallow to deep limy caliche soils located on uplands. They consist of well drained soils forming in valley fills and are primarily located near the bases of hills and mountains (USDA 1980b).

3.2.3 Lordsburg Station

The land surface of Hidalgo County is generally characterized by broad upland plains separated by north-south trending mountain ranges, some of which are within the Gila National Forest and parts of the Coronado National Forest (USDA 1973). The study corridor encompasses five general soil associations including, Eba-Cloverdale-Eicks, Hondale-Playas associations, Mohave-Stellar-Forest, Nickel-Upton-Tres Hermanos, and Rough broken land-Rock Land-Lehmans (USDA 1973). The Nickel-Upton-Tres Hermanos, Hondale-Playas, and Rough broken land-Rock Land-Lehmans associations were discussed in Section 3.2.2. The remaining three

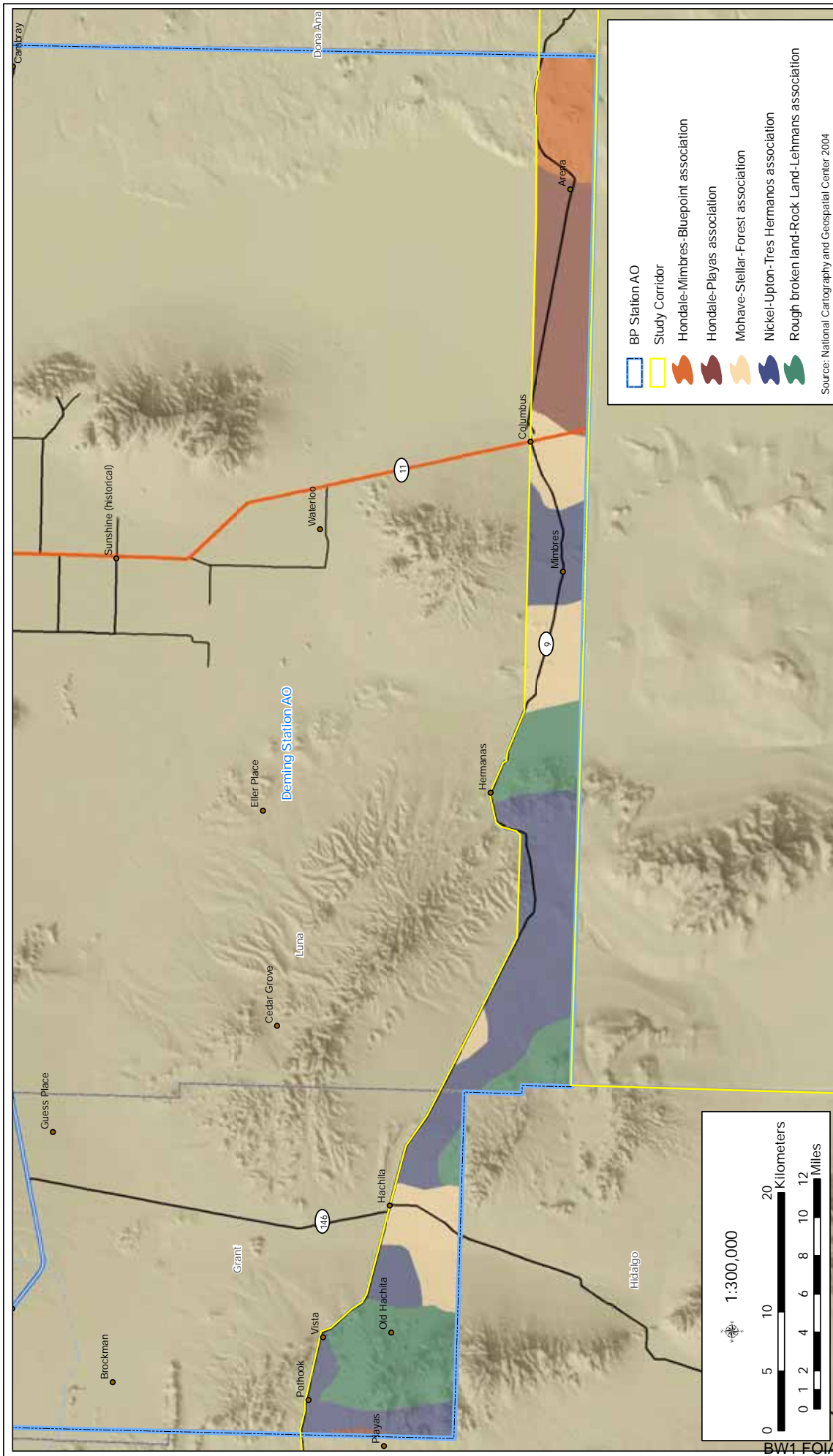


Figure 3-2b: El Paso Sector Soil Classifications
Deming Station

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soil associations are briefly described below and the extent to which they occur in the study corridor is provided in Table 3-4 and Figure 3-2c. Specific soil types occurring within these associations are listed in Appendix A.

Table 3-4. Soil Associations in Study Corridor for Lordsburg Station

Soil Association	Acres in Study Corridor	Acres in Station
Eba-Cloverdale-Eicks association	126,178	126,916
Hondale-Playas association	84,022	224,289
Mohave-Stellar-Forest association	371,933	669,528
Nickel-Upton-Tres Hermanos association	178,638	481,624
Rough Broken Land-Rock Land-Lehmans association	520,520	723,231
Total	1,284,766	1,281,291

Eba-Cloverdale-Eicks are deep, fine textured soils located in alluvial fans primarily found only in the in the Upper Animas valley (USDA 1973). This valley fill is typically composed of a short to mid mixed grasses and mesquite. Due to its localization in the Animas Valley it is unique to the area.

Hondale-Playas associations are deep, moderately fine textured soils on nearly level alkali flats and formed from stream and lake sediments. They consist of well-drained soils or periodically wet playas. These wet playas typically lack vegetation or exhibit very sparse vegetation due to high salinity (USDA 1973). Only a small portion is utilized as irrigated cropland.

Mohave-Stellar-Forest are deep, moderate to fine textured soils located on nearly level alluvial fans. They consist of well-drained soils that formed in major valleys (USDA 1973). These soils can be utilized for irrigated cropland although only a small percentage is actually used.

3.2.4 Prime Farmland

Prime farmlands are protected under the Farmland Protection Policy Act (FPPA) of 1980 and 1995. The FPPA's purpose is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. As required by Section 1541(b) of the Act [7 U.S.C. 4202(b)] Federal agencies are (1) to use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (2) to consider alternative actions, as appropriate, that could lessen adverse effects,

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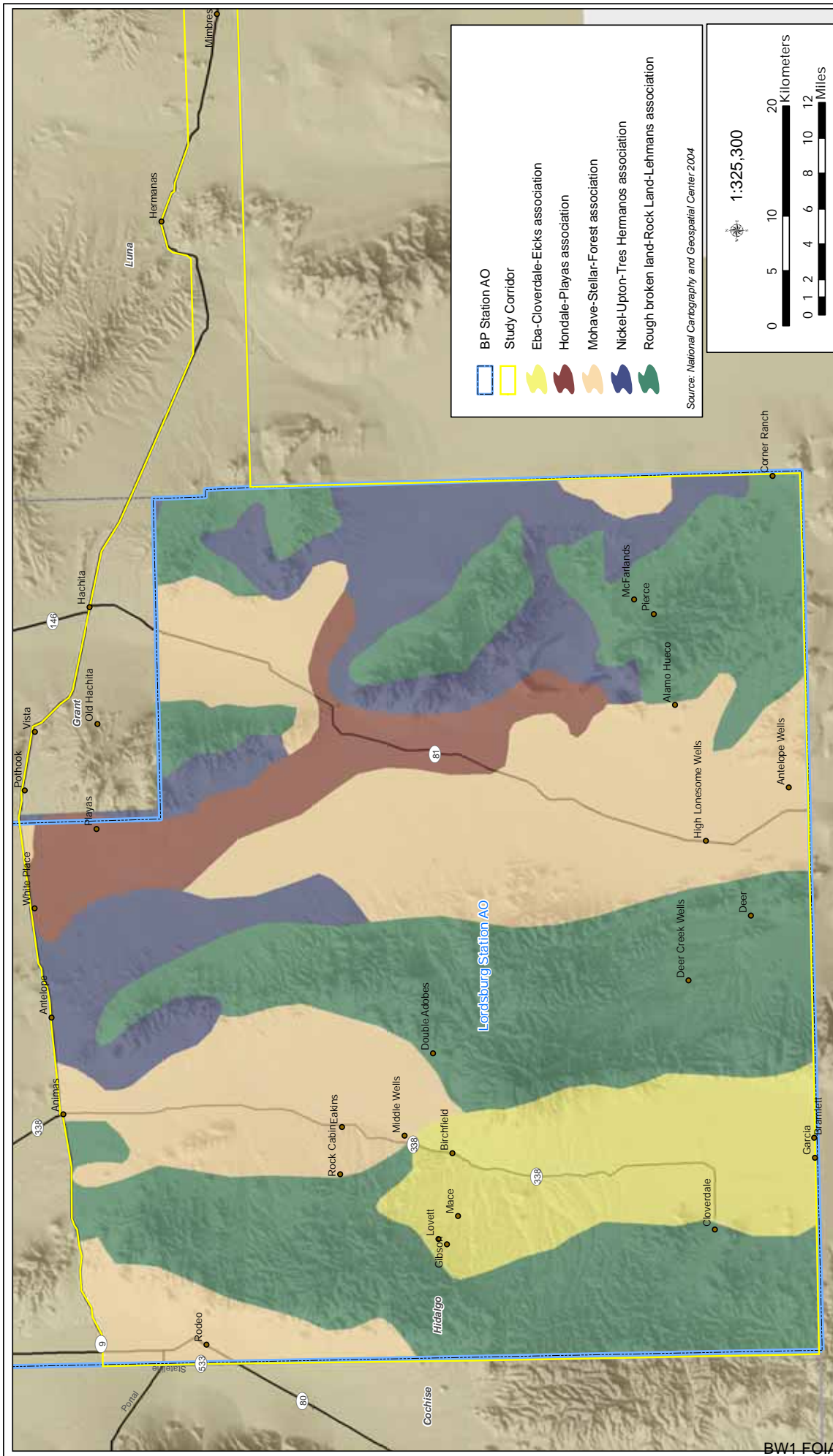


Figure 3-2c: El Paso Sector Soil Classifications
Lordsburg Station

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and (3) to ensure that their programs, to the extent practicable, are compatible with state and units of local government and private programs and policies to protect farmland.

According to 7 U.S.C. 4201(c)(1)(A), prime farmland is defined as “land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, labor, and without intolerable soil erosion.” Unique farmland is defined as “land, other than prime farmland, that is used for the production of specific high-value food and fiber crops, such as, citrus, nuts, olives, cranberries, fruits, and vegetables” [(7 U.S.C. 4201(c)(1)(B)].

Farmlands of statewide importance (also protected under the FPPA) are areas of irrigated farmlands in New Mexico which do not meet the criteria of prime farmland but have an irrigated capability. These lands must also have a dependable water supply for irrigation to meet crop needs. Areas under this designation are limited to farmlands currently in production.

Areas with the potential to be prime farmland are present along the U.S.-Mexico border and have recently been mapped by NRCS within the study corridor (Figures 3-3a-c). Approximately 56,004 acres within the study corridor have the potential to be considered prime farmland, if irrigated. An additional 189,065 acres of farmland of statewide importance also exist. The potential prime farmlands and farmland of statewide importance for the study corridor are shown in Figures 3-3a through 3-3c and are listed in Appendix A. The protected soils types shown in these figures are not necessarily in agricultural production; therefore, all of the soils shown would not be protected as a soil of statewide importance.

3.3 BIOLOGICAL RESOURCES

3.3.1 Vegetation Communities

The study corridor lies entirely within the physiographic region known as the Basin and Range Province (USGS 2004a), which is centered on the state of Nevada and extends from southern Oregon to western Texas and south into Mexico. Physiographic provinces are geographic regions with similar geologic and topographic features. The Basin and Range Province is an immense region characterized by north-south-trending, faulted mountains. The mountains are primarily of volcanic origin, or are the result of uplifted granitic material, and their continued

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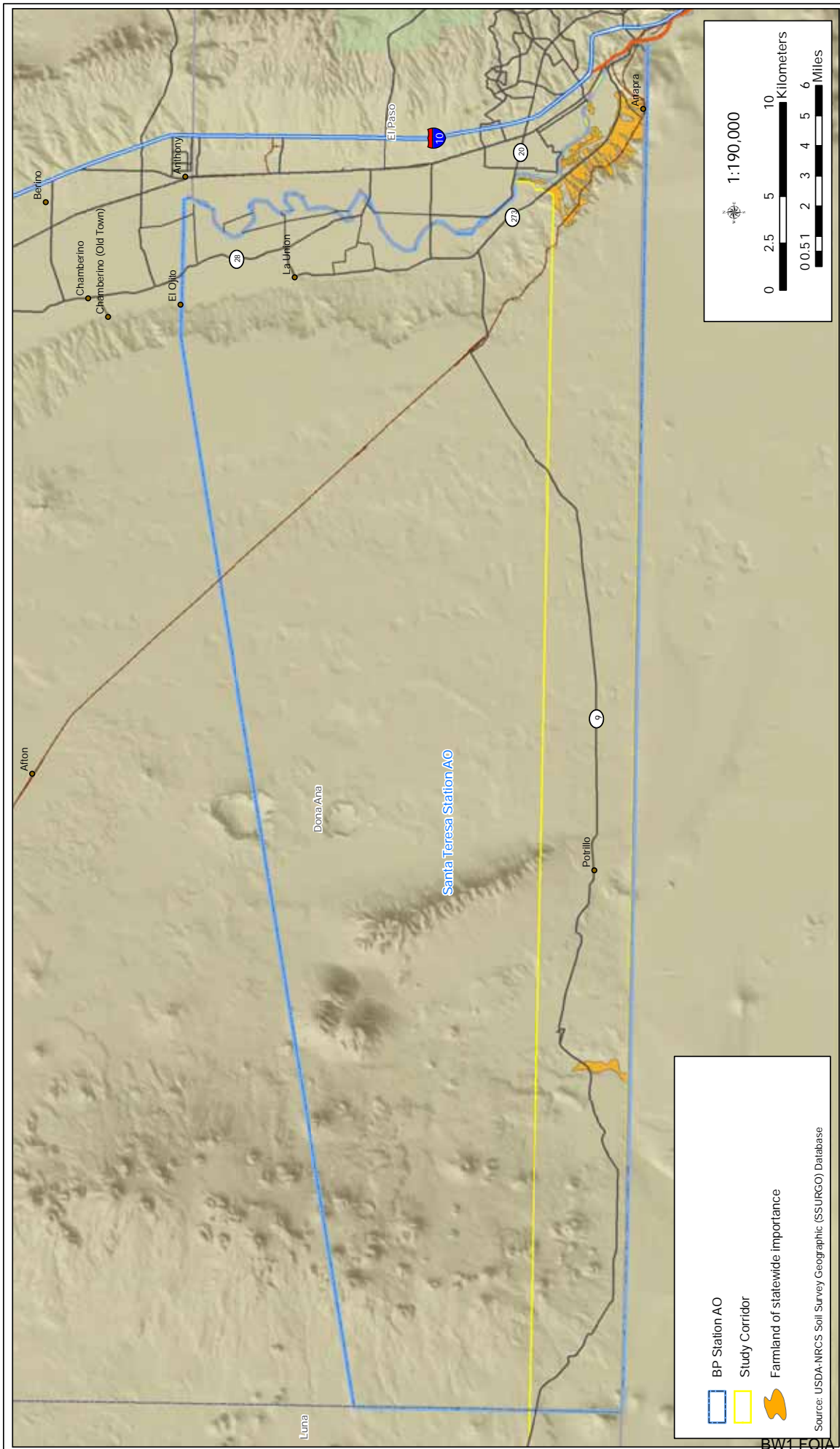
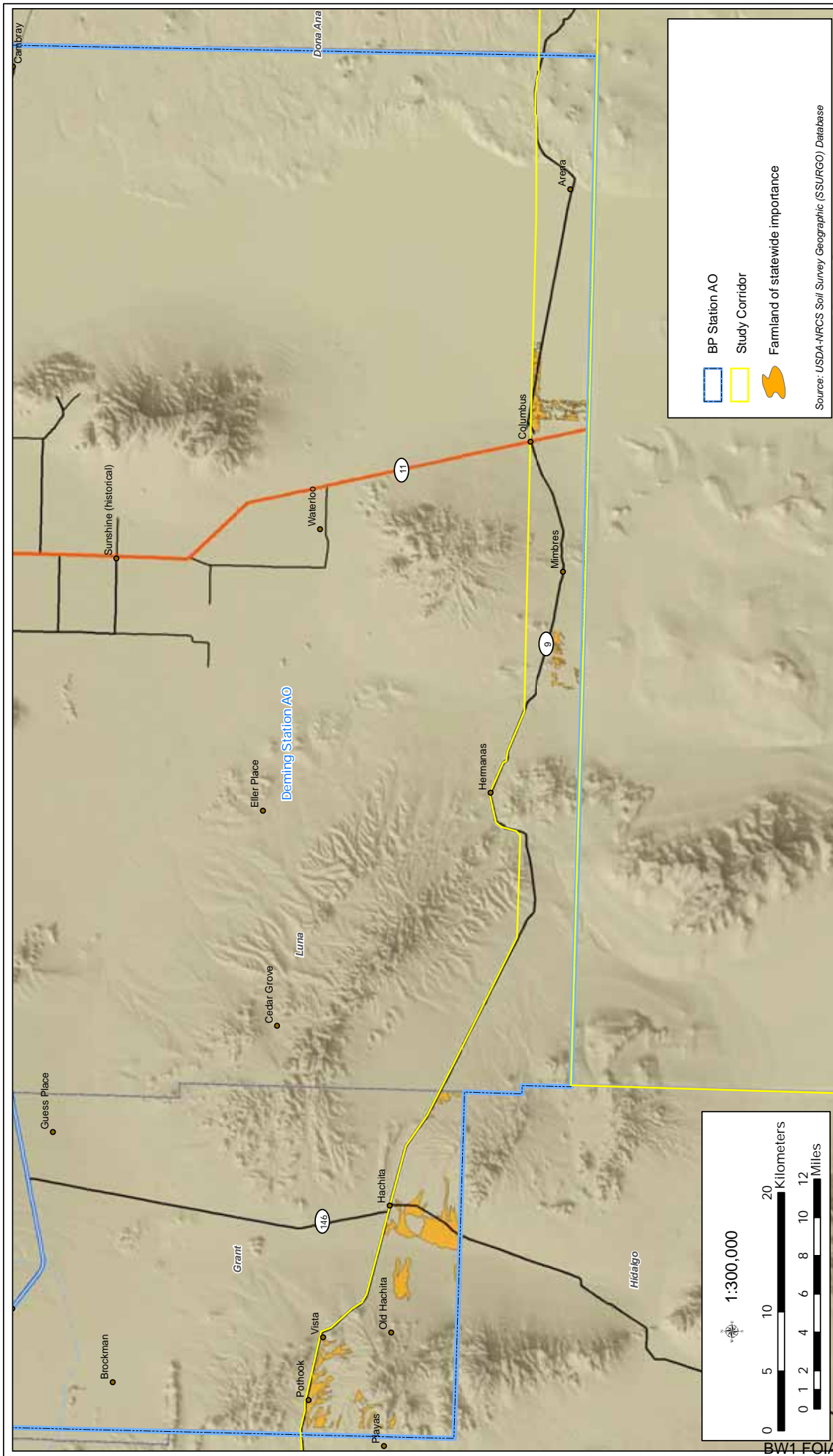


Figure 3-3a: El Paso Sector Prime Farmland Classification
Santa Teresa Station



April 2006

Figure 3-3b: El Paso Sector Prime Farmland Classification
Deming Station

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erosion has created vast depositional basins. The Basin and Range Province is bordered to the west by the Pacific mountain system, which is the primary factor contributing to the areas arid climate. Prevailing winds carry warm, moist air eastward into the Cascade and Sierra Mountains causing the air to rise, cool, and drop precipitation before moving further inland.

Due to the arid climate, the Basin and Range Province is occupied by desert biomes (Brown 1994a). The composition and structure of desert biomes is characteristically simple. Desertscrub communities consist of one or a few evenly spaced shrubs with little or no vegetation interspersed among them, and occupy millions of acres throughout the desert biomes of the Basin and Range Province. These long-lived communities are closely associated with edaphic and other environmental conditions resulting in a predictable and relatively static distribution. A significant portion of the desert flora consists of ephemerals, or short-lived species that germinate, flower, and produce seed typically within a single winter or summer rain season. These ephemeral species are typically present in the seed bank and germinate in response to heavy localized rains resulting in less predictable and dynamic distribution.

Vegetation communities can be classified over a broad range of scales by assessing differences in physiognomy, floristic composition, or both. Physiognomic classifications rely upon differences in general appearance of vegetation (*i.e.*, desertscrub, grassland, chaparral) and are often suited to classification at a regional scale. Floristic classifications utilize local floras, or vegetation species lists, to identify regions with a greater commonality of species than adjacent areas (*i.e.*, Sonoran Desert, Chihuahuan Desert). The interaction of physiognomy, composition, and environmental conditions results in areas of associated vegetation that can be readily identified as a community (*i.e.*, Chihuahuan Semi-desert Grassland).

The distribution of vegetation communities in these desert biomes is primarily influenced by patterns of temperature and available moisture created by variation in local and regional environmental gradients. Moisture availability, percent of summer rains, elevation, relief, and winter temperature extremes all increase along a geographic gradient beginning at the mouth of the Colorado River and moving north or east and along a topographic gradient moving from the lower plains upwards in elevation towards mountain peaks. These gradients are reflected in the distribution of vegetation communities, with plant density, plant height, and the number of tree and cacti species present increasing locally from plain to mountain and regionally from west to east. Within the study corridor, the boundary between vegetation communities, or ecotone, is

typically broad with the change in physiognomy, composition, and environmental conditions being gradual.

The study corridor is found within the Chihuahuan Desert biome. The Chihuahuan Desert is the easternmost and largest of seven desert biomes in North America. Unlike the other deserts, the Chihuahuan Desert has only one rainy season. The rainy season occurs from July through October and although annual rainfall is relatively high (51 – 76 inches), most of this moisture is lost to evaporation (Brown 1994a). The study corridor lies within the northernmost extent of the Chihuahuan Desert and nighttime temperatures drop below freezing 100 times per year (Brown 1994a). The region was once submerged beneath the sea and thus, nearly 80 percent of the soils are derived from limestone beds (Brown 1994a). In many parts of the Chihuahuan Desert, the thin soils overlie a layer of compacted lime, called caliche. The vegetation of the Chihuahuan Desert is shrub-dominated with stem and leaf succulents being common associates. Cacti are only locally dominant and not often as conspicuous as the larger cacti characteristic of its neighbor to the west, the Sonoran Desert.

3.3.1.1 Chihuahuan Desertscrub

The Chihuahuan Desertscrub (Brown 1994b) community occupies the large expanses of outwash plains, low hills, and valleys in the Chihuahuan Desert. At lower elevations, this community is characterized by its low diversity and open stands of small to medium shrubs. The majority of Chihuahuan Desertscrub is dominated by creosote (*Larrea tridentata*), which is often joined or replaced by tarbush (*Flourensia ternua*) or whitethorn acacia (*Acacia neovernicosa*). These shrubs and the occasional ocotillo (*Fouquieria splendens*), allthorn (*Koeberlinia spinosa*), or clump of western honey mesquite (*Prosopis glandulosa* var. *torreyana*) are often the only shrub species found for hundreds of miles within Chihuahuan Desertscrub communities. At its lowest elevations, this community may include saltbushes (*Atriplex* spp.) on fine grained soils or it may include open stands of mesquite on wind blown hummocks or dunes.

At higher elevations, this community is joined by stem and leaf succulents, small cacti, and the occasional bunchgrass. One of the most common leaf succulents is lechuguilla (*Agave lechuguilla*) which can be common over large expanses. Other stem and leaf succulents include the yuccas (*Yucca elata*, *Y. rostrata*, *Y. thompsoniana*, *Y. filifera*, *Y. carnerosana*, *Y. torreyi*, *Y. baccata*, *Y. macrocarpa*, and others), sotols (*Dasyllirion leiophyllum*, *D. wheeleri*),

agaves (*Agave scabra*, *A. falcata*, *A. neomexicana*, *A. parryi*, *A. striata*, and others), and beargrasses (*Nolina microcarpa*, *N. erumpens*, *N. texana*).

The largest of the Chihuahuan Desertscrub cacti are found in the western extremities of its distribution and include local populations of cane cholla (*Opuntia imbricata*) and prickly pears (*O. violacea* var. *macocentra*, *O. phaeacantha* var. *major*, and *O. p.* var. *discata*). Common, low growing and clumped or prostrate cacti of the Chihuahuan Desertscrub include widespread and endemic forms of echinocactus (*Echinocactus horizonthalonius* and *E. texensis*), fishhook cacti (*Sclerocactus uncinatus* and *S. scheeri*), Turk's head (*Ferocactus hamatacanthus*) and other barrel cacti, hedgehog cacti (*Echinocereus triglochidiatus*, *E. pectinatus* var. *rigidissimus*, *E. p.* var. *neomexicanus*, *E. chloranthus*, and *E. enneacanthus* var. *stramineus*), beehive cacti (*Coryphantha strobiliformis*, *C. Sheeri* var. *valida*, *C. echinus*, *C. macromeris*, *C. pottsii*, *C. vivipara*, and *C. ramulosa*), globe cacti (*Mammillaria gummifera* var. *meiacantha*, *M. pottsii*, and *M. gummifera* var. *applanata*), Texas cactus (*Neolohydia intertexta*), button cactus (*Epithelantha micromeris*), Texas pride (*Thelocactus bicolor*), and several low stature or prostrate chollas (*O. leptocaulis*, *O. kleiniae*, *O. schottii*, and *O. tunicate*). Other notable cacti, while widespread, are only locally abundant such as the night blooming cereus (*Peniocereus greggii*), peyote (*Lophophora williamsii*), and living rock cactus (*Ariocarpus fissuratus*).

Larger shrubs of the Chihuahuan Desertscrub include ocotillo, plumed crinklemat (*Tiquila greggii*), catclaw acacia (*Acacia greggii*), barometer bushes (*Leucophyllum minus* and *L. frutescens*), snakewoods (*Condalia* spp.), lotebush (*Ziziphus obtusifolia*), beebrush (*Aloysia wrightii*), and little leaf sumac (*Rhus microphylla*). Some herbaceous species which are more common within the Chihuahuan Semidesert Grassland described below (especially the grama grasses [*Bouteloua* spp.]) can also be found at the upper limits of Chihuahuan Desertscrub communities.

3.3.1.2 Semidesert Grassland

The Chihuahuan Semidesert Grassland (Brown 1994c) community offers a grassy landscape broken up by a diverse assemblage of large, well-spaced scrub. This community is situated above Chihuahuan Desertscrub and below Coahuila Chaparral or Madrean Evergreen Woodland. As such, this community shares many of the same species found in Chihuahuan Desertscrub. Grasses characteristic of the Chihuahuan semidesert grassland are tobosa (*Hilaria mutica*), usually found on lower sites with heavy soils subject to flooding, and black

grama (*Bouteloua eriopoda*), on gravely upland sites. Red three-awn (*Aristida longistea*) and burrograss (*Scleropogon brevifolius*) can be common to abundant. Other common grasses include slender grama (*B. filiformis*), chino grama (*B. brevista*), spruce top grama (*B. chondrosioides*), bush muhly (*Muhlenbergia porteri*), three-awns (*Aristida divaricata*, *A. wrightii*, *A. purpurea*, and others), Arizona cottontop (*Trichachne californica*), curly-mesquite (*Hilaria belangeri*), slim tridens (*Tridens muticus*), pappus grass (*Pappophorum vaginatum*), tanglehead grass (*Heteropogon contortus*), and vine mesquite grass (*Panicum obtusum*). Hairy tridens (*Tridens pilosus*) and fluffgrass (*T. pulchellus*) can be common to abundant in heavily grazed areas.

Many of the stem and leaf succulents found in the lower, Chihuahuan Desertscrub are characteristic of the Chihuahuan Semidesert Grassland including the sotols, beargrasses, agaves, and yuccas, especially soaptree yucca (*Yucca elata*). Shrubs are more common in higher elevation communities, but species often present within the Semidesert Grassland include mesquite (*Prosopis juliflora*), one-seed juniper (*Juniperus monosperma*), lotebush, knifeleaf condalia (*Condalia spathula*), allthorn, Mormon tea (*Ephedra trifurca*, *E. antisiphilitica*), mimosas (*Mimosa aculeaticarpa* var. *biuncifera*, *M. dysocarpa*), false mesquite (*Calliandra eriophylla*), Wright's lippia (*Aloysia wrightii*), catclaw acacia, littleleaf sumac, desert hackberry (*Celtis pallida*), javelina-bush (*Condalia ericoides*), barberry (*Berberis trifoliata*), and ocotillo.

3.3.1.3 Coahuila Chaparral

The disjunct Coahuila Chaparral (Pase and Brown 1994) communities of southern New Mexico occupy elevations between 1,065 and 1,535 feet of the Burro, Florida, and Organ Mountains. This community is composed of shrubs with dense, compact crowns and small evergreen sclerophyllous leaves. Most members of this community are deeply rooted, sprout readily from root crowns, quickly regenerate after fire, or produce prolific seed banks which germinate only after a fire. In the absence of fire, woody species can grow together and form a canopy resulting in the exclusion of herbaceous species and the further establishment of woody species. Coahuila scrub oak (*Quercus intricate*) is frequently a dominant species and is often joined by numerous other scrub oaks, evergreen and sugar sumac (*Rhus choriophylla*, *R. ovata*), eggleaf and ashy silk tassel (*Garrya ovata*, *G. flavescens*), Mexican cliffrose (*Pershia mexicana*), barberry (*B. trifoliata* and *B. fremontii*), Gregg's ash (*Fraxinus greggii*), and stiff fenderbush (*Fendlera rigida*). Species endemic to this community include two madrones (*Arbutus xalapensis* and *A. arizonica*) and several salvias (*Salvia ramosissima*, *S. roemeriana*,

S. regia). Other shrubs include Wright's silktassel (*G. wrightii*), hairy mountain mahogany (*Cercocarpus breviflorus*), desert ceanothus (*Ceanothus greggii*), apache plume (*Fallugia paradoxa*), skunkbush sumac (*Rhus trilobata*), and pointleaf manzanita (*Arctostaphylos pungens*). Non-chaparral associates include catclaw mimosa (*Mimosa aculeaticarpa* var. *biuncifera*), catclaw acacia, common hoptree (*Ptelea trifoliata*), foothill beargrass (*Nolina erumpens*), and Arizona cypress (*Cupressus arizonica*).

3.3.1.4 Madrean Evergreen Woodland

The Madrean Evergreen Woodland (Brown 1994d) community is found along drainages, rocky slopes and other thin-soiled habitats and generally above the Coahuila Chaparral. At lower elevations, this community is an Encinal Oak Woodland composed of evergreen oaks, oaks, alligator juniper (*Juniperus deppeana*) and one-seed juniper, Mexican pinyon (*Pinus cembroides*), and madrones in unequal proportions. Many of the widely distributed grasses, cacti, and leaf succulents of the grasslands as well as many of the shrubs of the Coahuila Chaparral can also be scattered or dominant within the Encinal Oak Woodland.

At higher elevations, this community is a Mexican oak (*Quercus carmensis*)-Pine (*Pinus* spp.) Woodland composed of Madrean oaks with or without the evergreen oaks and a variety of pines. Emory oak (*Quercus emoryi*) and gray oak (*Q. grisea*) are joined by pines commonly found within the Madrean biome, including Apache pine (*Pinus engelmannii*), Chihuahua pine (*P. leiophylla*), Arizona pine (*P. ponderosa* var. *arizonica*), and Durango pine (*P. drangensis*). In extreme southwestern New Mexico, this community is joined by silverleaf oak (*Q. hypoleucoides*) and netleaf oak (*Q. rugosa*). The madrones, Mexican pinyon, and alligator juniper can also be found in this community. Herbaceous components include bunchgrasses such as the muhlys (*Muhlenbergia emersleyi*, *M. torreyi*, and *M. porteri*), woolspike (*Elyonurus barbiculmis*), cane bluestem (*Bothriochloa barbinodis*), and small ballmoss (*Tillandsia recurvata*).

3.3.1.5 Project Vegetation

The New Mexico Cooperative Fish and Wildlife Research Unit of the Department of Interior (DOI) has completed a Gap Analysis Program (GAP) analysis of biological diversity in New Mexico (Thompson *et al.* 1996). The GAP analysis identified 42 land cover classes describing natural terrestrial vegetation in New Mexico. This delineation was used to identify communities present within the study corridor. The area of each Chihuahuan Desert community as described

in Brown (1994a) and the area of each GAP cover type group within these communities is presented by station in Tables 3-5 through 3-7. The area of GAP cover type groups could differ from the area of land-use types due to missing data within both GIS data sets. The distribution of GAP cover type group within each station is presented in Figures 3-4a through 3-4c.

Table 3-5. Chihuahuan Desert Community and GAP Cover Type Group within Santa Teresa Station

GAP Cover Type Group	Area (acres)	Chihuahuan Desert Community	Area (acres)
Rocky Mountain Montane Scrub & Interior Chaparral	1,207	Coahuila Chaparral	1,207
Chihuahuan Broadleaf Evergreen Desert Scrub	1,253	Chihuahuan Desertscrub	67,367
Chihuahuan Broadleaf Deciduous Desert Scrub	66,114		
Short Grass Steppe	342	Chihuahuan Semidesert	12,481
Chihuahuan Foothill-Piedmont Desert Grassland	7,085		
Chihuahuan Lowland/Swale Desert Grassland	5,055		
Southwest & Plains Forested/Shrub Wetland	104	Riparian Woodland	104
Irrigated Agriculture	467	Other	2,823
Rock Outcrop	1,379		
Riverine/Lacustrine	977		
Total	83,982		83,982

Table 3-6. Chihuahuan Desert Community and GAP Cover Type Group within Deming Station

GAP Cover Type Group	Area (acres)	Chihuahuan Desert Community	Area (acres)
Madrean Closed Conifer Woodland	90	Madrean Evergreen Woodland	2,375
Madrean Open Oak Woodland (Encinal)	2,285		
Rocky Mountain Montane Scrub & Interior Chaparral	9,077	Coahuila Chaparral	9,077
Chihuahuan Broadleaf Evergreen Desert Scrub	7,595	Chihuahuan Desertscrub	98,394
Chihuahuan Broadleaf Deciduous Desert Scrub	90,798		
Rocky Mountain Subalpine and Montane Grassland	107	Chihuahuan Semidesert Grassland	57,244
Short Grass Steppe	1,612		
Mid-Grass Prairie	940		
Chihuahuan Foothill-Piedmont Desert Grassland	50,650		
Chihuahuan Lowland/Swale Desert Grassland	3,936		
Irrigated Agriculture	388	Other	4,162
Barrens	36		
Rock Outcrop	3,739		
Total	171,252		171,252

Table 3-7. Chihuahuan Desert Community and GAP Cover Type Group within Lordsburg Station

GAP Cover Type Group	Area (acres)	Chihuahuan Desert Community	Area (acres)
Madrean Lower Montane Conifer Forest	991	Madrean Evergreen Woodland	263,727
Madrean Closed Conifer Woodland	59,411		
Madrean Open Oak Woodland (Encinal)	203,325		
Rocky Mountain Montane Scrub & Interior Chaparral	53,862	Coahuila Chaparral	53,900
Rocky Mountain Montane Deciduous Scrub	39		
Chihuahuan Broadleaf Evergreen Desert Scrub	176,556	Chihuahuan Desertscrub	503,252
Chihuahuan Broadleaf Deciduous Desert Scrub	326,697		
Short Grass Steppe	192,826	Chihuahuan Semidesert Grassland	450,895
Mid-Grass Prairie	66,144		
Chihuahuan Foothill-Piedmont Desert Grassland	176,009		
Chihuahuan Lowland/Swale Desert Grassland	15,916		
Irrigated Agriculture	760	Other	12,707
Barrens	2,414		
Rock Outcrop	9,276		
Riverine/Lacustrine	256		
Total	1,284,481		1,284,481

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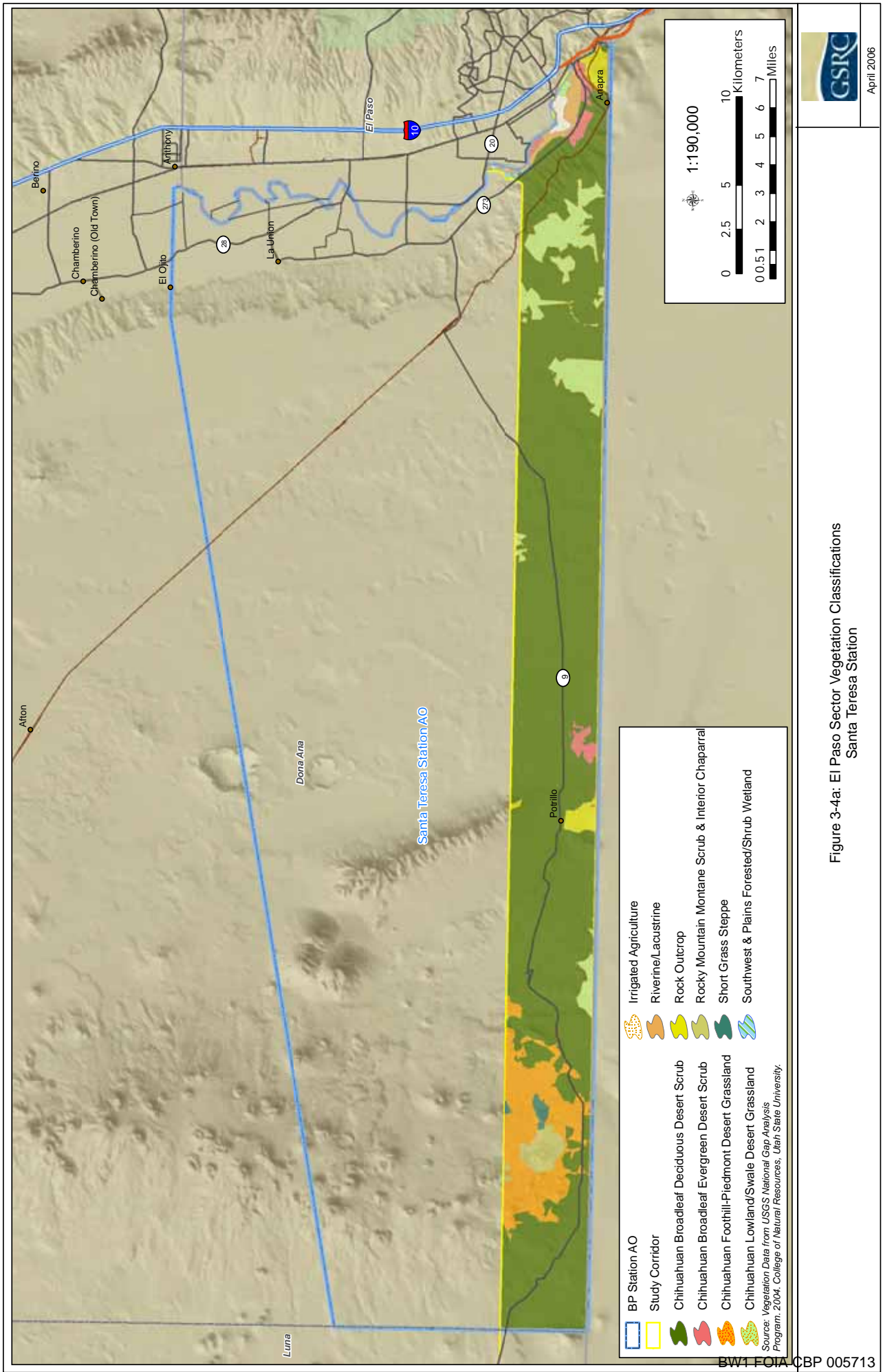


Figure 3-4a: El Paso Sector Vegetation Classifications
Santa Teresa Station

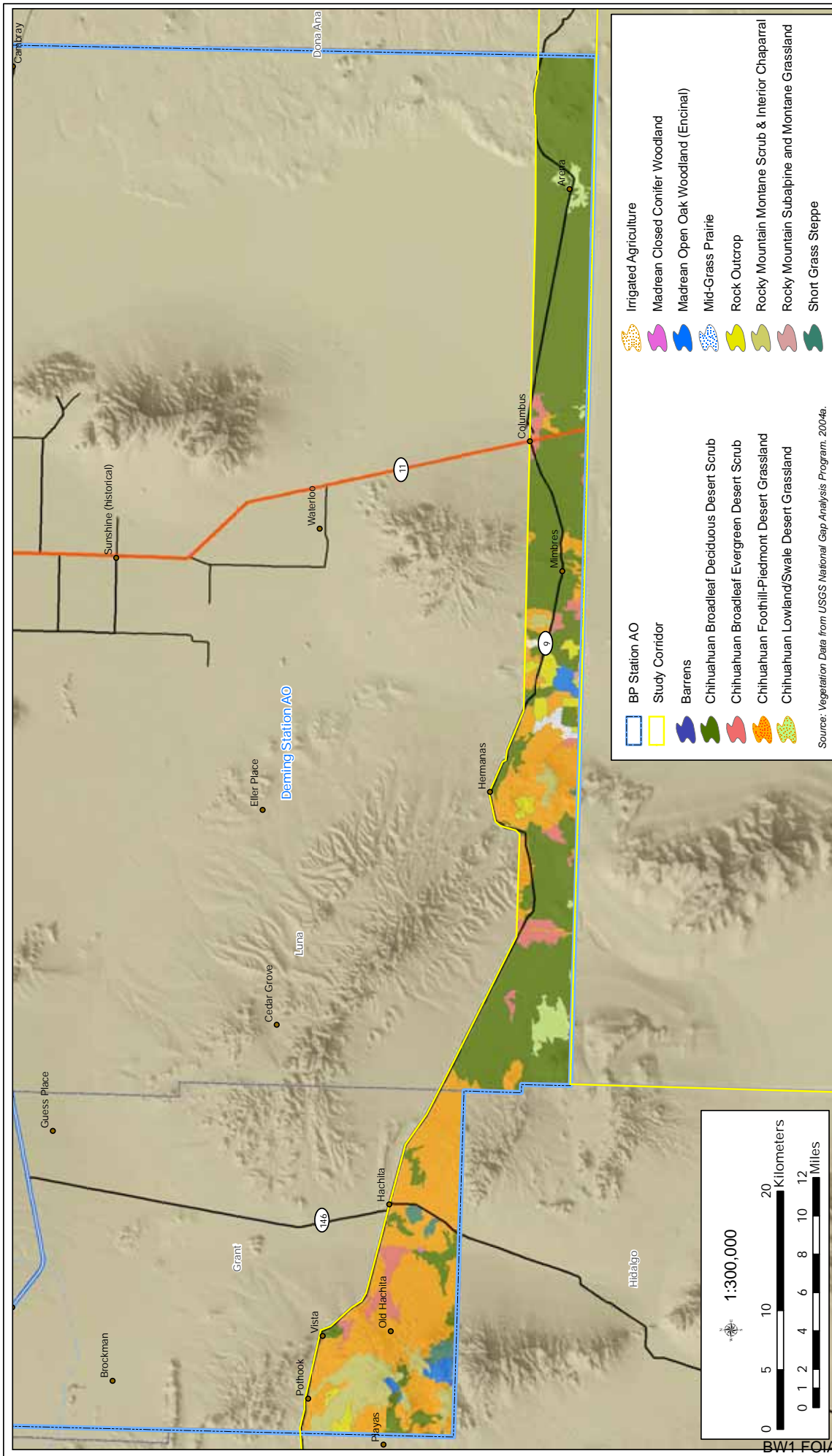


Figure 3-4b: El Paso Sector Vegetation Classifications
Deming Station

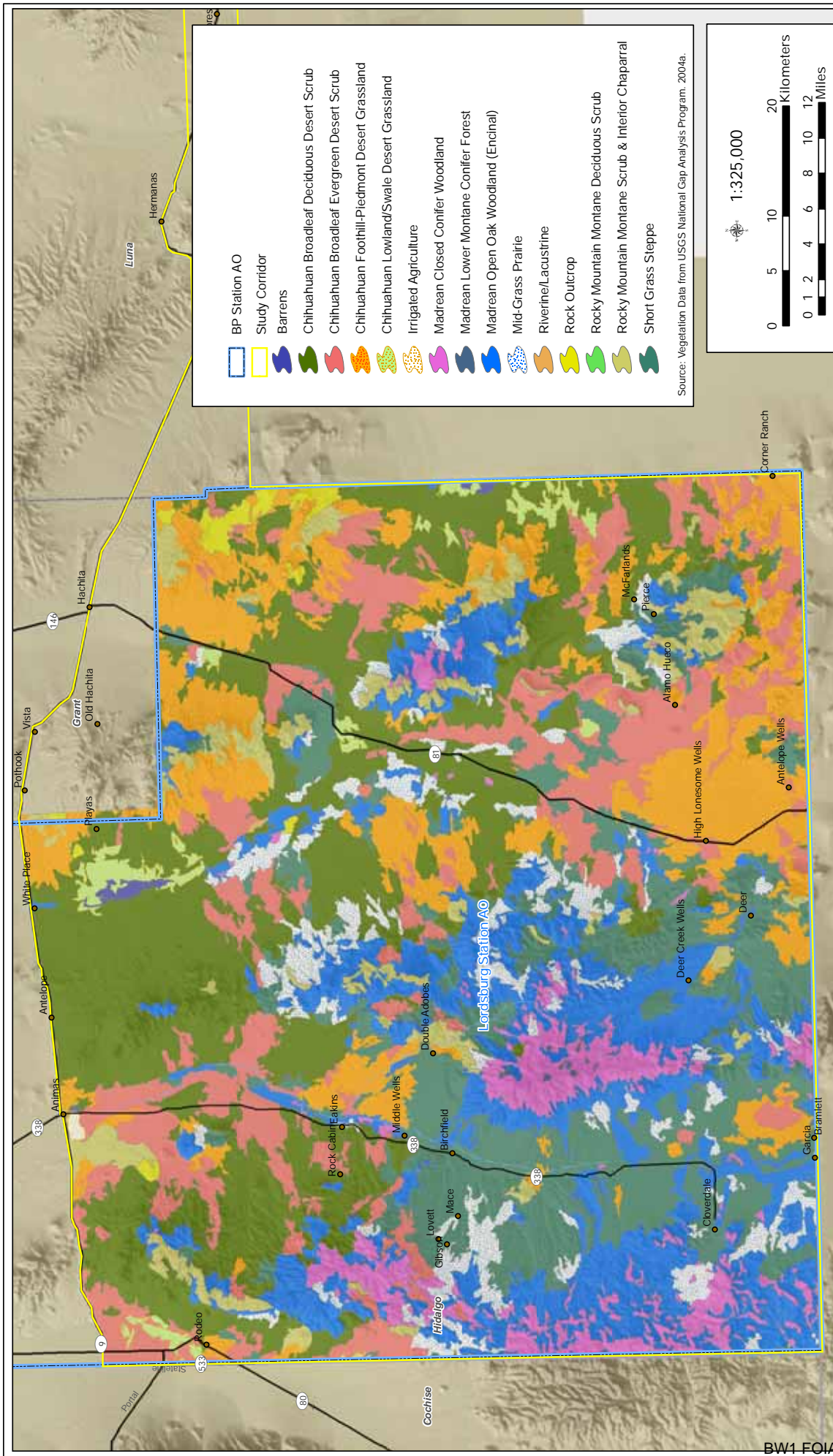


Figure 3-4c: El Paso Sector Vegetation Classifications
Lordsburg Station

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3.3.2 Wildlife Resources

As described in Section 3.3.1, the study corridor is found within the Chihuahuan Desert biome. The Chihuahuan Desertscrub (Brown 1994b) community occupies the majority of the study corridor. Mammals typically associated with Chihuahuan Desertscrub include large hooved mammals such as mule deer (*Odocoileus hemionus*), collared peccary (*Tayassu tajacu*) and pronghorn (*Antilocapra americana*) (Brown 1994b). Carnivore species likely to occur within the study corridor include coyote (*Canis latrans*), bobcat (*Lynx rufus*), kit fox (*Vulpes velox*), grey fox (*Urocyon cinereoargenteus*), ringtail (*Bassariscus astutus*), badger (*Taxidea taxus*), and racoon (*Procyon lotor*) (Burt and Grossenheider 1976). Rodents make up the largest order of mammals that occur in the area including Mexican ground squirrel (*Spermophilus mexicanus*), Botta's pocket gopher (*Thomomys bottae*), desert pocket gopher (*Geomys arenarius*), kangaroo rat (*Dipodomys* sp.) and approximately 17 species of murid rodents (mice and rats) (Findley *et al.* 1975). Hares and rabbits commonly seen in the study corridor include black-tailed jackrabbit (*Lepus californicus*) and desert cottontail (*Sylvilagus auduboni*) (Findley *et al.* 1975).

Birds typically associated with Chihuahuan Desertscrub that are expected to occur in the study corridor include red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), Gambel's quail (*Callipepla gambelii*), scaled quail (*Callipepla squamata*), western burrowing owl (*Athene cunicularia*), Chihuahuan raven (*Corvus cryptoleucus*), loggerhead shrike (*Lanius ludovicianus*), greater roadrunner (*Geococcyx californianus*), cactus wren (*Campylorhynchus brunneicapillus*), great-tailed grackle (*Quiscalus mexicanus*), and numerous passerine species (Peterson and Zimmer 1998). In addition, there are playas in this region that are dry for much of the year, usually containing water only after late summer and fall rains. The playas are an important stopover for shorebirds, sandhill cranes (*Grus canadensis*), and several species of ducks (New Mexico Wilderness Alliance [NMWA] 2006).

A wide variety of herpetofauna can be found associated with Chihuahuan Desertscrub. Many common species of amphibians can be found in the study corridor including spadefoot toads (*Scaphiopus* spp.) and the western spadefoot toad (*Spea multiplicata*). Bullfrogs (*Rana catesbiana*) and Rio Grande leopard frogs (*Rana berlandieri*) are common near the rivers, streams, and irrigation ditches. Several species of true toads (*Bufo* spp.) can also be found near arroyos, stream or ditches. Common reptiles include many lizard species such as whiptail lizards (*Aspidoscelis* spp.), side-blotched lizards (*Uta stansburiana*), greater earless lizard

(*Cophosaurus texanus*), round tailed horned lizards (*Phrynosoma modestum*), ornate tree lizards (*Urosaurus ornata*) and several species of spiny lizards (*Sceloporus* spp.). Approximately 36 species of snakes inhabit the study corridor. Snakes commonly found in the study corridor include western diamondback rattlesnakes (*Crotalus atrox*), prairie rattlesnakes (*Crotalus viridis*), glossy snake (*Arizona elegans*), Sonoran gopher snake (*Pituophis melanoleucus*), Trans-Pecos ratsnake (*Bogertophis subocularis*), western ground snake (*Sonora semiannulata*) and night snake (*Hypsiglena torquata*). The most common turtle, the desert box turtle, (*Terrepenne ornate luteola*) is found in the Chihuahuan Desertscrub and Chihuahuan Semi-desert Grassland (Stebbins 2003).

The Lordsburg AO includes New Mexico's "Bootheel" region, in the extreme southwestern corner of the state. This region has many animals that are also found in Mexico and much farther south, including large carnivores like the jaguar (*Panthera onca*) (NMDGF 2001). Here the Peloncillo Mountains stretch approximately 70 miles along the Arizona-New Mexico border. The Peloncillo Mountains encompass the northernmost edge of the Sierra Madre Occidental creating an ecotone straddling the Sonoran and Chihuahuan Deserts. Many Sonoran and Sierra Madrean species reach their eastern limits here, Chihuahuan and Great Plains species their western limits, and Mexican species their northern limits. This complex also serves as a wildlife corridor for the movement of far-ranging species (NMWA 2006).

In this area wildlife diversity is high. Mammals found in the Peloncillo Mountains Complex not common elsewhere in New Mexico's desert scrubland include desert bighorn sheep (*Ovis canadensis nelsoni*), Coues' whitetail deer (*Odocoileus virginianus couesi*), coatimundi (*Nasua nasua*), and black bear (*Ursa americanus*). The extremely rich bird fauna of the area includes Mexican duck (*Anas diazi*), Gould's turkey (*Meleagris gallopavo mexicana*), elegant trogon (*Trogon elegans*), and several hummingbird species (MacCarter 1993).

Amphibian and reptile diversity are also very high. Notable lizard species include the Gila monster (*Heloderma suspectum*), gray-checkered lizard (*Aspidoscelis dixonii*), giant spotted whiptail lizard (*Aspidoscelis burti stictogramma*), bunch grass lizard (*Sceloporus slevini*), and mountain skink (*Eumeces callicephalus*). Snake species include ridgenosed rattlesnake

(*Crotalus willardi*), lyre snake (*Trimorphodon biscutatus*), green rat snake (*Senticolis triaspis*), Arizona coral snake (*Micruroides euryxanthus*), Sonoran Mountain king snake (*Lampropeltis pyromelana*), and Mojave rattlesnake (*Crotalus scutulatus*) (Degenhardt *et al.* 1996).

3.4 PROTECTED SPECIES AND CRITICAL HABITAT

The U.S. Fish and Wildlife Service's (USFWS) responsibilities under the Endangered Species Act (ESA) include: (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered. Species may be considered endangered or threatened when any of the five following criteria occurs: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affect continued existence. In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which the USFWS has sufficient information to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

3.4.1 Federal

A total of 17 Federally endangered, threatened, proposed threatened, and candidate species occur in Hidalgo, Luna, and Doña Ana counties (USFWS 2006a). A total of nine species are listed as endangered, seven threatened, and one candidate (Table 3-8).

Table 3-8. Federally Listed, Proposed, and Candidate Species Potentially Occurring within Hidalgo, Luna, and Doña Ana Counties

Common Name	Scientific Name	Listing Status	County
BIRDS			
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	All
Interior least tern	<i>Sterna antillarum</i>	E	Doña Ana
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	Doña Ana
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	E	All
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	All
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	Doña Ana, Luna
MAMMALS			
Jaguar	<i>Panthera onca</i>	E	Hidalgo
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuenae</i>	E	Hidalgo
Mexican long-nosed bat	<i>Leptonycteris nivalis</i>	E	Hidalgo
Mexican gray wolf	<i>Canis lupus baileyi</i>	E	Hidalgo, Luna
REPTILES AND AMPHIBIANS			
Chiricahua leopard frog	<i>Rana chiricahuensis</i>	T	Hidalgo, Luna
New Mexico ridge-nosed rattlesnake	<i>Crotalus willardi obscurus</i>	T	Hidalgo
FISHES			
Loach minnow	<i>Tiaroga cobitis</i>	T	Hidalgo
Beautiful shiner	<i>Cyprinella formosa</i>	T	Luna
Spikedace	<i>Meda fulgida</i>	T	Hidalgo
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	E	Doña Ana
PLANTS			
Snead pincushion cactus	<i>Coryphantha sneedii</i>	E	Doña Ana

Legend: E – Endangered T – Threatened C – Candidate PE – Proposed Endangered

Source: USFWS 2006a. (Last Updated January 7, 2003.)

3.4.2 BLM Sensitive Species

BLM state offices maintain a list of species considered Special Status Species in order to focus management efforts toward maintaining habitats under a multiple use mandate (BLM 2002). The goals of the sensitive species policy are to: 1) maintain vulnerable species and habitat components in functional BLM ecosystems; 2) ensure sensitive species are considered in land management decisions; 3) prevent a need for species listing under the ESA; and 4) prioritize needed conservation work with an emphasis on habitat (BLM 2002). Species designated as BLM sensitive species are afforded the protection provided by the ESA for candidate species (BLM 2002). BLM sensitive species are included as part of the New Mexico Species of Concern List in Appendix B.

Of the BLM species listed in Appendix B, many could potentially occur in the study area. Some bird species that may occur within the study area such as white-faced ibis (*Plegadis chichi*), northern gray hawk (*Asturina nitida mazimus*), burrowing owl (*Athene cunicularia hypugaea*), and loggerhead shrike (*Lanius ludovicianus*) are afforded more protection under the MBTA than as listed BLM sensitive species. Other species including numerous bat species, Texas horned lizards (*Phrynosoma cornutum*), gray-checked whiptails (*Cnemidophorus dixonii*), Mexican garter snakes (*Thamnophis eques megalops*), Arizona shrews (*Sorex arizonae*), white-sided jackrabbits (*Lepus callotis gaillardi*), and yellow-nosed cotton rats (*Sigmodon ochrognathus*) would be noted during project-specific field surveys and environmental design measures should be utilized during project-specific construction even though no protection is afforded to these species.

3.4.3 State

In 1978, the state of New Mexico enacted the Wildlife Conservation Act (WCA) (NMSA 17-2-37 through 17-2-46). The WCA defines an animal species as endangered if it is in jeopardy of extinction or extirpation from the state. A species is threatened if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico. Only species native to New Mexico are listed as threatened or endangered (NMDGF 2000). A complete list of threatened and endangered plants and animals potentially occurring in Hidalgo, Luna and Doña Ana Counties is provided in Appendix B (New Mexico Natural Heritage Program [NMNHP] 2003, NMNHP 2006).

Specific habitat requirements for many of the listed species are not found within the immediate study corridor. The spikedace is a small fish listed as threatened by USFWS and NMDGF. In Hidalgo County it is only found in the Gila River system north of the study corridor (USFWS 2005b). The Rio Grande silvery minnow, endangered on Federal and state lists, is considered extirpated below Elephant Butte Reservoir in New Mexico. The beautiful shiner, listed threatened by the USFWS, is found in the Mimbres River north of Deming, New Mexico, but not within the study corridor. The Chihuahua chub (listed threatened by the state) is limited mainly to a 9.5-mile reach of the Mimbres River and Moreno Spring (Propst 1999). This species habitat is well to the north of the proposed corridor. The loach minnow is a bottom-dwelling inhabitant of shallow, swift water over gravel, cobble, and rubble substrates. It requires perennial streams with substrates free of excessive fine sedimentation, and moderate to swift

currents as well as swift pools over sand or gravel substrates. The currently known distribution for loach minnow in Hidalgo County is restricted to the Gila River in the northern portion of Hidalgo County and not in the study corridor.

Bald Eagle

In New Mexico, the bald eagle migrates and winters from the northern border, southward regularly to the Gila, lower Rio Grande, middle Pecos, and Canadian valleys (Hubbard 1985). The species is primarily water-oriented, and the majority of the populations occurring in New Mexico are found near streams and lakes. On the other hand, there are some "dry land" areas where these eagles occur regularly, most notably in the region between the Pecos Valley and the Sandia, Manzano, Capitan, and Sacramento mountains, plus on the Mogollon Plateau. Bald eagles typically night-roost in groups in trees, usually in protected sites such as canyons. Important food items in the southwest include fish, waterfowl, rabbits and carrion. Food availability and perch sites may limit wintering bald eagle abundance in New Mexico. Other factors potentially limiting abundance include human disturbances and loss of mature riparian and riverine habitats. The entire state is considered within the range of wintering bald eagles; however, the important habitat characteristics are not present within the study corridor. This species would be an uncommon transient, if it would occur at all, within the study corridor.

Northern Aplomado Falcon

Northern aplomado falcons are long-tailed falcons, intermediate in size between American kestrels (*Falco sparverius*) and prairie falcons (*Falco mexicanus*) (National Geographic Society 1983). Essential components of their habitat include open terrain with scattered trees, relatively low ground cover, an abundance of small to medium sized birds, and a supply of nesting platforms, particularly yuccas and mesquite (Hector 1983). In New Mexico, the aplomado falcon is known to nest in mesquite, soaptree yucca, cottonwood, western soapberry (*Sapindus saponaria* var. *drummondii*), and cholla (NMDGF 1991).

The northern aplomado falcon was designated as an endangered species by the USFWS on January 25, 1986 (51 FR 6686) and is also listed as endangered by the state of New Mexico. Critical habitat has not been designated for this species, but a Recovery Plan was completed in June 1990. This species is declining because of habitat degradation and habitat-type conversion due to brush encroachment fostered by decades of livestock overgrazing and fire

suppression, overcollecting and reproductive failure of the species caused by organochlorine pesticide use (USFWS 1987). The USFWS has proposed to release a non-essential experimental population throughout the entire study corridor (70 FR 6819).

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a small bird, approximately 6 inches long. It has a grayish-green back and wings, whitish throat, light gray-olive breast, and pale yellowish body. The southwestern willow flycatcher is found on breeding territories by mid-May; nest building and egg laying typically occur in late May and early June; and fledglings can be found in early to mid-July (Sogge *et al.* 1997). The southwestern willow flycatcher occurs in riparian habitats with dense growths of willows (*Salix* sp.), marsh broom (*Baccharis* sp.), arrowweed (*Pluchea* sp.), buttonbush (*Cephalanthus* sp.), tamarisk (*Tamarix* sp.), Russian olive (*Eleagnus* sp.), and often with a scattered overstory of cottonwood (*Populus* sp.). These habitats tend to be rare, widely separated, or small and usually separated by vast expanses of arid lands.

The southwestern willow flycatcher was listed as Federally endangered on February 27, 1995 (60 CFR 10693). Critical habitat was designated totaling 599 river miles within Arizona, California, and New Mexico on July 7, 1997 (62 CFR 39129); however during a hearing on March 25, 2001 the courts overturned the final ruling and the 1997 critical habitat designation no longer exists. On October 12, 2004, a new proposal for critical habitat was announced (69 FR 60706). The proposal calls for 376,095 acres (including 1,556 stream miles) of critical habitat in southern California, southern Nevada, southwestern Utah, south-central Colorado, Arizona, and New Mexico. Five recovery units are further broken down into 21 management units. These management units encompass stream segments essential for southwestern willow flycatcher conservation. The critical habitat designation was made final on September 30, 2005. In total, approximately 120,824 acres were designated as critical habitat (USFWS 2005a). This species is endangered due to the extensive loss and modification of its habitat. In addition, brood parasitism by the brown-headed cowbird (*Molothrus ater*) has significantly contributed to the endangered status of the southwestern willow flycatcher (Sogge *et al.* 1997).

Yellow-billed Cuckoo

The yellow-billed cuckoo is a medium-sized bird of about 12 inches in length and about 2 ounces in weight. The yellow-billed cuckoo is primarily a foliage-gleaning insectivore, but also hover gleans, hawks, and even hops on the ground to obtain prey (Ehrlich *et al.* 1992). In the

east, the cuckoo's prey consists mostly of hairy caterpillars, with lesser numbers of bird eggs, frogs, lizards, berries, and fruit (Ehrlich *et al.* 1988). Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars, or other large insects during summer rains (Ehrlich *et al.* 1992). Clutch size is one to five (commonly two to three) eggs and is largest when prey is abundant (Hughes 1999). Restricted in their distribution to large, continuous blocks of mature cottonwood/willow dominated riparian habitat, the yellow-billed cuckoo has one of the most restrictive macro-habitat requirements of any bird species (Laymon and Halterman 1989). In New Mexico, preferred migration and breeding habitat is found in streamside cottonwood/willow groves, and larger mesquite bosques (Corman 1992). Studies suggest that forest area, continuity, shape, composition, and structure are important characters affecting habitat suitability (Laymon and Halterman 1985).

The primary threat to western cuckoos, both historically and recently, is due primarily to habitat loss on the breeding grounds. Principal causes of riparian habitat losses are conversion to agricultural and other uses, dams and river flow management, stream channelization and stabilization, and livestock grazing. Other serious threats include habitat fragmentation, degradation of riparian woodland due to agricultural and residential development (Dobkin 1994), stochastic extinctions and low colonization rates, flood control (Laymon and Halterman 1987), and riparian habitats invaded by less desirable tamarisk (Hughes 1999).

Chiricahua Leopard Frog

The Chiricahua leopard frog is greenish-brown usually with a green face. This species is highly aquatic, living in a variety of water sources including rocky streams with deep rock-bound ponds, river overflow pools, oxbows, permanent springs, stock tanks, and ponds (Degenhardt *et al.* 1996). The riparian habitat along these water bodies generally consists of oak and mixed oak and pine woodlands, but it can also range into areas of chaparral, grassland, and even desert.

The Chiricahua leopard frog was listed as threatened without critical habitat on July 15, 2002 (*Federal Register* 67(117): 40790-40811). In the petition to list the Chiricahua leopard frog, the USFWS cited known threats as habitat alteration, destruction, and fragmentation; predation by nonnative organisms; introduced species such as bullfrogs and fish; and disease. Habitat loss

has resulted from water diversions, dredging, livestock grazing, mining, degraded water quality, and groundwater pumping. Problems associated with small population numbers and size also threaten the species (Degenhardt *et al.* 1996).

Lesser Long-nosed Bat

The lesser long-nosed bat is a medium-sized bat that has a distinctively elongated nose with a leaf-shaped tip. The bat's long muzzle and tongue are adaptations that allow it to collect nectar from the flowers of columnar cacti, and from paniculate agaves (Arizona Ecological Field Services Office [AEFSO] 2002). They appear to need no standing water, surviving on water from fruits and flower nectar (Cockrum and Petryszyn 1991). In general, foraging takes place from dusk to dawn during the months of May through September. These animals have been captured in New Mexico between July and October. Lactating females have been captured in New Mexico, suggesting that some reproduction may take place in New Mexico (Findley *et al.*, 1975). They migrate south in the fall, leaving New Mexico in September or early October. Their fall migration appears to be linked to the flowering of the agave (Dalton and Dalton 1993).

In New Mexico, the lesser long-nosed bat is found during the summer within desert grasslands and scrubland (Findley *et al.* 1975). Maternity colonies are formed at lower elevations near concentrations of flowering columnar cacti. After the young are weaned, some females and young move to higher elevations, primarily in the southeastern parts of New Mexico near concentrations of blooming paniculate agave (AEFSO 2002). During the day, they roost in mine tunnels and natural caves.

The lesser long-nosed bat occurs in the southeastern New Mexico, Chiricahua Mountains and south to Mexico (AEFSO 2002). Of the approximately 12 known major maternity roosts throughout their range in Central and North America, there are only three verified major maternity roosts of this species in the U.S., all of which are in Arizona (Cockrum and Petryszyn 1991).

The lesser long-nosed bat was listed (originally, as Sanborn's long-nosed bat) as endangered on September 30, 1988 (53 FR 38456). No critical habitat has been designated for this species. Loss of roost and foraging habitat, interdependence with its food resources, and direct taking of individual bats during animal control programs, particularly in Mexico, have contributed to the current status of the species (AEFSO 2002). This species is particularly vulnerable due to the

fact that pregnant females concentrate their numbers by roosting in only a few sites. Thus, destruction of a single major roost could have serious impacts on the entire species (Henshaw 1972).

Mexican Gray Wolf

The Mexican gray wolf ranges in weight from 68 to 91 pounds for males and 58 to 68 pounds for females (McBride 1980). Wolves do not have any specific habitat requirements and can exist in forests of all types, rangelands, brushlands, steppes, agricultural lands, wetlands, mountaintops, deserts, tundra, and barren ground areas. The only habitat feature of potential importance is the presence of natural water sources such as springs, seeps, pools, riffles, vernal pools, and arid riparian habitat. Dens are usually dug in slopes where tree roots, rocks, or firmness of soil will lessen the likelihood of a cave-in (McBride 1980).

The gray wolf (*Canis lupus*) was listed as endangered by the USFWS on March 11, 1967. The subspecies *C. lupus baileyi* (Mexican wolf) was added as an endangered species on April 28, 1976. The species' decline was primarily due to bounties offered by the livestock industry, which almost extirpated wolves from the region (Rutter and Pimlott 1968). Habitat destruction was an indirect factor in the extirpation because as native habitat was destroyed and livestock introduced, opportunities for wolves to prey on livestock increased. In the southwest, continued urbanization places demands on southwestern forests for recreation, big game hunting, increased production of timber and livestock, and continuing attempts to utilize the soils and water for growing non-native farm crops (Findley *et al.* 1975).

A recovery program for the Mexican gray wolf is currently operational on the Gila National Forest in western New Mexico. Reintroduced wolves are allowed to disperse and colonize an area referred to as the Blue Range Wolf Recovery Area, which includes the Gila National Forest in western New Mexico. The USFWS, USDA Wildlife Services, the AGFD, the New Mexico Department of Game & Fish, and Turner Endangered Species Fund have formed an Interagency Field Team to conduct wolf releases and monitor and manage the wolves (USFWS 2006b).

New Mexico Ridge-nosed Rattlesnake

The New Mexico ridge-nosed rattlesnake is distinguished by its upturned internasal and canthal scales that form a ridge around the front of the snout (Stebbins 2003). This subspecies is

restricted to the Animas Mountains. The New Mexico ridge-nosed rattlesnake is most commonly found in moist canyons in coniferous forests to pine and pine-oak woodland, but it is also found in adjacent, more arid woodland and ecotonal grassland habitats (Stebbins 2003).

The New Mexico ridge-nosed rattlesnake was listed as threatened by the USFWS on August 4, 1978 (43 FR 34479). A recovery plan was completed in March 1985, and critical habitat was designated in a portion of Hidalgo County, New Mexico. The New Mexico ridge-nosed rattlesnake is listed as endangered by the NMDGF. This species is listed as “threatened” because of its limited range, vulnerability, and past collecting. After the species was discovered in 1957 in the Animas Mountains of New Mexico, collectors came from all parts of the country. Some collectors destroyed or altered habitat in their collecting efforts. Other threats include destruction of habitat due to excessive grazing and infestation by certain flagellates and bacterium (Johnson 1983).

Interior Least Tern

The interior least tern was listed as an endangered species in the 1985 *Federal Register* (50 FR 21,784-21,792) in the following states: Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana (Mississippi River and its tributaries north of Baton Rouge), Mississippi (Mississippi River), Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Tennessee, and Texas (except within 50 miles of the Gulf of Mexico coast). At the time of listing, census data estimated the interior least tern population at approximately 5,000 individuals.

Interior least terns are known to occur along major river systems of the U.S. These river systems include the Red, Rio Grande, Arkansas, Missouri, Ohio, and Mississippi. However, no critical habitat has been designated for this species. A recovery plan for the interior least tern was finalized on September 19, 1990 (USFWS 2006c).

The nesting season typically begins in early June and lasts through August when least terns begin their winter migration to South America. Colonies are often loose associations of adults consisting of three to 30 pairs. Although the female does most of the incubation and brooding, both adults participate. Interior least tern nests are scrapes in the sand, approximately 4 inches wide, usually containing two to three eggs. The adults protect nests from predators through a mobbing behavior. The incubation period lasts from 19 to 25 days and chicks become mobile

and leave the nest within a few days of hatching. Chicks are fed small fishes and minnows until they fledge at around 20 days. Fledglings continue to receive food from adults for several weeks as they learn to forage, but are typically ready to disperse from natal colonies within 3 weeks of fledging (USFWS 1990).

Connections to the mainland, or land bridging, allow people and pets, recreational vehicles, livestock, and terrestrial predators greater access to the colonies. Direct human disturbances such as fireworks, camping, picnicking, recreation, and general exploration have also impacted interior least tern nesting habitat (USFWS 1990). Human foot disturbance are common on sandbars along the Rio Grande.

3.4.4 Critical Habitat

The ESA also calls for the conservation of what is termed critical habitat - the areas of land, water, and air space that an endangered species needs for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. One of the primary threats to many species is the destruction or modification of essential habitat by uncontrolled land and water development.

One species has designated critical habitat in the study corridor. Critical habitat for the New Mexico ridge-nosed rattlesnake has been determined by USFWS to include the following areas in Hidalgo County: locations between 6,200 feet and 8,532 feet in the Bear, Indian, and Spring Canyons of the Animas Mountains. This is a revised critical habitat designation from the proposed critical habitat of "Elevations above 6,200 feet in the Animas Mountains, Hidalgo County, New Mexico" and is based on updated information USFWS received from NMDGF. The range of the New Mexico ridge-nosed rattlesnake is primarily restricted to three canyons in the Animas Mountains of New Mexico and may involve habitat of approximately 1 square mile or less (*Federal Register* 1978).

3.5 EXOTIC PLANTS

The number of exotic plants recorded in New Mexico has increased over the last century (Cox 2001). Because surrounding states have relatively greater number of established exotic plant populations, the total number of exotics in New Mexico is likely to increase in the near future.

Although the total number of exotics recorded is high (390 species), many of the populations are small, isolated occurrences, represent non-invasive species which do not compete well with native vegetation, or do not exhibit characteristics that alter ecological processes, or otherwise create a negative impact on the state's environment and economy (*i.e.*, noxious weeds). The New Mexico Department of Agriculture (1999) has published a list of 32 plant species considered noxious including eight species that are locally abundant (Class B) and five species that are widespread (Class C). Most of the noxious plants on this list are forbs. The Class B weeds are generally non-palatable and spiny forbs and the Class C weeds include a single grass and three woody species. A review of the USGS Southwest Exotics Database (USGS 2005) produced two records of exotic plants within the study corridor. The Malta starthistle (*Centura melitensis*) is a Class B weed that is not palatable and replaces native bunchgrasses leading to erosion. Malta starthistle populations are found in the Deming Station along New Mexico Highway 180. The African rue (*Peganum harmula*) is a Class B weed that was first reported in New Mexico and has since spread to other states. This species competes with native forage plants and degrades wildlife habitat. Populations of African rue are known to occur within Deming and Lordsburg Stations along New Mexico Highway 180 and NM 9. The complete list of non-native plants (Cox 2001) and the list of noxious weeds (USGS 2005) are presented in Appendix B of this document.

3.6 UNIQUE AND SENSITIVE AREAS

The majority of the study corridor has not been developed or converted to agricultural uses and vast stretches of Chihuahuan Desert vegetation remains relatively untouched (USGS 2004). Most of the Chihuahuan Desert (Brown 1994b) vegetation communities are widely distributed and would not be considered unique. Grassland and chaparral communities of the Chihuahuan Desert are sensitive to fire suppression and grazing; however, most of these areas have already been degraded due to historical management practices.

The unique and sensitive areas within the study corridor of the Santa Teresa Station (Figure 3-5a) include a Wilderness Study Area (WSA), the Rio Grande Riverpark Trail system, and Mount Cristo Rey. The BLM can designate lands as a WSA and development on these lands is restricted. The WSA in Santa Teresa Station covers a large area of the northeast corner of the station including small portion of the project corridor. The City and County of El Paso have partnered with the National Park Service (NPS) to create The Rio Grande Riverpark Trail

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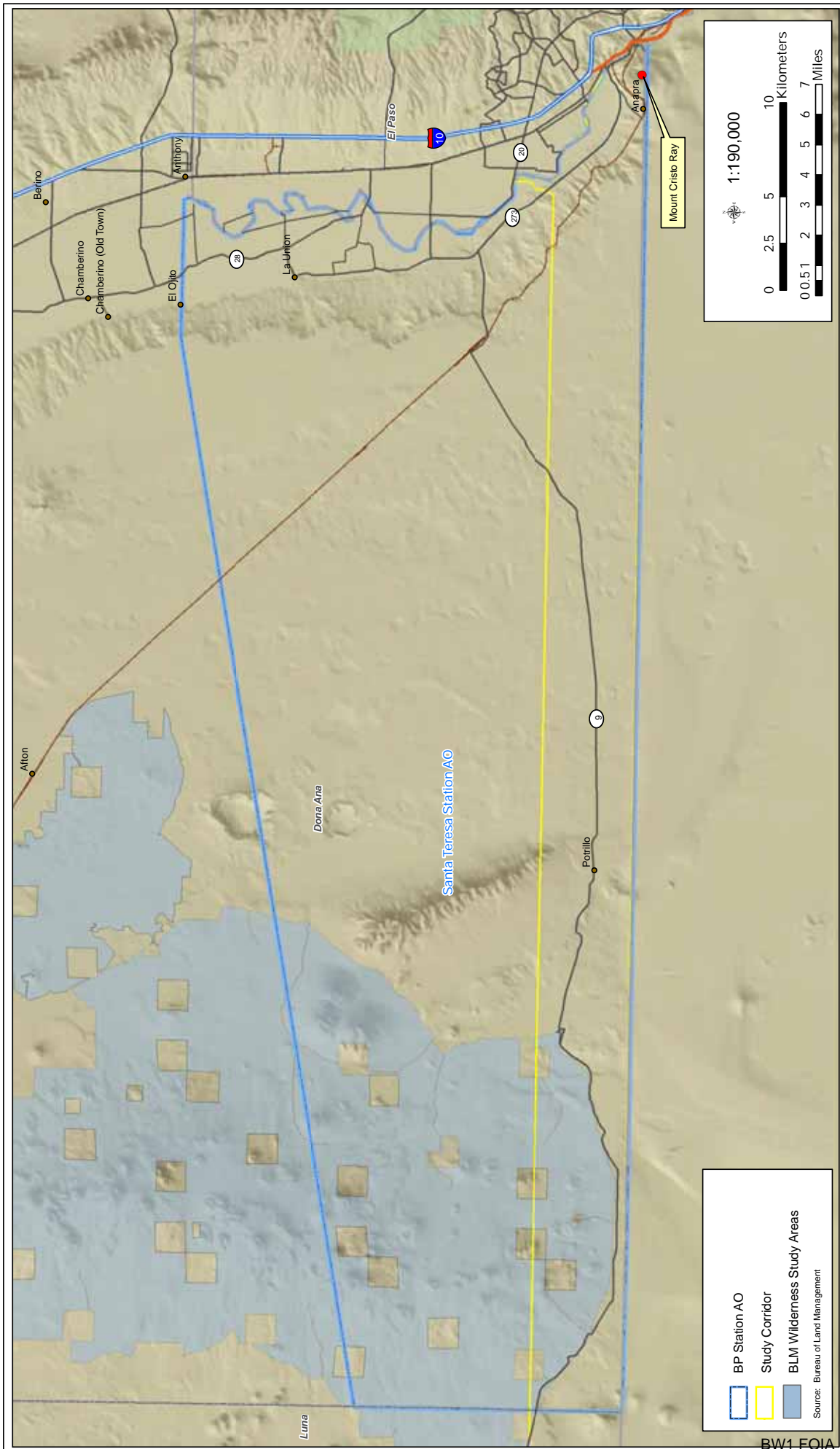


Figure 3-5a: El Paso Sector Unique and Sensitive
Santa Teresa Station

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System (El Paso County 2006a), which is planned to follow the course of the river for 32 miles southward from the New Mexico state boundary. The trail system connects existing trails and parks featuring landmarks of southwest history including forts, missions, and archeological sites.

Natural ecosystems including rare wetlands can also be visited from the trail and interconnected, wildlife viewing areas. Mount Cristo Rey (roadsideamerica.com 2006) is part of this system and is found on the border in the southeast corner of Santa Teresa Station near the community of Sunland Park. Mount Cristo Rey includes a statue of Jesus and is open to visitors only during daylight hours due to the presence of vandals.

The unique and sensitive areas within the Deming Station study corridor are limited to a single state park (Figure 3-5b). Pancho Villa State Park is located near Columbus at the international border and maintains historical exhibits from the 1916 raid on the community by General Francisco “Pancho” Villa (Energy, Minerals, and Natural Resources Department [EMNRD] 2006a). The park also offers a visitors center, camping facilities, and interpretive tours. Rockhound State Park (EMNRD 2006b), BLM WSAs, and the BLM's Florida Mountains Area of Critical Environmental Concern (ACEC) are located north of the study corridor. Development within ACECs is also restricted.

The unique and sensitive areas within the Lordsburg Station study corridor include a national forest, WSAs, and ACECs (Figure 3-5c). The Douglas Ranger District of the Coronado National Forest (CNF) (USDA 2006) lies at the western boundary of the Lordsburg Station. The CNF's mission is to protect the biodiversity of unique montane ecosystems, often called “Sky Islands”, and to provide recreational opportunities to the public. Most of this unit has been declared an Inventoried Roadless Area; however, some lands associated with existing roads or private lands have not been designated. Two WSAs and five ACECs are located within the Lordsburg Station study corridor including the Guadalupe Canyon ACEC which is located on the border near the western boundary of the station.

3.7 AESTHETIC RESOURCES

The aesthetic resources within the study corridor include the characteristic geologic features of the Basin and Range Province (USGS 2004b), and the natural vegetation of the Chihuahuan Desert Biome (Brown 1994b). Historic uplift of faulted blocks and their subsequent erosion over

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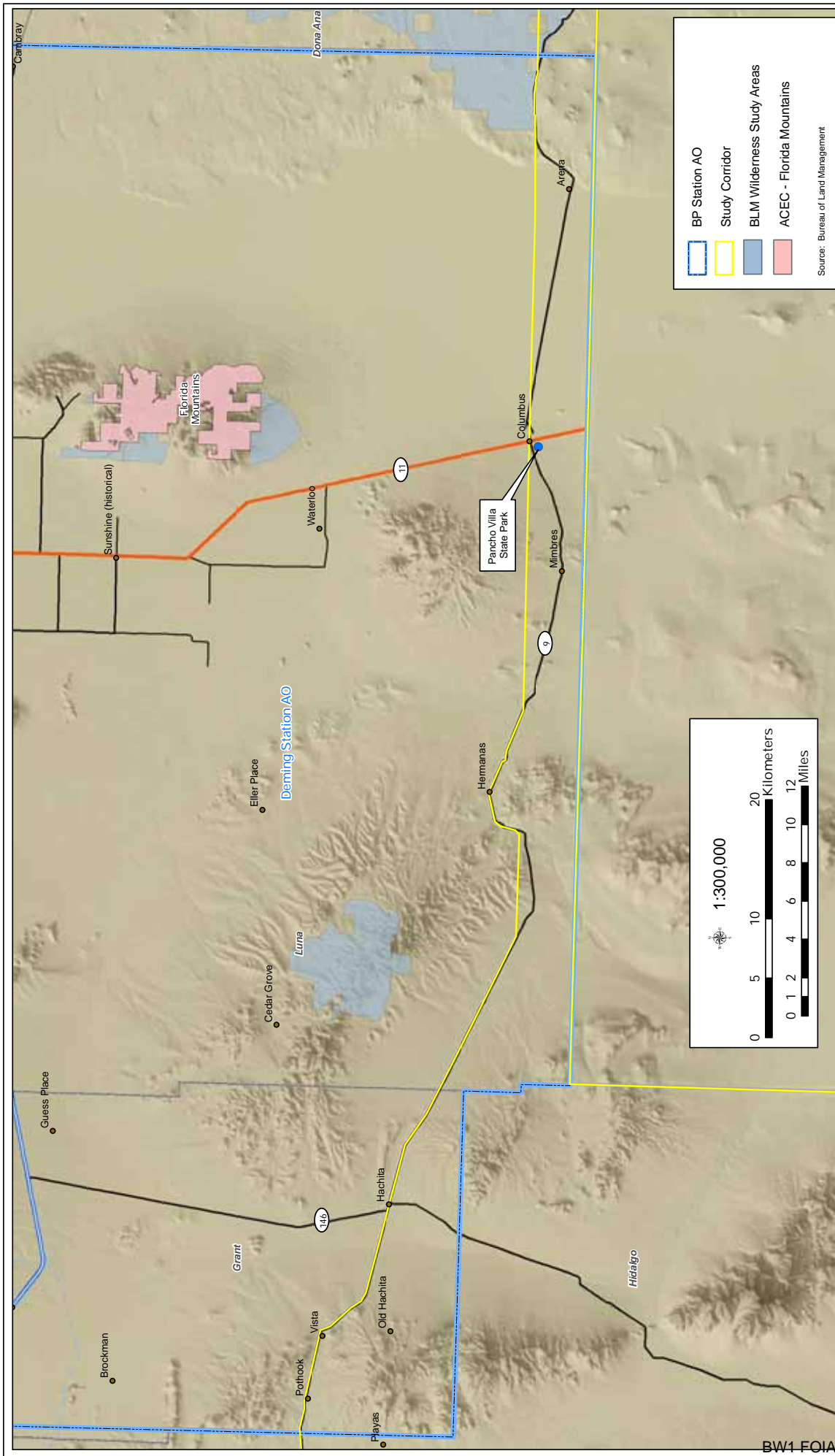


Figure 3-5b: El Paso Sector Unique and Sensitive
Deming Station

millions of years has resulted in jagged mountain ridges rising abruptly from vast intermountain ranges. The low diversity and simple appearance of Chihuahuan Desert vegetation held within these relatively flat valleys creates a landscape that changes little in appearance from horizon to horizon. The rural agricultural communities, historic missions and forts, and characteristic architecture contribute to the aesthetic quality of the region.

3.8 AIR QUALITY

3.8.1 Federal and State Standards

The U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS), for specific pollutants determined to be of concern with respect to the health and welfare of the general public. The EPA defines ambient air quality in 40 CFR 50 as "that portion of the atmosphere, external to buildings, to which the general public has access". Ambient air quality standards are intended to protect public health and welfare and are classified as either "primary" or "secondary" standards. Primary standards define levels of air quality necessary to protect the public health. National secondary ambient air quality standards define levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. The major pollutants of concern, or criteria pollutants, are carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, suspended particulate matter less than ten microns, and lead. NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare. Short-term standards (1-, 8- and 24-hour averaging periods) are established for pollutants contributing to acute health effects, while long-term standards (annual averages) are established for pollutants contributing to long-term health effects. The NAAQS are included in Table 3-9. Areas that do not meet these standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas.

The EPA requires each state to develop a State Implementation Plan (SIP) that sets forth how the Clean Air Act (CAA) provisions will be implemented within that state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain compliance with the NAAQS within each state. To provide consistency in different state programs and ensure that a state program complies with the requirements of the CAA and EPA, the EPA must approve the SIP. The purpose of the SIP is twofold. First, it must provide a strategy that will result in the attainment and maintenance of the NAAQS. Second, it must

demonstrate that progress is being made in attaining the standards in each non-attainment area.

Table 3-9. National Ambient Air Quality Standards

POLLUTANT	STANDARD VALUE	STANDARD TYPE
Carbon Monoxide (CO)		
8-hour average	9 ppm (10mg/m ³)**	P
1-hour average	35 ppm (40mg/m ³)**	P
Nitrogen Dioxide (NO₂)		
Annual arithmetic mean	0.053 ppm (100µg/m ³)**	P and S
Ozone (O₃)		
8-hour average*	0.08 ppm (157µg/m ³)**	P and S
Lead (Pb)		
Quarterly average	1.5 µg/m ³	P and S
Particulate<10 micrometers (PM₁₀)		
Annual arithmetic mean	50 µg/m ³	P and S
24-hour average	150 µg/m ³	P and S
Particulate<2.5 micrometers (PM_{2.5})		
Annual arithmetic mean	15 µg/m ³	P and S
24-hour average	65 µg/m ³	P and S
Sulfur Dioxide (SO₂)		
Annual average mean	0.03 ppm (80µg/m ³)	P
24-hour average	0.14 ppm (365µg/m ³)	P
3-hour average	0.50 ppm (1300µg/m ³)	S

Legend: P= Primary
 S= Secondary
 ppm = parts per million
 mg/m³ = milligrams per cubic meter of air
 µg/m³ = micrograms per cubic meter of air

Source: EPA 2005

* Parenthetical value is an approximate equivalent concentration

3.8.2 Potential Sources of Pollution

Some potential sources of air pollution within the study corridor have been the result of manmade emissions from sources such as vehicles and industrial establishments. Most prevalent, though are the natural and man induced pollution of particulates less than 10 microns (PM₁₀) due primarily to wind blown dust, to which the entire southern portion of New Mexico is susceptible. Another potential source of PM₁₀ and other air pollutants within the study corridor is smoke clouds blown in from Mexico. The primary source of such smoke is agricultural burning in southeastern Mexico and Central America.

The most common sources of natural wind blown dust included soil disturbance during construction projects, disturbed vacant land, unpaved rural roads or high traffic areas, unpaved parking areas or equipment yards, tilled agricultural fields, and military training activities.

3.8.3 Status of Air Quality

New Mexico is located in the EPA's Region 6. The New Mexico Environment Department's (NMED) Air Quality Bureau is the state agency responsible for "controlling present and future sources of air pollution". New Mexico's Ambient Air Quality Standards (NMAAQS) for the criteria pollutants are more stringent than the NAAQS.

Hidalgo and Luna County are currently in attainment for all criteria pollutants. However, in 2003, Luna County opted to take measures to avoid non-attainment status designation by the EPA for numerous exceedances in PM₁₀ due to natural events. In Doña Ana County, there are two separate areas in the southeastern portion that are in non-attainment (marginal) for ozone and PM₁₀ (EPA 2005 and NMED 2006). Doña Ana County borders El Paso, Texas and Ciudad Juarez, Mexico. This region of the state has historically had air quality problems, including PM₁₀ and ozone pollution. In Anthony, New Mexico, which lies on the border of Texas and New Mexico, there is a PM₁₀ non-attainment area. This area was designated by EPA in 1991. In 1995, the EPA declared a 42-square mile region in the southeast corner of the county on the border of Texas and Mexico as a marginal non-attainment area for the 1-hour ozone standard. This area includes the cities of Sunland Park, Santa Teresa, and La Union, New Mexico (NMED 2006). Sunland Park is currently designated as a maintenance area for the 8-hour NAAQS for ozone.

Due to the arid environment, all counties in southern New Mexico have experienced issues of natural wind blown dust (PM₁₀). Rather than penalizing western arid states for exceedances due to natural events and classifying them as non-attainment areas, the EPA and state regulatory agencies have developed a more effective policy to address PM₁₀ pollution caused by natural events. This policy is known as the Natural Events Policy. Under this policy, the NMED Air Quality Bureau and local governments are required to implement a Natural Events Action Plan (NEAP). The NEAP entails documenting when, and to what extent natural events affect PM₁₀, informing the public about the harmful effects, implementing a notification and health advisory program, and identifying actions needed to reduce PM₁₀ to minimize the effects of natural events. NEAPs have been implemented by Doña Ana and Luna Counties in order to mitigate any man-made contributions such as construction sites. The basis for mitigation in a NEAP is the establishment of Best Available Control Measures (BACM). BACMs are methods that can be used to reduce or eliminate windblown dust in areas where natural soils have been disturbed

and are therefore more susceptible to erosion by the wind. A list of pertinent and suggested BACMs identified in the Doña Ana and Luna County NEAPs are summarized as:

- Road stabilization using water or chemical dust suppressants
- Prioritization of the paving of unpaved roads based on the criteria that includes the amount of traffic, production of dust, and vicinity of people, schools, etc.
- Graveling unpaved roads on a regular basis
- Reducing speed limits on unpaved roads with appropriate enforcement or speed bumps/humps limiting use of unestablished roads through the use of road closures and barricades
- Providing adequate stormwater drainage to reduce soil from being washed or tracked onto paved roads
- Prevent tracking of dirt from construction sites by installing curbs, or stabilizing road shoulders
- Use of devices designed to clean mud and bulk dirt from tires such as steel grates or on-site wheel washes
- For trucks hauling bulk materials to or from the site, fully cover and secure cargo loads and prevent leakage from truck (NMED 2000 and NMED 2004).

3.8.4 Conformity Rule Requirements

The Federal Conformity Final Rule (40 CFR Parts 51 and 93) specifies criteria or requirements for conformity determinations for Federal projects. The Federal conformity rule was first promulgated in 1993 by the EPA, following the passage of Amendments to CAA in 1990. The rule mandates that a conformity analysis must be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more NAAQS.

A conformity analysis is the process used to determine whether a Federal action meets the requirements of general conformity rule and the associated SIP. It requires that the affected Federal agency evaluate the nature of the Proposed Action Alternative and associated air pollutant emissions, calculate emissions as a result of the Proposed Action Alternative, and mitigate emissions if thresholds are exceeded.

3.9 WATER RESOURCES

This section of the PEA discusses surface and groundwater resources, wetlands and Waters of the U.S. (WUS), and water quality within the study corridor. In the arid climate of southern New

Mexico, water availability and water quality are often discussed in tandem. Due to the rapid percolation and recharge of aquifers from surface waters, the quality of surface water reaching aquifers can limit the availability of potable water.

Precipitation within the study corridor contributes to surface and groundwaters within the Rio Grande basin (Robinson and Banta 1995, Consortium of the Rio Grande 1997, Texas State Historical Association 2005). One of the longest rivers in the U.S., the Rio Grande flows through New Mexico for 645 miles from its origin in Colorado draining 28,680 square miles of land above El Paso, Texas. The Rio Grande Rectification Project of 1933 resulted in the straightening of the rivers channel from Caballo Dam, north of El Paso Sector, to the Texas border. The river no longer travels the course marking the eastern boundary of the Santa Teresa Station and surface flows along this reach of the Rio Grande are now found primarily within the boundaries of the El Paso Station, Texas. The Rio Grande and ephemeral streams or washes of the project corridor are depicted by station in Figures 3-6a through 3-6c.

The Rio Grande aquifer system (Robinson and Banta 1995) underlies the majority of the El Paso Sector and is the principal aquifer of southern Colorado, central New Mexico, western Texas, and portions of Mexico. The aquifer is formed within the unconsolidated gravel, sand, silt, and clay, or partly consolidated sedimentary or volcanic materials that have filled deep valleys. The most important source of groundwater recharge to the Rio Grande aquifer system primarily originates as precipitation in the mountainous areas of Colorado. Although most precipitation entering the closed basins west of the Portillos Mountains generally flows for short distances before being lost to evaporation and transpiration, streamflow that extends beyond the mountain front provides an important source of surface recharge. Return recharge from irrigation and wastewater is an important component of surface recharge in basins near the Rio Grande. Groundwater is discharged from the Rio Grande aquifer system through evapotranspiration, withdrawal from wells and drains, discharge to streamflow, and underflow from one basin to another.

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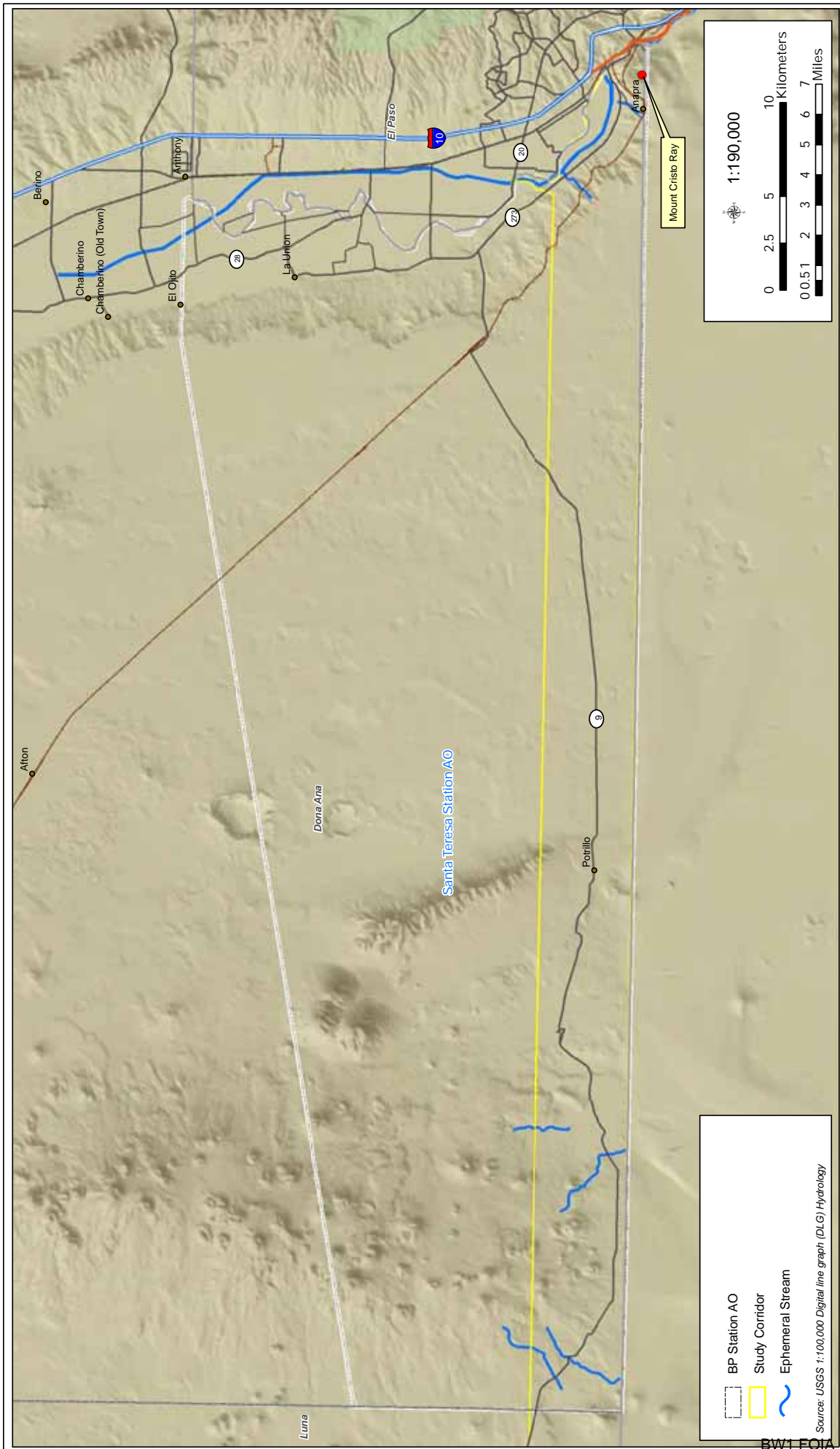


Figure 3-6a: El Paso Sector Water Resources
Santa Teresa Station

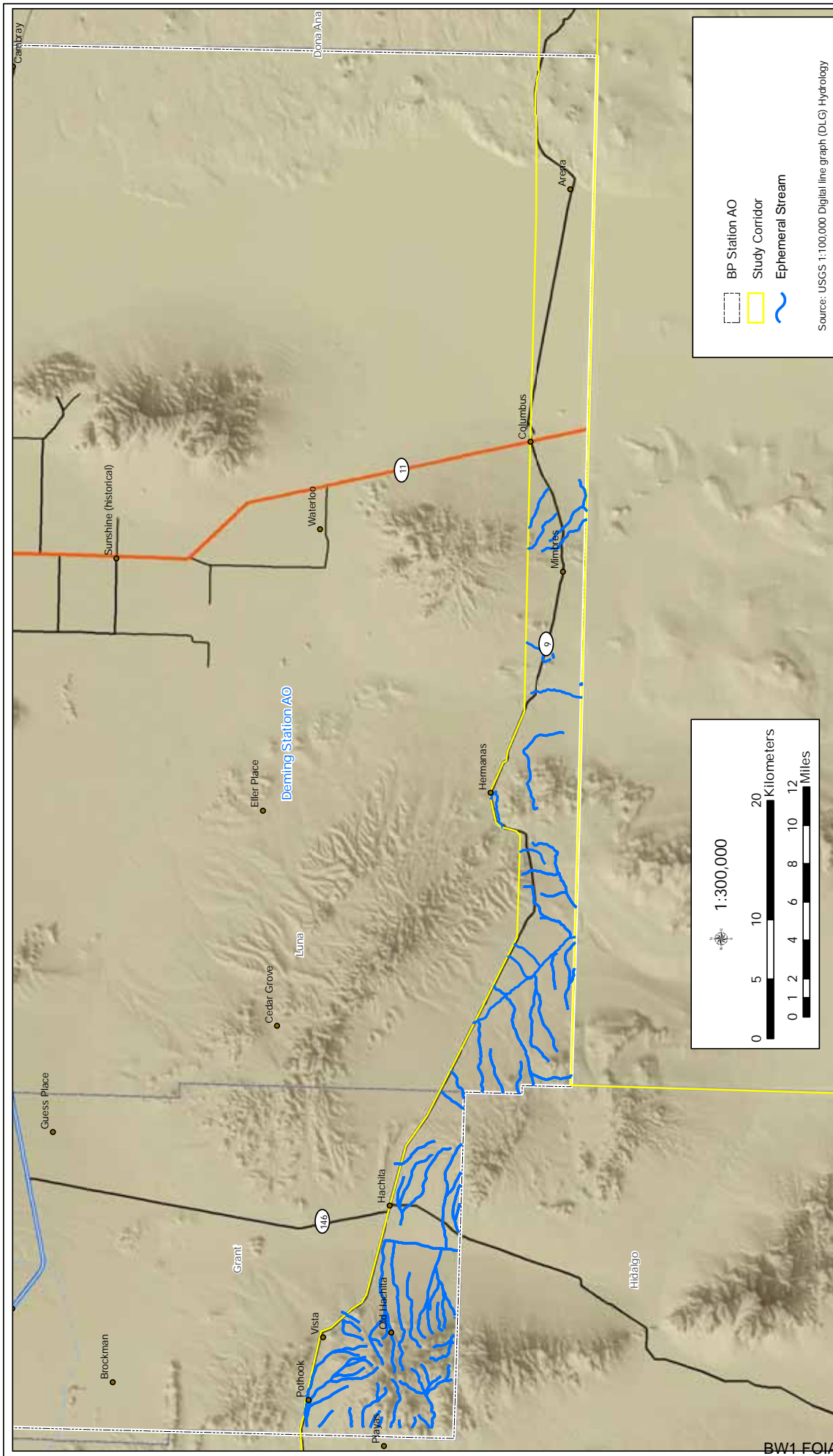


Figure 3-6b: El Paso Sector Water Resources
Deming Station

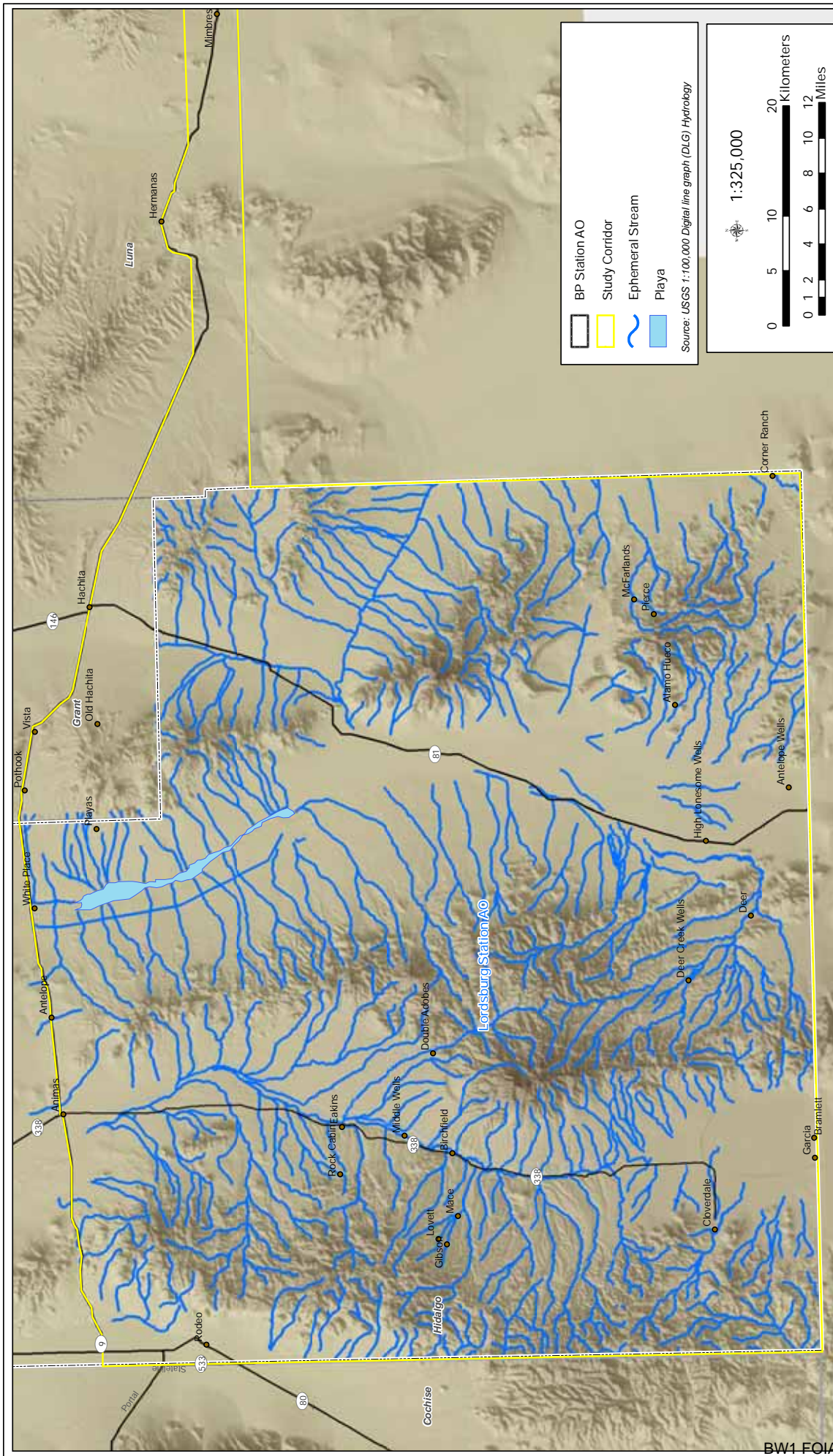


Figure 3-6c: El Paso Sector Water Resources
Lordsburg Station

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The Mesilla Basin is an open basin that underlies the Rio Grande between Caballo Dam and the narrow mountain pass between the Portillo and Franklin Mountains at El Paso, Texas. Sporadic storm water runoff, as well as wastewater and irrigation recharge, contributes directly to surface flows of the Rio Grande in this open basin. Valleys within Deming, Lordsburg and the western portion of Santa Teresa stations form closed basins that are not connected to the Rio Grande through surface flows. Streams in these basins are ephemeral, and little if any xeroriparian vegetation develops along their banks. However, groundwater moves from these basins toward the Rio Grande through an interconnected system of aquifers and historically contributed to surface flows of the Rio Grande through upward seepage.

Long-term declines in groundwater levels, resulting from a deficit between recharge and withdrawal, have occurred within heavily developed, closed basins. In the Animas Basin (Lordsburg Station), groundwater withdrawal for agricultural use caused more than 80 feet of water level decline between 1948 and 1981 (Robinson and Banta 1995). The Cloverdale and Playas Lake Basins are located along the southern border of Lordsburg station. The San Simon and San Bernadino Basins extend across the western boundary of Lordsburg Station, but are located primarily within Arizona and ultimately contribute flows to the Lower Colorado River Valley. The Mimbres Basin (Deming Station) is the primary source of water for the Deming/Columbus area and supplies water for approximately 31,000 acres of irrigated land. The Mesilla Basin (Santa Teresa Station) is an open basin, and groundwater withdrawals are offset by induced recharge, captured discharge, and surface recharge. The withdrawal of groundwater from deep within this basin's aquifer has reversed the upward seepage of groundwater. Return flow from over 54,000 acres of irrigated cropland, as well as treated and untreated wastewater returns from Las Cruces, Santa Teresa, and other population centers now seep downward and help to stabilize groundwater levels near the Rio Grande (Robinson and Banta 1995). The majority of groundwater withdrawn from the Rio Grande aquifer system is used for irrigation of cotton, peppers, onions, and pecans; however, municipal and industrial uses near El Paso and Ciudad Juarez are also a significant source of groundwater withdrawal (Robinson and Banta 1995).

Section 404 of the Clean Water Act (CWA) of 1977 (P.L. 95-217) authorizes the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), to issue permits for the discharge of dredged or fill material into WUS, including wetlands. WUS (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of

tide, and all interstate waters including interstate wetlands. WUS are further defined as, and may include, waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas. Jurisdictional boundaries for WUS are defined in the field as the ordinary high water marks which is that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory 1987). Site-specific wetland surveys would be completed for individual projects as plans for location and design are identified.

Activities that result in the dredging or filling of WUS, including wetlands, are regulated under Section 404 of the CWA. The USACE has established Nationwide Permits (NWP) to efficiently authorize common activities, which do not significantly impact WUS, including wetlands. The NWPs were modified and reissued by the USACE in the *Federal Register* on 15 January 2002, with an effective date of 18 March 2002. All NWPs have an expiration date of 19 March 2007. The USACE has the responsibility to authorize permitting under a NWP, or to require an Individual Permit.

The CWA Sections 301-320 establishes standards and enforcement guidelines for the protection of water quality. The New Mexico Water Quality Act (74-6-1 et seq., NMSA 1978) establishes the Water Quality Control Commission (WQCC) as the regulatory authority for the administration of state water pollution control including surface and groundwaters. These acts require that states categorize waters by the uses they provide and to establish maximum pollutant levels acceptable for its identified use. If water should become polluted to the extent that it is not suitable for its designated use, the WQCC is required to list this water as impaired under Section 303(d) of the CWA. In compliance with this act, the WQCC has listed two waters within the study corridor as impaired (WQCC 2004). Several reaches of the Mimbres River are listed as impaired, including the reach in the north central portion of Deming Station, because

the reaches do not support their designated use as fishery habitat. The impaired reach within the study corridor represents the final reach of the river before it ceases to flow. The Rio Grande flows through a small portion of Santa Teresa Station and is also listed as impaired. High levels of fecal coliform in the river are attributable to multiple sources including municipal, on-site waste treatment, and agricultural runoff. This impairment prevents safe contact with the water.

The majority of drinking water in the project region is supplied by groundwater within the Rio Grande aquifer system. It has been determined that present water supplies in the upper parts of the basin are barely adequate to meet demands (Robinson and Banta 1995). With diminished recharge from upstream sources and withdrawals increasing to meet the demands of the ever growing population centers along the border, groundwater contamination is a significant issue with interstate and international implications. As surface sources become an increasingly important component of recharge to the aquifer, the quality of groundwater is increasingly influenced by above ground activities. Agricultural operations and untreated domestic waste at individual homes, trailer parks, and small communities are a significant source of nitrate contamination.

3.10 HAZARDOUS MATERIALS

Solid and hazardous wastes are regulated in New Mexico by a combination of mandated laws promulgated by the EPA and the NMED Hazardous Waste Bureau. A search was conducted on the EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities, including sites that are on the National Priorities List or being considered for the list. There were 10 sites found on the CERCLIS database within Doña Ana County, three in Luna County, and one in Hidalgo County (EPA 2006). They are listed in Table 3-10.

Table 3-10. CERCLIS Database Results for El Paso County

EPA ID	Site Name	Street Address	County	In Study Corridor?
NM9141199977	BLM-LA MESA LANDFILL	17 miles south of Las Cruces	Doña Ana	No
NMD980964268	BLM-LAS CRUCES LANDFILL	Approximately 2 miles northeast of Las Cruces on East Foothills, Las Cruces	Doña Ana	No
NMD980750046	BLM-MESILLA DAM LANDFILL	T24S, R1E, Section 14 SE ¼ NE ¼ SW ¼ NE ¼, Las Cruces	Doña Ana	No
NM0000605387	DONA ANA METAL SURVEY	3 mile radius of the TX/NM/Mexico, Sunland Park	Doña Ana	Yes
NM0000605622	FORMER FARMERS MARKET AND SUPPLY COMPANY PROPERTIES	121 North main Street and 117 North Hatch	Doña Ana	No
NM0002271286	GRIGGS & WALNUT GROUND WATER PLUME	153 North Cottonwood Street, Las Cruces	Doña Ana	No
NMN000605616	MAIN STREET CLEANERS	705 North Main Street, Las Cruces	Doña Ana	No
NM8800019434	NASA WHITE SANDS TEST FACILITY	14 miles east and north of Las Cruces	Doña Ana	No
NMD986684231	STEPHENSON-BENNETT MINE	1.5 miles south of Organ	Doña Ana	No
NM2750211235	WHITE SANDS MISSILE RANGE	U.S. Army Commissary Building 1510, Las Cruces	Doña Ana	No
NM0000605167	HIGHWAY 549 SOLVENTS	Highway 549, Deming	Luna	No
NMD097119986	PERU HILL MILL	North of Deming	Luna	No
NM0000605379	TULIP DRIVE LANDFILL	Southeast corner of intersection of Highway 26, Deming	Luna	No
NM0000605610	EAST MOTEL DRIVE	Across the street from 992/984 East, Lordsburg	Hidalgo	No

Source: EPA 2006

A Phase I Environmental Site Assessment would be completed prior to the CBP entering into an easement or purchase agreement for lands to execute future projects within the study corridor. Given the industrialized nature of the City of El Paso near the U.S. – Mexico border, there is the potential for solid or hazardous wastes to be encountered within the Santa Teresa Station. The New Mexico Environment Department reports 11 former or current petroleum storage tanks within the study corridor. Four of the tank facilities have reported leaks: San Jose Fina at 222 W. Broadway in Columbus; Hachita Café (P.O. Box 95) in Hachita; New Mexico Department of Transportation (NMDOT) Hachita Patrol Yard on NM 9 in Hachita; and the Mimbres Store at 3090 Highway 35 in Mimbres (Cibas 2006). Project-specific environmental site assessments would locate any additional environmental hazards within specific project footprints.

3.11 NOISE

Noise is generally described as unwanted sound, which can be based either on objective effects (*i.e.*, hearing loss, damage to structures) or subjective judgments (*e.g.*, community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel. Sound on the decibel scale is referred to as sound level.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the EPA and has been adopted by most Federal agencies (EPA 1974). A-weighted decibel (dBA) is a measure of noise at a given, maximum level or constant state level) are listed in Table 3-12. A DNL of 65 dBA is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by EPA, as a level below which there is no adverse impact (EPA 1974).

Table 3-11. A-Weighted (dBA) Sound Levels of Typical Noise Environments

DBA	Overall Level	Noise Environment
120	Uncomfortably Loud (32 times as loud as 70 dBA)	Military jet takeoff at 50 feet
100	Very loud (8 times as loud as 70 dBA)	Jet flyover at 1,000 feet
80	Loud (2 times as loud as 70 dBA)	Down Town with some construction activity Propeller plane flyover at 1,000 feet High urban ambient sound Diesel truck 40 mph at 50 feet
70	Moderately loud	Freeway at 50 feet from pavement edge Vacuum cleaner (indoor)
60	Relatively quiet (1/2 as loud as 70 dBA)	Old urban residential area Air condition unit at 10 feet Dishwasher at 10 feet (indoor)
50	Quiet (1/4 as loud as 70 dBA)	Large transformers Small private office (indoor)
40	Very quiet (1/8 as loud as 70 dBA)	Bird calls Lowest limit of urban ambient sound
10	Extremely quiet (1/64 as loud as 70 dBA)	Just audible
0	Threshold of hearing	

Source: Wyle Research Corporation 1992

The study corridor encompasses primarily urban, sub-urban, and rural/undeveloped areas. The City of Columbus, Luna County and Sunland Park and Santa Teresa in Doña Ana County are the only areas within the study corridor that would be classified as urban. However, Columbus is a very small community and would actually be better classified as rural and marginally suburban. Due to its proximity to the El Paso Metropolitan area in Texas, Sunland Park and Santa Teresa actually serve as suburbs of El Paso and exhibit more suburban and rural aspects than urban areas. Suburban areas such as the growing residential developments emerging along the Rio Grande near Santa Teresa would have a greater level of noise compared to the rural and marginally suburban areas of Columbus or adjacent agricultural and range land. Noise levels are usually very low in rural areas, and the potential for the presence of sensitive receptors for noise is also lower.

3.12 CULTURAL RESOURCES

The NHPA establishes the Federal government's policy to provide leadership in the preservation of historic properties and to administer Federally owned or controlled historic properties in a spirit of stewardship. The NHPA established the Advisory Council on Historic Preservation (ACHP) to advocate full consideration of historic values in Federal decision-making; review Federal programs and policies to promote effectiveness, coordination, and consistency with national preservation policies; and recommend administrative and legislative improvements for protecting our Nation's heritage with due recognition of other national needs and priorities. In addition, the NHPA also established the State Historic Preservation Officers (SHPO) to administer national historic preservation program on the state level and Tribal Historic Preservation Officer (THPO) on tribal lands, where appropriate. The NHPA also establishes the National Register of Historic Places (NRHP). The NRHP is the Nation's official list of cultural resources worthy of preservation and protection. Properties listed in the NRHP include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The NPS administers the NRHP.

Section 106 of the NHPA requires the OBP to identify and assess the effects of its actions on cultural resources. The OBP must consult with appropriate state and local officials, Indian tribes, and members of the public and consider their views and concerns about historic preservation issues when making final project decisions. The historic preservation review

process mandated by Section 106 is outlined in regulations issued by the ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective January 11, 2001.

Several other important pieces of legislation include the Native American Graves Protection and Repatriation Act (NAGPRA), along with Executive Order (E.O.) 13007 and E.O. 13175. NAGPRA mandates the OBP to summarize, inventory, and repatriate cultural items in the possession of or control of the Federal agency to lineal descendants or to culturally affiliated Federally recognized Indian tribes. NAGPRA also requires that certain procedures be followed when there is an intentional excavation of or an inadvertent discovery of cultural items. E.O. 13007 was issued on May 24, 1996 in order to facilitate the implementation of the American Indian Religious Freedom Act of 1978. It specifically charges Federal agencies to: (1) accommodate, to the extent practical, American Indian access to and use of sacred sites by religious practitioners; (2) avoid adversely affecting the physical integrity of sacred sites; and (3) to maintain the confidentiality of these sites. E.O. 13175 outlines the official U.S. government policy on consultation and coordination with American tribal governments. The order emphasizes formal recognition of the American Indian Tribes' status as... "domestic independent nations" that have entered into treaties with the U.S. guaranteeing their right to self-government. It stipulates that this consultation would be done on a "government to government basis." Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activities considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources are typically divided into three major categories: archaeological resources, architectural resources, and traditional cultural resources.

Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains (*e.g.*, arrowheads, bottles). Architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the NRHP. However, more recent structures, such as Cold War era resources, may warrant protection if they manifest "exceptional significance" or the potential to gain significance in the future.

Traditional cultural resources are resources associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community. Traditional resources may include archaeological resources, locations of historic events, sacred areas, sources of raw material used to produce tools and sacred objects, topographic features, traditional hunting or gathering areas, and native plants or animals.

Under Federal regulation, only significant cultural resources warrant consideration with regard to adverse impacts resulting from a Federal undertaking. Significant archaeological, architectural, and traditional resources include those that are eligible or recommended as eligible for inclusion in the NRHP. The significance of Native American and Euroamerican archaeological resources is evaluated according to the criteria for eligibility to or inclusion to the NRHP as defined in 36 CFR 60.4 and in consultation with the SHPO. As established in the following criteria, the quality of significance is present in districts, sites, buildings, structures, and objects that:

- a) are associated with events that have made a significant contribution to the broad patterns of history, or
- b) are associated with the lives of persons significant in the past, or
- c) embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic value or represent a significant and distinguishable entity whose components may lack individual distinction, or
- d) have yielded, or may be likely to yield information important in prehistory or history.

Appendix C includes a list of all NRHP listed properties in the study corridor. In addition to these resources, there can be properties and sites within the study corridor that are NRHP-eligible but are not listed on the NRHP, as well as traditional cultural resources. It should also be noted that this list only represents known cultural resources and is not an exhaustive list of all cultural resources within the region. The NRHP is constantly being updated and revised with new properties that are routinely added.

3.12.1 The Section 106 Review Process

The OBP must determine whether its undertaking could affect cultural resources in order to initiate the Section 106 review process. If there is no potential to affect historic properties, then the OBP has no further Section 106 obligations. If there is a potential that either known or unknown historic properties could be affected, then the OBP must identify the appropriate

SHPO and/or THPO to consult with during the evaluation process. In addition, the OBP should also plan to involve the public, and identify other potential consulting parties such as the appropriate Federally recognized tribes that may claim a cultural affinity to the APE.

Once that it has been determined that the OBP's undertaking could affect known or potential cultural resources, it is necessary to identify all cultural resources within the APE. As a result, the OBP would conduct reviews of background information, consult with New Mexico SHPO (NMSHPO)/THPO as well as others, seek information from knowledgeable parties, and conduct additional studies as necessary. Often these efforts would include a standing structures survey and archaeological survey of the area in order to identify potential cultural resources that may be impacted. Cultural resources that are identified are evaluated against the NPS's published criteria outlined above in order to determine if they are eligible for inclusion on the NRHP. If the OBP finds that no potentially eligible or eligible cultural resources are present or affected it then provides documentation to the NMSHPO/THPO and, barring any objections, proceeds with its undertaking. If potentially eligible or eligible cultural resources are present then the OBP will proceed to assess possible adverse impacts.

The OBP, in consultation with the NMSHPO/THPO, makes an assessment of potential adverse effects on the identified cultural resources based on the criteria found in the ACHP's regulations. Potential adverse impacts may include but are not limited to:

- physical destruction or damage
- alteration inconsistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (see <http://www.cr.nps.gov/hps/tps/standguide/> for more information)
- relocation of the property
- change in the character of the property's use or setting
- introduction of incompatible visual, atmospheric, or audible elements
- neglect and deterioration
- transfer, lease, or sale out of Federal control without adequate preservation restrictions

If the NMSHPO and/or THPO agree that there will be no adverse effect, the OBP would proceed with the undertaking and any agreed upon conditions. If it is determined that there is an adverse effect, the OBP would begin consultation to seek ways to avoid, minimize, or mitigate the adverse effects.

The OBP would consult with the NMSHPO and/or appropriate THPO and others, who may include Indian tribes, local governments, permit or license applicants, and members of the public to resolve adverse effects to cultural resources. The ACHP may also participate in the consultation process. The consultation process usually results in a Memorandum of Agreement (MOA), which outlines the agreed-upon measures that the OBP would take to avoid, minimize, or mitigate the adverse effects. If the MOA is executed, the OBP would proceed with its undertaking under the terms of the MOA and the Section 106 process is complete.

3.12.2 Cultural Overview

Prehistoric occupation in the U.S. is generally divided into three major periods that vary regionally: the Paleo-Indian Period, the Archaic Period, and the Late Prehistoric Period. These periods are commonly subdivided into smaller temporal phases based on particular characteristics of the artifact assemblages encountered in each of the archeological regions of the U.S. The prehistoric periods and corresponding phases are defined by the presence of particular diagnostic artifacts such as projectile points, certain types of pottery, and occasionally, particular site locations. For the Historic Period, documentary information more often is used to distinguish certain phases; nevertheless, particular artifacts also can be used to recognize certain historic affiliations. A general chronological sequence for the Deming area and surrounding region is outlined below. The cultural history of the area has been divided into several distinctive periods: the Paleoindian Period (12,000 to 6000 BC), the Archaic Period (6000 BC to AD 200), the Formative Period (AD 200 to 1450), and the Historic Period (AD 1450 to Present). Table 3-12 outlines the prehistoric culture sequence for the southern New Mexico region.

3.12.2.1 Prehistoric Sequence

Despite arguments for a pre-Clovis occupation of the northern Jornada region (MacNeish 1993), the Paleoindian period is the earliest demonstrable cultural tradition in the southwest. Conventional theory dates the Paleoindian period in the study area from 12,000 to 6000 BC, although occupation may have begun earlier (Fiedel 1999). Paleoindian peoples relied on a highly mobile hunting and gathering life style. Many sites include bones of extinct Pleistocene species such as mammoth (*Mammuthus primigenius*), giant sloth (*Megatherium* sp.), and bison (*Bison antiquus*) that were killed and butchered. Campsites are rare and tend to have few remains (Cordell 1984).

Table 3-12. Prehistoric Sequence for the Jornada Mogollon Area

Period	Phase	Dates
Paleo-Indian	Plano Folsom Clovis	12,000 to 6000 BC
Archaic	Gardner Springs Keystone Fresnal Hueco	6000 to 4300 BC 4300 to 2600 BC 2600 to 900 BC 900 BC to AD 200
Formative	Early Mesilla Late Mesilla Doña Ana El Paso	AD 200 to 650 AD 750 to 1100 AD 1100 to 1200 AD 1200 to 1350/1450

The subsequent Archaic Period lasted from roughly 6000 BC to AD 200 in the deserts of southern New Mexico. Throughout most of North America, the hallmark of the Archaic Period was a diversification of the food quest, an inevitable response to the extinction of Pleistocene fauna that had been the mainstay of Paleoindian diets. Although subsistence data are rare from the earliest Archaic sites in southern New Mexico, deer, pronghorn, and other big game remains appear to be common in early Archaic deposits. Most Early Archaic populations were dispersed in small, mobile groups, foraging widely throughout much of the year (Moore 1996).

The beginning date for the Formative (or village farming) Period in southern New Mexico is ambiguous. According to Lehmer (1948), the Mesilla phase began with the appearance of village farming, permanent architecture, pottery containers, and the bow and arrow. Lehmer dated this set of events to AD 900. With larger excavation samples and better dating techniques, each of these events has been pushed back in time by centuries. Year-round villages probably appear very late in the Jornada Mogollon sequence, but the earliest known structures date to the Archaic period. Corn and squash horticulture may be as old as the structures. The earliest known Jornada pottery has been radiocarbon dated to the 6th or 7th century AD, and the beginning of ceramic production may date to about AD 200 (Moore 1996).

Concurrent with the later part of the Mesilla phase and extending into the Doña Ana phase is the Classic Mimbres occupation (or Mimbres Classic phase), which is generally agreed to have

lasted from AD 1000 to 1130. The core of the Mimbres culture centered on the Mimbres Valley and adjacent drainages north of Deming, New Mexico (Cordell 1984; Stuart and Gauthier 1984).

The Doña Ana phase (AD 1100 to 1200) was originally proposed by Lehmer (1948) to describe a transitional period between the pit house villages of the Mesilla phase and the adobe pueblos of the El Paso phase. This transitional phase has caused problems ever since it was proposed, and a number of investigators have either ignored or questioned it. The phase spans 50 to 100 years, about two to four generations, and, partly because of its brief duration, lacks architectural, ceramic, or other “type fossils.” Instead, Doña Ana material culture consists of combinations of earlier and later forms. The principal ceramic indicators of the phase, much more so than El Paso Brown Ware, are Mimbres Classic Black-on-white and Chupadero Black-on-white. Other trade wares that occur consistently but in small frequencies on Doña Ana phase sites include St. John’s Polychrome, Three Rivers Red-on-terracotta, and possibly Playas Red.

According to Lehmer (1948), the El Paso phase began about AD 1200 with the occupation of surface adobe pueblos, and ended with the abandonment of the Jornada region, about the time that early Rio Grande glaze wares appeared in the region, around AD 1400 or 1450. A typical El Paso phase site consisted of an adobe pueblo, usually lines of rooms oriented east-west, or several room blocks clustered around a plaza (Moore 1996).

3.12.2.2 Historic Period

As they approached the Rio Grande from the south, Spaniards in the 16th century viewed two mountain ranges rising out of the desert with a deep chasm between. This site they named El Paso del Norte (the Pass of the North), the future location of two border cities-Ciudad Juárez on the south or right bank of the Rio Grande, and El Paso, Texas, on the opposite side of the river. Since the 16th century, the pass has been a continental crossroads; a north-south route along a historic *camino real* (king’s highway) prevailed during the Spanish and Mexican periods, but traffic shifted to an east-west axis in the years following 1848, when the Rio Grande became an international boundary (El Paso County 2006b).

The El Paso area was inhabited for centuries by various Indian groups before the Spaniards came. The first Europeans in all probability were Álvaro Núñez Cabeza de Vaca and his three companions, survivors of an unsuccessful Spanish expedition to Florida, who passed through

the El Paso area in 1535 or 1536, although their exact route is debated by historians (El Paso County 2006b).

The Treaty of Guadalupe Hidalgo (February 2, 1848), which officially ended the Mexican War, fixed the boundary between the two nations at the Rio Grande, the Gila River, and the Colorado River, thence westward to the Pacific. All territory north of that line, known as the Mexican Cession and comprising half of Mexico's national domain, became a part of the U.S., which paid Mexico \$15 million (El Paso County 2006b).

Hidalgo County was created in 1919, and is said to have been named for the patriot priest, Miguel Hidalgo y Costilla, who in 1810 led the revolt that resulted in Mexico's independence, and was also known as Mexico's George Washington (Barnum 2006). Lordsburg is the county seat of Hidalgo county and was created on October 18, 1880 when the South Pacific railroad reached here from the west, and the fledging camp soon had a population of railroad workers, freighters, cowboys, gamblers, and merchants. One version is that the town took the surname of a man who had a chain of eating places along the railroad line. Another version is that it was the name of the engineer in charge of the construction crew. But the version most widely accepted is that it recalls Dr. Charles H. Loyd, a New York native, who came west during the Civil War and stayed to become one of Tucson's leading citizens. He and a partner started a banking and wholesale distributing business, Lord and Williams. When the railroad freight handlers at the new southern New Mexico Camp, still unnamed, came to a piece of the company's merchandise, they simply called out "Lords", a code name everyone knew, and in time the camp took the name of Lordsburg (Barnum 2006).

Deming is the county seat of Luna County and was founded in November 1881. Named for Mary Deming Crocker, wife of a railroad magnate of the Southern Pacific Railway system, the town was the result of railroad expansion to the west. The Southern Pacific, building toward the Pacific coast, reached this point in late 1881, and made preparations for the construction of a round house and repair shops. This activity furnished the incentive for the erection of a city of tents and shanties. Six months later, the Atchison, Topeka and Santa Fe Railway completed its junction with the Southern Pacific at Deming, thus assuring Deming a prominence in the southern part of New Mexico (Deming-Luna County Chamber of Commerce 2005).

Doña Ana County was created in 1852 and is the second-most populated county in the state. It was an Apache ambush on settlers that gave Las Cruces, New Mexico its name. When travelers from Taos were killed along the El Camino Real in 1830, the grieving survivors marked the graves with crosses. Thus, La Placita de Las Cruces, or the Place of the Crosses, became the frontier settlement of Las Cruces in 1849, when the first streets were marked with rawhide rope (Doña Ana County 2006).

In 1900, the county hosted an agriculturally based society with a population of 10,187. The market centers were Las Cruces, El Paso, Texas and Ciudad Juarez, Mexico. By 1990, the county was urbanized with a population of 135,510 and boasted an economy based on service and retail. Rapid population growth has occurred in and around the city of Las Cruces, as well as in the southern part of the county. The part of the county north of Hill remains primarily rural in nature (Doña Ana County 2006).

3.13 SOCIOECONOMICS

3.13.1 Population

Population in the ROI for 2003 was 5,225 in Hidalgo County which ranked 28th in the state. Luna County is part of the Deming, New Mexico Micropolitan Statistical Area. Its 2003 population of 25,692 ranked 18th in the state. Doña Ana County is part of the Las Cruces Metropolitan Statistical Area. Its 2003 population of 182,551 ranked 2nd in the state (U.S. Census Bureau 2000 and U.S. Bureau of Economic Analysis [BEA] 2003) (Table 3-13). The racial mix of Hidalgo, Luna, and Doña Ana counties consists predominantly of Caucasians and some race other than African-American, Native American, Asian, Native Hawaiian, and other Pacific Islander. The remainder is divided among African Americans, Native Americans, Asians, and Native Hawaiians and other Pacific Islanders or people claiming to be two or more races (U.S. Census Bureau 2000). The three counties within the ROI have a significant portion of the population (56 to 63 percent) that claims Hispanic or Latino origins (U.S. Census Bureau 2000).

Table 3-13. Population and Race

Geographic Region	Total Population	Race							
		White (%)	African American (%)	Native American (%)	Asian (%)	Native Hawaiian or other Pacific Islander (%)	Some Other Race (%)	Two or more Races (%)	Hispanic or Latino Origin of any Race (%)
New Mexico	1,819,046	67	2	10	1	<1	17	4	42
Hidalgo County	5,225	84	<1	1	<1	0	12	3	56
Luna County	25,692	74	<1	1	<1	0	20	3	58
Doña Ana County	182,551	68	2	2	<1	<1	25	4	63

Sources: U.S. Census Bureau 2000 and BEA 2003

3.13.2 Employment and Income

The total number of jobs in the ROI was 2,350 for Hidalgo County, 8,633 for Luna County, and 74,974 for Doña Ana County for 2000 (Table 3-14). The unemployment rate for 2000 in the ROI was 9.7 percent in Hidalgo County, 17.1 percent in Luna County, and 9.2 percent for Doña Ana County. Per Capita Personal Income (PCPI) in 2003 was \$17,370 in Hidalgo County, \$17,145 in Luna County, and \$20,756 in Doña Ana County (Table 3-15) (BEA 2003).

Table 3-14. Total Number of Jobs and Employment

Geographic Area	Total Number of Jobs			Unemployment Rate	
	1990	2000	% Change	1990 (%)	2000 (%)
Hidalgo County	2,838	2,380	-16.14	6.6	9.7
Luna County	6,452	8,885	27.39	12.7	17.1
Doña Ana County	58,156	75,557	23.04	7.8	9.2

Source: BEA 2003

Table 3-15. Per Capita Personal Income (PCPI)

	Per Capita Personal Income (PCPI) 2003	State Rank	Percent State Average	Percent National Average	Average Annual Growth Rate 1993-2003 (%)
Nation (Average)	\$30,096	NA	NA	100	4.0
New Mexico (Average)	\$29,039	NA	100	94	4.1
Hidalgo County	\$17,370	27	69	55	0.8
Luna County	\$17,145	28	69	54	3.9
Doña Ana County	\$20,756	17	83	66	4.0

NA=Not Applicable

Source: BEA 2003

The PCPI in all three counties is below both the national and state average. Total Personal Income (TPI) in 2003 was \$91 million in Hidalgo County, \$440 million in Luna County, and nearly \$4 billion for Doña Ana County (Table 3-16) (BEA 2003).

Table 3-16. Total Personal Income

Geographic Region	Total Personal Income (\$1000)		2003 State Rank	Per Cent State Total	Average Annual Growth Rate 1993-2003
	1993	2003			
New Mexico	\$354,212,659	\$651,008,617	NA	100	5.4
Hidalgo County	\$97,043	\$91,281	28	0.2	-0.6
Luna County	\$265,387	\$440,501	19	0.9	5.2
Doña Ana County	\$2,147,324	\$3,789,113	3	8.1	5.8

NA=Not Applicable
Source: BEA 2003

The percentage of all people in poverty was 27.3 in Hidalgo County, 32.9 in Luna County, and 25.4 for Doña Ana County (Table 3-17).

Table 3-17. 2000 Poverty and Median Income by County

Location	Number in Poverty of All Ages	Percentage in Poverty	Median Income
Nation	33,899,812	12.4	\$41,994
New Mexico	60,324	7.3	\$34,133
Hidalgo County	228	9.7	\$24,819
Luna County	1,472	17.1	\$20,784
Doña Ana County	6,861	9.2	\$29,808

Source: U.S. Census Bureau 2004

The percentage of people of all ages under poverty for the three counties is greater than both the percentage of people under poverty for the state of New Mexico (7.3 percent) and the U.S. (12.4 percent). Median household income for the counties in the ROI in 2000 was \$24,819 in Hidalgo County, \$20,784 in Luna County, and \$29,808 for Doña Ana County for 2000. All three counties are below the median household income of both the state of New Mexico (\$34,133) and the U.S. (\$41,994) (U.S. Census Bureau 2000).

3.13.3 Housing

A summary of housing in the ROI is given in Table 3-18. The total number of housing units was 2,848 in Hidalgo County, 11,291 in Luna County, and 65,210 for Doña Ana County. Doña Ana County had the greatest percentage of occupied housing units (91 percent) and Hidalgo County had the greatest percentage of vacant housing units (24 percent).

Table 3-18. Housing Units

County	Total Housing Units	Occupied				
		Total	Percent Occupied	Owner	Renter	Vacant
Hidalgo County	2,848	2,152	76	807	659	686
Luna County	11,291	9,397	83	3,668	2,278	3,451
Doña Ana County	65,210	59,556	91	25,572	19,259	14,725

Source: U.S. Census Bureau 2004

3.13.4 Executive Order 12898, Environmental Justice

The fair treatment of all races has been assuming an increasingly prominent role in environmental legislation and implementation of environmental statutes. In February 1994, President Clinton signed E.O. 12898 titled, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This action requires all Federal agencies to identify and address disproportionately high and adverse effect of its programs, policies, and activities on minority and low-income populations. All three counties have a large proportion of their population claiming to be of Hispanic or Latino origin (see Table 3-13). Furthermore, all three counties are below both the National and state median household income and have a greater percentage of all their populations in poverty relative to both the state and the Nation (see Table 3-17) (U.S. Census Bureau 2000). As a result there is a potential for projects to encounter both minority and low-income populations, and therefore, a potential for environmental justice issues across the ROI.

3.13.5 Executive Order 13045, Protection of Children

E.O. 13045 requires each Federal agency “to identify and assess environmental health risks and safety risks that may disproportionately affect children”; and “ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” This E.O. was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse

environmental health and safety risks than adults. In Hidalgo County, 728 individuals, or 39 percent of the population below the poverty level are children under the age of 18. In Luna County, 3,541 individuals, or 47 percent of the population below the poverty level are children under the age of 18. In Doña Ana County, 17,498 individuals, or 41 percent of the population below the poverty level are children under the age of 18. The potential for impacts to the health and safety of children is greater where projects are located near residential areas.

SECTION 4.0
ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

This section of the PEA addresses potential impacts associated with the implementation of the Proposed Action Alternative or alternatives outlined in Section 2.0. Impacts to the human and natural environment can be characterized as beneficial or adverse and can be direct or indirect based upon the result of the action. Direct impacts are those effects that are caused by the action and occur at the same time and place (40 CFR 1508.8[a]). Indirect impacts are those effects that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR 1508.8[b]). The effects can be temporary, short in duration (short-term), long lasting (long-term), or permanent. For purposes of this EA, temporary effects are defined as those that would last for the duration of the construction period; short-term impacts would last from the completion of construction to three years. Long-term impacts are defined as those impacts that would occur from three to 10 years after construction, while permanent impacts indicate an irretrievable loss or alteration.

Impacts can vary in magnitude from a slight to a total change in the environment. The impact analysis presented in this PEA is based upon existing regulatory standards, scientific and environmental knowledge and best professional opinions. The impacts on each resource are described as significant, moderate, minor (minimal), insignificant or no impact. Significant impacts are those effects that would result in substantial changes to the environment (as defined by 40 CFR 1500-1508). All impacts described are adverse unless otherwise noted. Additionally, a quantitative impact analysis was used to describe potential impacts when data were available for the given resource (*i.e.*, vegetation).

For the purposes of this PEA, it should be emphasized that all impacts are based on the assumption that all infrastructure components would be implemented. The OBP used a full build-out scenario to analyze impacts of infrastructure components. For roadways and improvements a 24-foot wide ROW was used. Where drag roads are proposed, an additional 10-foot wide ROW would be required. Permanent lights would be installed along 30 miles of the study corridor. For permanent light installation and maintenance a 20-foot wide ROW was used. Approximately 7 miles of new pedestrian barrier is proposed to be constructed. A 20-foot ROW was used for pedestrian barrier construction and maintenance. The total ROW necessary for PVBs is 8 feet wide, including a 4-foot wide installation footprint and two 2-foot wide shoulders on either side of the PVBs separating the PVBs from the border and the adjacent

patrol or drag road. Five RVSS sites would be constructed. Each site requires a maximum of a 10,000-square foot installation footprint. Furthermore, it was assumed that the maximum number and length of patrol roads, drag roads, permanent lights, pedestrian barriers, and PVBs would be constructed. Given these assumptions, the anticipated impacts from the proposed infrastructure projects in the study corridor are quantified in Table 4-1.

Table 4-1. Anticipated Impacts By Total Footprint and Infrastructure Type*

Type of Project	Area Impacted from Proposed Action Alternative (Acres)
All-Weather Patrol Roads (24-foot wide footprint x 316 miles)	920
Drag Roads (10-foot wide footprint x 78 miles)	95
Permanent Lights (20-foot wide x 30 miles)	73
Pedestrian Barrier (20-foot wide x 7 miles)	17
RVSS Tower (10,000 square feet x 5 sites)	1
PVBs (8-foot wide x 160 miles)	156
TOTAL ACRES	1,262
EXISTING DISTURBED ACREAGE	373
MAXIMUM NET IMPACTS OF PROPOSED ACTION	889

* Assumes complete build-out of all infrastructure components.

It is also assumed for the planning purposes of this PEA, that the existing patrol road and border access road ROWs would be utilized to the greatest extent practicable. Impacts from all-weather patrol roads are greatly exaggerated, because in most circumstances, 8 to 10 feet of the necessary footprint is already disturbed. Additionally, if all or a combination of TI components are deployed parallel to the U.S.-Mexico border, the ROW needed for construction would not be expected to exceed 60 feet. However, due to rugged terrain in the western portion of the study corridor, some border TI construction would be required beyond 60 feet from the U.S.-Mexico border.

4.1 LAND USE

The significance threshold established for land use is:

- The action is inconsistent with adopted land use plans or would substantially affect those resources required for, supporting, or benefiting current use

4.1.1 Alternative 1: No Action Alternative

The No Action Alternative would not directly affect land use. However, under the No Action Alternative illegal vehicle and foot traffic would continue to impact land use within the study corridor. Without improved efficiency and effectiveness provided by TI improvements, crimes attributable to IA activity would continue to affect urbanized areas. Furthermore, croplands and pasturelands would continue to be degraded by illegal traffic. The condition and extent of cattle fences along the border would not be affected by the No Action Alternative. Indirect impacts from continued IA activity would not support or benefit current land use in the study corridor.

4.1.2 Alternative 2: Proposed Action Alternative

The Proposed Action Alternative would substantially reduce illegal traffic and associated impacts within developed areas and agricultural lands. Approximately 1,262 acres could be impacted within the study corridor, of which 373 acres was previously impacted by existing roads and fences. Direct impacts to land use within each station from the construction of access roads, patrol roads, drag roads, permanent pedestrian barriers, and permanent lighting are shown below in Table 4-2.

Table 4-2. Anticipated Impacts to Land Use in the Santa Teresa, Deming, and Lordsburg Stations' AO*

Type of Land Use	Santa Teresa Station (Acres)	Deming Station (Acres)	Lordsburg Station (Acres)
Mixed Rangeland	0	12	304
Nonforested Wetland	0	3	0
Confined Feeding Operations	0	1	0
Transitional Areas	0	5	0
Evergreen Forestland	0	0	16
Shrub and Brush Rangeland	172	272	307

* Totals do not include acreage impacted by RVSS towers.

Road improvements and vehicle barriers at the border would reduce adverse impacts of illegal traffic within 1,682 acres of developed lands including 350 acres of residential lands near playas and within 540,390 acres of natural lands found within valleys throughout the Santa Teresa AO.

Land use would be impacted by the construction, use and maintenance of the components of the Proposed Action Alternative. The implementation of proposed TI would change land use from rangelands to man-made surfaces (e.g., construction of new roads and foundations for permanent lighting) or temporarily disturbed during construction resulting in a loss of productivity. However, this loss or degradation of rangelands is minimal in comparison to the amount of similar lands available within the region. For example, the estimated total impacts to rangeland would be 1,067 acres, while the total acres of rangeland within the study corridor is 1,446,515 acres. Some sections of the border would remain porous to cattle. Without some form of cattle exclusion, rangelands in the U.S. could be affected by loss of cattle to open rangeland in Mexico, open pathways for potentially diseased Mexican cattle, and easy access for cattle theft.

The Proposed Action Alternative is consistent with land use plans in the region and would not affect those resources that are required for, support, or benefit current land use; therefore, the Proposed Action Alternative would not significantly impact land use.

4.1.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

The beneficial effects of reduced illegal traffic and the adverse effects of lost productivity resulting from Alternative 3 would be equal to those described above for the Proposed Action Alternative. Additionally, this alternative would further benefit rangelands by incorporating a cattle barrier.

4.2 SOILS AND PRIME FARMLANDS

The significance threshold established for soils is:

- Result in substantial soil erosion or loss of topsoil
- Infrastructure is located on inappropriate soil types creating substantial risks to life or property
- Result in the loss of agricultural production on a substantial portion of prime farmlands or farmlands of statewide importance in the region

4.2.1 Alternative 1: No Action Alternative

The implementation of the No Action Alternative would not result in direct impacts to previously undisturbed soils; however, the OBP would not be as effective in detecting or apprehending IAs. Illegal vehicle and foot traffic would continue at its current level or increase. The continuation of illegal traffic and consequent enforcement activities has the potential of impacting soils (*i.e.*, erosion, compaction) in the study corridor. Many soils associated with the study corridor are extremely susceptible to erosion due in part to their high sand content and alluvial nature. The existing patrol roads would continue to degrade as OBP vehicles patrol, adding to existing erosion problems. Continued soil disturbance by illegal traffic as a result of new illegal trails would disturb new areas and ultimately increase soil erosion by wind and water throughout the study corridor.

4.2.2 Alternative 2: Proposed Action Alternative

Ground disturbance would be necessary to implement any of the components of the Proposed Action Alternative and based on Table 4-1, would potentially directly impact as much as 1,262 acres of soils, of which 373 acres was previously impacted by existing roads and fences. The impacts associated with the Proposed Action Alternative would primarily consist of erosion and loss of biological production. Road improvements would be designed and constructed in such a manner to reduce or eliminate long-term erosion problems. Examples of such measures, which would mitigate these effects to a level less than significant, are presented in Section 5.

Long-term direct impacts would result from the loss of biologically productive soils through the construction of the infrastructure components. Although these impacts are considered long-term, they would not result in significant impacts to the region based upon the minimal amount of soils lost (889 acres of soils impacted) related to the overall area within the study corridor (1,540,564 acres within the project corridor). Furthermore, existing roads and previously disturbed areas would be used to the fullest extent possible, thus, lessening any impacts to previously undisturbed soils. Direct impacts to soil associations in the study corridor are presented in Table 4-3.

Temporary indirect impacts would consist of possible soil erosion during construction activities; however, these impacts would be insignificant through the use of erosion control measures and the short duration of the construction process. Site-specific projects greater than 1 acre would require a Storm Water Pollution Prevention Plan (SWPPP) as part of the National Pollution

Table 4-3. Anticipated Impacts to Soils in the Santa Teresa, Deming, and Lordsburg Stations' AO*

Soil Association	Santa Teresa Station (Acres)	Deming Station (Acres)	Lordsburg Station (Acres)
Hondale-Playas	0	66	7
Mohave-Stellar-Forest	0	52	152
Nickel-Upton-Tres Hermanos	0	111	126
Rough broken land-Rock land-Lehmans	0	39	249
Hondale-Mimbres-Bluepoint	23	26	0
Eba-Cloverdale-Eicks	0	0	92
Pintura-Wink	146	0	0
Glendale-Harkey	3	0	0

* Totals do not include acreage impacted by RVSS towers.

Discharge Elimination System permit process. A SWPPP would ensure that erosion control measures such as, the use of silt fences, water bars, gabions, and reseeding of any denuded soils would dramatically reduce potential erosion impacts.

It is possible that prime farmlands or farmland of statewide importance protected by the FPPA may be present at some of the selected TI sites, and the TI would remove these soils from potential agricultural production. In order to evaluate the potential impacts on prime farmlands, the local NRCS office would be contacted once site-specific locations are identified. The local NRCS office would determine if mitigation measures would be necessary to offset the impacts of the proposed infrastructure. Border access roads are the only TI components that would be within agricultural areas that may be considered prime farmland or farmland of statewide importance. Improvements to access roads in these areas would be limited to the existing ROW to the greatest extent practicable.

Indirect beneficial impacts would also be realized from a possible reduction in disturbance to soils caused by illegal traffic.

Impacts to soils from the implementation of the Proposed Action Alternative would not result in substantial soil loss or result in the loss of agricultural production on a substantial portion of prime farmlands or farmlands of statewide importance, nor would TI would be located on inappropriate soil types. Therefore, the Proposed Action Alternative would not significantly impact soils and prime farmlands.

4.2.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

Impacts associated with the implementation of this alternative would be the same in nature and extent to that of the Proposed Action Alternative; installation of barbed wire on PVBs is not expected to result in any additional soil disturbance. While minor, and difficult to quantify, some additional benefits could be realized by reducing or eliminating the potential for uncontrolled grazing and ground disturbance by Mexican cattle crossing into the U.S., which in turn, reduces the potential for soil erosion.

As with the Proposed Action Alternative the NRCS office would be contacted once site-specific locations are identified and if necessary determine mitigation measures to implement on order to protect prime farmlands or farmland of statewide importance.

4.3 BIOLOGICAL RESOURCES

4.3.1 Vegetation Communities

Significance thresholds established for vegetation resources are:

- Any action that affects ecological processes, population size, population connectivity, migration, or individual fecundity to the extent that long-term viability of any species becomes threatened would be significant.
- Any action that results in the permanent loss or substantial degradation of sensitive or rare plant communities (*i.e.*, riparian habitats) would be significant.

4.3.1.1 Alternative 1: No Action Alternative

Under the No Action Alternative, native vegetation communities would continue to be degraded by illegal vehicle and foot traffic. Illegal traffic degrades natural vegetation communities by creating paths, trails, and ruts, damaging individual plants, altering patterns of erosion, and starting uncontrolled fires. Under the No Action Alternative, the condition of existing roads would not be improved. The condition of existing roads results in erosion and loss of soils during storm events, as well as the creation of fugitive dust during normal patrol activities. Erosion and fugitive dust have a minimal effect on vegetation by damaging roots and reducing plant respiration and photosynthesis respectively.

4.3.1.2 Alternative 2: Proposed Action Alternative

Vegetation along the study corridor within the Santa Teresa Station AO consists primarily of Chihuahuan Desertscrub communities and a few small areas of Chihuahuan Semidesert

Grassland. These communities would be temporarily impacted during the construction or improvements of patrol roads, barriers, and permanent lighting. Direct impacts to vegetation communities within the study corridor are shown in Table 4-4.

The vegetation within the study corridor of the Deming Station AO is also primarily Chihuahuan Desertscrub, but includes more small patches of Chihuahuan Semidesert Grassland. These communities would be temporarily impacted during the construction or improvements of patrol and access roads, barriers, and permanent lighting.

Table 4-4. Anticipated Impacts to Vegetation Communities in the Santa Teresa, Deming, and Lordsburg Stations' AO*

Soil Association	Santa Teresa Station (Acres)	Deming Station (Acres)	Lordsburg Station (Acres)
Chihuahuan Broadleaf Deciduous Desert Scrub	141	197	137
Chihuahuan Broadleaf Evergreen Desert Scrub	5	26	151
Chihuahuan Lowland/Swale Desert Grassland	21	14	8
Chihuahuan Foothill-Piedmont Desert Grassland	0	34	138
Short Grass Steppe	0	2	73
Irrigated Agriculture	0	7	0
Madrean Open Oak Woodland	0	3	63
Rock Outcrop	5	4	24
Rocky Mountain Subalpine and Montane Grassland	0	2	0
Barrens	0	2	0
Madrean Closed Conifer Woodland	0	3	13
Mid-Grass Prairie	0	0	17
Rocky Mountain Montane Scrub & Interior Chaparral	0	0	3
River/Lacustrine	0.1	0	0

* Totals do not include acreage impacted by RVSS towers.

Infrastructure improvements within the Lordsburg Station AO's study corridor consist of construction or improvements of patrol, access, and drag roads, as well as the construction of barriers along the border. Due to the topography of the border region in this station, proposed infrastructure includes more access roads than the other stations' AOs. Chihuahuan Desertscrub and Chihuahuan Semidesert Grassland communities would be impacted in the eastern portion of Lordsburg Station. In the western portion of the AO, these communities and

the Coahuila Chaparral and Madrean Evergreen Woodlands would be impacted. Patrol roads, drag roads, and vehicle barriers would be constructed along approximately 40 miles of the border in the Lordsburg Station AO and would permanently replace Chihuahuan Semidesert Grassland and Chihuahuan Desertscrub communities.

Heavy equipment used during the resurfacing of roads could result in inadvertent damage to above ground stems and soil disturbance within construction areas, temporarily degrading up to 899 acres of natural vegetation. Natural vegetation would be allowed to regenerate from the existing seed bank, undamaged root stocks of shrubs, and stem segments of cacti. Therefore, construction related disturbances would have minimal impacts in communities dominated by herbaceous species such as Chihuahuan Semidesert Grasslands and communities dominated by woody shrubs such as Chihuahuan Desertscrub and Coahuila Chaparral. Although some large trees within Madrean Evergreen Woodland communities could be lost during improvements to patrol and access roads, these losses would occur adjacent to existing roadways and would result in minimal impacts to oak or pine populations. The construction of drag roads, pedestrian barriers, PVBs, RVSS, and the installation of lighting would permanently replace up to 342 acres of Chihuahuan Semidesert Grassland and Chihuahuan Desertscrub communities with man-made surfaces. GAP maps do not depict any areas of riparian vegetation communities within the area of potential impacts from TI improvements. If these communities were located as part of individual projects, potential impacts would be analyzed at that time and minimized to the greatest extent practicable. Land development in the region has been relatively sparse and the communities within the study corridor are both locally and regionally common; therefore, adverse effects related to the Proposed Action Alternative would be minimal.

The minimal, temporary impacts of increased fugitive dust and the potential for erosion related to improvements and construction activities would be reduced by watering road surfaces during the construction period and long-term stabilization of soils through improved surface drainage patterns. The creation of fugitive dust resulting from dragging within the Lordsburg Station AO would affect Chihuahuan Desert Scrub and Chihuahuan Semidesert Grassland by reducing respiration and photosynthesis of plants near drag roads. The impacts of fugitive dust are difficult to quantify; however, they are expected to be minimal within these communities due to the typically small leaf area of dominant vegetation and the vertical, photosynthetic surfaces of most cacti.

Cattle from Mexico would be able to access some areas of the border and could degrade habitats if stocking rates are already maximized. Overgrazing can result in the loss of palatable and native grasses, increased erosion, and ultimately irreversible changes to the ecology of native ecosystems. However, much of the area has historically been heavily grazed and the additive effects of stray Mexican cattle would likely be minor. Because the study corridor does not contain any regionally rare or sensitive vegetation communities and has been historically degraded by grazing practices, all impacts to vegetation resulting from the Proposed Action Alternative would be minimal in historical and regional contexts.

The reduction of illegal traffic in the study corridor would ultimately benefit natural vegetation communities. Illegal foot or vehicular traffic, either on established roads or off-road routes degrades the native ecosystem by trampling vegetation and compacting soils. As vegetation is removed, soils become unstable and susceptible to compaction and erosion.

Impacts to vegetation communities would not be significant as they are not expected to inhibit ecological processes, population size, population connectivity, migration, or individual fecundity of any species within the study corridor.

4.3.1.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

Effects of Alternative 3 on natural vegetation would be similar to those resulting from the Proposed Action Alternative. Some further minor benefits would be realized by the exclusion of Mexican cattle.

4.3.2 Wildlife Resources

Significance thresholds established for wildlife resources are:

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved Federal, state or local habitat conservation plan
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident, or migratory wildlife corridors, or impede the use of native wildlife nursery sites

4.3.2.1 Alternative 1: No Action Alternative

No direct effects under the No-Action Alternative would be expected on wildlife resources. However, indirect effects would continue due to IA activities. The intensity of these indirect effects would increase as road conditions deteriorate and OBP efforts to patrol remote areas are

increasingly hampered. IA traffic may increase as a result of reduced patrol activities. IA traffic could result in a minimal loss and degradation of habitat and could cause incidental take of certain species.

4.3.2.2 Alternative 2: Proposed Action Alternative

The Proposed Action Alternative would not likely have direct impacts on fish or other aquatic species because the proposed construction activities would not take place in flowing or standing water. Construction in or near stream crossings would use BMPs and follow the SWPPP to reduce potential impacts downstream. Wildlife species which would potentially be directly impacted from the Proposed Action Alternative include small mammals, reptiles, and bird species. The greatest movement of small animals generally happens when a disturbance such as road grading, dozing, or pedestrian barrier construction occurs. Mobile animals escape to areas of similar habitat, while other slow or sedentary species of reptiles, amphibians, and small mammals could potentially be lost. This displacement or reduction in the number of animals would not significantly impact animal communities due to the presence of similar habitat adjacent to the study corridor. Additionally, less than 4 percent (7 miles) of the border would be impenetrable to some wildlife species, primarily near developed areas. Impacts to wildlife resources would not be significant, as components of the Proposed Action Alternative would be in accordance with Federal, state and local habitat conservation plans within the study corridor and would not substantially interfere with wildlife movements.

The Proposed Action Alternative would directly impact 1,262 acres of wildlife habitat including approximately 373 acres previously disturbed by existing roads and fences. The impacts to resources, such as foraging grass habitat and ground nesting habitat, would be insignificant due to the actual area of adjacent suitable habitat within the study corridor (1,540,564 acres). No long-term significant impacts to small mammal, reptiles, and bird populations would be expected. Larger terrestrial wildlife movements and migrations should not be affected by the Proposed Action Alternative. Additionally, construction activities would be conducted only during daylight hours. Therefore, short-term impacts on wildlife species are expected to be insignificant.

Impacts to wildlife resulting from the operation of lights at night could potentially occur. Additional areas beyond that disturbed from ground disturbance would be illuminated under this alternative. The increase in lights along the border could also produce some long-term

behavioral effects, although the magnitude of these effects in some areas is not presently known. Some species, such as insectivorous bats, may benefit from the concentration of insects that would be attracted to the lights. Continual exposure to light has been proven to slightly alter circadian rhythms in mammals and birds. Studies have demonstrated that under constant light, the time an animal is active, compared with the time it is at rest, increases in diurnal animals but decreases in nocturnal animals (Carpenter and Grossberg 1984). The foraging behavior of frogs was impaired under artificial light. The ability of the frogs to detect, and subsequently consume prey was significantly reduced under the enhanced light treatments relative to the ambient light treatment (Buchanan 1993). Outdoor lighting can disturb flight, navigation, vision, migration, dispersal, oviposition, mating, feeding and crypsis in some moths. In addition it may disturb circadian rhythms and photoperiodism (Frank 1988). It has also been shown that within several weeks under constant lighting, mammals and birds would quickly stabilize and reset their circadian rhythms back to their original schedules (Carpenter and Grossberg 1984). The long-term effects of an increased photoperiod on mobile wildlife species are expected to be insignificant. The “internal clocks” of many species maintain the species’ daily rhythms regardless of the extended presence of daylight or nighttime conditions (Luce 1977). Furthermore, given the vast open area within the proposed study corridor, animals can easily relocate to adjacent unaffected areas. The proposed lighting in the study corridor would illuminate approximately 30 miles of the 178 miles of U.S.-Mexico border in New Mexico. The position of the proposed light poles and shielding will allow for some dark areas to still exist within the immediate area north of the poles.

The RVSS towers could be used by raptors and birds of prey as a perch, which may increase predation upon smaller animals; however, if this were to occur no significant adverse impacts are expected. If project-specific plans require RVSS towers to exceed 200 feet in height, lighting would be installed as required by the Federal Aviation Administration (FAA). A white strobe light would be installed on the tower to avoid or minimize potential effects to migratory birds. In addition, the tower would be freestanding (i.e., no guy wires), thus reducing potential collisions by birds.

Additionally, short-term impacts to wildlife species could include those due to noise from construction activities. Physiological responses from noise range from minor responses such as an increase in heart rate to more damaging effects on metabolism and hormone balance. Long-term exposure to noise can cause excessive stimulation to the nervous system and chronic

stress that is harmful to the health of wildlife species and their reproductive fitness (Fletcher 1990). Behavioral responses vary among species of animals and even among individuals of a particular species. Variations in response may be due to temperament, sex, age, or prior experience. Minor responses include head-raising and body-shifting, and usually, more disturbed mammals will travel short distances. Panic and escape behavior results from more severe disturbances causing the animal to leave the area (Busnel and Fletcher 1978). Since the highest period of movement for most wildlife species occurs during night time or low daylight hours and construction activities would be conducted only during daylight hours, short-term impacts of noise on wildlife species are expected to be insignificant.

The construction of permanent pedestrian barriers, PVBs and use of lights could also indirectly impact wildlife due to fragmentation of habitats. However, fragmentation is also a function of the degree of contrast in quality between the focal habitat and its surroundings (Franklin *et al.* 2002). In this case, much of the project corridor is Chihuahuan Desertscrub and most of the construction would occur in previously disturbed areas. Fragmentation could remove or alter some wildlife habitat, but compared to the vast amounts of similar habitat in the proximity of the project corridor this would be expected to be insignificant. PVBs would not impede wildlife movement nor remove/alter significant amounts of wildlife habitat. While permanent pedestrian barriers would limit the movements of some wildlife species, 7 miles of these barriers would be deployed over the 178 miles of the New Mexico-Mexico border. Permanent pedestrian barriers are typically deployed near POEs and other high traffic areas. Wildlife movements would not be significantly disturbed by the deployment of permanent pedestrian barriers.

Roads could result in other indirect impacts. Improved roads, by design, increased the speed at which vehicles travel and increased traffic as well. Higher vehicular speeds decrease the response time for wildlife to avoid the vehicles, and thus, potentially increase the number of accidental wildlife deaths. However, expected patrol speeds should be less than 25 miles per hour. Impacts from road improvements would not significantly impact wildlife resources.

The reduction of illegal traffic in the study corridor would indirectly benefit wildlife habitat. Illegal foot or vehicle traffic, either on established roads or off-road routes, degrades the native ecosystem by trampling vegetation and compacting soils. Wildlife habitat is directly impacted as vegetation is lost and unable to naturally regenerate due to unstable or compacted soils. Vegetation loss reduces foraging and nesting habitat for many species.

The Proposed Action Alternative would not conflict with the provisions of approved Federal, state or local habitat conservation plans or substantially interfere with the movement of any native or migratory fish or wildlife species. Therefore, the Proposed Action Alternative would not significantly impact wildlife resources.

4.3.2.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

This alternative would have the same impact on all wildlife species as the Proposed Action Alternative. Vehicle barriers with cattle fencing designed according to NMDGF guidelines would not impede the movements of deer, pronghorn, or other large wildlife species.

4.4 PROTECTED SPECIES AND CRITICAL HABITAT

The threshold of significance established for this analysis for threatened and endangered species is:

- The action has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a sensitive or special-status (*i.e.*, threatened or endangered) in local or regional plans, policies or regulations by the USFWS and NMDGF which cannot be mitigated.

Under the ESA, formal consultation with the USFWS is required for any action that may affect Federally-listed species. Additionally, Federal agencies are required to ensure that any action authorized, funded, or carried out by such agencies would not be likely to jeopardize the continued existence of any threatened or endangered species. A copy of the consultation letters with the USFWS and NMDGF is presented in Appendix D. However, further consultation with USFWS and NMDGF would occur as site and project-specific actions are identified.

4.4.1 Alternative 1: No Action Alternative

No direct impacts are expected to occur to threatened and endangered species or their habitats since no future construction or operational activities would occur if the No Action Alternative were implemented. However, indirect effects would continue due to IA activities. The rate of these indirect effects would increase as road conditions deteriorate and OBP efforts to patrol remote areas are hampered or precluded. IA traffic may increase as a result of reduced patrol activities. IA traffic could result in loss and degradation of habitat and could cause incidental take of certain species. No new information regarding threatened or endangered species and

their habitats would be collected because surveys would not be conducted as part of OBP projects.

4.4.2 Alternative 2: Proposed Action Alternative

Based on the information provided in Section 3.4 for protected flora and fauna species and their preferred habitats, there is the potential for some Federally protected and BLM sensitive fauna species to be impacted directly and indirectly as a result of the proposed activities. However, through the use of environmental design measures discussed in Section 5.0 these impacts would be avoided or minimized. Therefore, the Proposed Action Alternative would not substantially affect Federally-listed threatened or endangered species.

Dragging operations, increased road patrols, permanent pedestrian barriers, artificial lighting and vehicle barriers have the potential for direct impacts to protected species including but not limited to fragmentation or degradation of habitat and loss of individuals. At this point in the planning process for the TI improvements in the El Paso Sector, the exact locations and extent of specific construction projects are not known. The primary option for mitigation of loss of habitat (e.g., potential bat habitat near the International Mines area) or individuals of a protected species is avoidance. Site-specific projects would be planned in such a way as to avoid areas where known protected species occur to the greatest extent practicable. For construction projects where avoidance is impractical, Section 7 consultation with the USFWS would be conducted to identify conservation measures and reasonable and prudent measures such as, using biologists to monitor construction progress and conduct post-project, long-term monitoring, as deemed necessary. Monitoring activities would be coordinated with USFWS and the appropriate state resource agencies.

Jaguars have been spotted several times in the Peloncillo Mountains of southwest New Mexico (NMDGF 2001). It is unlikely that a jaguar would be encountered during construction, but through the use of environmental design measures discussed in Section 5.0, adverse impacts to the jaguar would be avoided.

The northern aplomado falcon tends to live in open woodland or savannah, or grassy plains and valleys with scattered mesquite, yucca, and cactus. If any of the proposed construction activities were to take place in northern aplomado falcon habitat, the OBP would initiate informal

or formal Section 7 consultation, as appropriate, with USFWS to identify conservation measures or reasonable and prudent measures to off-set impacts to this species.

The southwestern willow flycatcher breeds in dense riparian habitats that include shrubs and medium sized trees, including willow, cottonwood, and mesquite (U.S. Section of the International Boundary and Water Commission [USIBWC] 2005). It is possible that the southwestern willow flycatcher would utilize vegetation near the Rio Grande. However, the southwestern willow flycatcher would not be present during the winter months. TI construction is not planned within southwestern willow flycatcher habitat in the Rio Grande; therefore, no impacts to the species or its preferred habitat would be expected from the Proposed Action Alternative.

The interior least tern could nest within the Rio Grande channel on sandbars. The only TI components that would potentially disturb nesting least terns are lighting structures within the Santa Teresa Station. Therefore, with the exception of the lighting, the Proposed Action Alternative would not have direct and indirect impacts on least terns. To avoid impacts to least terns from TI, construction would be conducted outside of the nesting season or surveys for nesting terns would be conducted prior to construction to confirm their absence. If the habitat conditions are suitable for nesting for least terns, lighting designs would be modified in that area to minimize stray light from entering the Rio Grande riparian corridor. With the incorporation of this design measure on a project-specific basis, as described in Section 5.0, impacts to this species from the lighting component of the Proposed Action Alternative would be minimized.

The range of the New Mexico ridge-nosed rattlesnake is primarily restricted to three canyons in the Animas Mountains of New Mexico and may involve habitat of approximately 1 square mile or less (*Federal Register* 1978). Through the use of mitigation measures, such as avoidance, discussed in Section 5.0, impacts from the Proposed Action Alternative would be minimized to less than significant levels.

The project corridor would cross habitat for the Chiricahua leopard frog near intermittent creeks and numerous stock tanks of the Animas and Peloncillo mountains in Hidalgo County (Degenhardt *et al.* 1996). However, through the use of mitigation measures such as avoidance, discussed in Section 5.0, impacts from the Proposed Action Alternative would be minimized to less than significant levels. For construction projects where avoidance is impractical, Section 7

consultation with the USFWS would be conducted to identify conservation measures and reasonable and prudent measures such as, using biologists to monitor construction progress and conduct post-project, long-term monitoring, as deemed necessary.

Potential direct impacts to the lesser long-nosed bat would occur from construction within or near roosting or foraging habitat. Noise, increased fugitive dust, and loss of vegetation could all impact the quality of forage available for this species. Possible indirect impacts to the lesser long-nosed bat would be highly dependant on the existence of a resident population and actual home range. Relocation or loss of individual agave plants may reduce one of the preferred food sources for the lesser long-nosed bat. Individual lesser long-nosed bats may be impacted by the Proposed Action Alternative; however, through the use of environmental design measures discussed in Section 5.0, impacts are not likely to adversely affect this species as a whole.

Beneficial impacts to Federal and state listed species and BLM sensitive species and their habitat could occur in the areas surrounding the study corridor by the reduction or elimination of illegal traffic, brush clearing, and fires caused by IAs. However, these beneficial impacts would be considered minimal.

4.4.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

This alternative would likely have no additional impacts on protected species than that of the Proposed Action Alternative. All protected species that could occur within the study corridor would not be restricted by the cattle fence. Protected birds would fly over and protected mammals, reptiles and amphibians would go over or maneuver through the strands of the cattle fence fitted PVBs. Benefits resulting from the fencing of the PVBs would include: the protection of foraging habitat from rogue cattle from Mexico.

4.5 NON-NATIVE AND INVASIVE PLANTS

The threshold of significance established for this analysis for non-native and invasive plant species is:

- The action actively promotes the spread of non-native and invasive plant species

4.5.1 Alternative 1: No Action Alternative

Under the No Action Alternative, illegal vehicular and foot traffic would continue to cross into the study corridor potentially carrying non-native and invasive plant species propagules. In addition, illegal vehicles would continue to disturb soils providing opportunities for non-native and invasive plant species to become established and potentially introducing additional non-native species to the region.

4.5.2 Alternative 2: Proposed Action Alternative

With the implementation of the Proposed Action Alternative, the effects of illegal vehicular and foot traffic would be substantially reduced. Without the use of measures outlined in Section 5.0 to prevent the spread of non-native and invasive plant species, construction activities and increased OBP access to previously inaccessible areas would result in opportunities for the spread of non-native and invasive plant species. Environmental design measures in conjunction with the Proposed Action Alternative would substantially reduce the risk of spreading non-native and invasive plant species as compared to the No Action Alternative.

4.5.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

Alternative 3 would result in an equivalent reduction in the effects of illegal traffic, and would also disturb an equal amount of soils when compared to the Proposed Action Alternative. Alternative 3 would further reduce non-native and invasive plant propagules in the study corridor relative to the other alternatives through the exclusion of Mexican cattle, which could transport these species into the U.S.

4.6 UNIQUE OR SENSITIVE AREAS

The significance thresholds established for unique and sensitive areas are:

- The action is inconsistent with adopted management plans
- The action causes the permanent loss of the characteristics that make an area unique or sensitive

4.6.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Douglas Ranger District of the CNF, Pancho Villa State Park, Mount Cristo Rey, and other unique and environmentally sensitive areas would remain vulnerable to impacts from illegal traffic. IAs can damage natural habitats and detract from the overall recreational and scenic value of these unique areas by creating trails, discarding trash,

and vandalizing structures. Furthermore, without increased efficiency and effectiveness of OBP apprehension, these unique areas would remain unsafe. This alternative would cause permanent loss of the characteristics which make the above mentioned areas unique or sensitive if the illegal traffic continues and, in particular, if it increases. Under this scenario, the No Action Alternative would have significant impacts to unique and sensitive areas.

4.6.2 Alternative 2: Proposed Action Alternative

The CNF and Pancho Villa State Park are located 10 and 3 miles, respectively, from any proposed TI and would not be directly affected by the Proposed Action Alternative. The construction of permanent pedestrian barriers and installation of permanent lighting would moderately detract from the aesthetic resources near Mount Cristo Rey. Ultimately, the increased lighting and OBP presence near the park would provide protection for those resources (e.g., recreational opportunity, historical structures) which make this park unique by improving safety to visitors and reducing vandalism. The Proposed Action Alternative would indirectly improve the efficiency and effectiveness of OBP apprehension resulting in a substantial reduction of IA degradation of, and presence within, these unique areas. The Proposed Action Alternative does not conflict with management plans, nor would it result in the permanent loss of aesthetic characteristics; therefore, the Proposed Action Alternative would not significantly impact unique and sensitive areas.

4.6.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

Alternative 3 would result in the same effects to unique and sensitive areas as those described for the Proposed Action Alternative.

4.7 AESTHETICS

The significance threshold established for aesthetics is:

- The action substantially and permanently degrades the existing visual character or quality of the region

4.7.1 Alternative 1: No Action Alternative

Under the No Action Alternative illegal vehicle and foot traffic would continue to impact aesthetics within the study corridor. Trash, graffiti, and general vandalism associated with IA traffic would continue to detract from the visual quality of urbanized areas. The trash and trails created by IAs in more remote areas is often not seen by the general public, but detracts from the sense of isolation characteristic of vast, open scrublands and grasslands.

4.7.2 Alternative 2: Proposed Action Alternative

Barriers, RVSS, and lighting would be permanent and could detract from the aesthetic resources where sensitive receptors are present (*i.e.*, residential areas and parks). PVBs could exceed the height of vegetation by up to 2 to 3 feet creating a visual break in the continuous expanse of generally undisturbed vegetation, especially in grassland communities. However, PVBs would be constructed in remote areas where sensitive receptors are absent and would not be visible from distances greater than approximately 1.5 miles; therefore, PVBs would have a minimal effect on aesthetic resources. The existing pedestrian barrier near Anapra would be expanded westward into rangelands. Although the extension of this pedestrian barrier could be visible from NM 9 and residential areas south of the highway, aesthetic impacts would be moderate. In addition, the resulting reduction of IA-related aesthetic degradation would substantially benefit this area. The location of RVSS is unknown at this time, but would likely be in remote areas where sensitive receptors are absent and thus, effects would be minimal. Permanent lighting would be expanded along the northern toe of Mount Cristo Rey and would be visible to residential and commercial areas of Sunland Park as well as recreational visitors of Mount Cristo Rey Park. However, the substantial benefits of reduced vandalism in this area would outweigh any moderate reduction of aesthetics resulting from lighting. The Proposed Action Alternative would improve the efficiency and effectiveness of OBP apprehension resulting in an indirect reduction of IA degradation of the aesthetic environment.

4.7.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

The effects of Alternative 3 on aesthetic quality would be the same as those described for the Proposed Action Alternative.

4.8 AIR QUALITY

Significance thresholds established for air quality are:

- Any action that conflicts with or obstructs implementation of the applicable air quality plan
- Any action that violates any air quality standard or contributes substantially to an existing or projected air quality violation
- Exposes sensitive receptors to substantial pollutant concentrations

4.8.1 Alternative 1: No Action Alternative

Without the proposed infrastructure projects, increased IA activity and subsequent OBP enforcement actions would exacerbate PM₁₀ within the study corridor. The continued use of dirt patrol roads without roadway improvements would result in continued degraded conditions and do little to reduce sources of wind blown dust within the region. Off-road IA activity would further increase the PM₁₀ levels regionally. However, the magnitude of these potential impacts would depend upon several variables including number of vehicle trips, climatic conditions, and soil types.

4.8.2 Alternative 2: Proposed Action Alternative

Due to regional air quality status, natural arid conditions, duration of construction activities, and the type of equipment to be used, air emissions from construction activities would continue to result in temporary adverse air quality impacts in the study corridor. However, these impacts would be temporary as construction activities would be limited to small locations and would not substantially contribute to elevated PM₁₀ levels in Luna County. Furthermore, upon completion of construction activities, routine patrol efforts and routine maintenance efforts by the OBP and from natural sources (e.g., fugitive dust) would be the only PM₁₀ emissions produced. The overall air quality would be improved as all-weather road surfaces would reduce the amount and magnitude of available wind blown dust relative to the No Action Alternative. The improved road surface would be compacted, graded and much less susceptible to effects of erosion. As a result of these TI projects, patrol efforts, apprehensions, and pursuits would likely be reduced, thus potentially reducing the current level of fugitive dust emissions.

In order to comply with the Federal Conformity Final Rule (40 CFR Parts 51 and 93) under the CAA, SIP, and county NEAPs for non-attainment areas (see Section 3.8), an air conformity analysis would be required prior to construction of any site-specific projects. The purpose would be to calculate emissions as a result of specific projects and determine if site-specific construction would generate air pollutants that would exceed current NAAQS *de minimus* thresholds. If necessary, emissions would be mitigated utilizing BACMS such as those identified in Section 3.8.3, as well as any other BMPs identified in Section 5 of this document. The air conformity analysis would be utilized as a construction and planning tool to reduce air pollutant emissions to levels below the NAAQS thresholds, thereby insuring impacts to air quality would be less than significant.

Impacts to air quality from the Proposed Action Alternative would not be significant, because all actions would comply with the applicable air quality plan, no actions would violate air quality standards or substantially contribute to an existing or projected air quality violation, and sensitive receptors would not be exposed to substantial pollutant concentrations.

4.8.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

Construction activities would be the same in footprint and duration to that of the Proposed Action Alternative. Incorporation of barbed wire on PVBs would result in only minimal additional construction time or effort and would be accomplished during the construction period. Therefore, potential air impacts would be similar to that of the Proposed Action Alternative and the same approach (an air conformity analysis with associated BACMS and BMPs) to ensure air pollutant emissions remain below NAAQS thresholds, would be required prior to construction of any site-specific project.

4.9 WATER RESOURCES

The significance thresholds for water resources are:

- The action substantially depletes groundwater supplies, or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume, or a lowering of the local groundwater table
- The action substantially alters existing drainage patterns of the site or area resulting in substantial erosion
- The action results in a permanent loss of a wetland or wetland function that can not be compensated

4.9.1 Alternative 1: No Action Alternative

The No Action Alternative would not require groundwater withdrawal for construction; therefore, this alternative would not directly impact water availability. However, without improved efficiency and effectiveness of apprehension, an increase in IA traffic and OBP activities would occur. Increasing IA activity, including illegal vehicle drive throughs would degrade intermittent or ephemeral streams within the study corridor. Due to the temporary, but torrential nature of flows in these streams, impacts to water quality from any increased sediment loads would be minimal. Contaminants in recharge waters would potentially impact groundwater in the Rio Grande basin; however, the Animas, Mesilla, and Mimbres basins would not be impacted.

4.9.2 Alternative 2: Proposed Action Alternative

Under the Proposed Action Alternative, the potential exists for increased temporary erosion during construction activities; however, as discussed above, temporarily increased sediment and turbidity would have minimal impacts on water quality. At this point in the planning process for the TI improvements in the El Paso Sector, the exact locations and extent of specific construction projects are not known. Site-specific analyses would be required for further evaluation of the amount of water necessary for the project as well as impacts to area water quality. Withdrawal from western basins (Animas, Cloverdale, Playas Lake, and Mimbres) would not be expected to affect long-term water supplies or groundwater quality. It is anticipated that required water would be minimal and due to normal development within these basins, natural recharge volumes would maintain present water levels within the aquifers. The Mesilla groundwater basin is connected to surface flows from the Rio Grande. The withdrawals from this basin would be coordinated with the USIBWC to ensure compliance with applicable international treaties. The volume of water withdrawn would not affect the public drinking water supplies, but could indirectly contribute to aquifer contamination from surface runoff.

Surface flow would permanently be altered due to road improvements and construction; however, the use of BMPs and the development of an SWPPP as described in Section 5.0 would minimize the potential for erosion and could improve erosion conditions at some crossings. The appropriate permits (*i.e.*, Section 404, nationwide permits) from the USACE would be obtained for all surface drainage crossings. The indirect effects of altered surface drainage and potential consequent erosion would have minimal beneficial and adverse impacts to water quality.

The Proposed Action Alternative would not significantly impact water resources. Proposed actions would not substantially deplete groundwater supplies, cause a net deficit in aquifer volume, or lower the groundwater table. The actions would not substantially alter existing drainage patterns or result in a permanent loss of wetlands or wetland function.

4.9.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

The impacts to water resources would be the same for this alternative as those discussed for the Proposed Action Alternative.

4.10 HAZARDOUS MATERIALS

Significance thresholds established for hazardous materials are:

- Any action that creates a hazard to the public or the environment through routine transport, use, or disposal of hazardous materials
- Be located on a site which is included on a list of hazardous materials sites and as a result would create a significant hazard to the public or the environment
- Any action that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

4.10.1 Alternative 1: No Action Alternative

Under the No Action Alternative, solid or hazardous waste would potentially be abandoned without notification by IAs. In this case, a potentially adverse impact would occur because proper disposal/clean up procedures would not be followed.

4.10.2 Alternative 2: Proposed Action Alternative

It is difficult to determine the location and quantity of hazardous waste that may be present within the general study corridor because of the random nature of illegal dumping along the border areas and the industrial nature of the El Paso, Texas border area. If hazardous materials or wastes were present, there would be a potential for exposure during construction activities. Site-specific Environmental Baseline Studies or Environmental Site Assessments would be conducted for each project where a real property transaction would occur. These studies would identify any environmental liabilities and outline appropriate remediation. Construction personnel would be informed about the potential to encounter hazardous wastes that may be present on the site from illegal dumping and the appropriate procedures to use if suspected hazardous contamination is encountered.

During construction activities, as well as daily maintenance of portable generators, fuels, oils, lubricants, and other hazardous materials would be used. Although catch pans would be used when refueling, accidental spills could occur as a result of daily maintenance procedures to portable light generators. A spill could result in potentially adverse impacts to on-site soils, and threaten the health of the local population, as well as wildlife, soils, water, and vegetation. However, the amount of fuel, lubricants, and oil is limited, and equipment necessary to quickly contain any spills would be present when refueling. A Spill Prevention, Control and Countermeasures Plan would be in place prior to construction, and all personnel would be

briefed in the implementation and responsibilities of the plan. With proper handling, storage, and disposal of solid and hazardous materials there would be no significant adverse impacts to onsite workers and neighboring flora and fauna.

No significant impacts from hazardous materials are expected resultant of the Proposed Action Alternative. The proposed action would not create a hazard to the public or environment through routine transport, use, or disposal of hazardous materials, nor would it be located on a site which is included on a list of hazardous materials sites. The proposed action would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

4.10.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

By implementing this alternative, the potential for major spills or coming into contact with hazardous waste is the same as the Proposed Action Alternative.

4.11 NOISE

Significance thresholds established for noise are:

- Any action that would result in a substantial permanent increase in ambient noise levels in the project vicinity above existing levels without the project
- Any action that would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels without the project

4.11.1 Alternative 1: No Action Alternative

No direct impacts, beneficial or adverse, would occur to ambient noise levels as a result of the No Action Alternative because no new construction activities would take place. Noise generated by OBP activities and routine maintenance would remain at the same levels within the study corridor.

4.11.2 Alternative 2: Proposed Action Alternative

Implementation of this alternative would result in temporary increases in ambient noise levels during construction. Noise levels created by construction equipment would vary greatly depending on factors such as the type of equipment, the specific model, the operation being performed, and the condition of the equipment. Noise levels would be expected to range from quiet urban levels (60 dBA) to brief periods of high urban sound (80 dBA); however, a noise of

80 dBA would be typically attenuated to 50 dBA (quiet) at a distance of 1,067 feet. The equivalent sound level of the construction activity also depends on the fraction of time that the equipment is operated over the time period of the construction. Construction activities as a result of this alternative would produce only short-term noise level increases. Temporary impacts associated with construction noise would remain at a less than significant level when compared to the DNL average. Construction activities would also increase ambient noise levels in rural and undeveloped areas that would normally have a lower DNL than in the more populated areas, but the absence of human noise receptors in the majority of the study corridor would negate the issue of noise. Potential sensitive noise receptors at recreation facilities would not be impacted by the increased noise from construction due to their distance from the construction activities.

The variety of proposed infrastructure would create different changes to noise levels upon completion of construction. The installation of pedestrian barriers, PVBs, and lighting systems would not change the ambient noise levels after the initial construction activities are completed. Generators for backup for the solar-powered RVSS would create temporary noise. Noise from the generators for solar-powered RVSS would only occur when the solar cells are incapable of creating enough power. This occurrence would be infrequent and RVSS would be located in remote areas with few, if any, human noise receptors.

Improvements to patrol roads, drag roads, and ancillary structures would not greatly increase noise levels beyond the construction stage. Traffic along these roads would be limited to OBP or private land owner use and would not cause a dramatic increase in traffic related noise levels.

Both temporary impacts due to initial construction activities or operation and maintenance of TI would result in less than significant impacts to the DNL average, because the actions would not result in substantial permanent or temporary increases in ambient noise levels in the project vicinity. However, each site-specific project would require analysis for the presence of sensitive receptors. If sensitive receptors are identified, measures would be required to ensure that noise impacts do not significantly impact individual receptors.

4.11.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

Temporary and permanent adverse impacts under this alternative would be the same as in the Proposed Action Alternative. However, by applying barbed wire to the main PVB beams to restrict trans-boundary cattle crossings, construction activities may result in a minor increase in noise relative to the Proposed Action Alternative. Although a specific design for attaching the barbed wire to the beams has not been identified, it would likely include tapping pins into the beams by either drilling or welding. In either case, associated construction noise would be minimal, yet slightly greater, than in the Proposed Action Alternative. Nonetheless, adverse impacts would be less than significant as the average DNL would not be increased significantly. As with the Proposed Action Alternative, site-specific projects would require further analysis for presence of sensitive receptors and if required, mitigating measures would be required to minimize noise related impacts in those areas.

4.12 CULTURAL RESOURCES

Significance thresholds established for cultural resources are:

- Any action that would cause a substantial adverse change in a historical or archeological resource
- Any action that would disturb any human remains, including those interred outside of formal cemeteries

4.12.1 Alternative 1: No Action Alternative

The No Action Alternative would not result in any direct effects to cultural resources. However, as illegal traffic and the consequent enforcement actions continue, indirect effects to known and undiscovered sites could be incurred.

4.12.2 Alternative 2: Proposed Action Alternative

Under the Proposed Action Alternative, the construction of various TI projects would involve ground disturbing activities that have the potential to impact previously unrecorded cultural resources, particularly archaeological sites which may not be readily evident. To reduce the level of potential impacts on cultural resources, consultation with NMSHPO and/or the appropriate THPO for the area would be required before construction to identify any known cultural resources, including historic structures, archaeological sites, or sacred sites that may have been recorded in the area. In addition, if the area has not undergone a previous archaeological survey, an investigation would be conducted in the APE of the construction in order to locate any unknown cultural resources within the area. If previously recorded or newly

recorded cultural resources are located within the APE, then mitigation measures would be required. These mitigation measures would be determined through consultation with NMSHPO and/or the appropriate THPO. In addition, if there are cultural resources, particularly historic structures, districts, or sacred sites near the proposed infrastructure, the potential exists for a visual impact to those resources. In these instances, a viewshed analysis may be appropriate to determine the extent of that impact.

The Proposed Action Alternative would not have significant impacts on cultural resources because the actions would not cause a substantial adverse change in a historical or archaeological resource or disturb any human remains that could not be mitigated.

4.12.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

The effects of Alternative 3 on cultural resources would be the same as those resulting from the Proposed Action Alternative.

4.13 SOCIOECONOMICS

The significance thresholds for socioeconomics are:

- The action causes a substantial permanent population increase or reduction in local income.
- The action causes the vacancy rate for temporary housing to fall, requiring relocation of existing people, construction of replacement housing elsewhere, or destruction of housing or businesses.
- The action increases the short or long-term demand for public services in excess of existing and projected capacities.
- The action results in any racial, ethnic, or socioeconomic group bearing a disproportionate share of adverse project effects.

4.13.1 Alternative 1: No Action Alternative

The No Action Alternative would require labor from the OBP maintenance staff, resulting in no increases to population in the project vicinity. Materials and other project expenditures for the construction activities would not be obtained through merchants in the local community.

IA activities and their associated costs would continue. Illegal activities cost U.S. citizens billions of dollars annually due to criminal activities, as well as the cost of apprehension,

detention, incarceration of criminals, and indirectly in loss of property, illegal participation in government programs, and increased insurance costs.

4.13.2 Alternative 2: Proposed Action Alternative

The proposed activities would not have substantial impacts on the local employment or income. Some construction materials will be locally purchased such as aggregate, concrete, water (in some areas), and welding supplies. Also, if military units are used, some commercial construction equipment would still be utilized. Workers may also spend a portion of their incomes in the local community. However, the duration of the projects would not be long enough for their spending to have significant impacts.

Proposed construction would not induce a permanent in-migration of people nor would there be additional permanent employees; therefore, there would be no increase in demand for housing in the ROI.

Indirect impacts to ranchers would potentially occur with the construction of PVBs along the border. Many area ranches depend on the existing barbed wire fence that serves as the boundary between the U.S. and Mexico. In the past, it has been noted that where PVBs are installed, the barbed wire fencing, which is left in place on the Mexican side of the PVB, systematically disappears. With no barbed wire fence to contain the cattle, American ranchers could potentially lose many head of cattle to Mexico. The opposite is also true; that is, cattle from Mexico could potentially enter American ranches with grave consequences, such as overgrazing or unknown diseases.

TI would benefit socioeconomics of the area by reducing the costs associated with illegal activity through the OBP's increased deterrence and apprehension capabilities.

The Proposed Action Alternative would not have a significant impact on local or regional socioeconomics. The action would not cause a substantial permanent population increase or reduction in local income. The action would not cause the vacancy rate for temporary housing to fall. The action would not displace residences or businesses. Most of the affected land is currently owned and managed by the Federal government.

4.13.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

The effects of Alternative 3 on socioeconomics would be similar to those resulting from the Proposed Action Alternative. However, with the inclusion of barbed wire on the PVBs, the impacts to ranchers would be greatly reduced relative to the Proposed Action Alternative.

4.14 CUMULATIVE IMPACTS

This section of the PEA addresses the potential cumulative impacts associated with the implementation of the alternatives outlined in Chapter 2.0 and other projects/programs that are planned for the region. The following paragraphs present a general discussion regarding cumulative effects that would be expected, irrespective of the alternative selected.

The CEQ defines cumulative impacts as the incremental impact of multiple present and future actions with individually minor, but collectively significant effects. Cumulative impacts can be concisely defined as the total effect of multiple land uses and developments, including their interrelationships, on the environment.

In 2001, the INS and JTF-N PEIS assessed the potential cumulative impacts associated with past and future OBP projects for the entire southwestern border and is herein incorporated by reference (INS 2001). In summary, the PEIS estimated that in total, 6,900 acres would be disturbed along the southwestern border by 2004. The actual area impacted by the OBP projects as of March 2006 has not even approached the 2004 estimate.

While the PEIS projected a much greater amount of infrastructure to be constructed, the lack of completed projects does not reflect that the current and future need for infrastructure has diminished. On the contrary, the need is even greater than it was in 2001. Furthermore, the increased reliance on technology-based TI such as RVSS as a force multiplier has reduced the immediate need for some other types of TI originally discussed in the PEIS.

Future projects are being planned by the OBP throughout the El Paso Sector. Other future projects in nearby OBP sectors include infrastructure programs similar to the study corridor addressed in this PEA. Currently, the El Paso Sector is undergoing similar studies for their Texas AO as in the New Mexico AO for proposed infrastructure. The El Paso Sector Texas AO study is planning improvements to or construction of 19 RVSS, improvements to or construction of approximately 99 miles of all-weather patrol roads and approximately 40 miles of drag roads, installation of permanent pedestrian barriers and permanent lights, vegetation management

along the Rio Grande, and construction of ancillary structures (*i.e.*, low water crossings and culverts).

The OBP has currently identified two site-specific projects and has begun the initial planning efforts for these projects. These two projects are (1) the installation of two 90-foot long “Jersey-type” concrete vehicle barriers under the Ysleta POE and (2) the construction of 12 individual, permanent vehicular gates at nine locations along the Rio Grande and irrigation ditch levees. Although the designs for these two projects have not been completed and the impact area is not known at this time, both the concrete vehicle barriers and the permanent vehicular gates are located in previously disturbed, unvegetated areas and would have a very small (*i.e.*, less than 1 acre total) footprint.

The OBP is also planning several facilities projects in the El Paso Sector. These include the construction of new Border Patrol Stations in the vicinity of Fort Hancock, Texas and Lordsburg, construction of a new El Paso Border Patrol Station and Sector Headquarters in El Paso and construction of two forward operating bases, one in the Deming Station AO and the other in the Lordsburg Station AO. The approximate footprint for each forward operating base is 5 acres.

The USIBWC has maintenance responsibilities on the Rio Grande within the program’s study corridor as part of the Upper Rio Grande Project. The Upper Rio Grande Project consists of five separate projects: Canalization, American Dam and Canal, Chamizal, Rectification, and a portion of the Boundary Preservation Project. The Upper Rio Grande Project is operated and maintained as one project. The project extends along the Rio Grande from Percha Diversion Dam in New Mexico downstream to the tri-county line at the southern end of Hudspeth County, Texas a distance of 270 river miles. The project is primarily for flood control, river stabilization, and to control the division of waters for beneficial use between the U.S. and Mexico pursuant to the 1906 Water Treaty with Mexico. Ongoing activities in the project vicinity associated with the Upper Rio Grande project include levee maintenance, grading and sediment removal in the main channel and at mouths of arroyos, maintenance of sediment control dams and grade control structures, clearing of drainage structures, the maintenance of the Fabens-Guadalupe and Fort Hancock-El Porvenir International Bridges, and maintenance of the American Dam and American Canal.

The CNF has implemented an Invasive Exotic Plant Management Program (USFS 2004). It is a complete, integrated vegetation management approach to the management of invasive species on the CNF. The CNF would use all methods to eradicate or contain and control populations of invasive species. The plan is intended for forest-wide management.

The Santa Teresa POE is proposed to become a major North American Free Trade Agreement (NAFTA) import/export facility for both rail and trucking traffic. Increased illegal traffic and the new NAFTA traffic will increase the need for improved border security and infrastructure (Rogers 2006).

The BLM has many on-going and planned projects for the Las Cruces District Office planning area. Many habitat improvement projects are slated over the next five years for bighorn sheep and other species in the Bootheel area in cooperation with NMDGF, the Sikes Act Habitat Stamp Program, NRCS Environmental Quality Incentive Program, and BLM challenge cost share program (Lister 2006). The BLM has communicated with the OBP on the location of water development projects in the Hatchets and Peloncillo mountains. USGS, BLM and NMDGF are conducting nectar feeding bat surveys in the Hatchets, Animas and Peloncillo mountains (Lister 2006). Additional BLM Las Cruces District Office projects are listed below.

- Apache Creek Allotment Decision
- Picacho Peak Fence
- Grazing Permit Transfer for Percha Creek, Allotment # 16085
- Hanson Quarry
- Mendosa Sand and Gravel
- El Paso Electric ROW renewal
- Jupiter Entertainment Film Permit
- Columbus Electric ROW
- El Paso Natural Gas CPS # 1260 Renewal
- Grazing transfer, Akela North, Allotment # 02031
- Dell Telephone Communication Site at Cornudas
- Valley Telephone ROW Amendment
- Key/Vangard Communication Site Assignment
- Grazing transfer of Rascon allotment
- Animas Mountains NW Allotment Boundary Fence
- Lackey Access Road ROW
- Sierra Electric Poverty Creek ROW
- Besinger Road, Pipeline EA
- Chili Challenge – 2006 SRP
- Aden Hills grassland restoration treatment
- Wamels Pond grassland restoration treatment
- Bartoo Sand and Gravel
- El Paso Electric Company
- NMDOT – Virden

- Otero County Electric Renewal
- Lazy E Ranch pipelines
- Hidalgo County oil & gas lease
- Renewal Butterfield Shooting Range R&PP - Lease
- EPEC White Sands Test Facility Forward Security Gate Powerline
- TNMP 115kiloVolt Transmission Line and Fiber Optic Line
- NASA Withdrawal Revocation
- Qwest
- El Paso Electric
- Council Tree Comm – Assignment to ZGS El Paso
- Renewal El Paso Natural Gas Company
- Renewal Sierra Nevada Property - CX
- Sierra Electric Corporation Ladder Ranch EA, N1/2 SE1/4, Sec. 13, T15S, R7W & Lot 9, Sec. 33, T10S, R8W
- Crown Communications Incorporated Renewal at Oro-Grande, T22S, R8E, Sec. 11, N2SW, SWSW
- Verizon Wireless Equipment Shelter at Steins
- Cingular Wireless ROW Amendment, T24S, R21W, Sec. 15 SE,
- Valley Telephone ROW Tps. 27, 28 S., Rs. 7, 8 W.
- Prospect Pipeline
- Valley Telephone ROW Amendment T. 27 S., R. 8 W., Secs. 28 & 33
- Lufkin Road ROW Assignment T. 16 S., Rs. 13, 14 W.
- Payan Mineral Material Sale Modification T. 24 S., R. 3 E., Sec. 28
- Hidalgo County Oil and Gas Lease Sale Tps. 20, 21 S., R. 20 W.
- EPNG Temporary Construction Areas T. 24 S., R. 3 W., Secs. 28 & 33
- EPNG Pipeline ROW Amendments T. 24 S., R. 3 W., Secs. 28 & 33
- Marytoy Pipeline Reconstruction T. 22 S., R. 12 E., Secs. 7 & 8
- Lazy E Mesquite Control T. 22 S., R. 5 W.
- Moongate Waterline and Storage Tank ROW T. 22 S., Rs. 1, 2 E.
- Seraphim Falls Film Permit Tps. 22, 23 S., R. 20 W.
- Columbus Electric Coop Powerline ROW T. 28 S., R. 19 W., Sec. 29
- Grazing Transfer and Permit Issuance for Jornada Lakes Allotment #06147, T. 14 S., Rs. 1, 2 W.
- Browning Pipeline T. 23 S., R. 18 W.
- Schafer Boundary Fence T. 23 S., R. 18 W.
- West Well Pipeline T. 12 S., R. 8 W., Sec. 3
- Thompson Canyon Pipeline Burial and Extension T. 20 S., R. 17 W., Secs. 26, 27, & 34
- Picacho Peak Trails T. 23 S., Rs. 1 W. & 1 E.
- Berino Sale Tract Road ROW T. 25 S., R. 3 E., Sec. 34
- Hidalgo County Free Use Mineral Material at Steins T. 24 S., R. 21 W., Sec. 30
- Hidalgo County Free Use Mineral Material at Animas T. 27 S., R. 18 W., Sec. 19
- Hidalgo County Free Use Mineral Material at Waldo T. 23 S., R. 18 W., Sec. 8
- Sierra County Free Use Mineral Material at Engle East T. 12 S., R. 1 E., Sec. 31
- Sierra County Free Use Mineral Material at Engle South T. 16 S., R. 2 W., Sec. 12
- Sierra County Free Use Mineral Material at Lone Mountain T. 15 S., R. 3 W., Sec. 21
- South Kelly Erosion Control T. 15 S., R. 5 W., Sec. 31 & T. 16 S., R. 5 W., Sec. 6
- Grazing Transfer and Permit Issuance for Hanover Lease Allotment #04542, T. 17 S., R. 12 W.

- CLC Monitoring Well and Water Storage Tank T. 23 S., R. 2 E., Sec. 11
- Grazing Lease Renewal for Carne Allotment #02534 T. 23 S., Rs. 7, 8 W.
- Grazing Lease Renewal for Catfish Cove Allotment #02516 T. 20 S., Rs. 10, 11 W.
- Grazing Lease Renewal for Taylor Mountain Allotment #02525 T. 20 S., Rs. 10, 11 W.
- Windmill Canyon Well T. 25 S., R. 7 W., Sec. 18
- Grazing Permit Renewal for Foster Canyon Allotment #03006 T. 21 S., R. 1 W.
- Grazing Permit Renewal for Horse Canyon Allotment #03026 T. 20 S., R. 2 W.
- Grazing Permit Renewal for Broad Canyon Allotment #03025 Tps. 20, 21 S., Rs. 1, 2 W.
- Grazing Permit Renewal for Rock Canyon Allotment #03007 T. 20 S., R. 2 W.
- Grazing Permit Renewal for Bignell Arroyo Allotment #03027 Tps. 19, 20 S., R. 2 W.
- Grazing Permit Renewal for Hersey Arroyo Allotment #03014 T. 20 S., R. 2 W.
- Grazing Permit & Lease Renewals for Seventysix Draw Allotments #02041 & #02520, Tps. 26, 27 S., Rs. 7, 8, 9 W.
- Grazing Permit Renewal for Seventeen Well Allotment #02049 T. 26 S., Rs. 8, 9 W.
- Grazing Permit Renewal for Picacho Peak Allotment #03008 Tps. 22, 23 S., Rs. 1 W. & 1 E.
- Grazing Permit Renewal for Sierra Alta Ranch Allotment #03012 Tps. 19, 20 S., Rs. 2, 3 W.
- Grazing Permit Renewal for Alamo Basin Allotment #03015 Tps. 20, 21 S., Rs. 2, 3 W.
- Grazing Permit Renewal for Little Black Mountain Allotment #03048 Tps. 24, 25 S., Rs. 1, 2 E.
- Grazing Permit Renewal for Home Ranch Allotment #03002 Tps. 23, 24, 25 S., Rs. 1, 2 W. & 1 E.
- Grazing Permit Renewal for Palma Park Allotment #03058 Tps. 18, 19 S., Rs. 2, 3 W.
- Grazing Permit Renewal for Thorn Well Allotment #03063 T. 18 S., Rs. 1, 2 W. & 1 E.
- Grazing Permit Renewal for Garfield Allotment #03061 T. 18 S., R. 4 W.
- Grazing Permit Renewal for Akela Allotment #03041 T. 25 S., R. 5 W.
- Grazing Permit Renewal for Upham Allotment #03068 T. 19 S., Rs. 1, 2 W. & 1 E.
- Grazing Lease Renewal for Hay Draw Allotment #04525 Tps. 23, 24 S., Rs. 12, 13, 14 W.
- Grazing Lease Renewal for Red Mountain Allotment #02503 Tps. 24, 25 S., R. 10 W.
- Grazing Permit and Lease Renewals for Flat Ranch Allotments #02020 & #02575, Tps. 25, 26 S., Rs. 10, 11 W.
- Grazing Permit and Lease Renewals for San Juan Ranch Allotment #02033 & Koenig Allotment #02536, Tps. 26, 27 S., Rs. 7, 8 W.
- Grazing Permit Renewal for Altamira Ranch Allotment #03040 Tps. 21, 22 S., Rs. 1 W. & 1 E.
- Grazing Permit Renewal for Akela North Allotment #02031 Tps. 23, 24 S., Rs. 5, 6 W.
- Sierra County Trespass Communication Site T. 11 S., R. 7 W., Sec. 7
- Schafer Fence and Pipeline T. 24 S., Rs. 17, 18 E.
- Jack Cain Erosion Control Tps. 13, 14 S., R. 1 E., Secs. 3, 35, & 36
- Grazing Permit Renewal for Spanish Stirrup Allotment #02035 Tps. 24, 25 S., Rs. 7, 8 W.
- Grazing Permit Renewal for Florida Mtn. Ranch Allotment #02025 Tps. 25, 26 S., Rs. 8, 9 W.
- XT Prescribed Burn Tps. 29, 30, 31 S., Rs. 19, 20 W.
- Grazing Transfer and Permit Issuance for Virden Allotment #01088 Tps. 18, 19 S., R. 21 W.
- McGregor Black Grama Study Plot T. 21 S., R. 11 E., Sec. 10
- McGregor Corrals Reconstructiion T.21S., R.11E., Sec.13; T.23S., R.12E., Sec.18; T.21S., R.12E., Sec.4

- Dogtown Ranch Fence and North Hermanas Pipeline T. 28 S., Rs. 10, 11 W.
- Detroit Pipeline South T. 19 S., R. 1 W., Sec. 29
- Change in Class of Livestock for B T Allotment #09031 Tps. 23, 24, 25 S., Rs. 11, 12, 13 E.
- Grazing Transfer and Permit Issuance for Phillips Ranch Allotment #02043, Tps. 24, 25 S., Rs. 11, 12 W.
- Stepro Mineral Materials Exploration T. 28 S., R. 5 W.; T. 21 S., R. 4 W.; & T. 25 S., R. 2 E.
- Grazing Transfer and Permit Issuance for Brokeoff Ranch Allotment #09062, Tps. 24, 25 S., Rs. 19, 20 E.
- Grazing Transfer and Permit Issuance for Hidden Valley Ranch Allotment #02009, T. 21 S., R. 9 W.
- EBID Mineral Material Permit at Hill T. 22 S., R. 1 E., Sec. 3
- EBID Mineral Material Permit at Salem T. 18 S., R. 4 W., Sec. 25
- EBID Mineral Material Permit at Mesquite T. 24 S., R. 3 E., Sec. 30
- EBID Mineral Material Permit at Mesilla Dam T. 24 S., R. 1 E., Sec. 14
- EBID Mineral Material Permit at La Union T. 27 S., R. 2 E., Sec. 13
- Garfield Dam ROW Amendment T. 18 S., R. 4 W., Sec. 10
- Tri-County Resource Management Plan Doña Ana, Otero, and Sierra Counties
- Orphey Trap and Road T. 26 S., R. 22 W., Sec. 12
- Rocky Nevarez Mineral Material Sale T. 22 S., R. 1 E., Sec. 3
- Continental Divide National Scenic Trail Realignment Luna, Grant, and Hidalgo Counties
- Doña Ana Equine Endurance Rides SRP Tps. 26, 27, 28 S., Rs. 2, 3 E.
- Flaring of Bennett Ranch Unit #1-Y and 25-1 Wells T. 26 S., R. 12 E., Secs. 14 & 25
- Crawford Competitive Land Sale T. 24 S., R. 1 W., Sec. 1
- Cooke's Peak Access Re-Route T. 20 S., R. 8 W., Sec. 29
- Snake Tank Road Re-Route T. 13 S., R. 10 E., Sec. 6
- Change in Livestock from Cattle to Goats for Willow Draw Allotment #02052, Tps. 27, 28 S., Rs. 14, 15 W.
- Change in Livestock from Cattle to Goats for Hachita Allotment #02010 Tps. 27, 28 S., Rs. 14, 15 W.
- Cornucopia Draw Prescribed Burn T. 22 S., R. 16 E., Secs. 20, 21, 28, & 29

The General Services Administration is proposing to construct several modular buildings at the existing Columbus POE in the Deming New Mexico Station AO. These buildings will be used to support POE activities.

Due to the remote and unpopulated areas of Doña Ana, Luna, and Hidalgo counties, there are very few on-going or future projects other than those conducted by the OBP and private ranching activities. The county governments report on-going general maintenance on gravel and dirt surface roads. NMDOT is currently completing a road improvement project on NM 9 in Santa Teresa and all impacts from this project are to be within the current highway ROW. Hidalgo County reports that a chip-seal project is slated to begin in the summer of 2006 on New Mexico Highway 338 south of Animas, New Mexico (Ellis 2006).

The NMDGF conducts big game surveys in the Bootheel area mountain ranges annually. NMDGF and Animal and Plant Health Inspection Service Wildlife Services are conducting predator control activities within BLM's Habitat Management Plan areas in the Bootheel.

The following assessment of potential cumulative impacts is based upon the information provided from the previously listed, past, ongoing and future projects.

4.14.1 Alternative 1: No Action Alternative

The No Action Alternative would not result in direct impacts to any resource. Therefore, the No Action Alternative would not contribute directly to cumulative impacts of all past, present, and reasonably foreseeable projects in the region of potential cumulative impacts. Other projects throughout the region of potential cumulative impacts would primarily occur near to or connecting urbanized areas or otherwise previously disturbed areas. These projects include maintenance of existing roadways and the expansion of the Santa Teresa POE. Thus, on an individual project basis impacts to soils, water resources, vegetation, wildlife, aesthetics, unique and sensitive areas, and land use that are similar in quality to those resulting from the No Action Alternative would also be minimal.

Cultural resources, socioeconomics, environmental justice and protection of children, solid and hazardous waste, and noise could all be minimally affected under the No Action Alternative. However, other projects are not likely to adversely affect these resources. Therefore, there would be no or negligible cumulative impacts to these resources as a result of the No Action Alternative.

Protected species are often given such status because of impacts that have occurred over a large portion of their range and over a long period of time. Historical projects, land management practices, or other factors such as climate change have resulted in significant changes to their environment and must be considered as a contribution to cumulative impacts. Protected species with the potential to be impacted under the No Action Alternative are the lesser long-nosed bat, the aplomado falcon, jaguar, Chiricahua leopard frog, and the Mexican ridged-nosed rattle snake. These impacts are limited to general disturbance and degradation of roosting sites and forage habitats as described in Section 4.4. Other OBP projects potentially affecting

protected species would be mitigated in consultation with the USFWS. Thus, although past activities have degraded habitats and impacts related to the No Action Alternative could be minor, the cumulative impacts to protected species would also be minor.

Indirect impacts related to IA traffic and subsequent OBP activities would continue under the No Action Alternative. These impacts have been discussed above for each resource and all are considered to be minor to moderate when considered independently. In general, the disturbance of soils can degrade vegetation communities but has limited impact on surface water quality and stream habitat. This degradation of vegetation communities has minimal impacts on wildlife habitat suitability and the suitability of lands for their current land use. IA and subsequent OBP activities would continue to contribute to elevated levels of fugitive dust during the construction period of other projects in the region. However, emissions related to the No Action Alternative would primarily occur in remote areas, while emissions related to other projects would primarily affect more urbanized areas and would be limited to the construction period. When taken together impacts related to all of the current and future projects, in combination with historic degradation related to development, would be considered a cumulative impact. Thus, the cumulative impacts to these resources resulting from increased IA traffic and other projects in the region would be minor to moderate.

4.14.2 Alternative 2: Proposed Action Alternative

The majority of the TI projects proposed under the Proposed Action Alternative would be constructed within areas that are already disturbed, continuous with existing urbanized development, or are immediately adjacent to existing infrastructure (*i.e.*, PVBs and patrol roads). This is also true of most other present and reasonably foreseeable projects within the region of potential cumulative impacts, with the exception of some BLM communications and utilities ROW projects. The disturbance or loss of soils, vegetation, and wildlife habitat must be considered a cumulative impact contributing to the historical impacts on these resources. However, these cumulative impacts would be minimized to the extent practical and the Proposed Action Alternative and current management practices would ultimately result in substantial benefits to most resources as described for above in sections 4.1 through 4.11. Impacts to historically affected resources such as rangelands, socioeconomics, noise, air quality and protected species are discussed below.

The native rangelands of the study corridor have been historically overgrazed. The implementation of this alternative would impact grasslands and socioeconomics relating to the cattle industry as discussed in sections 4.3.1 and 4.13.2. BLM actively manages several grazing allotments and permits. BLM also manages grassland restoration projects in order to combat overgrazing. Other projects (including OBP projects, Santa Teresa POE, NMDOT projects) in the study corridor would have little to no impact on these resources due to their locations near more urbanized areas or their location on previously disturbed sites. Historical overgrazing in the area since the 1800s has altered ecological processes resulting in long-term changes to the composition and structure of grasslands, which will not recover unless grazing were discontinued. Although the Proposed Action Alternative would result in a cumulative impact on the quality of grasslands available for use as forage in ranching operations in the study corridor, these impacts would be minimal in relation to historical impacts and future impacts under the No Action Alternative. The Proposed Action Alternative would also benefit these resources by reducing IA traffic. Therefore, the resulting cumulative impacts would be minimal.

Increased vehicle, aircraft and heavy equipment use in the region associated with OBP projects and projects by others (e.g., NMDOT and county governments) would increase air emissions and noise regionally but would not likely result in significant cumulative impacts. However, because the El Paso region is not in attainment for CO and PM₁₀, the cumulative impacts to air quality will be assessed on a project-specific basis for each OBP TI project as the project-specific information becomes available. Most of the OBP TI projects are proposed within a corridor along the border where there are few noise receptors present, and noise increases would be temporary; therefore, no cumulative noise impacts are anticipated.

The implementation of the proposed OBP TI and facilities projects, oil and gas leasing on BLM property, and communications and utilities ROW construction projects would have beneficial cumulative socioeconomic impacts to the region. Construction and maintenance activities associated with these projects would yield expenditures for supplies that would potentially have a moderate cumulative socioeconomic impact. Additionally, the implementation of OBP projects would reduce or eliminate IA traffic and allow for more efficient OBP response times, reducing the pressure on local law enforcement and reducing associated costs of criminal activity. The

majority of other projects in the region would also benefit socioeconomics in the region of potential cumulative impacts; therefore, the cumulative impacts to this resource would also be beneficial.

Any ground disturbing activities associated with these projects have the potential for impacts to cultural resources; however, relative to the No Action Alternative, only beneficial impacts to cultural resources would be realized. All OBP projects would be evaluated by NMSHPO under the Section 106 process. This would minimize or mitigate any project-specific impacts to cultural resources. However, the construction of TI projects and OBP facilities projects in the region would reduce IA pedestrian and vehicle traffic and allow for OBP enforcement actions to remain focused on the immediate border region. The reduction in IA traffic and subsequent OBP enforcement activities would reduce the likelihood of disturbing cultural resources in the region providing beneficial cumulative impacts to cultural resources.

4.14.3 Alternative 3: TI as in Proposed Action with Cattle Fence PVBs

Cumulative impacts from the PVBs equipped with barbed wire are similar to those described in the Proposed Action Alternative except in regards to impacts to grasslands and socioeconomics. Under this alternative, the direct cumulative impacts to grasslands and socioeconomics would be reduced relative to the Proposed Action Alternative. Cattle fencing would control the influx of Mexican cattle, which potentially serve as vectors for non-native vegetation propagules, protect limited foraging habitat resources, and protect the “per head” investments of ranchers.

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SECTION 5.0
ENVIRONMENTAL MITIGATION AND DESIGN FEATURES

5.0 ENVIRONMENTAL DESIGN MEASURES

This chapter describes those measures that would be implemented to reduce or eliminate potential adverse impacts to the human and natural environment. Many of these measures have been incorporated as standard operating procedures for the OBP. The environmental design measures are presented for each resource category that could be potentially affected. The proposed measures would be coordinated through the appropriate agencies and land managers/administrators prior to initiation of construction. Environmental design measures will vary on a case-by-case basis once site-specific projects are identified and will be discussed in greater detail in subsequent tiered NEPA documents.

5.1 SOILS

Before project specific construction activities can occur that may affect prime farmlands, a NRCS Form AD 1006 will be submitted to the NRCS for a farmland conversion rating. Soil erosion control can be greatly enhanced with the use of BMPs. BMPs are designed to reduce the impacts of non-point source pollution during forestry, construction, agriculture and cultivation activities. BMPs include such things as buffers around water bodies to reduce the risk of siltation, installation of water bars to slow the flow of water down hill, and placement of culverts, low water crossings or bridges where streams need to be traversed. These BMPs would greatly reduce the amount of soil lost to runoff during heavy rain events and ensure the integrity of the construction site. In arid areas, BMPs can also reduce impacts to air quality by reducing the amount of airborne soil, sand, and particulate matter.

Vehicular traffic associated with engineering, construction, and patrol activities should remain on established roads to the maximum extent practicable. Previously disturbed routes and locations would be utilized to the maximum extent practicable to reduce soil disturbances. Areas with highly erodible soils would be given special consideration to ensure incorporation of various compaction techniques, aggregate materials, wetting compounds, and revegetation to ameliorate the subsequent soil erosion. Erosion control measures such as waterbars, gabions, hay bales, and reseeding would be implemented during and after construction activities. Revegetation efforts will be needed to ensure long-term recovery of the area and to prevent significant soil erosion problems. Native seeds and plants will be used to assist in the conservation and enhancement of protected species as required by Section 7(a)(1) of the ESA.

5.2 BIOLOGICAL RESOURCES

Construction equipment would be cleaned following BMPs described in the SWPPP for each project prior to entering and departing the project corridor to minimize the spread and establishment of non-native invasive plant species. Soil disturbances in temporary impact areas would be rehabilitated. Rehabilitation would include re-vegetating or the distribution of organic and geological materials over the disturbed area to reduce erosion while allowing the area to naturally vegetate. Additionally, the disturbed and restored areas will be monitored for the spread and eventual eradication of non-native invasive plant species as part of periodic maintenance activities.

To minimize vegetation impacts, designated travel corridors would be marked with easily observed removable or biodegradable markers, and travel would be restricted to the project corridor and staging areas. Native seeds or plants, which are compatible with the enhancement of protected species, will be used to the extent practicable, as required under Section 7(a)(1) of the ESA.

Environmental design measures which should be considered, especially in areas that support protected species, include the development of vegetation corridors to avoid habitat fragmentation and the proper placement and size of culverts to adequately convey stormwater and allow wildlife to safely cross roads. The primary option for mitigation of loss of habitat (e.g., potential bat habitat near the International Mines area) or individuals of a protected species is avoidance. Site-specific projects would be planned in such a way as to avoid areas where known protected species occur to the greatest extent practicable. For construction projects where avoidance is impractical, Section 7 consultation with the USFWS would be conducted to identify conservation measures and reasonable and prudent measures such as, using biologists to monitor construction progress and conduct post-project, long-term monitoring, as deemed necessary.

The Migratory Bird Treaty Act requires that Federal agencies coordinate with the USFWS if a construction activity would result in the take of a migratory bird. If construction or clearing activities are scheduled during the nesting season (March through September) surveys would be performed to identify active nests in the project vicinity including burrows suitable for nesting

burrowing owls. If construction activities would result in the take of a migratory bird, then coordination with the USFWS, NMDGF and applicable permits would be obtained prior to construction or clearing activities.

Another environmental design measure that would be considered is to schedule all construction activities outside the nesting season negating the requirement for nesting bird surveys. The proposed RVSS and other communication towers would also comply with USFWS guidelines for reducing fatal bird strikes. These guidelines recommend co-locating new antennae arrays on existing towers whenever possible and to build towers as short as possible without guy wires or lighting. White strobe lights should also be used whenever lights are necessary for aviation safety.

Local threatened and endangered species lists and critical habitat information are included in Section 3. Species and habitat surveys would be performed in the proposed study corridors to determine whether any species or habitat may be detrimentally affected prior to the construction of these projects. If so, then formal Section 7 consultation with the USFWS would be conducted to identify conservation measures.

Proposed construction activities that take place in northern aplomado falcon habitat should be planned to avoid the falcon's breeding season (March through September). In situations where the breeding season cannot be avoided, pre-construction surveys should be conducted to search the area for nests or breeding pairs. If either are found, consultation with USFWS must be immediate and construction must halt.

The range of the New Mexico ridge-nosed rattlesnake is primarily restricted to Indian, Bear, and Spring Canyons in the Animas Mountains of New Mexico. If avoidance is not practicable, vegetation must be maintained or reseeded to serve as ground cover for the snake. A biological monitor may be necessary during construction to ensure the safety of individual snakes.

In the project area, the Chiricahua leopard frog occurs primarily in or near intermittent creeks and stock tanks of the Animas and Peloncillo Mountains of Hildago County. For projects in the Animas and Peloncillo mountains, all necessary water should be hauled in from off-site, as any available water on-site is essential to the frog's survival. A SWPPP must be followed to reduce impacts from altering surface water flows and pollution.

To avoid possible indirect impacts to the lesser long-nosed bat, vegetation, especially ocotillo, paloverde, prickly pears, and agave must be protected, maintained, or re-established in project areas to the greatest extent practicable. The bat is easily disturbed while roosting, so known roosting sites must be avoided.

5.3 WATER RESOURCES

The installation of infrastructure projects would likely require a SWPPP as part of the National Pollution Discharge Elimination System permit process because the area of disturbance exceeds 1 acre.

If jurisdictional WUS, including wetlands, are located within the study corridor and are unavoidable, early coordination with the regulatory section of the local USACE district, EPA, the county NRCS, and other appropriate agencies would be completed prior to the initiation of the construction activities. Applicable CWA Section 404/401 permit procedures would be completed prior to any work in these areas and compensatory mitigation implemented, as appropriate. When identified, wetlands would be flagged, and silt fences and hay bales placed around the wetland to eliminate and impede any unnecessary impacts to the wetland areas.

5.4 HAZARDOUS MATERIALS

To minimize potential impacts from solid and hazardous materials, all fuels, waste oils, and solvents will continue to be collected and stored in tanks or drums within secondary containment system that consist of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be allowed only at the existing fuel pump island and all vehicles will have drip pans during storage to contain minor spills and drips. Although it will be unlikely for a major spill to occur, any spill of 5 gallons or more will be contained immediately with the application of an absorbent material (e.g., granular, pillow, sock, etc.). Any major spill of 5 gallons or more of a hazardous or regulated substance will be reported immediately to the on-site environmental personnel who will notify appropriate Federal and state agencies. A designated environmental advisor will be on-site during construction activities in case of such accidents.

All used oil and solvents will continue to be recycled if possible. All non-recyclable hazardous and regulated wastes will continue to be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures.

5.5 AESTHETICS

Some environmental design measures to minimize potential impacts resulting from RVSS and utility-associated towers would include, but not be limited to, painting the RVSS and utility-associated towers to blend into their background and the use of decorative fencing in urban areas where there is a high aesthetic value. Lighting would be shielded and wattage would be limited to 5 to 6 lumens in order to minimize the extent of impacted areas.

5.6 CULTURAL RESOURCES

Prior to any ground disturbing activities, consultation will be initiated with NMSHPO and the appropriate THPO. Site records checks and archaeological surveys will be conducted at each specific project location in order to determine if there are any cultural resources that will be impacted during construction. If significant cultural resources are discovered within the area to be impacted, the appropriate mitigation measures would be implemented to minimize the impacts to those resources. These mitigation measures would be developed in consultation with NMSHPO and the appropriate THPO along with other interested parties. The preferred mitigation measure would be avoidance if possible.

In areas where RVSS and communication towers would be constructed, sites would be assessed for visual impacts to any cultural resources within eyesight of the new equipment. If there is a potential for significant visual impacts to cultural resources, particularly structures and/or historic districts, then a viewshed analysis would be appropriate in order to determine the extent of the visual impacts.

Through all levels of the Section 106 and NEPA process, consultation would be conducted with the appropriate Federally recognized tribes that claim a cultural affinity to the impacted area. These consultations could take the form of formal consultation letters, reviews of the NEPA documents, and reviews of the cultural resources survey reports for the appropriate projects.

The construction of RVSS and communication poles and towers can be further expedited through the establishment of Programmatic Agreements (PAs) with the appropriate Native American tribes outlining the types of projects and conditions in which direct consultation would be appropriate. These PEAs would be developed in accordance with appropriate Federal laws regarding Native American consultation between the Federal entity and the Native American Tribes.

SECTION 6.0
PUBLIC INVOLVEMENT

6.0 PUBLIC INVOLVEMENT

6.1 AGENCY COORDINATION

This chapter discusses consultation and coordination that has occurred during preparation of this document. Included are contacts that were made during the development of the action alternatives and writing of the PEA. Formal and informal coordination were conducted with the following agencies:

- U.S. Fish and Wildlife Service (USFWS)
- JTF-N
- Bureau of Land Management (BLM)
- New Mexico Department of Game and Fish (NMDGF)
- New Mexico Environmental Department (NMED)
- U.S. Section, International Boundary and Water Commission (USIBWC)
- U.S. Environmental Protection Agency (EPA)
- Natural Resource Conservation Service (NRCS)
- New Mexico State Historical Association
- Comanche Nation
- Ft. Sill Apache Tribe
- Kiowa Tribe of Oklahoma
- White Mountain Apache Tribal Council
- Mescalero Apache Tribe
- Ysleta del Sur Pueblo
- Good Neighbor Environmental Board

6.2 PUBLIC SCOPING

Prior to the development of the Draft PEA the public was afforded the opportunity to participate in the scoping process. Public meetings were held by the OBP to solicit public comments and concerns in reference to the alternatives proposed in the PEA. Public notices were published in a local and regional newspaper in both English and Spanish. In El Paso (Ysleta area) one individual participated in the scoping process; in Santa Teresa, seven individuals participated; in Deming, 10 individuals participated and in Fort Hancock one individual participated. The sign-in

sheets from all four meetings are provided in Appendix D. Comments were received only at the Deming scoping meeting. Besides a BLM representative at the Deming scoping meeting, no outside Federal or state agencies attended any of the scoping meetings. Concerns from Senator Bingaman's representative as well as area ranchers were addressed during the preparation of this PEA by including cattle fencing as part of the PVB design. Comments received during the scoping process are located in Appendix D.

Meetings were held at the following locations and dates:

- El Paso, Texas at Riverside High School, January 17, 2006
- Santa Teresa, New Mexico at Santa Teresa High School, January 18, 2006
- Deming, New Mexico at the Mimbres Valley Special Events Center, January 19, 2006
- Fort Hancock, Texas at Fort Hancock High School, January 20, 2006

6.3 PUBLIC REVIEW

The draft PEA was made available to the public for 30 days. The NOA was published in The El Paso Times, el Diario USA, the Deming Headlight, the Las Cruces Sun-News, and the Alamogordo News in both Spanish and English and was also available electronically at <http://aerc.swf.usace.army.mil>. Exhibits 1 through 5 are affidavits of publication of the NOA from local newspapers. During this period, one letter was received from the USIBWC and two letters from New Mexico agencies. Their main concern was future cooperation during the planning phases for projects to be tiered from this PEA. The OBP's responses to all comments are included in Appendix D. The NOA for the final PEA was published in the same local newspapers as the draft NOA in both Spanish and English. It is included in this document as Exhibit 6. All correspondence sent or received during the preparation of this PEA is included as Appendix E.

Exhibit 1. Affidavit of Publication – El Paso Times

PUBLISHERS AFFIDAVIT

GSRC

STATE OF TEXAS
COUNTY OF EL PASO

Before me, a Notary Public in and for El Paso County, State of Texas, on this day personally appeared TERRIE CARTER who state upon oath that he is the CLASSIFIED SUPERVISOR of the El Paso Times, a daily newspaper published in the City and County of El Paso, State of Texas, which is a newspaper of general circulation and which has been continuously and regularly published for the period of not less than one year in the said County of El Paso, and that he was such upon the dates herein mentioned:

That the LEGAL copy was published in the El Paso Times for the ONE DAY. The dates of such publication being as follows, to wit APRIL 27, 2006

Subscribed and sworn to before me, Signed Jani A. Carter

This the 27th day of APRIL 2006

Bela Duques



NOTICE OF
AVAILABILITY
PROGRAMMATIC
ENVIRONMENTAL
ASSESSMENT
For Proposed Tactical In-
frastructure Projects
Within the El Paso Sector
Office of Border Patrol
El Paso and Hudspeth
Counties, Texas
Dona Ana, Laramie, and
Hidalgo Counties,
New Mexico
The public is hereby notified of the availability of the draft Programmatic Environmental Assessment (PEA) for the construction, use, and maintenance of tactical infrastructure (TI) along the U.S.-Mexico border within the Office of Border Patrol (OBP).
El Paso Sector. These PEA will address TI proposed for El Paso Sector stations along the international border in Texas and New Mexico. The proposed actions include the construction of patrol roads, drug cook, permanent perimeter barriers, remote video surveillance systems, land access bridges, gates, vegetation management and permanent lighting structures.
The study area for these PEA for the western

TI is defined the area of operations between Texas Highways 20 and the U.S. - Mexico border in Hudspeth and El Paso counties. For stations in New Mexico, the study area is the international border north to NM Highways or no less than three miles of the international border in Dona Ana, Laramie, and Hidalgo counties. For the purpose of these PEA, all proposed TI projects on the Texas station are located near the Rio Grande and south of New Mexico Highway 9 for the New Mexico stations. The draft PEA for Texas stations will be available for review at the El Paso Public Library - School Campus Branch and Fort Hancock Public Library. The draft PEA for New Mexico stations will be available for review at the El Paso Public Library - School Campus Branch, the Thomas Branigan Memorial Library in Lordsburg, the Marshall Memorial Library in Deming, and the Lindberg Heritage Library. The documents can also be viewed via the internet at <http://www.obp.usa.gov>.

For additional information or to provide comments, please contact Mr. Charles M. McGee, Jr., U.S. Army Corps of Engineers, Environmental Research Branch, P.O. Box 17580, Fort Worth, Texas 76161-0580 or by FAX at 817-555-6499.

Exhibit 3. Affidavit of Publication – Alamogordo Daily News

AFFIDAVIT OF PUBLICATION

ALAMOGORDO,
STATE OF NEW
MEXICO
COUNTY OF OTERO.

} SS.

I, RICHARD COLTHARP, being duly sworn, on my oath say that I am the Publisher of the Alamogordo Daily News, a Newspaper of daily circulation, published and printed in the English language at the City of Alamogordo, Otero County, State of New Mexico. That the Alamogordo Daily News has been regularly published and issued for more than nine months prior to the date of the first publication hereinafter mentioned.

That the attached notice was published 1 time in 1 issue of said newspaper, and not in any supplement thereof, the first publication being on April 27, 2006.

That said notice was published in accordance with the laws of the State of New Mexico.

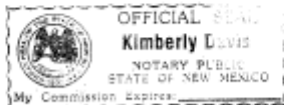
Publisher

Subscribed in my presence and sworn before me this the
1 day of May

Notary Public

My commission expires 2-20-09

Legal #0265



Legal #0265
NOTICE OF
AVAILABILITY
PROGRAMMATIC
ENVIRONMENTAL
ASSESSMENT
For Proposed Tactical
Infrastructure Projects
Within the El Paso Sector
Office of Border Patrol
Dona Ana, Luna, and
Hidalgo Counties,
New Mexico
The public is hereby notified of the availability of the draft Programmatic Environmental Assessment (PEA) for the construction, use, and maintenance of Tactical Infrastructure (TI) along the U.S.-Mexico border within the El Paso Sector. This PEA will address TI proposed for El Paso Sector stations within New Mexico. The proposed actions include the construction of patrol roads, drag roads, permanent pedestrian barriers, permanent vehicle lanes, remote video camera systems, and permanent lighting structures. The study area for this PEA is defined as all El

Paso Sector stations and of operations north of the U.S.-Mexico border as far north as New Mexico Highway 9, but no less than 3 miles north of the international border in Dona Ana, Luna, and Hidalgo counties. For the purpose of this PEA, all proposed TI projects are located south of New Mexico Highway 9. The draft PEA will be available for review at the El Paso Public Library - Richard Burgos Branch, the Thomas Branigan Memorial Library in Las Cruces, the Marshall Memorial Library in Deming, and the Lordsburg-Hidalgo Library and is also available at <http://www.swi.usace.army.mil>.

For additional information or to provide comments, please contact Mr. Charles H. McGee, Jr., U.S. Army Corps of Engineers, Environmental Resources Branch, P.O. Box 17300, Fort Worth, Texas 76102-0300 or by FAX at (817) 885-6499.

NOTIFICACION DE
DISPONIBILIDAD
VALORACION
AMBIENTAL
PROGRAMADICA
Para Proyectos de
Infraestructura Tactica
Dentro de el Sector de
El Paso
Oficina de la Patrulla
Frontalera
Coronados de Dona Ana,
Luna e Hidalgo,
Nuevo Mexico

Se le notifica a al publico de la disponibilidad de un ante proyecto PEA por sus siglas en ingles para la construcción, uso y mantenimiento de la Infraestructura Tactica (TI) por sus siglas en ingles a lo largo de la Frontera entre los Estados Unidos y Mexico dentro del Sector de El Paso. Esta PEA se dirigira a TI propuesta para las estaciones de el sector de El Paso dentro de Nuevo Mexico. Las acciones propuestas incluyen construcciones de caminos de terraceria, caminos de petrolage, barreras permanentes para pedestres, barreras permanentes para vehiculos, sistemas de vigilancia de video y estructura

se suministrado permanente. El area de estudio para estos PEAs se define como todas las estaciones de el sector de El Paso en el area de operaciones al norte de la frontera entre EU. Mexico incluye al norte como la carretera 9 de Nuevo Mexico y al norte 3 millas de la frontera internacional de los condados de Dona Ana, Luna e Hidalgo. Para proyectos de estos PEAs, todos los proyectos TI propuestos estan localizados al sur de la corre-

lona 9 de Nuevo Mexico. El ante proyecto del PEA estara disponible para ser revisado en la Biblioteca publica de El Paso - Richard Burgos, en la Biblioteca Thomas Branigan Memorial en las Cruces, y en la Biblioteca Marshall Memorial en Deming, y en la Biblioteca Lordsburg-Hidalgo. Los documentos tambien pueden ser revisados en <http://www.swi.usace.army.mil>.

Para informacion adicional o para proveer comentarios, favor de contactar al Sr. Charles H. McGee, Jr., U.S. Army Corps of Engineers, Branch de Recursos Ambientales, P.O. Box 17300, Fort Worth Texas 76102-0300 a via FAX al (817) 885-6499.

Exhibit 4. Affidavit of Publication – Deming Headlight

The Deming Headlight April 27, 2006

<p>Legal Notices 152</p> <p>Item 10 of the Act. This Notice of Ordinance is published in NASA 4-37-7.</p> <p>(s) Scott Vinton Scott Vinton Luna County Manager No. 2750 IT (4-27)</p>	<p>Legal Notices 152</p> <p>Richard Benge Branch, The Thomas Bringer Memorial Library in Las Cruces, the Man- dala Memorial Library in Deming, and the Lordsburg-Hidalgo Li- brary and is also avail- able at http://www.lunacounty.org.</p>	<p>Legal Notices 152</p> <p>do permanente. El area de estudio para estos PEA se de- finen como todas las co- munidades de el sector de El Paso en el area de operaciones al norte de la frontera entre E.U. - Mexico han lejos al norte como la carretera 9 de Nuevo Mexico y al sur como la frontera internacional de las condiciones de Dora Ana, Loma y Hidalgo. Para propósitos de co- ordenar PEA, todos los proyectos de propuestas están localizados al sur de la carretera 9 de Nuevo Mexico. El este proyecto del PEA estará disponible para ser revisados en la Bi- blioteca publica de El Paso - Richard Bringer, en la Biblioteca Thomas Bringer Memorial en las Cruces y en la Biblioteca Mandala Memorial en Deming, y en la Biblioteca Lordsburg-Hidalgo. Los documentos también po- drán ser revisados en http://www.lunacounty.org.</p>
<p>LEGAL NOTICE</p> <p>The Board of Luna County Commissioners will hold a regular meeting on Thursday, May 11, 2006 at 10:00 a.m. The meet- ing will be held in the conference room of the Luna County Annex, 321 Spruce, Deming, New Mexico.</p> <p>An Agenda will be pro- vided to the public in the County Administration Office located in the Luna County Annex, 321 W. Spruce at least 24 hours prior to the meet- ing.</p>	<p>For additional infor- mation or to provide com- ments, please contact Mr. Charles H. McGee, Jr., U.S. Army Corps of Engineers, Environmental Re- sources Branch, 819 Taylor Street, Box 3244, P.O. Box 17300, Fort Worth, Texas, 76102.</p>	<p>Para información adi- cional o para proveer comentarios, favor de contactar al Sr. Charles H. McGee, Jr., U.S. Army Corps of Engineers, Branch de Recursos Ambien- tales, P.O. Box 17300, Fort Worth, Texas 76102-0300 o via FAX 817-771-5099.</p>
<p>NOTICE OF PROPOSED ORDINANCE</p> <p>At the May 11, 2006 reg- ular meeting to be held at 321 W. Spruce at 10:00 a.m. in Deming, New Mexico, the Luna County Board of County Commissioners will con- sider adoption of a re- vised personnel ordi- nance entitled "Luna County Personnel Ordinance". The ordinance provides for personnel policies pertaining to the employment of a person by Luna County. The proposed ordinance depends on certain pre- existing county personnel ordinances.</p>	<p>NOTIFICATION DE DISPONIBILIDAD VALORACION AMBIENTAL PROGRAMADA</p> <p>Para Propósitos de Propósitos de Infor- mación Técnica Dentro de el Sector de El Paso Oficina de la Ruta de Frontieras Condado de Dora Ana, Loma y Hidalgo, Nuevo Mexico.</p>	<p>Se le notifica a el máximo de la disponibili- dad de un este pro- yecto (PEA) por las di- gitales en inglés, pero la construcción, uso y mantenimiento de la Infraestructura Técnica (IT) por las digitales en la frontera entre los Es- tados Unidos y Mexico dentro del Sector de El Paso. Estos PEA se di- rigen al IT proyecto para los sectores de el sector de El Paso Dentro de Nuevo Mexico. Los acciones propuestas incluyen construcción de comu- nidades de terreno, caminos de patrullaje, barreras permanentes para peatones, barre- ras permanentes para vehículos, sistemas de vigilancia de video y estructura de alambre.</p>
<p>NOTICE OF AVAILABILITY</p> <p>PROGRAMMATIC ENVIRONMENTAL ASSESSMENT</p> <p>For Proposed Tactical Infrastructure Projects Within the El Paso Sector Office of Border Patrol Dora Ana, Loma, and Hidalgo Counties, New Mexico</p>	<p>The public is hereby notified of the availabil- ity of the draft Pro- grammatic Environmental Assessment (PEA) for the con- struction, use, and main- tenance of Tactical In- frastructure (IT) along the U.S.-Mexico Border within the El Paso Sector. This PEA will address IT proposed for El Paso Sector stations within New Mexico. The proposed actions include the construction of paved roads, dog roads, permanent pedestrian barriers, permanent vehicle bar- riers, remote video sur- veillance systems, and permanent lighting structures.</p>	<p>The study area for this PEA is defined as all El Paso Sector station- ing of operations south of the U.S.-Mexi- co border as far north as New Mexico High- way 9, but to cover New Mexico Highway 9 or no less than 5 miles north of the in- ternational border in Dora Ana, Loma, and Hidalgo counties. For the purpose of this PEA, all proposed IT projects are located south of New Mexico Highway 9. The draft PEA will be available for review at the El Paso Public Library</p>
<p>NOTICE OF AVAILABILITY</p> <p>PROGRAMMATIC ENVIRONMENTAL ASSESSMENT</p> <p>For Proposed Tactical Infrastructure Projects Within the El Paso Sector Office of Border Patrol Dora Ana, Loma, and Hidalgo Counties, New Mexico</p>	<p>The public is hereby notified of the availabil- ity of the draft Pro- grammatic Environmental Assessment (PEA) for the con- struction, use, and main- tenance of Tactical In- frastructure (IT) along the U.S.-Mexico Border within the El Paso Sector. This PEA will address IT proposed for El Paso Sector stations within New Mexico. The proposed actions include the construction of paved roads, dog roads, permanent pedestrian barriers, permanent vehicle bar- riers, remote video sur- veillance systems, and permanent lighting structures.</p>	<p>The study area for this PEA is defined as all El Paso Sector station- ing of operations south of the U.S.-Mexi- co border as far north as New Mexico High- way 9, but to cover New Mexico Highway 9 or no less than 5 miles north of the in- ternational border in Dora Ana, Loma, and Hidalgo counties. For the purpose of this PEA, all proposed IT projects are located south of New Mexico Highway 9. The draft PEA will be available for review at the El Paso Public Library</p>
<p>NOTICE OF AVAILABILITY</p> <p>PROGRAMMATIC ENVIRONMENTAL ASSESSMENT</p> <p>For Proposed Tactical Infrastructure Projects Within the El Paso Sector Office of Border Patrol Dora Ana, Loma, and Hidalgo Counties, New Mexico</p>	<p>The public is hereby notified of the availabil- ity of the draft Pro- grammatic Environmental Assessment (PEA) for the con- struction, use, and main- tenance of Tactical In- frastructure (IT) along the U.S.-Mexico Border within the El Paso Sector. This PEA will address IT proposed for El Paso Sector stations within New Mexico. The proposed actions include the construction of paved roads, dog roads, permanent pedestrian barriers, permanent vehicle bar- riers, remote video sur- veillance systems, and permanent lighting structures.</p>	<p>The study area for this PEA is defined as all El Paso Sector station- ing of operations south of the U.S.-Mexi- co border as far north as New Mexico High- way 9, but to cover New Mexico Highway 9 or no less than 5 miles north of the in- ternational border in Dora Ana, Loma, and Hidalgo counties. For the purpose of this PEA, all proposed IT projects are located south of New Mexico Highway 9. The draft PEA will be available for review at the El Paso Public Library</p>


Exhibit 5. Affidavit of Publication – Las Cruces Sun News

PROOF OF PUBLICATION

Lou Hendren, being duly sworn, deposes and says that he is the Classified Manager of the Las Cruces Sun-News, a newspaper published daily in the county of Dona Ana, State of New Mexico; that the notice 36091 per clipping attached was published once a week/day in regular and entire issue of said newspaper and not in any supplement thereof for 1 consecutive week(s) day(s), the first publication was in the issue dated April 27, 2006 and the last publication was April 27, 2006.

Dependent further states this newspaper is duly qualified to publish legal notice or advertisements within the meaning of Sec. Chapter 167, Laws of 1937.

Signed


Classified Manager
Official Position

STATE OF NEW MEXICO

ss.

County of Dona Ana

Subscribed and sworn before me this

17th day of May
2006


Notary Public in and for
Dona Ana County, New Mexico
Oct 7, 2009
My Term Expires

NOTICE OF AVAILABILITY

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
For Proposed Tactical Infrastructure Projects
Within the El Paso Sector
Office of Border Patrol
Dona Ana, Luna, and Hidalgo Counties, New Mexico

The public is hereby notified of the availability of the draft Programmatic Environmental Assessment (PEA) for the construction, use, and maintenance of Tactical Infrastructure (TI) along the U.S.-Mexico border within the El Paso Sector. This PEA will address TI proposed for El Paso Sector stations within New Mexico. The proposed actions

include the construction of lighted roads, drug racks, permanent pedestrian barriers, permanent vehicle barriers, remote video surveillance systems, and permanent lighting structures.

The study area for this PEA is defined as all El Paso Sector stations' area of operations north of the U.S.-Mexico border on or north of New Mexico Highway 9, but no less than 3 miles north of the international border in Dona Ana, Luna, and Hidalgo counties. For the purpose of this PEA, all proposed TI projects are located south of New Mexico Highway 9. The draft PEA will be available for review at the El Paso Public Library - Richard S. Davis Branch, the Thompson Memorial Library in Las Cruces, the Marshall Memorial Library in Lordsburg, and the Lordsburg-Hidalgo Library and is also available at <http://taco.southwest.com>.

For additional information or to provide comments, please contact Mr. Charles H. McGregor, Jr., U.S. Army Corps of Engineers, Environmental Sciences Branch, P.O. Box 17308, Fort Worth, Texas 76157-0308 or by FAX at (817) 886-6499. PUB NO: 36091
PUB DATE: April 27, 2006

1000328158

Exhibit 6. Notice of Availability of the final PEA.

NOTICE OF AVAILABILITY

**PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
For Proposed Tactical Infrastructure Projects
Within the El Paso Sector
Office of Border Patrol
Dona Ana, Luna, and Hidalgo Counties, New Mexico**

The public is hereby notified of the availability of the final Programmatic Environmental Assessment (PEA) for the construction, use, and maintenance of Tactical Infrastructure (TI) along the U.S.-Mexico Border within the El Paso Sector. This PEA will address TI proposed for El Paso Sector stations within New Mexico. The proposed actions include the construction of patrol roads, drag roads, permanent pedestrian barriers, permanent vehicle barriers, remote video surveillance systems, and permanent lighting structures.

The study area for this PEA is defined as all El Paso Sector stations' area of operations north of the U.S.-Mexico border as far north as New Mexico Highway 9, but no less than 3 miles north of the international border in Dona Ana, Luna, and Hidalgo counties. For the purpose of this PEA, all proposed TI projects are located south of New Mexico Highway 9. The final PEA will be available for review at the El Paso Public Library - Richard Burges Branch, the Thomas Branigan Memorial Library in Las Cruces, the Marshall Memorial Library in Deming, and the Lordsburg-Hidalgo Library and is also available at <http://aerc.swf.usace.army.mil>.

For additional information, please contact Mr. Charles H. McGregor, Jr., U.S. Army Corps of Engineers, Environmental Resources Branch, P.O. Box 17300, Fort Worth, Texas 76102-0300 or by FAX at (817) 886-6499.

SECTION 7.0
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7.0 REFERENCES

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SECTION 8.0
LIST OF PREPARERS



8.0 LIST OF PREPARERS

The following people were primarily responsible for preparing this Environmental Assessment.

NAME	AGENCY/ ORGANIZATION	DISCIPLINE/EXPERTISE	EXPERIENCE	ROLE IN PREPARING EA
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Greg Lacy	Gulf South Research Corporation	Wildlife Biology	10 years NEPA and natural resources	EA preparation (wildlife resources and protected species and critical habitat)

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SECTION 9.0
ACRONYMS

9.0 ACRONYMS

ACHP	Advisory Council on Historic Preservation
AHPA	Archeological and Historical Preservation Act
ACEC	Area of Critical Concern
AO	Area of Operations
APE	Area of Potential Effect
AEFSO	Arizona Ecological Field Service Office
BACM	Best Available Control Measures
BEA	Bureau of Economic Analysis
BLM	Bureau of Land Management
BMP	Best Management Practices
CAA	Clean Air Act
CBP	Customs and Border Protection
CEQ	Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFR	Code of Federal Regulations
CNF	Coronado National Forest
CWA	Clean Water Act
dBA	A Weighted Decibel
DHS	Department of Homeland Security
DNL	Day-night Average Sound Level
DOI	Department of the Interior
E.O.	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FPPA	Farmland Protection Policy Act
FY	Fiscal Year
GAP	Gap Analysis Program
IA	Illegal Alien
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
INA	Immigration and Nationality Act
INS	Immigration and Naturalization Service
JTF-6	Joint Task Force 6
JTF-N	Joint Task Force North
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NAFTA	North American Free Trade Agreement
NAGPRA	Native American Graves Protection and Repatriation Act
NEAPS	Natural Events Action Plan
NEPA	National Environmental Policy Act
NHPA	National Historical Preservation Act
NM 9	New Mexico Highway 9
NMAAQS	New Mexico Ambient Air Quality Standards
NMED	New Mexico Environmental Department
NMDGF	New Mexico Department of Game and Fish
NMDOT	New Mexico Department of Transportation
NMSHPO	New Mexico State Historic Preservation Officer

NOA	Notice of Availability
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NWP	Nationwide Permits
OBP	Office of Border Patrol
PCPI	Per Capita Personal Income
PEA	Programmatic Environmental Assessment
PEIS	Programmatic Environmental Impact Statement
POE	Port of Entry
PVB	Permanent Vehicle Barriers
ROI	Region of Influence
ROW	Right-of-way
RVSS	Remote Video Surveillance System
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SWPPP	Storm Water Pollution Prevention Plan
THPO	Tribal Historic Preservation Officer
TI	Tactical Infrastructure
TPI	Total Personal Income
U.S.	United States
USIBWC	U.S. Section of International Boundary Water Commission
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WCA	Wildlife Conservation Act
WQCC	Water Quality Control Commission
WUS	Waters of the U.S.

APPENDIX A
LIST OF SOIL TYPES AND PRIME FARMLANDS IN STUDY CORRIDOR

Soils found Within Major soil Associations Within the Study Area

Hondale-Mimbres-Bluepoint association	
NAME	STATION
Hondale-Verhalen association	Deming
Lehmans-Lithic Haplargids complex	Deming
Lithic Haplargids-Rock outcrop association	Deming
Nickel-Upton association	Deming
Stellar-Mohave association	Deming
Stellar-Verhalen-Mimbres association	Deming
Tres Hermanos-Upton complex	Deming
Akela very gravelly loam	Deming
Berino and Mohave soils	Deming
Eba very gravelly clay loam	Deming
Hondale-Mimbres complex	Deming
Lehmans very rocky loam	Deming
Lehmans extremely rocky loam	Deming
Mimbres and Verhalen soils	Deming
Mohave sandy clay loam	Deming
Nickel very gravelly sandy loam	Deming
Nickel-Tres Hermanos complex	Deming
Rock land	Deming
Rough broken and Rock land	Deming
Stellar silty clay loam	Deming
Stony land	Deming
Tres Hermanos gravelly loam	Deming
Turney-Dona Ana association	Deming
Upton gravelly sandy loam,	Deming

Pintura-Bernino-Simona	
NAME	STATION
Mohave sandy loam, 0 to 1 percent slopes	Deming
Sonoita gravelly sandy loam	Deming
Verhalen silty clay loam, alkali	Deming
Hondale-Verhalen association, 0 to 3 percent slopes	Deming
Stellar-Mohave association, 0 to 5 percent slopes	Deming
Tres Hermanos-Upton complex, 0 to 5 percent slopes	Deming
Akela very gravelly loam, 0 to 10 percent slopes	Deming
Akela very gravelly loam, 10 to 25 percent slopes	Deming
Dona Ana sandy loam	Deming
Dona Ana sandy clay loam	Deming
Hondale loam	Deming
Hondale soils, strongly alkali	Deming
Jal fine sandy loam	Deming
Maricopa sandy loam	Deming
Mimbres silty clay loam, alkali	Deming
Mimbres and Verhalen soils	Deming
Mohave sandy clay loam, 0 to 3 percent slopes	Deming
Nickel-Tres Hermanos complex	Deming

Pintura-Berino complex, eroded	Deming
Sonoita gravelly sandy loam	Deming
Stellar silty clay loam	Deming
Stellar silty clay loam, 0 to 1 percent slopes	Deming
Tres Hermanos gravelly loam, 1 to 5 percent slopes	Deming
Upton gravelly sandy loam, 3 to 10 percent slopes	Deming
Verhalen silty clay loam	Deming

Mohave-Stellar association	
NAME	STATION
Dune land-Pintura complex	Deming
Simona loamy sand, 0 to 5 percent slopes	Deming
Akela very gravelly loam, 0 to 10 percent slopes	Deming
Lehmans extremely rocky loam, 10 to 25 percent slope	Deming
Pintura-Berino complex, eroded	Deming
Sonoita gravelly sandy loam	Deming

Nickel-Upton-Tres Hermanos association	
NAME	STATION
Gila loam	Deming
Akela very gravelly loam, 0 to 10 percent slopes	Deming
Bluepoint loamy sand, 0 to 3 percent slopes	Deming
Bluepoint-Onite association	Deming
Dona Ana sandy loam	Deming
Hondale loam	Deming
Hondale soils, strongly alkali	Deming
Hondale soils, eroded	Deming
Hondale-Mimbres complex	Deming
Hondale-Bluepoint association	Deming
Maricopa sandy loam	Deming
Mimbres loam	Deming
Mimbres silty clay loam, alkali	Deming
Pintura-Berino complex, eroded	Deming
Water	Deming
Yturbide loamy sandy	Deming

Rough broken land-Rock Land-Lehmans association	
NAME	STATION
Mimbres-Arizo-Riverwash association, 0 to 5 percent	Deming
Mimbres soils	Deming
Lithic Haplargids-Rock outcrop association, 15 to 75	Deming
Nickel-Upton association, 2 to 15 percent slopes	Deming
Stellar-Mohave association, 0 to 5 percent slopes	Deming
Tres Hermanos-Lehmans association, 1 to 15 percent s	Deming
Eba very gravelly clay loam, 0 to 10 percent slopes	Deming
Lehmans very rocky loam, 0 to 10 percent slopes	Deming
Lehmans extremely rocky loam, 10 to 25 percent slope	Deming
Lozier extremely rocky loam, 0 to 10 percent slopes	Deming

Mimbres and Verhalen soils	Deming
Mohave sandy clay loam, 0 to 3 percent slopes	Deming
Nickel very gravelly sandy loam, 3 to 9 percent slop	Deming
Rock land	Deming
Rough broken and Rock land	Deming
Sonoita gravelly sandy loam	Deming
Stellar silty clay loam	Deming
Turney-Dona Ana association	Deming
Upton gravelly sandy loam, 3 to 10 percent slopes	Deming

Eba-Cloverdale-Eicks association	
NAME	STATION
Lithic Haplargids-Rock outcrop association, 15 to 75	Lordsburg
Stellar-Verhalen-Mimbres association, 0 to 2 percent	Lordsburg
Berino loamy sand, hummocky	Lordsburg
Berino sandy loam	Lordsburg
Eba very gravelly loam, 1 to 15 percent slopes	Lordsburg
Forrest gravelly loam	Lordsburg
Gila sandy loam	Lordsburg
Glendale-Arizo complex	Lordsburg
Graham rocky clay loam, 1 to 9 percent slopes	Lordsburg
Hondale soils	Lordsburg
Jal loam	Lordsburg
Lehmans extremely rocky loam, 10 to 25 percent slope	Lordsburg
Lehmans-Nickel association, 1 to 9 percent slopes	Lordsburg
Mimbres and Glendale silty clay loams	Lordsburg
Mohave sandy clay loam, 0 to 5 percent slopes	Lordsburg
Nickel gravelly sandy loam, 3 to 9 percent slopes	Lordsburg
Nickel-Turney association, 0 to 5 percent slopes	Lordsburg
Rock land	Lordsburg
Rough broken land and Rock land	Lordsburg
Stellar sandy clay loam	Lordsburg
Terino-Turney association	Lordsburg
Tres Hermanos gravelly clay loam	Lordsburg
Ubar soils	Lordsburg
Upton gravelly loam, 1 to 5 percent slopes	Lordsburg
Verhalen silty clay loam	Lordsburg
Verhalen silty clay loam, alkali	Lordsburg
Yturbide gravelly loamy sand	Lordsburg

Mohave-Stellar-Forest association	
NAME	STATION
Hondale-Verhalen association, 0 to 3 percent slopes	Lordsburg
Forrest-Pinaleno association	Lordsburg
Hap-Yturbide association, 1 to 9 percent slopes	Lordsburg
Pinaleno-Mimbres association	Lordsburg
Riverwash	Lordsburg
Berino loamy sand, hummocky	Lordsburg
Berino sandy loam	Lordsburg
Cloverdale stony clay loam, 3 to 15 percent slopes	Lordsburg
Eba very gravelly loam, 1 to 15 percent slopes	Lordsburg

Eba-Nickel complex, 10 to 60 percent slopes	Lordsburg
Forrest gravelly loam	Lordsburg
Forrest-Stellar association	Lordsburg
Frye sandy loam, hummocky	Lordsburg
Frye loam	Lordsburg
Gila sandy loam	Lordsburg
Gila loam	Lordsburg
Glendale-Arizo complex	Lordsburg
Graham rocky clay loam, 1 to 9 percent slopes	Lordsburg
Graham extremely rocky clay loam, 0 to 3 percent slopes	Lordsburg
Graham extremely rocky clay loam, 10 to 45 percent slopes	Lordsburg
Hondale soils	Lordsburg
Hondale complex	Lordsburg
Jal loam	Lordsburg
Lehmans extremely rocky loam, 10 to 25 percent slope	Lordsburg
Lehmans-Nickel association, 1 to 9 percent slopes	Lordsburg
Maricopa loamy sand	Lordsburg
Mimbres and Glendale loams	Lordsburg
Mimbres and Glendale silty clay loams	Lordsburg
Mimbres and Glendale silty clay loams, alkali	Lordsburg
Mohave sandy clay loam, 0 to 1 percent slopes	Lordsburg
Mohave sandy clay loam, 1 to 3 percent slopes	Lordsburg
Mohave sandy clay loam, 0 to 5 percent slopes	Lordsburg
Nickel gravelly sandy loam, 3 to 9 percent slopes	Lordsburg
Nickel gravelly loam, 1 to 5 percent slopes	Lordsburg
Nickel-Turney association, 0 to 5 percent slopes	Lordsburg
Nickel-Turney association, 0 to 5 percent slopes	Lordsburg
Pima-Hawkeye complex	Lordsburg
Pintura-Berino complex, eroded	Lordsburg
Rock land	Lordsburg
Rock land	Lordsburg
Rough broken land and Rock land	Lordsburg
Sonoita sandy loam	Lordsburg
Sonoita-Yturbide complex	Lordsburg
Stellar sandy clay loam	Lordsburg
Stellar silty clay loam	Lordsburg
Stellar cobbly silty clay loam	Lordsburg
Terino-Turney association	Lordsburg
Tres Hermanos gravelly clay loam	Lordsburg
Ubar silt loam	Lordsburg
Ubar soils	Lordsburg
Upton gravelly loam, 1 to 5 percent slopes	Lordsburg
Upton gravelly loam, 1 to 9 percent slopes	Lordsburg
Vekol sandy clay loam	Lordsburg
Vekol silty clay loam	Lordsburg
Vekol soils	Lordsburg
Verhalen silty clay loam	Lordsburg
Whitlock gravelly loam, 5 to 10 percent slopes	Lordsburg
Yana gravelly sandy loam, 1 to 9 percent slopes	Lordsburg
Yturbide gravelly loamy sand	Lordsburg
Yturbide soils	Lordsburg
Yturbide loamy sand, heavy subsoil variant	Lordsburg

Nickel-Upton-Tres Hermanos association	
NAME	STATION
Anamite silty clay loam	Lordsburg
Berino sandy loam	Lordsburg
Cloverdale loam, 0 to 3 percent slopes	Lordsburg
Cloverdale stony clay loam, 3 to 15 percent slopes	Lordsburg
Cloverdale-Stellar association, 0 to 3 percent slope	Lordsburg
Eba very gravelly loam, 1 to 15 percent slopes	Lordsburg
Eba-Nickel complex, 10 to 60 percent slopes	Lordsburg
Eicks loam	Lordsburg
Frye loam	Lordsburg
Glendale-Arizo complex	Lordsburg
Mohave sandy clay loam, 0 to 5 percent slopes	Lordsburg
Pima-Hawkeye complex	Lordsburg
Rock land	Lordsburg
Yturbide soils	Lordsburg
Yturbide loamy sand, heavy subsoil variant	Lordsburg

Hondale-Playas association	
NAME	STATION
Playas	Lordsburg
Stellar-Verhalen-Mimbres association, 0 to 2 percent	Lordsburg
Berino loamy sand, hummocky	Lordsburg
Berino sandy loam	Lordsburg
Hondale silt loam, strongly alkali	Lordsburg
Hondale soils	Lordsburg
Hondale complex	Lordsburg
Jal loam	Lordsburg
Lehmans extremely rocky loam, 10 to 25 percent slope	Lordsburg
Mimbres and Glendale silty clay loams	Lordsburg
Mimbres and Glendale silty clay loams, alkali	Lordsburg
Mohave sandy clay loam, 0 to 1 percent slopes	Lordsburg
Mohave sandy clay loam, 0 to 5 percent slopes	Lordsburg
Nickel gravelly sandy loam, 3 to 9 percent slopes	Lordsburg
Nickel gravelly loam, 1 to 5 percent slopes	Lordsburg
Nickel-Turney association, 0 to 5 percent slopes	Lordsburg
Rock land	Lordsburg
Rough broken land and Rock land	Lordsburg
Sonoita sandy loam	Lordsburg
Sonoita-Yturbide complex	Lordsburg
Stellar sandy clay loam	Lordsburg
Terino-Turney association	Lordsburg
Ubar silt loam	Lordsburg
Ubar soils	Lordsburg
Upton gravelly loam, 1 to 5 percent slopes	Lordsburg
Upton gravelly loam, 1 to 9 percent slopes	Lordsburg
Verhalen silty clay loam	Lordsburg
Verhalen silty clay loam, alkali	Lordsburg

Yturbide gravelly loamy sand	Lordsburg
Yturbide soils	Lordsburg
Yturbide loamy sand, heavy subsoil variant	Lordsburg

Rough broken land-Rock Land-Lehmans association	
NAME	STATION
Tres Hermanos-Lehmans association, 1 to 15 percent s	Lordsburg
Forrest loam	Lordsburg
Nickel-Upton association, 2 to 15 percent slopes	Lordsburg
Berino sandy loam	Lordsburg
Cloverdale loam, 0 to 3 percent slopes	Lordsburg
Cloverdale stony clay loam, 3 to 15 percent slopes	Lordsburg
Cloverdale-Stellar association, 0 to 3 percent slope	Lordsburg
Eba very gravelly loam, 1 to 15 percent slopes	Lordsburg
Eba-Nickel complex, 10 to 60 percent slopes	Lordsburg
Forrest gravelly loam	Lordsburg
Graham rocky clay loam, 1 to 9 percent slopes	Lordsburg
Graham extremely rocky clay loam, 0 to 3 percent slo	Lordsburg
Jal loam	Lordsburg
Lehmans extremely rocky loam, 10 to 25 percent slope	Lordsburg
Lehmans-Nickel association, 1 to 9 percent slopes	Lordsburg
Mimbres and Glendale silty clay loams	Lordsburg
Mohave sandy clay loam, 0 to 5 percent slopes	Lordsburg
Nickel gravelly sandy loam, 3 to 9 percent slopes	Lordsburg
Nickel gravelly loam, 1 to 5 percent slopes	Lordsburg
Pima-Hawkeye complex	Lordsburg
Rock land	Lordsburg
Rough broken land and Rock land	Lordsburg
Sonoita-Yturbide complex	Lordsburg
Stellar sandy clay loam	Lordsburg
Stellar silty clay loam	Lordsburg
Stellar cobbly silty clay loam	Lordsburg
Tres Hermanos gravelly clay loam	Lordsburg
Upton gravelly loam, 1 to 5 percent slopes	Lordsburg
Upton gravelly loam, 1 to 9 percent slopes	Lordsburg
Vekol silty clay loam	Lordsburg
Verhalen silty clay loam	Lordsburg
Yturbide gravelly loamy sand	Lordsburg
Yturbide soils	Lordsburg

Haplargids-Torripsamments

NAME	STATION
Akela-Rock outcrop complex	Santa Teresa
Berino-Pintura complex	Santa Teresa
Minlith-Rock outcrop association	Santa Teresa
Rock outcrop-Torriorthents association	Santa Teresa

Pintura-Wink association	
NAME	STATION

Mimbres silty clay loam	Santa Teresa
Nickel-Upton association	Santa Teresa
Onite-Pajarito association	Santa Teresa
Rock outcrop-Lozier association	Santa Teresa
Aftaden-Rock outcrop association	Santa Teresa
Akela-Rock outcrop complex	Santa Teresa
Anthony-Vinton fine sandy loams	Santa Teresa
Bluepoint loamy sand, 1 to 5 percent slop	Santa Teresa
Bluepoint loamy sand, 5 to 15 percent slo	Santa Teresa
Bluepoint-Caliza-Yturbide complex	Santa Teresa
Dumps	Santa Teresa
Pajarito fine sandy loam	Santa Teresa
Pajarito-Pintura complex	Santa Teresa
Riverwash	Santa Teresa
Rock outcrop-Torriorthents association	Santa Teresa
Simona-Harrisburg association	Santa Teresa
Tencee-Upton association	Santa Teresa
Wink-Harrisburg association	Santa Teresa
Wink-Pintura complex	Santa Teresa

Alkela-Rock outcrop Aftaden association	
NAME	STATION
Aftaden-Rock outcrop association	Santa Teresa
Rock outcrop-Torriorthents association	Santa Teresa

Glendale-Harkey association	
NAME	STATION
Belen loam	Santa Teresa
Harkey fine sandy loam	Santa Teresa
Harkey loam, saline-alkali	Santa Teresa
Harkey clay loam	Santa Teresa
Agua loam	Santa Teresa
Agua variant and Belen variant soils	Santa Teresa
Anapra silt loam	Santa Teresa
Anapra clay loam	Santa Teresa
Anthony-Vinton fine sandy loams	Santa Teresa
Anthony-Vinton loams	Santa Teresa
Anthony-Vinton clay loams	Santa Teresa
Armijo clay loam	Santa Teresa
Belen clay loam	Santa Teresa
Bluepoint loamy sand, 1 to 5 percent slop	Santa Teresa
Bluepoint loamy sand, 5 to 15 percent slo	Santa Teresa
Brazito loamy fine sand	Santa Teresa
Brazito very fine sandy loam, thick surfa	Santa Teresa
Dumps	Santa Teresa
Glendale loam	Santa Teresa
Glendale clay loam	Santa Teresa
Harkey loam	Santa Teresa
Pajarito fine sandy loam	Santa Teresa

Riverwash	Santa Teresa
Rock outcrop-Torriorthents association	Santa Teresa

APPENDIX B
NEW MEXICO SPECIES OF CONCERN & NON-NATIVE PLANTS
& NOXIOUS WEEDS LISTS

New Mexico Species of Concern - Luna County

Common Name.....	SCIENTIFIC NAME.....	FWS..	NM...	FS. BLM..	NM...	FWS.
		ESA	WCA	R3	Sen	SOC
Longfin Dace	Agosia chrysogaster	-	-	-	S	-
Rio Grande Sucker	Catostomus plebeius	-	-	S	-	S
Great Plains Narrowmouth Toad	Gastrophryne olivacea	-	(E)	S	-	-
Chiricahua Leopard Frog	Rana chiricahuensis	T	-	S	S	-
Texas Horned Lizard	Phrynosoma cornutum	-	(E)	S	S	-
Reticulate Gila Monster	Heloderma suspectum suspectum	-	(E)	S	-	-
Desert Kingsnake	Lampropeltis getula splendida	-	-	S	-	-
White-faced Ibis (no data)	Plegadis chihi	-	-	S	S	-
Bald Eagle	Haliaeetus leucocephalus	AD, T mg	(T)	S	-	-
Northern Gray Hawk	Asturina nitida maximus	-	-	S	S	-
Common Black-Hawk	Buteogallus anthracinus anthracinus	-	(T)	S	-	S
Swainson's Hawk	Buteo swainsoni	-	-	S	-	-
Ferruginous Hawk	Buteo regalis	-	-	S	S	-
Aplomado Falcon	Falco femoralis septentrionalis	E mg	(E)	S	-	-
American Peregrine Falcon	Falco peregrinus anatum	DM m	(T)	S	-	S
White-tailed Kite (no data)	Elanus caeruleus majusculus	-	-	S	-	-
Mountain Plover	Charadrius montanus	PT	-	S	-	S
Black-necked Stilt (no data)	Himantopus mexicanus	-	-	S	-	-
Long-billed Curlew	Numenius americanus americanus	-	-	S	-	-
Common Ground-dove	Columbina passerina pallescens	-	(E)	S	-	-
Burrowing Owl	Athene cunicularia hypugaea	-	-	S	-	S
Mexican Spotted Owl	Strix occidentalis lucida	T hmg	(T)	S	-	S
Lucifer Hummingbird (no data)	Calothorax lucifer	-	-	S	-	-
Southwestern Willow Flycatcher	Empidonax traillii extimus	E h	(E)	S	-	-
Loggerhead Shrike	Lanius ludovicianus	-	-	S	S	-
Bell's Vireo	Vireo bellii	-	(E)	S	-	S
Gray Vireo	Vireo vicinior	-	(T)	S	-	-
Gray Catbird	Dumetella carolinensis ruficrissa	-	-	S	-	-
American Redstart	Setophaga ruticilla tricolora	-	-	S	-	-
Baird's Sparrow	Ammodramus bairdii	-	(T)	S	S	S
Long-legged Myotis Bat	Myotis volans interior	-	-	-	S	S
Fringed Myotis Bat	Myotis thysanodes thysanodes	-	-	-	S	S
Pale Townsend's Big-eared Bat	Plecotus townsendii pallescens	-	-	S	S	S
Desert Pocket Gopher	Geomys arenarius arenarius	-	-	-	S	S
Ringtail	Bassariscus astutus	-	-	S	-	S
Western Spotted Skunk	Spilogale gracilis	-	-	-	S	-
Hooded Skunk	Mephitis macroura milleri	-	-	-	S	-
Chihuahuan Pronghorn	Antilocapra americana mexicana	-	-	S	-	m
Cook's Peak Woodlandsnail	Ashmunella macromphala	-	(T)	-	S	n
Fairy Shrimp	Streptocephalus moorei	-	-	-	-	S
SW Pearly Checkerspot Butterfly	Charidryas acastus sabina	-	-	-	-	S

NATIVE SPECIES APPARENTLY NO LONGER OCCURRING IN LUNA COUNTY

Beautiful Shiner	Cyprinella formosa mearnsi (extirpated from NM)
Chihuahuan Chub	Gila nigrescens
Palomas Pupfish	Cyprinodon sp (extirpated from NM)
Arizona Black-tailed Prairie Dog	Cynomys ludovicianus arizonensis
Mexican Gray Wolf	Canis lupus baileyi
Desert Bighorn Sheep	Ovis canadensis mexicana
Florida Mountainsnail	Oreohelix florida (extinct, NM endemic)

New Mexico Species of Concern - Dona Ana County Page 1 of 2

Common Name.....	SCIENTIFIC NAME.....	FWS..	NM...	FS..	BLM..	NM...	FWS..
		ESA	WCA	R3	NM	Sen	SOC
Northern Leopard Frog	Rana pipiens	-	-	s	-	-	-
Bleached Earless Lizard	Holbrookia maculata ruthveni	-	-	-	-	s n	-
Texas Horned Lizard	Phrynosoma cornutum	-	-	s	s	-	-
White Sands Prairie Lizard	Sceloporus undulatus cowlesi	-	-	-	-	s n	-
Little White Whiptail	Cnemidophorus gypsi	-	-	-	-	s n	-
Desert Kingsnake	Lampropeltis getula splendida	-	-	s	-	-	-
Brown Pelican (no data)	Pelecanus occidentalis carolinensis	E	E	s	-	-	-
Neotropic Cormorant	Phalacrocorax brasilianus	-	T	s	-	-	-
American Bittern	Botaurus lentiginosus	-	-	s	-	-	-
Great Egret	Ardea alba egretta	-	-	s	-	-	-
Snowy Egret	Egretta thula brewsteri	-	-	s	-	-	-
Green Heron	Butorides virescens	-	-	s	-	-	-
Black-crowned Night-Heron	Nycticorax nycticorax hoactli	-	-	s	-	-	-
White-faced Ibis	Plegadis chihi	-	-	s	s	-	-
Osprey	Pandion haliaetus carolinensis	-	-	s	-	-	-
White-tailed Kite (no data)	Elanus caeruleus majusculus	-	-	s	-	-	-
Mississippi Kite	Ictinia mississippiensis	-	-	s	-	-	-
Bald Eagle	Haliaeetus leucocephalus	AD, T mg	T	s	-	-	-
Northern Goshawk	Accipiter gentilis	-	-	s	s	s	s
Common Black-Hawk	Buteogallus anthracinus anthracinus	-	T	s	-	-	-
Swainson's Hawk	Buteo swainsoni	-	-	s	-	-	-
Ferruginous Hawk	Buteo regalis	-	-	s	s	-	-
Aplomado Falcon	Falco femoralis septentrionalis	E mg	E	s	-	-	-
American Peregrine Falcon	Falco peregrinus anatum	DM m	T	s	-	-	s
Sora	Porzana carolina	-	-	s	-	-	-
Whooping Crane	Grus americana	EXPN, E mg	E	s	-	-	-
Western Snowy Plover	Charadrius alexandrinus nivosus	-	-	s	-	-	-
Mountain Plover	Charadrius montanus	PT	-	s	-	s	-
Black-necked Stilt	Himantopus mexicanus	-	-	s	-	-	-
Long-billed Curlew	Numenius americanus americanus	-	-	s	-	-	-
Interior Least Tern	Sterna antillarum athalassos	E mg	E	s	-	-	-
Black Tern	Chlidonias niger surinamensis	-	-	-	s	-	s
Common Ground-dove	Columbina passerina pallescens	-	E	s	-	-	-
Burrowing Owl	Athene cunicularia hypugaea	-	-	-	s	-	s
Mexican Spotted Owl	Strix occidentalis lucida	T hmg	-	s	-	s	-
Yellow-billed Cuckoo	Coccyzus americanus occidentalis	C	-	s	-	s	-
Broad-billed Hummingbird	Cynanthus latirostris magicus	-	T	s	-	-	-
Costa's Hummingbird	Calypte costae	-	T	s	-	-	-
Belted Kingfisher	Ceryle alcyon	-	-	s	-	-	-
Southwestern Willow Flycatcher	Empidonax traillii extimus	E h	E	s	-	-	-
Loggerhead Shrike	Lanius ludovicianus	-	-	-	s	s	-
Bell's Vireo	Vireo bellii	-	T	s	-	-	s
Gray Vireo	Vireo vicinior	-	T	s	-	-	-
Gray Catbird	Dumetella carolinensis ruficrissa	-	-	s	-	-	-
American Redstart	Setophaga ruticilla tricolora	-	-	s	-	-	-
Baird's Sparrow	Ammodramus bairdii	-	T	s	s	-	s
Varied Bunting	Passerina versicolor	-	T	s	-	-	-
Western Small-footed Myotis Bat	Myotis ciliolabrum melanorhinus	-	-	-	s	s	-
Yuma Myotis Bat	Myotis yumanensis yumanensis	-	-	-	s	s	-
Occult Little Brown Myotis Bat	Myotis lucifugus occultus	-	-	s	s	s	-
Long-legged Myotis Bat	Myotis volans interior	-	-	-	s	s	-
Fringed Myotis Bat	Myotis thysanodes thysanodes	-	-	-	s	s	-

New Mexico Species of Concern - Dona Ana County

Common Name.....	SCIENTIFIC NAME.....	FWS..	NM...	FS.	BLM...	NM...	FWS.
		ESA	WCA	R3	NM	Sen	SOC
Western Red Bat	Lasiurus blossevillei	-	-	S	-	S	S
Eastern Red Bat	Lasiurus borealis	-	-	S	-	S	-
Spotted Bat	Euderma maculatum	-	T	S	S	-	S
Pale Townsend's Big-eared Bat	Plecotus townsendii pallescens	-	-	S	S	-	-
Big Free-tailed Bat	Nyctinomops macrotis	-	-	-	S	S	-
Organ Mountains Colorado Chipmunk	Tamias quadrivittatus australis	-	T	-	S	-	S
Desert Pocket Gopher	Geomys arenarius arenarius	-	-	-	S	-	S
Desert Pocket Gopher	Geomys arenarius brevirostris	-	-	-	-	S	-
Rock Pocket Mouse	Chaetodipus intermedius rupestris	-	-	-	-	S	n
Pecos River Muskrat	Ondatra zibethicus ripensis	-	-	-	-	S	-
Red Fox	Vulpes vulpes	-	-	-	S	S	S
Ringtail	Bassariscus astutus	-	-	-	-	S	-
Western Spotted Skunk	Spilogale gracilis	-	-	S	-	S	-
Common Hog-nosed Skunk	Conepatus mesoleucus	-	-	-	-	S	-
Chihuahuan Pronghorn	Antilocapra americana mexicana	-	-	S	-	S	-
Desert Bighorn Sheep	Ovis canadensis mexicana (endangered pops)	-	E	S	-	m	-
Dona Ana Talussnail	Sonorella todsoni	-	T	-	S	n	S
Anthony Blister Beetle	Lytta mirifica	-	-	-	S	S	S
Obsolete Viceroy Butterfly	Basilarchia archippus obsoleta	-	-	S	-	-	S

NATIVE SPECIES APPARENTLY NO LONGER OCCURRING IN DONA ANA COUNTY

American Eel	Anguilla rostrata	(extirpated from NM)
Mexican Tetra	Astyanax mexicanus	
Rio Grande Chub	Gila pandora	
Rio Grande Silvery Minnow	Hybognathus amarus	
Rio Grande Shiner	Notropis jemezianus	
Rio Grande Bluntnose Shiner	Notropis simus simus	(extinct)
Gray Redhorse	Moxostoma congestum	
Flathead Catfish	Pylodictis olivaris	
Blue Sucker	Cyprinotus elongatus	
Arizona Black-tailed Prairie Dog	Cynomys ludovicianus arizonensis	
Mexican Gray Wolf	Canis lupus baileyi	
Swift Fox	Vulpes velox velox	
Grizzly Bear	Ursus arctos	(extirpated from NM)
Jaguar	Panthera onca arizonensis	
American Bison	Bos bison	
NM Ramshorn Snail	Pecosorbis kansasensis	
Ovate Vertigo Snail	Vertigo ovata	

New Mexico Species of Concern - Hidalgo County

Page 1 of 3

Common Name.....	SCIENTIFIC NAME.....	FWS..	NM...	FS.	BLM..	NM...	FWS.
		ESA	WCA	R3	NM	Sen	SOC
Longfin Dace	Agosia chrysogaster	-	-	-	S	-	-
Roundtail Chub	Gila robusta	-	E	S	S	-	S
Spikedace	Meda fulgida	T hmg	T	S	-	-	-
Loach Minnow	Rhinichthys cobitis	T hm	T	S	-	-	-
Desert Sucker	Catostomus clarki	-	-	-	S	S	S
Sonora Sucker	Catostomus insignis	-	-	-	S	S	S
Colorado River Toad	Bufo alvarius	-	T	S	-	-	-
Chiricahua Leopard Frog	Rana chiricahuensis	T	-	S	-	S	-
Lowland Leopard Frog	Rana yavapaiensis	-	E	S	S	-	S
Texas Horned Lizard	Phrynosoma cornutum	-	-	S	S	-	-
Bunch Grass Lizard	Sceloporus slevini	-	T	S	-	-	-
Giant Spotted Whiptail	Cnemidophorus burti	-	T	S	-	-	-
Gray-checkered Whiptail	Cnemidophorus dixonii	-	E	-	S	-	S
Mountain Skink	Eumeces callicephalus	-	T	S	-	-	-
Reticulate Gila Monster	Heloderma suspectum suspectum	-	E	S	-	-	-
Desert Kingsnake	Lampropeltis getula splendida	-	-	S	-	-	-
Green Rat Snake	Senticolis triaspis intermedia	-	T	S	-	-	-
Yaqui Blackhead Snake	Tantilla yaquia	-	-	-	-	S	-
Mexican Garter Snake	Thamnophis eques megalops	-	E	S	S	-	S
Narrowhead Garter Snake	Thamnophis rufipunctatus rufipunctatus	-	T	S	S	-	S
NM Ridgenose Rattlesnake	Crotalus willardi obscurus	T hmg	E	S	-	-	-
Neotropical Cormorant	Phalacrocorax brasilianus	-	T	S	-	-	-
Least Bittern	Ixobrychus exilis exilis	-	-	S	-	-	-
Snowy Egret	Egretta thula brewsteri	-	-	S	-	-	-
Green Heron	Butorides virescens	-	-	S	-	-	-
Black-crowned Night-Heron	Nycticorax nycticorax hoactli	-	-	S	-	-	-
White-tailed Kite (no data)	Elanus caeruleus majusculus	-	-	S	-	-	-
Mississippi Kite	Ictinia mississippiensis	-	-	S	-	-	-
Bald Eagle	Haliaeetus leucocephalus	T mg	T	S	-	-	-
Northern Goshawk	Accipiter gentilis	-	-	S	S	S	S
Northern Gray Hawk	Asturina nitida maximus	-	-	S	S	-	-
Common Black-Hawk	Buteogallus anthracinus anthracinus	-	T	S	-	-	S
Swainson's Hawk	Buteo swainsoni	-	-	S	-	-	-
Zone-tailed Hawk	Buteo albonotatus	-	-	S	-	-	-
Ferruginous Hawk	Buteo regalis	-	-	S	S	-	-
Aplomado Falcon	Falco femoralis septentrionalis	E mg	E	S	-	-	-
American Peregrine Falcon	Falco peregrinus anatum	DM n	T	S	-	-	S
Gould's Wild Turkey	Meleagris gallopavo mexicana	-	T	S	-	-	S
Sora	Porzana carolina	-	-	S	-	-	-
Mountain Plover	Charadrius montanus	PT	-	S	-	S	-
Upland Sandpiper	Bartramia longicauda	-	-	S	-	-	-
Long-billed Curlew	Numenius americanus americanus	-	-	S	-	-	-
Common Ground-dove	Columbina passerina pallescens	-	E	S	-	-	-
Yellow-billed Cuckoo	Coccyzus americanus occidentalis	C	-	S	-	S	-
Flammulated Owl	Otus flammeolus	-	-	S	-	-	-
Whiskered Screech Owl	Otus trichopsis asperus	-	T	-	-	-	-
Elf Owl	Micrathene whitneyi whitneyi	-	-	S	-	-	-
Burrowing Owl	Athene cunicularia hypugaea	-	-	-	S	-	S
Mexican Spotted Owl	Strix occidentalis lucida	T hmg	-	S	-	S	-
Buff-collared Nightjar	Caprimulgus ridgwayi ridgwayi	-	E	S	-	-	-
Broad-billed Hummingbird	Cynanthus latirostris magicus	-	T	S	-	-	-

Biota Information System Of New Mexico (BISON-M) April 2003- Dept. of Game & Fish,
Conservation Services Div.

New Mexico Species of Concern - Hidalgo County Page 2 of 3

Common Name.....	SCIENTIFIC NAME.....	FWS..	NM...	FS. BLM..	NM...	FWS.
		ESA	WCA	R3 NM	Sen	SOC
White-eared Hummingbird	Hylocharis leucotis borealis	-	T	s	-	-
Violet-crowned Hummingbird	Amazilia violiceps ellioti	-	T	s	-	-
Blue-throated Hummingbird	Lampornis clemenciae bessophilus	-	-	s	-	-
Lucifer Hummingbird	Calothorax lucifer	-	T	s	-	-
Costa's Hummingbird	Calypte costae	-	T	s	-	-
Elegant Trogon	Trogon elegans canescens	-	E	s	-	-
Gila Woodpecker	Melanerpes uropygialis uropygialis	-	T	s	-	-
Northern Beardless Tyrannulet	Camptostoma imberbe ridgwayi	-	E	s	-	-
Southwestern Willow Flycatcher	Empidonax traillii extimus	E h	E	s	-	-
Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	-	-	-	-	-
Thick-billed Kingbird	Tyrannus crassirostris	-	E	s	-	-
Loggerhead Shrike	Lanius ludovicianus	-	-	s	s	-
Bell's Vireo	Vireo bellii	-	T	s	-	s
Gray Vireo	Vireo vicinior	-	T	s	-	-
Mexican Chickadee	Parus sclateri eidos	-	-	s	-	-
Sprague's Pipit	Anthus spragueii	-	-	s	-	-
Abert's Towhee	Pipilo aberti aberti	-	T	s	-	-
Botteri's Sparrow	Aimophila botterii arizonae	-	-	-	s	-
Baird's Sparrow	Ammodramus bairdii	-	T	s	s	-
AZ Grasshopper Sparrow	Ammodramus savannarum ammodramus	-	T	-	-	-
Yellow-eyed Junco	Junco phaeonotus palliatus	-	T	s	-	-
McCown's Longspur	Calcarius mccownii	-	-	s	-	-
Varied Bunting	Passerina versicolor	-	T	s	-	-
Arizona Shrew	Sorex arizonae	-	E	-	s	-
Mexican Long-tongued Bat	Choeronycteris mexicana	-	-	s	s	s
Mexican Long-nosed Bat	Leptonycteris nivalis	E mg	E	s	-	-
Lesser Long-nosed Bat	Leptonycteris curasoae yerbabuenae	E m	T	s	-	-
Western Small-footed Myotis Bat	Myotis ciliolabrum melanorhinus	-	-	-	s	s
Yuma Myotis Bat	Myotis yumanensis yumanensis	-	-	-	s	s
Cave Myotis Bat	Myotis velifer	-	-	s	s	s
Long-legged Myotis Bat	Myotis volans interior	-	-	-	s	s
Fringed Myotis Bat	Myotis thysanodes thysanodes	-	-	-	s	s
Western Yellow Bat	Lasiurus xanthinus	-	T	s	-	-
Western Red Bat	Lasiurus blossevillii	-	-	s	-	s
Eastern Red Bat	Lasiurus borealis	-	-	s	-	s
Pale Townsend's Big-eared Bat	Plecotus townsendii pallescens	-	-	-	s	s
Big Free-tailed Bat	Nyctinomops macrotis	-	-	-	s	s
Greater Western Mastiff Bat	Eumops perotis californicus	-	-	-	s	s
White-sided Jack Rabbit	Lepus callotis gaillardi	-	T	s	s	-
Black-tailed Prairie Dog	Cynomys ludovicianus ludovicianus	C m	-	-	-	s
Mearns' Pocket Gopher	Thomomys bottae mearnsi	-	-	-	s	s
Southern Pocket Gopher	Thomomys umbrinus emotus	-	T	-	-	-
Yellow-nosed Cotton Rat	Sigmodon ochrognathus	-	-	-	s	-
Ringtail	Bassariscus astutus	-	-	s	-	-
White-nosed Coati	Nasua narica	-	-	s	-	-
Western Spotted Skunk	Spilogale gracilis	-	-	-	-	-
Hooded Skunk	Mephitis macroura milleri	-	-	-	-	-
Common Hog-nosed Skunk	Conopatus mesoleucus	-	-	-	-	-
Jaguar	Panthera onca arizonensis	E mg	R	s	-	-
Chihuahuan Pronghorn	Antilocapra americana mexicana	-	-	s	-	m
Desert Bighorn Sheep	Ovis canadensis mexicana (endangered pops)	-	E	s	-	m
Desert Bighorn Sheep	Ovis canadensis mexicana (hunted pop)	-	-	s	-	s m
Mexican Gray Wolf	Canis lupus baileyi	EXPN, E	-	-	-	-

New Mexico Species of Concern - Hidalgo County Page 3 of 3

Common Name.....	SCIENTIFIC NAME.....	FWS..	NM...	FS.	BLM..	NM...	FWS.
		ESA	WCA	R3	NM	Sen	SOC
Shortneck Snaggletooth Snail	Gastrocopta dalliana dalliana	-	E	-	-	-	s
Hacheta Grande Woodlandsnail	Ashmunella hebardi	-	T	-	s	n	s
Animas Minute Moss Beetle	Limnebius aridus	-	-	-	s	s	s
Obsolete Viceroy Butterfly	Basilarchia archippus obsoleta	-	-	s	-	-	-

NATIVE SPECIES APPARENTLY NO LONGER OCCURRING IN HIDALGO COUNTY

Gila Chub	Gila intermedia	
Razorback Sucker	Xyrauchen texanus	
Arizona Black-tailed Prairie Dog	Cynomys ludovicianus arizonensis	
Grizzly Bear	Ursus arctos	(extirpated from NM)
Southwestern River Otter	Lutra canadensis sonorae	(extirpated from NM)
Merriam's Elk	Cervus elaphus merriami	(extinct)

September 20, 1999

MEMORANDUM

TO: General Public

FROM: Frank A. Du Bois

SUBJECT: New Mexico Noxious Weed List

The New Mexico Department of Agriculture has selected the following plant species to be targeted as noxious weeds for control or eradication pursuant to the Noxious Weed Management Act of 1998.

New Mexico's noxious weed list is classified into three divisions: Class A, Class B, and Class C weeds, all of which are non-native to New Mexico. Class A weeds are species that currently are not present in New Mexico or have limited distribution; preventing new infestations of these species and eradicating existing infestations is the highest priority.

Class B weeds are species that are limited to portions of the state. In areas that are not infested, these species should be treated as class A weeds. In areas with severe infestations, management plans should be designed to contain the infestation and stop any further spread.

Class C weeds are species that are wide-spread in the state. Management decisions for these species should be determined at the local level based on feasibility of control and level of infestation.

This list does not include every plant species with a potential to negatively impact the state's environment and economy. Vegetation managers are also encouraged to recognize plant species listed on the federal noxious weed list or other western states' noxious weed lists as potentially having negative impacts and to manage them accordingly.

New Mexico Noxious Weed List

<u>Class A Weeds</u>	<u>Latin name</u>	<u>Origin</u>
Alfombrilla	<i>Drymaria arenarioides</i>	Mexico
Black Henbane	<i>Hyoscyamus niger</i>	Europe
Camelthorn	<i>Alhagi pseudalhagi</i>	Asia
Canada Thistle	<i>Cirsium arvense</i>	Eur asia
Dalmatian Toadflax	<i>Linaria genisitifolia ssp. dalmatica</i>	Europe
Diffuse Knapweed	<i>Centaurea diffusa</i>	Mediterranean
Dyer s Woad	<i>Isatis tinctoria</i>	Europe
Eurasian Watermilfoil	<i>Myriophyllum spicatum</i>	Eur asia
Hoary Cress	<i>Cardaria draba</i>	Europe
Hydrilla	<i>Hydrilla verticillata</i>	South Africa
Leafy Spurge	<i>Euphorbia esula</i>	Eur asia
Onionweed	<i>Asphodelus fistulosus</i>	Mediterranean
Perennial Pepperweed	<i>Lepidium latifolium</i>	South Europe
Purple Loosestrife	<i>Lythrum salicaria</i>	Europe
Purple Starthistle	<i>Centaurea calcitrapa</i>	Europe
Scotch Thistle	<i>Onopordum acanthium</i>	Europe
Spotted Knapweed	<i>Centaurea maculosa</i>	Eur asia
Yellow Starthistle	<i>Centaurea solstitialis</i>	Europe
Yellow Toadflax	<i>Linaria vulgaris</i>	Eur asia
 <u>Class B Weeds</u>		
African Rue	<i>Peganum harmala</i>	North Africa
Bull Thistle	<i>Cirsium vulgare</i>	Eur asia
Halogeton	<i>Halogeton glomeratus</i>	Asia
Malta Starthistle	<i>Centaurea melitensis</i>	Europe
Musk Thistle	<i>Carduus nutans</i>	South Europe
Russian Knapweed	<i>Acroptilon repens</i>	Eur asia
Poison Hemlock	<i>Conium maculatum</i> L.	Europe
Teasel	<i>Dipsacus fullonum</i>	Europe
 <u>Class C Weeds</u>		
Field Bindweed	<i>Convolvulus arvensis</i> L.	Europe
Jointed Goatgrass	<i>Aegilops cylindrica</i>	South Europe
Russian Olive	<i>Elaeagnus angustifolia</i> L.	Europe
Saltcedar	<i>Tamarix</i> sp.	Europe
Siberian Elm	<i>Ulmus pumila</i>	Europe



A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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- Botanical Literature of Interest.....7
- What's in a Name?8

An Inventory and Analysis of the Alien Plant Flora of New Mexico

George W. Cox

Biosphere and Biosurvival, 13 Vuelta Maria, Santa Fe, NM 87501

Abstract

I summarized published information on non-native vascular plants recorded as established in the wild in New Mexico. Alien plants numbered 390 species and one additional hybrid form, with 13 species being represented by two or three alien subspecies. Alien plant species comprised 1 family and species of fern, 50 families and 270 species of Dicotyledons, and 5 families and 119 species of Monocotyledons. The families with most alien species were Poaceae, with 112, Asteraceae, with 43, Brassicaceae, with 42, Fabaceae, with 22, and Chenopodiaceae, with 18. About 77.2 percent of alien species were of Eurasian origin, with 11.3 percent being from other parts of North America. Annual forbs, vines and grasses constituted 44.9 percent of the aliens, whereas trees and shrubs constituted 8.5 percent of alien species. Since publication of the first state flora, the number of alien plants has increased from 136 in 1915 to 390 in 2000. The pattern of increase has been exponential, with about 6.75 new aliens appearing per year since 1980. Many other alien plants are present in neighboring states, and the potential for additional invasions is great.

Introduction

New Mexico, with a vascular plant flora of about 3542 species in AD 2000, is experiencing invasions of alien plant species from several phytogeographic regions: the Chihuahuan and Sonoran desert regions to the south and west, the Colorado Plateau and Great Basin to the northwest, the Rocky Mountain region to the north, and the Great Plains to the east. Although New Mexico is somewhat remote from the points of introduction of alien plants from outside North America, many such species are now appearing. This review examines the known flora of alien plants in New Mexico, and traces the history of invasion from 1915, the data of publication of the first state flora, to 2000.

Methods

Information on the current presence of alien species was taken from Allred (2000), Carter (1997), and recent issues of *The New Mexico Botanist*. Data on the presence of alien plants at earlier dates were taken from Wootton and Standley (1915), Tidestrom and Kittell (1941), and Martin and Hutchins (1980/1981). Data on growth form, life history pattern, and native region were obtained from Martin and Hutchins (1980/1981), other regional floras, and the National Resource Conservation Service's Plants Database (USDA-NRCS 2000). Plant nomenclature was based on Allred (2000) and Carter (1997), the latter for woody plants not included in the former. The current species total for New Mexico was obtained from the statistical summary given by Roalson and Allred (1995) plus species new to the state reported since then in *The New Mexico Botanist*.

Results

A total of 390 species plus one hybrid taxon were recognized as established aliens (Appendix I). Three additional species were characterized as cryptogenic species (Carlton 1996), that is, species of uncertain status because natural pre-European invasion might have occurred or because European settlers might have introduced these species before the first studies of the flora of North America. Three species of dicots and 10 of grasses were represented by 2 or 3 subspecies. Alien species included 1 family and species of fern, 50 families and 270 species of Dicotyledons, and 5 families and 119 species of Monocotyledons. Seven families were represented by more than 10 species: Poaceae (112), Asteraceae (43), Brassicaceae (42), Fabaceae (22), Chenopodiaceae (18), Caryophyllaceae (12), and Polygonaceae (12).

(Continued on page 2, Aliens)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.

— **Linnaeus**



(Aliens, Continued from page 1)

Since the total number of species known in New Mexico is now about 3542, alien species make up about 11.0 percent of the state's flora.

Species classified as cryptogenic included *Amaranthus hybridus* L., Slim Amaranth; *Limosella aquatica* L., Mudwort; and *Xanthium strumarium* var. *canadense* (Mill.) Torr., Cocklebur. These species, all widespread in Europe, were well established in eastern North America in the early 18th Century, and might have reached North America by natural or human-assisted dispersal.

Several species occasionally considered alien are omitted from the list because of recent analyses that establish them as native. These include several taxa of *Corispermum*, which Martin and Hutchins (1980/81) characterize as alien. Mosyakin (1996) has revised this group and determined our species to be native to North America. New Mexican varieties of *Oxalis corniculata*, some North American forms of which are European exotics, are natives (Turner 1994). The New Mexican subspecies of *Calystegia sepium*, listed in some floras as a European import, is likewise native to western North America (Austin 1990).

The number of species of alien plants has increased by a factor of 2.88-fold since publication of the state's first flora (Wootton and Standley 1915)(Table 1). In 1915, only 136 species of 32 families had been recorded, corresponding to 4.6 percent of the flora then known (2975 species), or 4.1 percent of the flora known today. By 1942, no additional families of aliens had appeared, but the total number of alien species had increased to 181, a rate of increase of 1.67 species per year. Between 1942 and 1980, aliens belonging to 14 additional families had appeared, with total species increasing to 255, a rate of increase of 1.95 per year. Since 1980, 10 new families of aliens have appeared and 135 additional species have been recognized, a rate of increase of 6.75 per year. The number of alien species established in New Mexico has thus been increasing exponentially.

Most of the 24 families of aliens appearing since 1942 are now represented by only 1-2 species. Altogether, these families have contributed only 43 species to the current alien list. Two families however, have contributed more substantially; 5 species of the Rosaceae, all native to Europe or Eurasia, and 4 species of the Ranunculaceae, all from the Old World, have appeared in New Mexico's alien flora since 1942.

Since 1915, the major families increasing most in relative number of species were the Brassicaceae (3.82-fold increase), Poaceae (3.61-fold increase), and Asteraceae (2.87-fold increase). These three families have contributed 55.1 percent(140 species) of the increase in number of alien species since 1915.

Annual forbs were the most frequent life form group among aliens, followed by perennial forbs, annual grasses and perennial grasses (Table 2). Annuals of all groups make up 44.9 percent of the present alien flora. Graminoids constitute 29.2 percent of the total alien flora.

From 1915 to 2000, the groups increasing most in relative species number were trees, which increased 6.67-fold, and shrubs, which increased 4.33-fold. Graminoids as a whole increased 3.56-fold, with annual grasses increasing 4.20-fold and perennial grasses 3.00-fold. Forbs increased only 2.44-fold.

Forbs and vines with variable life history patterns (i.e., annual/biennial, annual/perennial, or biennial/perennial) almost doubled in numbers between 1980 and 2000. The total number of vines and woody plants more than doubled during this same period.

About 77.2 percent of present alien plants are native to temperate Eurasia (Table 3). An additional 11.3 percent are native to the United States, Canada, and Mexico. The representation of temperate Eurasian species has declined somewhat since 1915, when it was about 83.8 percent. Species native to Africa and the Old World trop-

ics have increased 6.33-fold; 13 of the 19 species from these areas are grasses. Since 1980, the numbers of alien species from other parts of North America have increased 2.44-fold.

Discussion

The alien component of the New Mexico flora, 11.0 percent, is only slightly greater than that estimated for the coterminous United States, 10.8 percent (Vitousek et al. 1997). The number of established alien plants in the coterminous United States, however, is estimated to be about 2,100 species. This number, together with the fact that northern Mexico and states adjacent to New Mexico possess many alien species that have not yet invaded New Mexico indicates that many additional invasions are certain to occur. In 1990, for example, Texas was estimated to possess 492 established alien plants, which equaled 9.9 percent of that state's flora (Vitousek et al. 1997). Colorado, with a total flora of 3088 taxa (species, subspecies, and varieties), has 492 alien taxa, which equal 15.9 percent of the flora (Weber and Wittman 1992). In both states, the absolute number of alien species is more than 100 greater than the number established in New Mexico. No statewide analysis is available for Arizona, but California has about 1045 established alien plants, which make up 17.7 percent of the state flora (Randall et al. 1998). Many of California's alien plants reach Arizona, so that Arizona probably has a substantially larger number of alien plant species than New Mexico.

The native regions of alien plants in New Mexico differ somewhat from those of eastern North America. In the central and north-eastern United States and adjacent Canada, 87.9 percent of alien plants are of Eurasian origin, with only 4.3 percent coming from other parts of North America (Foy et al. 1983). In New Mexico, the representation of Eurasian species is 10.4 percent less, but the importance of exotics from elsewhere in North America is greater. This reflects the fact that New Mexico is located central to several diverse native floras, and to the fact that urban and agricultural development of the state have created environments favorable for invasion of many species from the more humid eastern part of the continent.

New Mexico also differs somewhat from areas of the Pacific Coast in the representation of alien plants from different regions. In California, roughly 65 percent of alien plants come from Eurasia (Randall et al. 1998). For New Mexico, the percentage of aliens from Eurasia is thus about 12.2 percent greater, with the bulk of these being of European origin. The greater isolation of California, compared to New Mexico, from the European source area of exotic plants probably accounts for this difference. About 5 percent of California's exotics come from Australia and New Zealand, whereas less than 1 percent of New Mexico's exotics come from this region. An additional 7 percent of California's aliens come from southern Africa, compared to about 3.1 percent for New Mexico.

The large increase in alien woody plant species in New Mexico over the last 20 years of the 20th Century may be somewhat more apparent than real. Field botanists have often overlooked the early stages of establishment of many of these species in the wild, documenting them only when they appear far from areas of obvious planting (Jack L. Carter, Pers. Comm.). Nevertheless, these species represent one of our most serious ecological threats because of their tendency to invade native riparian ecosystems.

The abundance of alien plant species in bordering states means that New Mexico is poised to receive many new invaders in coming years. Indeed, the current rate of increase in alien species suggests that at least 6 to 7 species are likely to appear per year in the immediate future. This likelihood argues for establishment of an early detection and eradication program for alien invaders in New Mexico.

(Continued on page 3, Aliens)



(Aliens, Continued from page 2)

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Table 1. The number of families and species of alien plants in the New Mexico flora from 1915 through 2000.

	1915 ¹	1942 ²	1980 ³	2000
Ferns				
Families				1
Species				1
Dicots				
Families	29	29	41	50
Species	104	125	184	270
Monocots				
Families	3	3	5	5

Species	33	58	72	119
Total				
Families	32	32	46	56
Species	136	181	255	390

¹Wootton and Standley (1915)

²Tidestrom and Kittell (1942)

³Martin and Hutchins (1980/81)

Table 2. The number of alien species of different life forms in the New Mexico flora from 1915 through 2000.

	1915 ¹	1942 ²	1980 ³	2000
Forbs				
Annual	54	65	83	110
Biennial	4	6	16	19
Perennial	29	33	52	73
Annual/Biennial	5	7	10	21
Annual/Perennial	3	4	5	6
Biennial/Perennial	1	1	2	5
Vines				
Annual	1	1	1	2
Perennial	1	1	3	6
Annual/Perennial				1
Graminoids				
Annual	15	34	40	63
Perennial	17	23	28	51
Shrubs	3	3	4	13
Trees	3	3	11	20
TOTAL	136	181	255	390

¹Wootton and Standley (1915)

²Tidestrom and Kittell (1942)

³Martin and Hutchins (1980/81)

Table 3. The number of alien species of different geographical origins in the New Mexico flora from 1915 through 2000.

	1915 ¹	1942 ²	1980 ³	2000
Temperate Eurasia				
Europe	81	101	138	196
Eurasia	27	38	51	72
Asia	6	7	19	33
Old World Tropics	1	3	4	7
Africa	2	3	6	12
New World Tropics	6	10	11	14
Temperate South America	4	6	7	10
Australia	1	1	1	2
North America				
USA/Canada	7	11	15	38
Mexico	1	1	3	6
TOTAL	136	181	255	390

¹Wootton and Standley (1915)

²Tidestrom and Kittell (1942)

³Martin and Hutchins (1980/81)

(Continued on page 4, Aliens)



(Aliens, Continued from page 3)

Appendix I. Alien plants known to be established in New Mexico (December 2000).

Ferns and Allies

Salviniaceae

Salvinia minima Baker, Water Spangles

Angiosperms: Dicotyledoneae

Aceraceae

Acer saccharinum L., silver maple

Amaranthaceae

Amaranthus albus L., prostrate pigweed
Amaranthus caudatus L., love-lies-bleeding
Amaranthus cruentus L., red amaranth
Amaranthus hypochondriacus L., Prince-of-Wales feather
Amaranthus retroflexus L., redroot amaranth
Amaranthus viridis L., slender amaranth

Apiaceae

Apium graveolens L., wild celery
Apium leptophyllum (Pers.) Sprague ex Britt. & Wilson, marsh parsley
Carum carvi L., caraway
Conium maculatum L., poison hemlock
Coriandrum sativum L., coriander
Daucus carota L., Queen Anne's lace
Foeniculum vulgare Mill., fennel
Levisticum officinale W.D.J. Koch, garden lovage
Pastinaca sativa L., wild parsnip

Asteraceae

Acroptilon repens (L.) DC., Russian knapweed
Anthemis cotula L., camomile
Arctium minus (Hill) Bernh., burdock
Artemisia biennis Willd. var. *biennis*, biennial wormwood
Calypocarpus vialis Less., straggler daisy
Carduus acanthoides L., spiny plumeless thistle
Carduus nutans L., musk thistle
Carthamus tinctorius L., safflower
Centaurea calcitrapa L., purple starthistle
Centaurea diffusa Lam., diffuse knapweed
Centaurea maculosa Lam., spotted knapweed
Centaurea melitensis L., Malta starthistle
Centaurea solstitialis L., yellow starthistle
Chrysanthemum leucanthemum L., oxeye daisy
Cichorium intybus L., chicory
Cirsium arvense (L.) Scop., Canada thistle
Cirsium vulgare (Savi) Ten., bull thistle
Conyza bonariensis (L.) Cronq., asthmaweed
Conyza ramosissima Cronq., dwarf horseweed
Cosmos bipinnatus Cav., garden cosmos
Cotula australis (Sieber) Hook. f., Australian waterbuttons
Eclipta prostrata (L.) L., false daisy
Erigeron annuus (L.) Pers., eastern daisy fleabane
Galinsoga parviflora Cav., gallant-soldier
Hedynois cretica (L.) Willd., cretanweed
Hypochaeris radicata L., hairy catsear
Lactuca serriola L. var. *integrifolia* Bogehn., prickly lettuce
Lactuca serriola L. var. *serriola*, prickly lettuce
Onopordum acanthum L., Scotch thistle
Pentzia incana (Thunb.) O. Kuntze, African sheepbush
Scorzonera laciniata L., cutleaf vipergrass
Senecio vulgaris L., common groundsel

Silybum marianum L., blessed milkthistle
Sonchus arvensis L., field sowthistle
Sonchus asper (L.) Hill, spiny-leaved sowthistle
Sonchus oleraceus L., common sowthistle
Tanacetum vulgare L., common tansy
Taraxacum laevigatum (Willd.) DC., red-seeded dandelion
Taraxacum officinale Weber, common dandelion
Tragopogon dubius Scop., yellow salsify
Tragopogon porrifolius L., salsify
Tragopogon pratensis L., meadow goatsbeard
Vernonia noveboracensis (L.) Michx., New York ironweed
Xanthium spinosum L., cocklebur

Bignoniaceae

Catalpa speciosa Warder, northern catalpa

Boraginaceae

Cynoglossum officinale L., common hound's tongue
Echium vulgare L., viper's bugloss
Lappula squarrosa (Retz.) Dumort., European stickseed
Myosotis scorpioides L., true forget-me-not
Symphytum officinale L., common comfrey

Brassicaceae

Alyssum desertorum Stapf., desert madwort
Alyssum minus (L.) Rothm., alyssum
Berteroa incana (L.) DC., hoary false madwort
Barbarea vulgaris R. Br., common wintercress
Brassica juncea (L.) Cosson, India mustard
Brassica napus L., turnip
Brassica rapa L., field mustard
Brassica tournefortii Gouan, Asian mustard
Camelina microcarpa Andr., littlepod false flax
Camelina sativa (L.) Crantz, gold-of-pleasure
Capsella bursa-pastoris (L.) Medic., shepherd's purse
Cardamine hirsuta L., hairy bittercress
Cardaria draba (L.) Desv., hoary cress
Cardaria chalapensis (L.) Handel-Mazetti, lenspod whitetop
Chorispora tenella (Pall.) DC., crossflower
Conringia orientalis (L.) Dumort., hare's ear mustard
Coronopus didymus (L.) I. E. Smith, lesser swinecress
Descurainia sophia (L.) Webb, flaxweed
Diplotaxis muralis (L.) DC., annual wallrocket
Diplotaxis tenuifolia (L.) DC., perennial wallrocket
Eruca vesicaria (L.) Cav., rocketsalad
Erysimum repandum L., spreading wallflower
Hesperis matronalis L., dames rocket
Iberis umbellata L., globe candytuft
Isatis tinctoria L., dyer's woad
Lobularia maritima (L.) Desv., sweet alyssum
Lepidium campestre (L.) R. Br., field pepperweed
Lepidium latifolium L., perennial pepperweed
Lepidium perfoliatum L., clasping pepperweed
Malcolmia africana (L.) R. Br., African mustard
Matthiola bicornis DC., night scented stock
Nasturtium officinale R. Br., watercress
Raphanus sativus L., radish
Rapistrum rugosum (L.) Allioni, annual bastardcabbage
Rorippa microphylla (Boehn. ex Reichenb.) Hyland ex Löve & Löve, onion yellowcress
Sinapis alba L., white mustard
Sinapis arvensis L., charlock mustard
Sisymbrium altissimum L., tall tumbleweed
Sisymbrium irio L., London rocket
Sisymbrium loeselii L., small tumbleweed mustard
Sisymbrium officinale (L.) Scop. L., hedgemustard
Thlaspi arvense L., pennycress

(Continued on page 5, Aliens)

Botany is the natural science that transmits the knowledge of plants.

— Linnaeus



(Aliens, Continued from page 4)

Caesalpinaceae

- Caesalpinia gilliesii* (Hook.) Wallich ex D. Dietr., bird-of-paradise
- Gleditsia triacanthos* L., honey locust

Campanulaceae

- Campanula rapunculoides* L., rampion bellflower

Cannabaceae

- Cannabis sativa* L., marijuana

Caprifoliaceae

- Lonicera japonica* Thunb., Japanese honeysuckle
- Lonicera morrowii* A. Gray, Morrow's honeysuckle
- Lonicera tatarica* L., Tatarian honeysuckle
- Lonicera x bella* Zabel [*morrowii* X *tatarica*], pretty honeysuckle

Caryophyllaceae

- Agrostemma githago* L., common corncockle
- Arenaria serpyllifolia* L. thyme-leaved sandwort
- Cerastium viscosum* L., sticky chickweed
- Cerastium vulgatum* L., common mouse-eared chickweed
- Dianthus armeria* L., Deptford pink
- Saponaria officinalis* L., bouncing-bet
- Silene latifolia* Poir. ssp. *alba* (Miller) (= *Lychnis alba* Miller), white cockle
- Silene noctiflora* L., night-flowering catchfly
- Spergularia media* L., media sandspurry
- Spergularia rubra* L., red sandspurry
- Stellaria media* (L.) Cyrillo, common chickweed
- Vaccaria hispanica* (Miller) Rauschert, cow-cockle

Chenopodiaceae

- Atriplex hortensis* Moq., garden orache
- Atriplex rosea* L., tumbling saltweed
- Atriplex semibaccata* R. Br., Australian saltbush
- Bassia hyssopifolia* (Pal.) Kuntze, five-hook
- Chenopodium album* L., lamb's quarters
- Chenopodium capitatum* (L.) Asch., strawberry blite
- Chenopodium glaucum* L. ssp. *glaucum*, oakleaf goosefoot
- Chenopodium hircinum* Schrad., avian goosefoot
- Chenopodium murale* L., nettle-leaf goosefoot
- Chenopodium paganum* Reichb., goosefoot
- Chenopodium rubrum* L., red goosefoot
- Halogeton glomeratus* (Bieb.) C. A. Mey., halogeton
- Kochia scoparia* (L.) Roth, summer cypress
- Salsola collina* P. S. Pallas, slender Russian thistle
- Salsola paulsenii* Litv., Russian thistle
- Salsola tragus* L., prickly Russian thistle
- Teloxys ambrosioides* L., Mexican tea
- Teloxys botrys* (L.) W. A. Weber, Jerusalem oak goosefoot

Clusiaceae

- Hypericum perforatum* L., common St. Johnswort

Convolvulaceae

- Convolvulus arvensis* L., field bindweed
- Ipomoea hederacea* (L.) Jacq., ivyleaf morning-glory
- Ipomoea purpurea* (L.) Roth, tall morning-glory

Cucurbitaceae

- Citrullus vulgaris* Schrad. var. *citroides* Bailey, watermelon
- Citrullus vulgaris* Schrad. var. *vulgaris* Bailey, watermelon
- Cucumis melo* L., cantaloupe
- Mormordica balsamina* L., balsam-apple

Cuscutaceae

- Cuscuta epithymum* L., clover dodder

Dipsacaceae

- Dipsacus fullonum* L. ssp. *sylvestris* (Huds.) Clapham, teasel

Elaeagnaceae

- Elaeagnus angustifolia* L., Russian olive

Euphorbiaceae

- Euphorbia esula* L., leafy spurge
- Euphorbia peplus* L., petty spurge

Fabaceae

- Alhagi maurorum* Medikus., camelthorn
- Caragana arborescens* Lam., Siberian pea shrub (George W. Cox)
- Coronilla varia* L., purple crownvetch
- Lathyrus latifolius* L., perennial pea
- Lotus corniculatus* L., birdfoot deerfutch

- Medicago lupulina* L., black medic
- Medicago polymorpha* L., burclover
- Medicago sativa* L., alfalfa
- Melilotus indicus* (L.) All., annual yellow sweetclover
- Melilotus officinalis* (L.) Lam., sweetclover
- Onobrychis viciifolia* Scop., sainfoin
- Robinia hispida* L., bristly locust
- Robinia pseudo-acacia* L., black locust
- Sphaerophysa salsula* (Pall.) DC., alkali Swainsonpea
- Trifolium fragiferum* L., strawberry clover
- Trifolium hybridum* L., alsike clover
- Trifolium pratense* L., red clover
- Trifolium procumbens* L., field clover
- Trifolium repens* L., white clover
- Vicia dasycarpa* Ten., winter vetch
- Vicia sativa* L. ssp. *nigra* (L.) Ehrh., garden vetch
- Vicia villosa* Roth, winter vetch

Gentianaceae

- Sabatia angularis* (L.) Pursh, rosepink

Geraniaceae

- Erodium cicutarium* (L.) L'Her., red-stemmed filaree

Haloragaceae

- Myriophyllum aquaticum* (Vell.) Verdc., parrot feather watermilfoil
- Myriophyllum spicatum* L., spike watermilfoil
- Myriophyllum verticillatum* L., whorl-leaf watermilfoil

Lamiaceae

- Lamium amplexicaule* L., henbit deadnettle
- Leonurus cardiaca* L., motherwort
- Marrubium vulgare* L., horehound
- Mentha rotundifolia* (L.) Huds., apple mint
- Mentha spicata* L., spearmint
- Nepeta cataria* L., catnip
- Prunella vulgaris* L., heal-all
- Salvia pratensis* L., meadow sage
- Scutellaria galericulata* L., marsh skullcap

Linaceae

- Linum usitatissimum* L., common flax

Lythraceae

- Lythrum salicaria* L., purple loosestrife

Malvaceae

- Abutilon theophrasti* Medic., velvetleaf
- Alcea rosea* L., hollyhock
- Hibiscus trionum* L., flower-of-an-hour
- Malva crispa* L., curly mallow
- Malva neglecta* Wallr., common mallow
- Malva parviflora* L., cheeseweed mallow
- Malva sylvestris* L., high mallow

Meliaceae

- Melia azedarach* L., Chinaberry

Mimosaceae

- Albizia julibrissin* Durazzini, mimosa

Molluginaceae

- Mollugo cerviana* L., threadstem carpetweed
- Mollugo verticillata* L., green carpetweed

Moraceae

- Maclura pomifera* (Raf.) Schneid., Osage orange
- Morus alba* L., White Mulberry

Oleaceae

- Fraxinus pennsylvanica* Marsh., green ash
- Ligustrum vulgare* L., European privet

Papaveraceae

- Papaver rhoeas* L., corn poppy
- Papaver somniferum* L., opium poppy

Plantaginaceae

- Plantago lanceolata* L., narrowleaf plantain
- Plantago major* L., common plantain

Polemoniaceae

- Phlox divaricata* L., wild blue phlox (George W. Cox)

Polygonaceae

- Fagopyrum esculentum* Moench, buckwheat
- Polygonum aubertii* Henry, Chinese fleeciveine

(Continued on page 6, Aliens)



(Aliens, Continued from page 5)

- Polygonum aviculare* L., knotweed
Polygonum convolvulus L., black bindweed
Polygonum lapathifolium L., curltop willowweed
Polygonum persicaria L., spotted ladysthumb
Rumex acetosella L., sheep sorrel
Rumex crispus L., curly dock
Rumex obtusifolius L., bitter dock
Rumex patientia L., patience dock
Rumex pulcher L., fiddle dock
Rumex stenophyllus Ledeb., narrowleaf dock (Roger S. Peterson)
- Portulacaceae
Portulaca oleracea L. ssp. *impolita* Danin & H. G. Baker, purslane
Portulaca oleracea L. ssp. *oleracea*, purslane
Portulaca oleracea L. ssp. *papillio-stellulata* Danin & H. G. Baker, purslane
- Primulaceae
Anagallis arvensis L., scarlet pimpernel
Centunculus minimus L., chaffweed
- Ranunculaceae
Clematis orientalis L., Oriental virginsbower
Consolida ajacis (L.) Schur., rocket larkspur
Ranunculus acris L., tall buttercup
Ranunculus testiculatus Crantz, curvseed butterwort
- Rosaceae
Malus sylvestris P. Mill., European crabapple
Pyracantha coccinea Roemer, scarlet firethorn
Pyrus communis L., common pear
Rubus discolor Weihe & Nees, Himalayan blackberry
Sanguisorba minor Scop., small burnet
- Rubiaceae
Galium aparine L., cleavers
- Salicaceae
Populus alba L., white poplar
Salix alba L., white willow
Salix babylonica L., weeping willow
Salix fragilis L., crack willow
- Scrophulariaceae
Linaria dalmatica (L.) Mill., Dalmatian toadflax
Linaria vulgaris Mill., yellow toadflax
Verbascum blattaria L., moth mullein
Verbascum thapsus L., common mullein
Verbascum virgatum Stokes, wand mullein
Veronica anagallis-aquatica L., water speedwell
Veronica arvensis L., corn speedwell
Veronica persica Poir., birdeye speedwell
Veronica serpyllifolia L., thymeleaf speedwell
- Simaroubaceae
Ailanthus altissima (Mill.) Swingle, ailanthus
- Solanaceae
Datura innoxia Miller, angel's trumpet
Datura stramonium L., jimsonweed
Hyoscyamus niger L., black henbane
Lycium barbarum Mill., matrimony vine
Nicotiana glauca Graham, tree tobacco
Physalis ixocarpa Brot. ex Hornem., Mexican groundcherry
Solanum nigrum L., black nightshade
Solanum sarachoides Sendt. In Mart., hairy nightshade
- Tamaricaceae
Tamarix chinensis Lour, fivestamen tamarisk
Tamarix ramosissima Ledeb., saltcedar
- Ulmaceae
Ulmus pumila L., Siberian elm
- Verbenaceae
Phyla nodiflora (L.) Greene, turkey tangle frogfruit
Verbena tenuisecta Briq., South American mock vervain
Vitex agnus-castus L., lilac chastetree
- Zygophyllaceae
Peganum harmala L., African rue
Tribulus terrestris L., goathead
Zygophyllum fabago L., Syrian beancaper

Angiosperms: Monocotyledoneae

- Cyperaceae
Cyperus esculentus L., chufa flatsedge
Cyperus rotundus L., nutgrass
- Hydrocharitaceae
Egeria densa Planch, Brazilian waterweed
- Liliaceae
Asparagus officinalis L., garden asparagus
Asphodelus fistulosus L., onionweed
Muscari neglectum Guss. ex Ten., starch grape hyacinth
- Poaceae
Aegilops cylindrica Host, jointed goatgrass
Agropyron cristatum (L.) Gaertn. ssp. *cristatum*, crested wheatgrass
Agropyron cristatum (L.) Gaertn. ssp. *desertorum* (Fisch. ex Link) Löve, crested wheatgrass
Agropyron cristatum (L.) Gaertn. ssp. *fragile* (Roth) Löve, crested wheatgrass
Agrostis gigantea Roth, redtop
Agrostis stolonifera L., creeping bentgrass
Aira elegans Willd. ex Gaudin., annual silver hairgrass
Alopecurus geniculatus L., water foxtail
Alopecurus myosuroides Huds., foxtail
Alopecurus pratensis L., meadow foxtail
Anthoxanthum odoratum L., sweet vernalgrass
Apera interrupta (L.) Beauv., apera
Aristida oligantha Michx., oldfield threawn
Arrhenatherum elatius (L.) J. & C. Presl, tall oatgrass
Arundo donax L., giant reed
Avena barbata Pott ex Link, slender oat
Avena fatua L. var. *fatua*, wild oat
Avena fatua L. var. *sativa* (L.) Hausskn., wild oat
Bothriochloa bladhii (Retz.) S. T. Blake, Australian bluestem
Bothriochloa ischaemum (L.) Keng var. *ischemum*, yellow bluestem
Bothriochloa ischaemum (L.) Keng var. *songarica* (Rupr.) Celerier & Harlan, King Ranch bluestem
Briza minor L., little quakinggrass
Bromus brizaeformis Fisch. & Mey., rattlesnake chess
Bromus catharticus Vahl, rescuegrass
Bromus diandrus Roth, riggut brome
Bromus hordeaceus L., soft brome
Bromus inermis Leyss., smooth brome
Bromus japonicus Thunb. ex Murray, Japanese brome
Bromus rubens L., foxtail brome
Bromus secalinus L., rye chess
Bromus sterilis L., poverty brome
Bromus tectorum L., cheatgrass
Catapodium rigidum (L.) C. E. Hubb., ferngrass
Cenchrus echinatus L., southern sandbur
Chloris submutica Kunth, Mexican windmillgrass
Chloris virgata Sw., showy windmillgrass
Cynodon dactylon L., Bermudagrass
Dactylis glomerata L., orchardgrass
Dactyloctenium aegypticum (L.) Willd., crowfootgrass
Deschampsia danthonioides (Trin.) Munro, annual hairgrass
Digitaria ciliaris (Retz.) Koel., southern crabgrass
Digitaria eriantha Steudel, pangola grass
Digitaria ischaemum (Schreb.) Muhl., smooth crabgrass
Digitaria sanguinalis (L.) Scop., hairy crabgrass
Echinochloa colona (L.) Link, junglerice
Echinochloa crus-galli (L.) Beauv., barnyardgrass
Echinochloa crus-pavonis (Kunth) Schult., barnyardgrass
Eleusine indica (L.) Gaertn., goosegrass
Elymus elongatus (Host) Runem. ssp. *elongatus*, tall wheatgrass
Elymus elongatus (Host) Runem. ssp. *ponticus* (Podp.) Melderis, tall wheatgrass
Elymus hispidus (Opiz) Melderis ssp. *hispidus*, intermediate wheatgrass
Elymus hispidus (Opiz) Melderis ssp. *barbulatus* (Schur), pubescent wheatgrass
Elymus repens (L.) Gould, quackgrass
Eragrostis barrelieri Daveau, Mediterranean lovegrass

(Continued on page 7, Aliens)



(Aliens, Continued from page 6)

Eragrostis cilianensis (All.) Vign. ex Janchen, stinkgrass
Eragrostis curvula (Schrad.) Nees var. *conferta* Nees, Boer lovegrass
Eragrostis curvula (Schrad.) Nees var. *curvula*, weeping lovegrass
Eragrostis lehmanniana Nees, Lehmann lovegrass
Eragrostis superba Peyr., Wilman lovegrass
Eremopyrum triticeum (Gaertn.) Nevski, annual wheatgrass
Festuca arundinacea Schreber, tall fescue
Festuca pratensis Huds., meadow fescue
Festuca trachyphylla (Hack.) Krajina, hard fescue
Hackelochloa granularis (L.) Kuntze, Hackelochloa
Hierochloa odorata (L.) Beauv., sweetgrass
Holcus lanatus L., velvetgrass
Hordeum arizonicum Covas, Arizona barley
Hordeum murinum L. ssp. *glaucum* (Steud) Tsvelev, wall barley
Hordeum murinum L. ssp. *leporinum* (Link) Arcangeli, hare barley
Hordeum vulgare L., barley
Lolium perenne L. var. *perenne*, perennial ryegrass
Lolium perenne L. var. *aristatum* Willd., Italian ryegrass
Lolium temulentum L., poison darnel
Panicum amarum Ell., bitter panicum
Panicum antidotale Retz., blue panicum
Panicum coloratum L., Kleingrass
Panicum dichotomiflorum Michx., fall panicum
Panicum hians Ell., gaping panicum
Panicum milaceum L., broomcorn millet
Paspalum dilatatum Poir., Dallisgrass
Pennisetum ciliare (L.) Link, buffelgrass
Phalaris angusta Nees ex Trin., canarygrass
Phalaris canariensis L., canarygrass
Phalaris minor Retz., canarygrass
Phleum pratense L., timothy
Pleuraphis rigida Thurber in S. Wats., big galleta
Poa annua L., annual bluegrass
Poa arachnifera Torr., Texas bluegrass
Poa bulbosa L., bulbous bluegrass

Poa compressa L., Canada bluegrass
Poa pratensis L. *pratensis* phase, Kentucky bluegrass
Poa trivialis L., rough bluegrass
Polypogon interruptus Kunth., ditch polypogon
Polypogon monspeliensis (L.) Desf., rabbitfoot grass
Polypogon viridis (Gouan) Breistroffer, water polypogon
Psathyrostachys juncea (Fischer) Nevski, Russian wildrye
Puccinellia distans (L.) Parl., Parrish's alkaligrass
Rhynchelytrum repens (Willd.) C. E. Hubb., Natal grass
Saccharum ravennae (L.) Murray, Ravennagrass
Schismus arabicus Nees, Mediterranean grass
Schismus barbatus (L.) Thell., Mediterranean grass
Sclerachloa dura (L.) Beauv., hardgrass
Secale cereale L., rye
Setaria adhaerens (Forsskal) Chiov., clinging bristlegrass
Setaria italica (L.) Beauv., foxtail millet
Setaria magna Griesb., giant foxtail
Setaria pumila (Poir.) Roem. & Schult., yellow bristlegrass
Setaria verticillata (L.) Beauv., hooked bristlegrass
Setaria viridis (L.) Beauv., green bristlegrass
Sorghum bicolor (L.) Moench ssp. *bicolor*, sorghum
Sorghum bicolor (L.) Moench ssp. *drummondii* (Steud.) DeWet, Sudangrass
Sorghum halepense (L.) Pers., Johnsongrass
Sporobolus neglectus Nash, puffshead dropseed
Sporobolus vaginiflorus (Torr. ex Gray) Wood, poverty dropseed
Tragus berteronianus Schult., spike burgrass
Tridens eragrostoides (Vasey & Scribn.) Nash, tridens
Tridens flavus (L.) A.S. Hitchc., purpletop
Triticum aestivum L., wheat
Urochloa panicoides Beauv., liverseed grass
Vulpia bromoides L., Brome, six weeksgrass
Vulpia myuros (L.) K. C. Gmelin var. *myuros*, rattail sixweeksgrass
Vulpia myuros (L.) K. C. Gmelin var. *hirsuta* Hack., rattail sixweeksgrass
Zea mays L. ssp. *mays*, maize
Potamogetonaceae
Potamogeton crispus L., curly pondweed



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Range Plant Specialist

What's In A Name?

It's helpful and even satisfying for us to know the meaning of the scientific names of New Mexico plants. We delight in knowing that *Iris* means *rainbow* (Greek), commemorate the great Swedish naturalist with *Linnaea* (Latin), nod knowingly with *Dracocephalum* (dragon's head, Greek), scratch our heads a bit over *Gaura*, meaning superb (Greek), and take comfort that *Alyssum* (without madness, Greek) was recommended as a cure for rabies. But not all generic names are so meaningful. It is perfectly acceptable and within the rules to rearrange the letters of a closely related genus to arrive at a new name. Thus we have *Sibara* from *Arabis* (Cruciferae), *Sartidia* from *Aristida* (Gramineae), *Litrisia* from *Liatris* (Compositae), *Milula* from *Allium* (Liliaceae), and *Leymus* from *Elymus* (Gramineae). Some untapped anagrams for future botanists are *Spoilage* from *Aegilops*, *Precis* from *Crepis*, *Acid-rio* from *Dicoria*, *Septic* from *Pectis*, *Altercate* from *Tetraclea*, and *Ada-sue* from *Suaeda*. 



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APPENDIX C
LIST OF PREVIOUSLY SURVEYED ARCHAEOLOGICAL SITES
IN THE STUDY CORRIDOR

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Hidalgo	498	Prehistoric	Yes
Hidalgo	593	Prehistoric	No
Hidalgo	1369	Prehistoric	Yes
Hidalgo	2469	Prehistoric	Unknown
Hidalgo	2758	Prehistoric	Unknown
Hidalgo	4979	Prehistoric	Yes
Hidalgo	4980	Prehistoric	Yes
Hidalgo	5689	Prehistoric	Unknown
Hidalgo	5690	Prehistoric	Unknown
Hidalgo	5691	Prehistoric	Unknown
Hidalgo	5692	Historic	Unknown
Hidalgo	5693	Prehistoric	Unknown
Hidalgo	5694	Unknown	Unknown
Hidalgo	5695	Unknown	Unknown
Hidalgo	5696	Unknown	Unknown
Hidalgo	5697	Prehistoric	Unknown
Hidalgo	5698	Prehistoric	Yes
Hidalgo	5699	Unknown	Unknown
Hidalgo	5700	Historic	Unknown
Hidalgo	5701	Unknown	Unknown
Hidalgo	5702	Prehistoric	Unknown
Hidalgo	5703	Prehistoric	Unknown
Hidalgo	5704	Unknown	Unknown
Hidalgo	5705	Prehistoric	Unknown
Hidalgo	11823	Both	Yes
Hidalgo	12129	Prehistoric	Unknown
Grant	13199	Unknown	Unknown
Hidalgo	13201	Prehistoric	Unknown
Hidalgo	13202	Prehistoric	Unknown
Hidalgo	13203	Prehistoric	Unknown
Hidalgo	13204	Unknown	Unknown
Hidalgo	13205	Unknown	Unknown
Hidalgo	13206	Prehistoric	Unknown
Grant	13207	Unknown	Unknown
Grant	20138	Historic	Unknown
Hidalgo	20140	Historic	Unknown
Hidalgo	25970	Unknown	Unknown
Hidalgo	25971	Unknown	Unknown
Hidalgo	25972	Unknown	Unknown
Hidalgo	25973	Unknown	Unknown
Grant	29349	Both	Unknown
Hidalgo	29350	Unknown	Unknown
Hidalgo	31050	Prehistoric	Yes
Hidalgo	34392	Historic	Unknown
Grant	34393	Unknown	Unknown
Grant	34394	Unknown	Unknown
Grant	34395	Historic	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Hidalgo	34907	Prehistoric	Unknown
Hidalgo	34908	Unknown	Unknown
Hidalgo	35265	Prehistoric	Unknown
Hidalgo	37397	Unknown	Unknown
Luna	37536	Unknown	Unknown
Hidalgo	37665	Unknown	Unknown
Hidalgo	38048	Unknown	Unknown
Hidalgo	38049	Prehistoric	Unknown
Hidalgo	38050	Unknown	Unknown
Hidalgo	38051	Unknown	Unknown
Hidalgo	38449	Prehistoric	Unknown
Hidalgo	38450	Both	Unknown
Hidalgo	38451	Prehistoric	Unknown
Hidalgo	38452	Prehistoric	Unknown
Luna	44811	Historic	No
Hidalgo	49989	Historic	Unknown
Grant	50085	Historic	Unknown
Hidalgo	50093	Historic	Unknown
Hidalgo	54015	Prehistoric	Unknown
Hidalgo	54016	Prehistoric	Unknown
Hidalgo	54017	Prehistoric	Unknown
Hidalgo	54018	Prehistoric	Unknown
Hidalgo	54019	Unknown	Unknown
Hidalgo	54020	Prehistoric	Yes
Hidalgo	54021	Prehistoric	Yes
Hidalgo	54022	Prehistoric	Unknown
Hidalgo	54023	Unknown	Unknown
Hidalgo	54024	Prehistoric	Unknown
Hidalgo	54025	Unknown	Unknown
Hidalgo	54026	Prehistoric	Yes
Hidalgo	54027	Unknown	Unknown
Hidalgo	54028	Prehistoric	Yes
Hidalgo	54029	Prehistoric	Yes
Hidalgo	54030	Unknown	Unknown
Hidalgo	54031	Prehistoric	Yes
Hidalgo	54032	Prehistoric	Unknown
Hidalgo	54033	Prehistoric	Yes
Hidalgo	54034	Prehistoric	No
Hidalgo	54035	Unknown	Unknown
Hidalgo	54036	Prehistoric	No
Hidalgo	54037	Prehistoric	Unknown
Hidalgo	54038	Prehistoric	Yes
Hidalgo	54039	Prehistoric	Yes
Hidalgo	54040	Prehistoric	Unknown
Hidalgo	54041	Unknown	Unknown
Hidalgo	54042	Prehistoric	Yes
Hidalgo	54043	Prehistoric	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Hidalgo	54044	Prehistoric	Unknown
Hidalgo	54045	Prehistoric	Unknown
Hidalgo	54046	Unknown	Unknown
Hidalgo	54047	Unknown	Unknown
Hidalgo	54048	Prehistoric	Yes
Hidalgo	54049	Prehistoric	Yes
Hidalgo	54050	Prehistoric	Yes
Hidalgo	54051	Prehistoric	Yes
Hidalgo	54052	Both	Unknown
Hidalgo	54053	Prehistoric	Yes
Hidalgo	54054	Unknown	Unknown
Hidalgo	54055	Unknown	Unknown
Hidalgo	54056	Unknown	Unknown
Hidalgo	54057	Unknown	Unknown
Hidalgo	54058	Unknown	Unknown
Hidalgo	54059	Unknown	Unknown
Hidalgo	54060	Unknown	Unknown
Hidalgo	54061	Unknown	Unknown
Hidalgo	54062	Unknown	Unknown
Hidalgo	54063	Unknown	Unknown
Hidalgo	54064	Unknown	Unknown
Hidalgo	54065	Unknown	Unknown
Hidalgo	54066	Unknown	Unknown
Hidalgo	54067	Unknown	Unknown
Hidalgo	54273	Unknown	Unknown
Hidalgo	54953	Unknown	Unknown
Hidalgo	54954	Prehistoric	Unknown
Grant	55873	Unknown	Unknown
Hidalgo	59936	Historic	Unknown
Hidalgo	59937	Prehistoric	Unknown
Hidalgo	59938	Prehistoric	Unknown
Hidalgo	59939	Unknown	Unknown
Hidalgo	59940	Unknown	Unknown
Hidalgo	59941	Unknown	Unknown
Hidalgo	59942	Unknown	Unknown
Hidalgo	59943	Unknown	Unknown
Hidalgo	59944	Unknown	Unknown
Hidalgo	59945	Prehistoric	Unknown
Hidalgo	59946	Unknown	Unknown
Hidalgo	59972	Unknown	Unknown
Hidalgo	61947	Prehistoric	Unknown
Hidalgo	67961	Historic	Unknown
Hidalgo	67962	Historic	No
Hidalgo	68028	Historic	Unknown
Hidalgo	71697	Prehistoric	Unknown
Hidalgo	71698	Unknown	Unknown
Hidalgo	72893	Both	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Hidalgo	72901	Both	Unknown
Hidalgo	73374	Historic	Unknown
Hidalgo	73401	Historic	Unknown
Hidalgo	75393	Prehistoric	Unknown
Hidalgo	75394	Unknown	Unknown
Hidalgo	75459	Prehistoric	Unknown
Hidalgo	77494	Historic	Unknown
Hidalgo	79732	Unknown	Unknown
Hidalgo	79733	Unknown	Unknown
Hidalgo	79734	Unknown	Unknown
Hidalgo	80525	Prehistoric	Unknown
Hidalgo	85739	Both	No
Hidalgo	85745	Unknown	No
Hidalgo	85762	Prehistoric	No
Hidalgo	86866	Historic	Unknown
Hidalgo	86955	Prehistoric	Unknown
Hidalgo	86956	Unknown	Unknown
Hidalgo	88357	Historic	Unknown
Hidalgo	89142	Historic	Unknown
Hidalgo	89226	Prehistoric	Unknown
Hidalgo	89227	Prehistoric	Unknown
Hidalgo	89345	Historic	No
Hidalgo	100528	Historic	Unknown
Hidalgo	101502	Unknown	Unknown
Hidalgo	104052	Historic	No
Hidalgo	104599	Prehistoric	No
Hidalgo	104600	Unknown	No
Hidalgo	104601	Unknown	No
Hidalgo	104602	Prehistoric	No
Hidalgo	104603	Unknown	No
Hidalgo	104604	Prehistoric	No
Hidalgo	85791	Unknown	Unknown
Hidalgo	109519	Prehistoric	No
Hidalgo	85740	Both	Unknown
Luna	85778	Historic	Unknown
Hidalgo	85784	Prehistoric	Unknown
Hidalgo	85785	Unknown	Unknown
Hidalgo	85787	Historic	Unknown
Hidalgo	85788	Historic	Unknown
Hidalgo	85789	Historic	Unknown
Hidalgo	85790	Unknown	Unknown
Hidalgo	85792	Unknown	Unknown
Hidalgo	85794	Prehistoric	Unknown
Hidalgo	85795	Prehistoric	Unknown
Hidalgo	85796	Prehistoric	Unknown
Hidalgo	89048	Prehistoric	Unknown
Hidalgo	89049	Unknown	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Hidalgo	89050	Unknown	Unknown
Hidalgo	89051	Unknown	Unknown
Hidalgo	98629	Unknown	Unknown
Hidalgo	98630	Unknown	Unknown
Hidalgo	98631	Unknown	Unknown
Hidalgo	98632	Prehistoric	Unknown
Hidalgo	98633	Unknown	Unknown
Hidalgo	98634	Prehistoric	Unknown
Hidalgo	98635	Unknown	Unknown
Hidalgo	98636	Both	Unknown
Hidalgo	98637	Unknown	Unknown
Hidalgo	98638	Unknown	Unknown
Hidalgo	98639	Unknown	Unknown
Hidalgo	98640	Unknown	Unknown
Luna	100707	Historic	Unknown
Hidalgo	120638	Unknown	Unknown
Hidalgo	120640	Unknown	Unknown
Hidalgo	121072	Historic	No
Hidalgo	121151	Historic	No
Hidalgo	126127	Prehistoric	Unknown
	130157	Historic	Unknown
	130156	Historic	Unknown
	130159	Prehistoric	Unknown
	130160	Prehistoric	Unknown
	130161	Prehistoric	Unknown
	130163	Historic	Unknown
Hidalgo	131178	Historic	Unknown
Hidalgo	131179	Historic	Unknown
Hidalgo	131180	Historic	Unknown
Hidalgo	131181	Unknown	Unknown
Hidalgo	131182	Historic	Unknown
Hidalgo	131526	Unknown	Unknown
	137052	Historic	Unknown
Dona Ana	462	Prehistoric	Unknown
Dona Ana	1049	Prehistoric	Unknown
Dona Ana	1644	Prehistoric	Unknown
Dona Ana	1645	Prehistoric	Unknown
Dona Ana	1646	Prehistoric	Unknown
Dona Ana	1651	Prehistoric	Unknown
Dona Ana	1658	Prehistoric	Unknown
Dona Ana	1659	Prehistoric	Unknown
Dona Ana	1660	Prehistoric	Unknown
Dona Ana	1671	Both	Unknown
Dona Ana	1801	Prehistoric	Unknown
Dona Ana	2287	Prehistoric	Unknown
Luna	5197	Historic	Unknown
Dona Ana	12794	Prehistoric	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	12795	Prehistoric	Unknown
Dona Ana	12796	Prehistoric	Unknown
Dona Ana	12797	Prehistoric	Unknown
Dona Ana	12798	Prehistoric	Unknown
Dona Ana	12799	Prehistoric	Unknown
Dona Ana	12824	Prehistoric	Unknown
Dona Ana	12825	Unknown	Unknown
Dona Ana	12826	Prehistoric	Unknown
Luna	12839	Historic	Unknown
Luna	19072	Prehistoric	Unknown
Dona Ana	21134	Prehistoric	No
Dona Ana	26966	Prehistoric	Unknown
Dona Ana	26976	Prehistoric	Unknown
Dona Ana	26991	Unknown	Unknown
Dona Ana	26992	Prehistoric	Unknown
Dona Ana	27754	Prehistoric	Unknown
Dona Ana	27755	Prehistoric	Unknown
Dona Ana	27756	Unknown	Unknown
Dona Ana	35121	Prehistoric	Unknown
Dona Ana	35122	Prehistoric	Unknown
Dona Ana	35123	Unknown	Unknown
Dona Ana	35124	Prehistoric	Unknown
Dona Ana	35125	Unknown	Unknown
Dona Ana	35126	Prehistoric	Unknown
Dona Ana	35127	Unknown	Unknown
Dona Ana	35128	Unknown	Unknown
Dona Ana	35129	Unknown	Unknown
Dona Ana	35130	Unknown	Unknown
Dona Ana	35131	Unknown	Unknown
Dona Ana	35132	Prehistoric	Unknown
Dona Ana	35133	Unknown	Unknown
Dona Ana	35134	Unknown	Unknown
Dona Ana	35135	Prehistoric	Unknown
Dona Ana	35136	Prehistoric	Unknown
Dona Ana	35137	Unknown	Unknown
Dona Ana	35138	Prehistoric	Unknown
Dona Ana	35139	Prehistoric	Unknown
Dona Ana	35141	Unknown	Unknown
Dona Ana	35142	Unknown	Unknown
Dona Ana	35143	Prehistoric	Unknown
Luna	35202	Prehistoric	Unknown
Luna	35203	Unknown	Unknown
Dona Ana	35216	Prehistoric	Unknown
Dona Ana	35217	Prehistoric	Unknown
Dona Ana	35218	Prehistoric	Unknown
Dona Ana	35219	Prehistoric	Unknown
Dona Ana	35220	Prehistoric	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	35221	Prehistoric	Unknown
Dona Ana	35222	Prehistoric	Unknown
Luna	35223	Unknown	Unknown
Luna	35224	Prehistoric	Unknown
Luna	35225	Prehistoric	Unknown
Luna	35226	Prehistoric	No
Luna	35227	Prehistoric	Unknown
Luna	35228	Unknown	Unknown
Luna	35229	Unknown	Unknown
Luna	35230	Unknown	Unknown
Luna	35231	Unknown	Unknown
Luna	37538	Prehistoric	Unknown
Luna	38037	Unknown	Unknown
Dona Ana	39162	Prehistoric	Unknown
Dona Ana	43943	Historic	Unknown
Dona Ana	45516	Prehistoric	Unknown
Dona Ana	46441	Unknown	Unknown
Dona Ana	49317	Prehistoric	Unknown
Dona Ana	49318	Prehistoric	Unknown
Dona Ana	49319	Prehistoric	Unknown
Dona Ana	49320	Prehistoric	Unknown
Dona Ana	49321	Prehistoric	Unknown
Dona Ana	49322	Prehistoric	Unknown
Dona Ana	49323	Prehistoric	Unknown
Dona Ana	49324	Prehistoric	Unknown
Dona Ana	49325	Prehistoric	Unknown
Dona Ana	49326	Prehistoric	Unknown
Dona Ana	49327	Prehistoric	Unknown
Dona Ana	49328	Prehistoric	Unknown
Dona Ana	49329	Prehistoric	Unknown
Dona Ana	49330	Prehistoric	No
Dona Ana	49331	Prehistoric	Unknown
Dona Ana	49332	Prehistoric	Unknown
Dona Ana	49337	Prehistoric	Unknown
Dona Ana	49338	Prehistoric	Unknown
Dona Ana	49341	Prehistoric	Unknown
Dona Ana	49342	Prehistoric	Unknown
Dona Ana	49343	Prehistoric	No
Dona Ana	49345	Prehistoric	Unknown
Dona Ana	49346	Both	Unknown
Dona Ana	49348	Prehistoric	Unknown
Dona Ana	49350	Prehistoric	Unknown
Dona Ana	49351	Prehistoric	No
Dona Ana	49352	Prehistoric	Unknown
Dona Ana	49354	Prehistoric	Unknown
Dona Ana	49355	Prehistoric	No
Dona Ana	49356	Prehistoric	No

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	49357	Prehistoric	No
Dona Ana	49358	Prehistoric	No
Dona Ana	49359	Prehistoric	No
Dona Ana	49360	Prehistoric	Unknown
Dona Ana	49361	Prehistoric	Unknown
Dona Ana	49362	Prehistoric	Unknown
Dona Ana	49363	Prehistoric	Unknown
Dona Ana	49364	Prehistoric	Unknown
Dona Ana	49365	Prehistoric	Unknown
Dona Ana	49366	Prehistoric	Unknown
Dona Ana	49367	Prehistoric	Unknown
Dona Ana	49368	Prehistoric	Unknown
Dona Ana	49369	Prehistoric	Unknown
Dona Ana	49370	Prehistoric	Unknown
Dona Ana	49371	Prehistoric	Unknown
Dona Ana	49372	Prehistoric	Unknown
Dona Ana	49374	Prehistoric	Unknown
Dona Ana	49376	Prehistoric	Unknown
Dona Ana	49377	Prehistoric	Unknown
Dona Ana	49378	Prehistoric	Unknown
Dona Ana	49379	Prehistoric	Unknown
Dona Ana	49380	Prehistoric	Unknown
Dona Ana	49381	Prehistoric	Unknown
Dona Ana	49382	Prehistoric	Unknown
Dona Ana	49383	Prehistoric	Unknown
Dona Ana	49384	Prehistoric	Unknown
Dona Ana	49385	Prehistoric	Unknown
Dona Ana	49386	Prehistoric	Unknown
Luna	50343	Historic	Unknown
Luna	50344	Historic	Unknown
Luna	50345	Historic	Unknown
Luna	50346	Historic	Unknown
Luna	50347	Historic	Unknown
Luna	50349	Historic	Unknown
Luna	50353	Historic	Unknown
Dona Ana	51123	Prehistoric	Unknown
Dona Ana	51124	Prehistoric	Unknown
Dona Ana	51125	Prehistoric	Unknown
Dona Ana	51126	Prehistoric	Unknown
Dona Ana	51130	Unknown	Unknown
Dona Ana	52219	Prehistoric	Unknown
Dona Ana	52220	Prehistoric	Unknown
Dona Ana	52221	Prehistoric	Unknown
Dona Ana	54089	Prehistoric	Unknown
Dona Ana	54471	Prehistoric	Unknown
Luna	54816	Prehistoric	Unknown
Dona Ana	54875	Historic	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	54876	Historic	Unknown
Dona Ana	54877	Historic	Unknown
Dona Ana	54878	Historic	Unknown
Dona Ana	54879	Historic	Unknown
Dona Ana	54880	Historic	Unknown
Luna	54881	Historic	Unknown
Luna	54882	Historic	Unknown
Luna	54883	Historic	Unknown
Dona Ana	54892	Prehistoric	Unknown
Luna	54893	Unknown	Unknown
Luna	54894	Unknown	Unknown
Luna	54895	Unknown	Unknown
Luna	54905	Prehistoric	Unknown
Dona Ana	56000	Prehistoric	Unknown
Dona Ana	56001	Prehistoric	Unknown
Dona Ana	56002	Prehistoric	Unknown
Dona Ana	56003	Prehistoric	Unknown
Dona Ana	56004	Prehistoric	Unknown
Dona Ana	56005	Prehistoric	Unknown
Dona Ana	56006	Prehistoric	Unknown
Dona Ana	56007	Prehistoric	Unknown
Dona Ana	56008	Prehistoric	Unknown
Dona Ana	56009	Prehistoric	Unknown
Dona Ana	56010	Prehistoric	Unknown
Dona Ana	56011	Prehistoric	Unknown
Dona Ana	56012	Prehistoric	Unknown
Dona Ana	56013	Prehistoric	Unknown
Dona Ana	56014	Prehistoric	Unknown
Dona Ana	56015	Prehistoric	Unknown
Dona Ana	56016	Prehistoric	Unknown
Dona Ana	56017	Prehistoric	Unknown
Dona Ana	56018	Prehistoric	Unknown
Dona Ana	56019	Prehistoric	Unknown
Dona Ana	56020	Prehistoric	Unknown
Dona Ana	56021	Unknown	Unknown
Dona Ana	56022	Prehistoric	Unknown
Dona Ana	56023	Prehistoric	Unknown
Dona Ana	56024	Unknown	Unknown
Dona Ana	56025	Prehistoric	Unknown
Dona Ana	56026	Prehistoric	Unknown
Dona Ana	56027	Prehistoric	Unknown
Dona Ana	56028	Prehistoric	No
Dona Ana	56029	Unknown	Unknown
Dona Ana	56030	Prehistoric	Unknown
Dona Ana	56031	Prehistoric	Unknown
Dona Ana	56033	Prehistoric	Unknown
Dona Ana	56034	Prehistoric	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	56035	Prehistoric	Unknown
Dona Ana	56036	Prehistoric	Unknown
Dona Ana	56040	Prehistoric	Unknown
Dona Ana	56041	Prehistoric	Unknown
Dona Ana	56042	Prehistoric	Unknown
Dona Ana	56043	Prehistoric	Unknown
Dona Ana	56044	Prehistoric	Unknown
Dona Ana	56045	Prehistoric	Unknown
Dona Ana	56046	Prehistoric	Unknown
Dona Ana	56047	Prehistoric	Unknown
Dona Ana	56048	Unknown	Unknown
Dona Ana	56051	Prehistoric	Unknown
Dona Ana	56052	Prehistoric	Unknown
Dona Ana	56053	Prehistoric	Unknown
Dona Ana	56836	Historic	Unknown
Luna	58907	Historic	Unknown
Dona Ana	59698	Unknown	Unknown
Dona Ana	59740	Unknown	Unknown
Dona Ana	59741	Unknown	Unknown
Dona Ana	59742	Unknown	Unknown
Dona Ana	59743	Unknown	Unknown
Dona Ana	59744	Unknown	Unknown
Dona Ana	59745	Unknown	Unknown
Dona Ana	59746	Unknown	Unknown
Dona Ana	59747	Unknown	Unknown
Dona Ana	59748	Unknown	Unknown
Dona Ana	59749	Unknown	Unknown
Dona Ana	59750	Unknown	Unknown
Dona Ana	59751	Unknown	Unknown
Dona Ana	59752	Unknown	Unknown
Dona Ana	59753	Unknown	Unknown
Dona Ana	59754	Prehistoric	Unknown
Dona Ana	59755	Unknown	Unknown
Dona Ana	59756	Unknown	Unknown
Dona Ana	59757	Prehistoric	Unknown
Dona Ana	59758	Unknown	Unknown
Dona Ana	59759	Unknown	Unknown
Dona Ana	59760	Unknown	Unknown
Dona Ana	59761	Unknown	Unknown
Dona Ana	59762	Unknown	Unknown
Dona Ana	59763	Unknown	Unknown
Dona Ana	59764	Unknown	Unknown
Dona Ana	59765	Unknown	Unknown
Dona Ana	59766	Unknown	Unknown
Dona Ana	59767	Unknown	Unknown
Dona Ana	59769	Unknown	Unknown
Dona Ana	59770	Unknown	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	59771	Unknown	Unknown
Dona Ana	59772	Unknown	Unknown
Dona Ana	59773	Unknown	Unknown
Dona Ana	59774	Prehistoric	Unknown
Dona Ana	59775	Unknown	Unknown
Dona Ana	59776	Unknown	Unknown
Dona Ana	59777	Unknown	Unknown
Dona Ana	59778	Unknown	Unknown
Dona Ana	59779	Unknown	Unknown
Dona Ana	59780	Unknown	Unknown
Dona Ana	59781	Unknown	Unknown
Dona Ana	59782	Unknown	Unknown
Dona Ana	59783	Prehistoric	Unknown
Dona Ana	59784	Prehistoric	Unknown
Dona Ana	59785	Prehistoric	Unknown
Dona Ana	59786	Unknown	Unknown
Dona Ana	59787	Unknown	Unknown
Dona Ana	59788	Unknown	Unknown
Dona Ana	59789	Unknown	Unknown
Dona Ana	59790	Unknown	Unknown
Dona Ana	59791	Unknown	Unknown
Dona Ana	59792	Prehistoric	Unknown
Dona Ana	59793	Unknown	Unknown
Dona Ana	59794	Unknown	Unknown
Dona Ana	59795	Unknown	Unknown
Dona Ana	59796	Both	Unknown
Dona Ana	59797	Unknown	Unknown
Dona Ana	59798	Unknown	Unknown
Dona Ana	59799	Prehistoric	Unknown
Dona Ana	59800	Prehistoric	Unknown
Dona Ana	59801	Unknown	Unknown
Dona Ana	59802	Unknown	Unknown
Dona Ana	59803	Unknown	Unknown
Dona Ana	59804	Unknown	Unknown
Dona Ana	59805	Unknown	Unknown
Dona Ana	59806	Prehistoric	Unknown
Dona Ana	59807	Unknown	Unknown
Dona Ana	59808	Unknown	Unknown
Dona Ana	59809	Unknown	Unknown
Dona Ana	59810	Unknown	Unknown
Dona Ana	59811	Unknown	Unknown
Dona Ana	59812	Unknown	Unknown
Dona Ana	59813	Unknown	Unknown
Dona Ana	59814	Unknown	Unknown
Dona Ana	59815	Unknown	Unknown
Dona Ana	59816	Unknown	Unknown
Dona Ana	59817	Unknown	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	59818	Unknown	Unknown
Dona Ana	59819	Unknown	Unknown
Dona Ana	59820	Unknown	Unknown
Dona Ana	59821	Unknown	Unknown
Dona Ana	59822	Unknown	Unknown
Dona Ana	59823	Unknown	Unknown
Dona Ana	59824	Prehistoric	Unknown
Dona Ana	59825	Unknown	Unknown
Dona Ana	59826	Unknown	Unknown
Dona Ana	59827	Historic	Unknown
Dona Ana	59828	Prehistoric	Unknown
Dona Ana	59829	Prehistoric	Unknown
Dona Ana	59830	Historic	Unknown
Dona Ana	59831	Historic	Unknown
Dona Ana	59832	Unknown	Unknown
Dona Ana	59833	Unknown	Unknown
Dona Ana	59834	Historic	Unknown
Dona Ana	59835	Prehistoric	Unknown
Dona Ana	59836	Unknown	Unknown
Dona Ana	59837	Historic	Unknown
Dona Ana	59838	Unknown	Unknown
Dona Ana	59839	Prehistoric	Unknown
Dona Ana	59841	Unknown	Unknown
Dona Ana	59843	Historic	Unknown
Dona Ana	59846	Historic	Unknown
Dona Ana	59847	Prehistoric	Unknown
Dona Ana	59849	Prehistoric	Unknown
Dona Ana	59850	Unknown	Unknown
Dona Ana	59851	Prehistoric	Unknown
Dona Ana	59852	Prehistoric	Unknown
Dona Ana	59853	Prehistoric	Unknown
Dona Ana	59854	Prehistoric	Unknown
Dona Ana	59855	Prehistoric	Unknown
Dona Ana	59856	Prehistoric	Unknown
Dona Ana	59857	Prehistoric	Unknown
Dona Ana	59858	Unknown	Unknown
Dona Ana	59860	Unknown	Unknown
Dona Ana	59861	Historic	Unknown
Dona Ana	59862	Prehistoric	Unknown
Dona Ana	59863	Prehistoric	Unknown
Dona Ana	59864	Unknown	Unknown
Dona Ana	59865	Prehistoric	Unknown
Dona Ana	60630	Unknown	Unknown
Dona Ana	60631	Unknown	Unknown
Dona Ana	60632	Unknown	Unknown
Dona Ana	60633	Prehistoric	Unknown
Dona Ana	60634	Unknown	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	60635	Prehistoric	Unknown
Dona Ana	60636	Prehistoric	Unknown
Dona Ana	60637	Prehistoric	Unknown
Dona Ana	60638	Prehistoric	Unknown
Dona Ana	60639	Prehistoric	Unknown
Dona Ana	60640	Prehistoric	Unknown
Dona Ana	60641	Prehistoric	Unknown
Dona Ana	60642	Prehistoric	Unknown
Dona Ana	60643	Prehistoric	Unknown
Luna	61480	Unknown	Unknown
Luna	61481	Unknown	Yes
Luna	61482	Historic	Yes
Dona Ana	67691	Prehistoric	Unknown
Dona Ana	67692	Prehistoric	Unknown
Dona Ana	67694	Prehistoric	Unknown
Dona Ana	67695	Both	Unknown
Dona Ana	67696	Prehistoric	Unknown
Dona Ana	69483	Historic	Unknown
Dona Ana	69484	Unknown	Unknown
Dona Ana	76002	Prehistoric	Unknown
Dona Ana	79551	Prehistoric	No
Dona Ana	82890	Historic	No
Dona Ana	84649	Prehistoric	Unknown
Dona Ana	84670	Prehistoric	No
Dona Ana	84671	Unknown	No
Luna	85076	Both	No
Dona Ana	86774	Prehistoric	No
Dona Ana	86775	Prehistoric	Unknown
Dona Ana	86776	Prehistoric	Unknown
Dona Ana	86777	Prehistoric	Unknown
Dona Ana	86778	Prehistoric	Unknown
Dona Ana	86779	Prehistoric	No
Dona Ana	86780	Prehistoric	Unknown
Dona Ana	86781	Prehistoric	Unknown
Dona Ana	86782	Prehistoric	Unknown
Dona Ana	86783	Prehistoric	Unknown
Dona Ana	86784	Prehistoric	Unknown
Dona Ana	86785	Prehistoric	Unknown
Dona Ana	86786	Prehistoric	Unknown
Dona Ana	86787	Prehistoric	Unknown
Dona Ana	86790	Prehistoric	Unknown
Dona Ana	86791	Prehistoric	Unknown
Dona Ana	87595	Prehistoric	No
Dona Ana	87596	Prehistoric	No
Dona Ana	89131	Prehistoric	Unknown
Luna	89132	Prehistoric	Unknown
Dona Ana	98641	Prehistoric	No

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
Dona Ana	98642	Prehistoric	No
Dona Ana	98643	Prehistoric	No
Dona Ana	98732	Prehistoric	Unknown
Dona Ana	98733	Both	Unknown
Dona Ana	98734	Prehistoric	Unknown
Dona Ana	99914	Prehistoric	No
Dona Ana	99915	Prehistoric	No
Dona Ana	99916	Prehistoric	No
Dona Ana	99917	Prehistoric	No
Dona Ana	99913	Prehistoric	No
Dona Ana	99912	Prehistoric	No
Dona Ana	106197	Prehistoric	Unknown
Dona Ana	107246	Prehistoric	No
Dona Ana	107777	Historic	Unknown
Dona Ana	108456	Prehistoric	No
Dona Ana	108457	Prehistoric	No
Dona Ana	108458	Prehistoric	No
Dona Ana	108459	Prehistoric	No
Luna	109327	Unknown	No
Luna	109328	Prehistoric	No
Dona Ana	85761	Prehistoric	Unknown
Luna	85765	Prehistoric	No
Luna	85772	Prehistoric	No
Luna	85774	Both	No
Luna	85798	Unknown	Unknown
Luna	100525	Unknown	Unknown
Luna	100526	Prehistoric	Unknown
Dona Ana	100527	Prehistoric	Unknown
Dona Ana	113683	Prehistoric	Unknown
Dona Ana	113684	Prehistoric	Unknown
Dona Ana	114176	Historic	Unknown
Dona Ana	121555	Unknown	No
Dona Ana	121556	Unknown	No
Dona Ana	121557	Prehistoric	No
Dona Ana	121558	Prehistoric	No
Dona Ana	121559	Prehistoric	No
Dona Ana	121560	Prehistoric	No
Dona Ana	121562	Prehistoric	No
Dona Ana	123207	Prehistoric	No
El Paso, TX	127181		Unknown
Dona Ana	127393	Historic	Unknown
Dona Ana	129531	Prehistoric	Unknown
	130158	Historic	Unknown
	131430	Prehistoric	Unknown
Luna	131438	Historic	Unknown
	131904	Historic	Unknown
Luna	136115	Historic	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
	138499	Both	Unknown
	138500	Both	Unknown
	138501	Both	Unknown
Dona Ana	56050	Prehistoric	Unknown
Dona Ana	56032	Prehistoric	Unknown
Dona Ana	49344	Prehistoric	Unknown
Dona Ana	130169	Historic	Unknown
Dona Ana	130170	Historic	Unknown
Dona Ana	129523	Prehistoric	Unknown
Dona Ana	129524	Prehistoric	Unknown
Dona Ana	129529	Prehistoric	Unknown
Dona Ana	129530	Prehistoric	Unknown
Dona Ana	129532	Prehistoric	Unknown
Luna	136113	Prehistoric	Unknown
Luna	136160	Unknown	Unknown
Hidalgo	135022	Historic	Unknown
Grant	20139	Historic	Unknown
Hidalgo	20141	Prehistoric	Unknown
Hidalgo	135021	Prehistoric	Unknown
Grant	135181	Unknown	Unknown
Hidalgo	135965	Historic	Unknown
	139027	Both	Unknown
Grant	139387	Historic	Unknown
Dona Ana	85744	Prehistoric	Unknown
Hidalgo	135180	Unknown	Unknown
Hidalgo	139971	Historic	Unknown
Grant	99349	Historic	No
Dona Ana	134139	Historic	Unknown
	146527	Prehistoric	Unknown
	146534	Prehistoric	Unknown
	146540	Prehistoric	Unknown
	146541	Prehistoric	Unknown
	146543	Prehistoric	Unknown
	146561	Prehistoric	Unknown
	146562	Prehistoric	Unknown
	146563	Prehistoric	Unknown
	146564	Prehistoric	Unknown
	146565	Prehistoric	Unknown
	146566	Prehistoric	Unknown
	146567	Prehistoric	Unknown
	146568	Prehistoric	Unknown
	146569	Prehistoric	Unknown
	146570	Prehistoric	Unknown
	146571	Prehistoric	Unknown
	146572	Prehistoric	Unknown
	146576	Prehistoric	Unknown
	146577	Prehistoric	Unknown

List of Previously Surveyed Archaeological Sites in the Study Corridor

County	LA. No.	Site Designation	NRHP Recommendation (Yes/No)
	146578	Prehistoric	Unknown
	146579	Prehistoric	Unknown
	146850	Historic	Unknown
	146859	Unknown	Unknown
	146860	Both	Unknown
	146861	Prehistoric	Unknown
	146862	Prehistoric	Unknown
	146863	Prehistoric	Unknown
Luna	146906	Historic	Unknown
Luna	146907	Historic	Unknown
Luna	146908	Historic	Unknown
Luna	146909	Historic	Unknown
	147175	Prehistoric	Unknown
	147176	Prehistoric	Unknown
	147177	Both	Unknown
	147178	Prehistoric	Unknown
	147179	Prehistoric	Unknown
	146542	Prehistoric	Unknown
	148995	Historic	Unknown
Grant	129785	Historic	Unknown
Dona Ana	85759	Prehistoric	Unknown
	150502	Prehistoric	Unknown
Dona Ana	145145	Historic	Unknown

APPENDIX D
PUBLIC MEETINGS SIGN-IN SHEETS & COMMENTS RECEIVED



DEPARTMENT OF HOMELAND SECURITY
BUREAU OF CUSTOMS AND BORDER PROTECTION
OFFICE OF BORDER PATROL
EL PASO SECTOR

PUBLIC SCOPING MEETING
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR PROPOSED INFRASTRUCTURE PROJECTS IN THE
EL PASO, YSLETA, FABENS AND FORT HANCOCK STATIONS
EL PASO SECTOR, TEXAS
JANUARY 17, 2006

	Name (Please Print)	Address (Mailing)	Representing	Would you like to receive a copy of the environmental assessment?
1	JOSE LOPEZ	119 S. OLD PUEBLO RD EL PASO, TX 79907	YSLETA DEL SUR PUEBLO	YES.
2				
3				
4				
5				
6				
7				
8				
9				
10				



DEPARTMENT OF HOMELAND SECURITY
BUREAU OF CUSTOMS AND BORDER PROTECTION
OFFICE OF BORDER PATROL
EL PASO SECTOR

PUBLIC SCOPING MEETING
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR PROPOSED INFRASTRUCTURE PROJECTS IN THE
SANTA TERESA, LAS CRUCES, DEMING AND LORDSBURG STATIONS
EL PASO SECTOR, TEXAS
JANUARY 18, 2006

Name (Please Print)	Address (Mailing)	Representing	Would you like to receive a copy of the environmental assessment?
Alex Todd	P.O. Box 3 Santa Teresa NM 88008	Catalina Dent	Yes
BENNIE JO RANGICH	1091 THUNDERBIRD ELPASO 79902	SELF	YES
Ed Garland	2970 N. MAIN LAS CRUCES NM 88001	SELF	Yes
Josée Motte	P.O. Box 108 Santa Teresa NM 88008	SELF	Yes
Paul Wells		USCP	NO
René A. Valenzuela		USCP	NO
John Colquhitt	201 E. Main #400 El Paso El Paso TX 79901	Verde Group	Yes
Jim Cattle	220 DOMINICK BLVD SANTA TERESA, NM 88008	NM Bureau of Land Management	Yes
Mike Nearchester	P.O. Box 30002 L.C. New Mex 88003	NMBO-PSL	Yes



DEPARTMENT OF HOMELAND SECURITY
BUREAU OF CUSTOMS AND BORDER PROTECTION
EL PASO SECTOR

PUBLIC SCOPING MEETING
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR PROPOSED INFRASTRUCTURE PROJECTS IN THE
SANTA TERESA, LAS CRUCES, DEMING AND LORDSBURG STATIONS
EL PASO SECTOR, TEXAS
JANUARY 19, 2006

Name (Please Print)	Address (Mailing)	Representing	Would you like to receive a copy of the environmental assessment?
Carol Schuchter	1705 Salinas SW Deming NM 88030		
Nancy Castle	5275 Rockhound Rd SE Deming NM 88030		yes
Gerald Donaldson	210 Cortez Hawley, NM 88043	PD NMO	yes
LARRY CALDWELL	211 N. ZINK, DEMING, NM 88030		yes -
Matt Winder	P.O. Box 601 Columbus, NM 88029	myself	yes
Greg Bloom	505 S. Main #148 LC, NM 88005	Sen. Bingaman	yes
Lori Allen	BLM 1800 Manglers Las Cruces, NM 88005	BLM	yes
Shirley A.	PO Box 2503 Deming NM 88031	NM Livestock Board	yes
Mary Means	P.O. Box 3, Deming, NM		yes
K C Gifford	Box 3 Quilmas N.M.		NO



DEPARTMENT OF HOMELAND SECURITY
BUREAU OF CUSTOMS AND BORDER PROTECTION
OFFICE OF BORDER PATROL
EL PASO SECTOR

PUBLIC SCOPING MEETING
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR PROPOSED INFRASTRUCTURE PROJECTS IN THE
EL PASO, YSLETA, FABENS AND FORT HANCOCK STATIONS
EL PASO SECTOR, TEXAS
JANUARY 20, 2006

	Name (Please Print)	Address (Mailing)	Representing	Would you like to receive a copy of the environmental assessment?
1	KAREN BROWNFIELD	PO Box 206, Ft Hancock, TX 79839	FHISD	YES
2				
3				
4				
5				
6				
7				
8				
9				
10				



DEPARTMENT OF HOMELAND SECURITY
BUREAU OF CUSTOMS AND BORDER PROTECTION
OFFICE OF BORDER PATROL
EL PASO SECTOR

Questions, Comments, or Suggestions

The Office of Border Patrol and the U.S. Army Corps of Engineers are interested in addressing your concerns and questions regarding this study. Suggestions regarding alternatives, resource issues, public involvements, etc. are encouraged as well. Your input is an important part of the NEPA process. Please write your question, comment, or suggestion on the space provided below. If you would like to be kept informed about this study please provide your name and address. Feel free to use the back of this form or add pages if needed. You may also take this form with you and return it to the address below.

BLM would like to be
considered as a cooperating
agency or at least discuss
the option.

Name: Lori Allen Affiliation: BLM - Las Cruces
Address: 1800 Marquess City: Las Cruces State: NM
Zip: 88005 Phone: 505-325-4454 E-mail: Lori.Allen@nm.blm.gov

Point of Contact:
Mr. Charles McGregor
Environmental Resource Planner
Fort Worth District, U.S. Army Corps of Engineers
819 Taylor Street, Room 3A14
Fort Worth, TX 76102
Fax (817) 886-6499



US Army Corps
of Engineers

OFFICE OF SENATOR JEFF BINGAMAN
UNITED STATES SENATE

FACSIMILE TRANSMITTAL SHEET

TO: Charlex McGregor FROM: Greg Bloom
COMPANY: DATE: JANUARY 30, 2006
FAX NUMBER: 817-886-6499 TOTAL NO. OF PAGES INCLUDING COVER: 2
RE: NEPA Process: El Paso Border Patrol Sector

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Charles,

Please email so that I know you have received this.

Let me know if you need anything else or any sort of clarification.

Thanks,
Greg

Greg Bloom
505.523.4775 (ph)
505.523.6584 (fax)
greg_bloom@bingaman.senate.gov

703 HART SENATE OFFICE BUILDING, WASHINGTON, DC 20510
MAIN: (202) 224-5521 9 AM TO 6 PM ET FAX: (202) 224-2852 TDD: (202) 224-1792



DEPARTMENT OF HOMELAND SECURITY
BUREAU OF CUSTOMS AND BORDER PROTECTION
OFFICE OF BORDER PATROL
EL PASO SECTOR

Questions, Comments, or Suggestions

The Office of Border Patrol and the U.S. Army Corps of Engineers are interested in addressing your concerns and questions regarding this study. Suggestions regarding alternatives, resource issues, public involvements, etc. are encouraged as well. Your input is an important part of the NEPA process. Please write your question, comment, or suggestion on the space provided below. If you would like to be kept informed about this study please provide your name and address. Feel free to use the back of this form or add pages if needed. You may also take this form with you and return it to the address below.

Our office coordinates the SW Border Security Task
Force which works with and for the NM border
counties by bringing together local, state & Federal
~~state~~ organizations & elected officials. The
BSTF has recommended that all vehicular
barriers also serve to stop cattle from
crossing in areas where vehicular barriers
parallel cattle fencing. This recommendation
is the result of the theft of cattle fencing after
the installation of vehicular barriers. Please consider
this in your work. Thank you.

Name: Greg Bloom

Affiliation: U.S. Senator Bingaman

Address: 505 S. Main St. #148 City: Las Cruces

State: NM

Zip: 88005

Phone: 505-523-4775

E-mail: Greg-Bloom@Bingaman.Senate.gov

Point of Contact:

Mr. Charles McGregor

Environmental Resource Planner

Fort Worth District, U.S. Army Corps of Engineers

819 Taylor Street, Room 3A14

Fort Worth, TX 76102

Fax (817) 886-6499



US Army Corps
of Engineers

January 26, 2006
711 N. Zinc Street
Deming, NM 88030
Phone: 505.546.9316

Mr. Charles McGregor, Environ-
mental Resource Planner
Fort Worth District
U.S. Army Corps of Engineers
819 Taylor Street, Room 3A14
Fort Worth, TX 76102

Subject: Public Scoping: Programmatic)
Environmental Assessment for)
the Proposed Infrastructure)
Projects in Santa Teresa, Las)
Cruces, Deming and Lordsburg)
Stations El Paso Sector, New)
Mexico.)

Mr. McGregor:

Pursuant to the above subject, appended are public comment
for your consideration.

Please be so kind as to add my name and address to your mail-
ing list, so I may receive program documents.

Thank you.

I am,



Larry Caldwell

LLC/lb

cc: file (1)
letterbook (1)

public comment

larry caldwell

In considering current and future infrastructure needs, the PEA/PEIS should be determined and mitigation undertaken using a baseline that existed prior to the present environmental incursions caused by illegals/local/state/federal entities.

DEPARTMENT OF HOMELAND SECURITY
BUREAU OF CUSTOMS AND BORDER PROTECTION

PUBLIC SCOPING MEETING
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR THE PROPOSED INFRASTRUCTURE PROJECT
EL PASO SECTOR, NEW MEXICO

ORAL COMMENT OF

MARK WINDER

JANUARY 19, 2006

ORIGINAL

ORAL COMMENT of MARK WINDER, was recorded
on the 19th of January, 2006, before Rhonda McCay, RPR,
CSR in and for the States of Texas and New Mexico,
reported by machine shorthand, at the Mimbres Valley
Special Events Center, 2300 East Pine, Deming, New
Mexico.

1 MARK WINDER: My name is Mark, M-A-R-K,
2 Winder, W-I-N-D-E-R. I live west of Columbus, two and a
3 half miles from the international border.

4 And I've been talking to some of the Corps
5 of Engineers people about what the upcoming mission is
6 going to be. I'd like to make some comments about my
7 feelings on what should happen, since we live in close
8 proximity to the border.

9 I understand that one of the main tasks
10 that the Corps of Engineers has is the construction of
11 roads and improvements to roads to give the Border
12 Patrol better access. We need that.

13 In addition, we need a plan to keep the
14 roads maintained. In the past, we have had roads
15 constructed out there. If we have a heavy rain or wind
16 storm, the roads are back to the same condition before
17 the improvements were initiated. So we need a plan to
18 maintain the roads.

19 And secondly, I understand that lighting is
20 one of the issues that is going to be brought up during
21 the meeting. And I'm not sure how much good that
22 lighting along the border is going to do.

23 One of my concerns, living so close to the
24 border, if the lighting is going to bleed off in our
25 direction, northward, is that going to create problems

1 with us, since we are close to the border. One of the
2 things we don't want to see is high-intensity lights
3 lighting our house all night long and interfering with
4 our sleep and activities we might do at our house.

5 One of the additions, one of the things
6 that I would like to see is the anti-intrusion barrier.
7 The vehicle anti-intrusion barriers, I support you 100
8 percent. We need those. We've had problems, before the
9 State police arrived, with the intrusion of Mexican
10 vehicles into the United States.

11 One additional comment that I don't think
12 would be brought up in the meeting, is, what I'd like to
13 see is a fence a few miles on either side of the port of
14 entry to prevent the tremendous influx of people coming
15 through our property and coming along the border there.
16 It seems to be a major staging area, the town of
17 Palomas. If they were pushed more east or west into
18 other areas, it would benefit us. We are in daily
19 contact with the Border Patrol, having damage to our
20 fences and our property and picking up trash these
21 people leave behind.

22 If that is an issue that would come up in
23 the future, that is one of the things that we would like
24 to see.

25 I think that's it.
(Comment concluded)

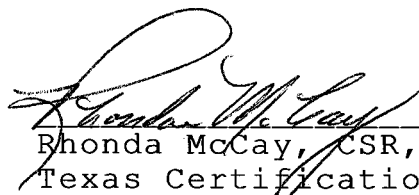
C E R T I F I C A T E

STATE OF TEXAS)

COUNTY OF EL PASO)

I, Rhonda McCay, Certified Shorthand Reporter in
and for the State of Texas and Registered Professional
Reporter hereby certify that this transcript is a true
record of the said proceedings, and that said
transcription is done to the best of my ability.

Given under my hand and seal of office on this
27th day of January, 2006.



Rhonda McCay, CSR, RPR
Texas Certification Number 4457
Date of Expiration: 12/31/2006
REPORTERS, INK.
Firm Registration Number 420
221 N. Kansas, Suite 1201
El Paso, Texas 79901
Ph.: 915.544.1515



INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

MAY 30 2006

Mr. Charles H. McGregor, Jr.
United States Army Corps of Engineers
CESWF-PER-EE
819 Taylor Street
Fort Worth, TX 76140-0300

Dear Mr. McGregor:

Thank you for the opportunity to comment on the draft Programmatic Environmental Assessment (PEA) for the proposed construction of tactical infrastructure projects along the New Mexico/Mexico international border. The United States Section of the International Boundary and Water Commission (USIBWC) has reviewed the PEA and would like to offer the following comments for your perusal.

The USIBWC has a duty to access, maintain, and utilize the international boundary monuments along the United States/Mexico international land boundary. The USIBWC is charged with these duties through treaties and international agreements between the United States and Mexico. We require that the proposed works, and related facilities not affect the permanence (disturb the foundations) of existing boundary monuments nor impede access for their maintenance. In addition, any proposed construction must allow for line-of-sight visibility between each of the boundary monuments.

USIBWC 1

The USIBWC requires that final engineering drawings be submitted to the USIBWC for review and approval prior to beginning any construction near the international boundary. These drawings must show the location of each component in relation to the international boundary and the boundary monuments. The USIBWC requires that all structures be off-set from the international boundary by a minimum of two feet, maintain a clear line-of-sight between any affected boundary monuments, and maintain a 10-foot radius off-set around the international monuments (see attached).

USIBWC 2

The USIBWC requests that proposed construction activities be accomplished in a manner that does not change historic surface runoff characteristics at the international border. The USIBWC will not approve any construction near the international boundary in the United States that increases, concentrates, or relocates overland drainage flows into either country. This requirement is intended to ensure that developments in one country will not cause damage to lands or resources in the other country. The USIBWC will need copies of any hydrological or hydraulic studies and site specific drawings for work proposed in the vicinity of the international boundary, particularly if culverts or other structures are proposed to be constructed in any drainage courses that cross the boundary. We will also require that you assure that structures constructed along the U.S./Mexico border are maintained in an adequate manner and that liability issues created by these structures are addressed.

USIBWC 3

The Commons, Building C, Suite 100 • 4171 N. Mesa Street • El Paso, Texas 79902
(915) 832-4100 • (FAX) (915) 832-4190 • <http://www.ibwc.state.gov>

USIBWC 1: Thank you for your comment. The CBP/OBP will continue to coordinate with the U.S. Section IBWC as project-specific plans and designs are identified. As this is a programmatic document, project-specific design plans are not available at this time. In the past, similar projects to those proposed in the Programmatic Environmental Assessment have not impeded access to boundary monuments or impacted the line of sight visibility between monuments. A statement has been added to Section 5.6, describing line-of-sight and access requirements.

USIBWC 2: Please see the response to comment USIBWC 1.

USIBWC 3: Please see the response to comment USIBWC 1. Also, project-specific designs and Stormwater Pollution Prevention Plans would be submitted to USIBWC for review as part of future projects that will tier from this PEA.

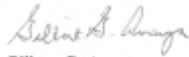
For your information, on June 25, 1897 a Presidential Proclamation was signed by President William McKinley to keep lands free from obstruction as protection against smuggling of goods between the United States and Mexico. The proclamation reserved a strip of land 60 feet wide, parallel with and adjacent to the international boundary, extending one mile east and one mile west of Monument No. 122 within the City of Nogales, Arizona. Following a recommendation that additional lands be reserved along the boundary, President Theodore Roosevelt signed a Presidential Proclamation on May 27, 1907 reserving a 60-foot wide strip of land parallel with and adjacent to the international boundary on all lands which were not already patented (i.e. Indian Reservations, National Parks and Monuments, private property etc.) to the boundary line through New Mexico, Arizona, and California. It is the responsibility of the United States (federal agencies) to ensure the integrity of the 60-foot strip of reserved land. Similar lands are also designated by Mexico along its side of the land boundary. The provisions of the 1907 Presidential declaration for the 60-foot wide strip adjacent to the international boundary should be observed.

USIBWC 4

Once the proposed tactical infrastructure projects are better defined, we recommend that project specific details be submitted for review and comment by both Sections of the IBWC. If you have any questions regarding these comments, please call me at (915) 832-4702 or contact Environmental Protection Specialist, Daniel Borunda at (915) 832-4767.

USIBWC 5

Sincerely,

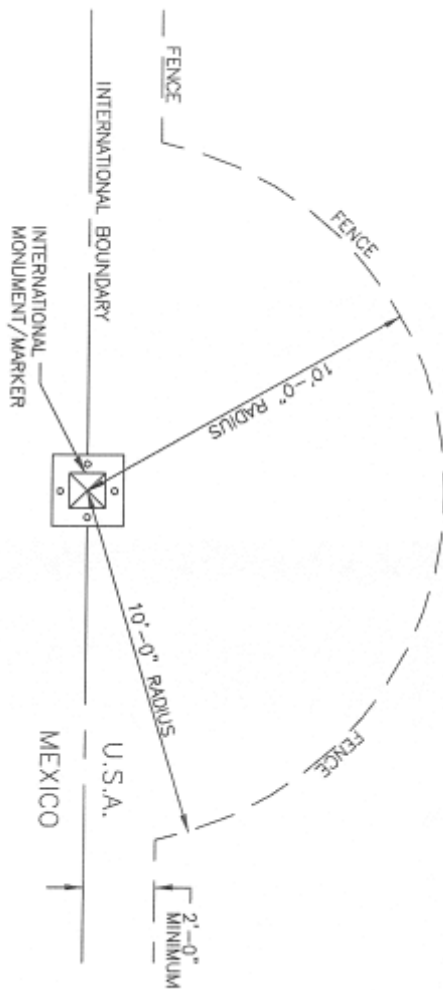


Gilbert G. Anaya
Supervisory Environmental Protection Specialist
Environmental Management Division

Enclosures:
(As stated)

USIBWC 4: The provisions of the 1907 Presidential declaration for the 60-foot wide reservation adjacent to the international boundary will be observed.

USIBWC 5: IBWC would be contacted as part of the NEPA coordination process for each subsequent project-specific document to be tiered from this programmatic document.



LOCATION OF FENCE NEAR INTERNATIONAL MONUMENTS/MARKERS N.T.S.

NOTES:

1. FENCES AND ASSOCIATED GATES MUST BE CONSTRUCTED IN A WAY AS NOT TO INTERFERE WITH LINE-OF-SIGHT BETWEEN INTERNATIONAL MONUMENTS OR ACCESS TO THESE MONUMENTS.
2. FENCE OFFSETS FROM THE INTERNATIONAL BOUNDARY LINE MUST BE AT LEAST TWO FEET (2'). HOWEVER, LARGER OFFSET DISTANCES MAY BE REQUIRED AT SPECIFIC SITES.
3. THE CONSTRUCTION OF GOVERNMENT OR PRIVATE FACILITIES (BUILDINGS, UTILITIES, WALLS, STORM DRAINS, ETC.) IN THE VICINITY OF UNITED STATES/MEXICO INTERNATIONAL BOUNDARY MUST NOT OBSCURE THE INTERNATIONAL MONUMENTS OR MARKERS.

REV.	DESCRIPTION	RECORDS	DATE
	INTERNATIONAL BOUNDARY AND WATER COMMISSION UNITED STATES AND MEXICO UNITED STATES SECTION		
INTERNATIONAL MONUMENTS			
DRAWN	C.R.	CHECKED	C.M.
DESIGNED	C.B.	APPROVED	C.B.
1 OF 1		EL PASO, TEXAS	MAY 1999
			35089



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P.O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

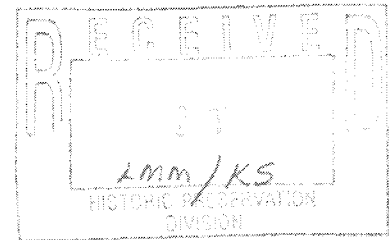
April 24, 2006

Planning, Environmental and
Regulatory Division

077797

Subject: Office of Border Patrol El Paso Sector Programmatic Environmental Assessments

Ms. Katherine Slick, Director
Department of Cultural Affairs
Historic Preservation Division
228 East Palace Ave, Room 320
Santa Fe, NM 87501




Dear Ms. Slick,

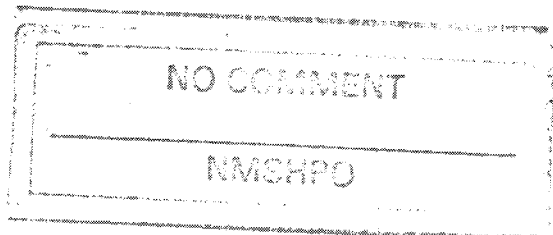
In a letter dated February 28, 2006, the United States Army Corps of Engineers, Fort Worth District, on behalf of the Department of Homeland Security, Customs and Border Protection, and the Office of Border Patrol (OBP) initiated consultation with you regarding the production of Programmatic Environmental Assessments (PEA) for potential impacts of the proposed installation of tactical infrastructure in the OBP's El Paso Sector for stations in Texas and New Mexico. The purpose of the proposed action is to deter illegal vehicle traffic from entering the United States, specifically along the Rio Grande in Texas and the international border in New Mexico. Enclosed please find a copy of the draft PEA for El Paso Sector stations in New Mexico for your review and comment.

We appreciate your involvement in this consultation process. We respectfully request that all comments be received within 30 days of the publication of the Notice of Availability. The Notice of Availability is expected to occur on April 27, 2006. Comments will be received until May 29, 2006.

Comments can be sent by mail to Mr. Charles McGregor at United States Army Corps of Engineers, 819 Taylor Street, Room 3A14, Fort Worth, TX 76140-0300, by FAX at (817) 886-6499, or by e-mail to Charles.McGregor@swf02.usace.army.mil. Thank you for your cooperation.

Sincerely,


William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division



Enclosure

NMSHPO: Thank you for your prompt attention.



STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One NMDGF Way
Post Office Box 25117
Santa Fe, NM 87504
Phone: (505) 476-6069
Fax: (505) 476-6127

Wildlife Information: New Mexico Wildlife, Inc.
The New Mexico Department of Game & Fish is an Equal Opportunity Employer

Lee V. Galt, Executive
Director, NM

Dr. David L. Smith, Wildlife
Biologist, NM

David L. Smith, Wildlife
Biologist, NM

Alfred L. Smith, Wildlife
Biologist, NM

Robert L. Smith, Wildlife
Biologist, NM

Greg L. Smith, Wildlife
Biologist, NM

W. L. Smith, Wildlife
Biologist, NM

April 21, 2006

Charles H. McGregor
US Army Corps of Engineers
CESWF-PER-EE
819 Taylor Street, Room 3A14
PO Box 17300
Fort Worth, TX 76102-0300

Re: Programmatic Environmental Assessment for Proposed Tactical Infrastructure along the International
Border
NMDGF No. 10623

Dear Mr. Charles H. McGregor:

In response to your letter dated 27 April 2006 regarding the above referenced project, the Department has identified wildlife related concerns in previous correspondence (see attachments). We have reviewed the draft Programmatic Environmental Assessment (PEA) and do not find that the document does not address or discuss the issues raised by our agency nor have mitigative actions been identified.

NMDGF 1

The Department would like to submit an additional recommendation that where normal range fencing is used that the specifications for this fencing should include wildlife considerations. The Department's 2003 guidelines for fencing have been attached.

NMDGF 2

Thank you for the opportunity to review and comment on this document. If you have any questions, please contact Pat Medina, Habitat Specialist, at (505) 532-2100 or patmedina@state.nm.us.

Sincerely,

Lisa Kinigpatrick, Chief
Conservation Services Division

LK/gm

cc: Russ Holder, Acting Ecological Services Field Supervisor, USFWS
Luis Rios, SW Area Operations Chief, NMDGF
Pat Medina, SW Area Habitat Specialist, NMDGF

NMDGF 1: Please see comments and responses on the following page in regards to the original letter.

NMDGF 2: These fencing guidelines would be used during the project-specific planning process for future projects tiered from this programmatic document.



STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way
P.O. Box 101 2311
Santa Fe, NM 87504
Phone: (505) 476-6000
Fax: (505) 476-6122

Visit our website at www.wildlife.state.nm.us
For more information or to order this publication, call (800) 833-6888

Lee A. Goss, Chairman
Albuquerque, NM

Dr. Tom Allen, Vice-Chairman
Albuquerque, NM

David Henderson, Commissioner
Santa Fe, NM

Alfred Mondy, Commissioner
Albuquerque, NM

Peter Pico, Commissioner
Las Alamos, NM

Ray Rios, Commissioner
Albuquerque, NM

Mr. H. "Bud" Salinas, Commissioner
Silver City, NM

April 7, 2006

Charles H. McGregor
US Army Corps of Engineers
CESWF-PER-EE
619 Taylor Street, Room 3A14
PO Box 17300
Fort Worth, TX 76102-0300

Re: Programmatic Environmental Assessment for Proposed Tactical Infrastructure along the International Border
NMDGF No. 10708

Dear Mr. Charles H. McGregor:

In response to your letter dated 27 February 2006, regarding the above referenced project, a list of species of concern that occur in Dona Ana, Luna and Hidalgo Counties has been enclosed. The Department is concerned that increases of infrastructure on the border has the potential to adversely impact wildlife species and we ask that you analyze these potential impacts within the draft programmatic EIS (DPEIS). Some anticipated adverse impacts are the fragmentation of habitat and the reduction or closure of dispersal corridors caused by the construction of vehicle and pedestrian barriers. Construction design for barriers should accommodate, to the greatest extent possible, the free passage of wildlife.

NMDGF 3

NMDGF 4

Construction of new roads and the improvement of existing roads will also fragment habitat and impede movement corridors of native wildlife. Increased patrol activity from improved roads can alter behavior patterns and cause wildlife to move away from these areas, thus reducing available habitat. Construction of towers (i.e. video surveillance systems, light structures) can adversely impact and cause mortality to raptor, passerine and bat species and may adversely impact migration of some wildlife.

NMDGF 5

NMDGF 6

The Department suggests that the DPEIS should analyze these issues and discuss cumulative impacts of increasing tactical infrastructure along the international border. If proposed projects will have an adverse impact to wildlife, species the Department would like to see mitigation measures proposed that would alleviate or minimize these impacts.

NMDGF 7

NMDGF 8

Other sources of biological information are:

1. Species Accounts: <http://fwis.fwr.usd.edu/nm/nm.htm>
2. Species Searches: <http://www.nmns.org/nmns/edu/biomom/conservationplan>
3. New Mexico Wildlife of Concern by Committee List
http://www.wildlife.state.nm.us/conservation/shares_with_wildlife/documents/speciesofconcern.pdf
4. Habitat Handbook Project Guidelines:
http://wildlife.state.nm.us/conservation/habitat_handbook/index.htm
5. For custom site-specific database searches on plants and wildlife, Go to Data then to Free On-Line Data and follow the directions go to: <http://www.nmns.org>

NMDGF 3: Impacts to wildlife, including dispersal and migration impacts, are discussed in Section 4.3.2 of the Draft Programmatic Environmental Assessment. Impacts to Protected Species and Critical Habitat are discussed in Section 4.4.

NMDGF 4: Construction designs for vehicle barriers impede vehicle entry only. Pedestrian or wildlife movements are not precluded. See Section 2.2.3.

NMDGF 5: Impacts to wildlife including habitat fragmentation and wildlife movements and behavior are discussed in Section 4.3.2.2.

NMDGF 6: Impacts to wildlife from RVSS and lighting structures, including impacts to raptors, avian wildlife, and bats, are discussed in Section 4.3.2.2.

NMDGF 7: Cumulative impacts from increasing tactical infrastructure along the international border are discussed in Section 4.14.

NMDGF 8: Mitigation measures for wildlife are included in Section 5.2 Biological Resources.

6. New Mexico State Forestry Division (505-827-5830) or <http://www.nmstateplants.com.edu/index.html> for state-listed plants
7. For the most current listing of federally listed species always check the U.S. Fish and Wildlife Service at (505-346-2525) or <http://ifw2sa.fws.gov/EndangeredSpecies/lists/>.

Thank you for the opportunity to review and comment on your project. If you have any questions, please contact Pat Mathis, Habitat Specialist, at (505) 532-2100 or patrick.mathis@state.nm.us.

Sincerely,

Lisa Kirkpatrick, Chief
Conservation Services Division

LK/pca

cc: Russ Holder, Acting Ecological Services Field Supervisor, USFWS
Luis Rios, SW Area Operations Chief, NMGF
Pat Mathis, SW Area Habitat Specialist, NMGF

NEW MEXICO DEPARTMENT OF GAME AND FISH

Recommendations for Constructing Wire Fences for Livestock in Big Game Habitats July 2003

Recommendations for wire fencing will vary with the purpose of the fence, the kinds of livestock and big game present, and any clear or implied legal requirements for fence design. Fences may be intended to restrict both livestock and wildlife, or to restrict livestock while allowing for passage of wildlife. Fencing needs may vary between interior and exterior fences in livestock pastures. Fences may be used for protection along highways, or to protect wildlife areas or habitat improvements from livestock entry. The ability of livestock or big game to negotiate a type of fence will vary with the species or breed, and sex/age of the animals. Further, regional variation in the behavior of pronghorn and desert bighorn in reaction to fences (Bear 1969:270, Elenowitz 1983:37) suggests that learned behavior may create additional variation in animal responses to fence designs. Landowners increase their legal protection against trespass livestock by having fences that are at least equal to the 4-strand fence described in 77-16-4 NMSA as a "legal fence" (Appendix A). The State Highway Department and county commissions are required by 30-8-13 NMSA to construct and maintain fences along certain roads in order to prevent livestock entry (Appendix B). However, a 1991 opinion of the Interior Department Solicitor's Office (Appendix C) indicates that federal mandates to protect wildlife on the federal lands may take precedence over state requirements for fencing of highways. Considering such variation in fence purposes, kinds of animals present, and legal constraints, a variety of types of fences should be available for recommended use, according to each local situation.

Published recommendations for fence designs (Kie et al. 1994, Kindschy 1996, and standard designs of the U.S. Forest Service and the Bureau of Land Management) are based largely upon field experiences. There has been little experimental research to test the abilities of various kinds of animals to negotiate various types of fences. Experiments have been conducted by Bear 1969, Helvie 1971, Gross et al. 1983 and Howard 1991).

The Bureau of Land management (BLM) and the New Mexico Department of Transportation (NMDOT) have a 1990 Memorandum of Understanding in which fence standards are described (Appendix D). This attachment states that right-of-way fence specifications in areas of big game habitat will be developed through coordination between BLM and the Department of Game and Fish. Further, the attachment describes a 4-strand fence to be used along rights-of-way through pronghorn habitat. Ten other fence designs are recommended in the BLM manual (Appendix E). Each of these fences is recommended for a specific combination of big game species and type of livestock.

The U.S. Forest Service and the NMDOT modified their Memorandum of Understanding in 1982, to address right-of-way fencing in wildlife areas. The agreed-upon 4-strand fence is shown in Exhibit 9 of the MOU (Appendix F).

The Department of Game and Fish has recommended at least four fence designs during the 1980's and 1990's. Variation in Department recommendations reflects the lack of experimental

research with fence designs. Lacking a basis in research, recommendations were based upon opinions and influenced by experiences of various biologists. Both 3-strand and 4-strand fences have been recommended. Separate fence designs have been proposed for bighorn sheep habitats. Recommended fences have ranged from 34 to 42 inches high, with bottom strands varying between 12 and 20 inches above ground.

Livestock fences may prohibit or inhibit big game movements and may cause injury or death to animals that unsuccessfully negotiate fences. Big game traverse wire fences by crawling under the bottom strand, by penetrating between strands, and by jumping over fences. The propensities for using these 3 strategies vary among big game species, and among age/sex classes of animals. Further, there are regional differences in the propensities of some big game species to use certain strategies (Bear 1969:270, Elenowitz 1983:37), indicating that there are learned adaptations for crossing fences in some populations.

Crawling animals may sustain cuts by a low bottom wire. Pronghorn, javelina, and young of other species are most apt to use this strategy. Most published recommendations for fences in pronghorn habitat suggest a smooth bottom wire at least 16 inches above ground, although a bottom wire at 10 inches above ground is suggested when holding domestic sheep is necessary.

Penetrating animals may be cut by barbed wires. Worse, they may pass horns or antlers through the fence, be unable to penetrate with their entire bodies, and have horns or antlers entangled between wires with 6-8 inch spacings. They then "fight" the fence, risking cuts to the head and neck and potentially death. Most publications recommend wire spacings of 10 to 15 inches to accommodate penetrating big game. However, closer spacings are needed to hold domestic sheep, or where extreme restriction of livestock movements is needed.

Jumping animals may be cut by a barbed top wire; may entangle legs between the two top wires; or may become hung up with front and back legs on opposite sides of the fence. Adult deer and elk are most prone to jump fences. However bighorn in Southwest New Mexico (Elenowitz 1983) and some pronghorn jump fences. The lowest possible fence presents the least hazard. Published recommendations are for fences between 32 and 40 inches high, depending largely upon whether domestic sheep or domestic cattle are being held. A smooth top strand, or covering the top strand with white 1-inch PVC pipe, is recommended in areas of abundant big-game use, where trails cross fence lines, and in fence corners within big game habitats. Entanglement between the top two wires usually involves a hind leg, and presumably occurs as an animal attempts to jump with the hind legs "tucked" under the body. A leg going under the top wire may kick back into the second wire, entangling the animal. As the animal falls, a hind leg pivoting over the top wire may twist the second wire upward, producing a tight bind around the leg. This is most apt to occur if the top wires are closely spaced and not strung tightly. To avoid this problem, most published recommendations are that the top strands be 10 to 12 inches apart, and that frequent stays be used to inhibit twisting of the top wires.

Kie et al. (1994) and BLM guidelines recommend a fence with only 4 inches between the two top wires for use in bighorn sheep habitats. The recommendations appear to be based upon the research of Helvie (1971) who worked with bighorn that used a penetrating strategy, but did not jump fences. The Department of Game and Fish does not recommend this fence because bighorn

frequently jump fences in southwest New Mexico and because deer, which frequently jump fences, are present in most bighorn areas.

In wildlife habitat, where it is intended to minimize restriction of big game, fence construction must be a compromise between minimizing the risks to wildlife and holding livestock. Net wire fences are strongly discouraged. If necessary, they should be no more than 36 inches high, preferably less. A preferred net wire fence has 24 inches of woven wire with two strands of barbed wire at 2 and 10 inches above the net wire. For big game, an ideal strung-wire fence has few, tight, mostly smooth wires, widely spaced for penetration; with a high bottom strand for crawling animals and a low top strand for jumping animals. A preferred 3-strand fence is described in Fig. 1. However, this fence will not hold domestic sheep and may not hold cattle at pressure points.

In practice, 4-strand fences almost always have equally spaced wires. Their abilities to hold livestock have been demonstrated by experience. Such fences may be designed to allow crawling and jumping strategies, but equally spaced wires are expected to deter penetration, or to injure penetrating animals. Accepting this limitation, a 4-strand fence with nearly equal wire spacings is recommended in Fig. 2.

Four-strand fences with unequally spaced wires have not been tested for their abilities to hold livestock or to allow big game passage. Having unequally spaced wires could allow for big game penetration, as well as for crawling and safe jumping. Two 4-strand fences (Fig.3) are recommended for testing of their ability to hold cattle. These fences should be tested – perhaps as short segments in areas of abundant big game use – on Department lands, and on other lands where restriction of livestock is not critical.

In any wire fence, probability of entanglement between wires is diminished by taut wire with posts and stays 10 feet apart.

In extremely steep terrain, fences may be unnecessary to hold livestock. Such areas should be unfenced to allow free movement of big game. In critical areas and migration seasons, when livestock are not present, lay-down panels are requested to allow movements of big game.

Literature Cited:

Bear, G. D. 1969. Antelope and net wire fences. *Proc. Western Assn. St. Game and Fish comm.* 49:265-271.

Brigham, W.R. 1990. Fencing wildlife water developments. Pages 37-43 in G. K. Tsukamoto and S. J. Stiver, eds. *Proc Wildlife Water Development Symposium*. Nev. Chap. The Wildl. Soc., U. S. Bur. Land Manage., and Nev. Dept. Wildl.

Elenowitz, A. S. 1983. Habitat use and population dynamics of transplanted desert bighorn sheep in the Peloncillo Mountains, New Mexico. M. Sc. Thesis, New Mexico State University., Las Cruces. __pp.

Kie, J. G., V. C. Bleigh, A. L. Medina, J. D. Yoskum and J. W. Thomas. 1994. Managing Rangelands for Wildlife. Chapt. 27, pp. 663-688 in Bookout, T. A., (Ed.) Research and management techniques for wildlife and habitats. Fifth ed. The Wildlife Society, Bethesda, MD. 704pp.

Gross, B. D., J.L. Holechek, D. Hallford and R. D. Pieper. 1983. Effectiveness of antelope pass structures in restriction of livestock. *J. Range. Manage.* 36:22-24.

Hall, F. C. 1985. Wildlife habitats in managed rangelands- the Great Basin of southeastern Oregon: management options and practices. U. S. For. Serv. Gen. Tech. Rep. PNW-189. 17pp.

Helvie, J.B. 1971. Bighorns and fences. *Desert Bighorn Counc. Trans.* 15:53-62.

Howard, J.W. Jr. 1991. Effects of electric predator-excluding fences on movements of mule deer in pinyon/juniper woodlands. *Wildl. Soc. Bull.* 19:331-334.

Kindschy, R. r. 1996. Fences, waterholes and other range improvements. Chapt. 22, pp. 369-381 in Krausman, P. R. (Ed.) *Rangeland Wildlife*. The Society of Range Management, Denver, CO. 440 pp.

Figure 1. The preferred 3-strand fence for big game habitats in New Mexico. Top and bottom wires are best if smooth, rather than barbed. This is more critical for the top wire. Fence posts and stays should be no more than 10 feet apart, to keep a taut fence. Wires should be at 16, 26 and 38 inches above the ground to accommodate crawling, penetrating and jumping animals.

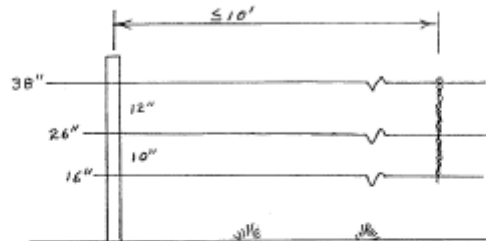
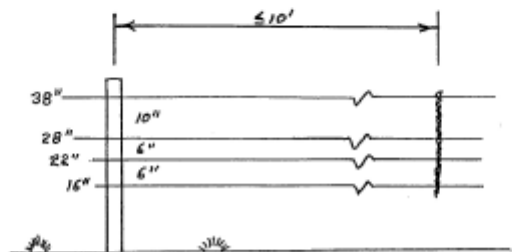


Figure 2. Recommended 4-strand fence with nearly-equal wire spacings. Top and bottom wires are best if smooth, rather than barbed. This is more critical for the top wire. Fence posts and stays should be no more than 10 feet apart, to keep a taut fence. Wires should be at 16, 22, 28 and 38 inches above ground to accommodate crawling and jumping animals.





BEIL RICHARDSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
Office of the Secretary
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502-6110
Telephone (505) 827-2855



RON CURRY
SECRETARY
DERMOTH WATCHMAN-MOORE
DEPUTY SECRETARY

May 19, 2006

Charles H. McGregor, Jr.
U.S. Army Corps of Engineers
819 Taylor Street, CESWF-PER-EE
Forth Worth, TX 76140-0300

Fax: 817.886.6490

Dear Mr. McGregor:

RE: DRAFT PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR PROPOSED
TACTICAL INFRASTRUCTURE OFFICE OF BORDER PATROL, EL PASO
SECTOR NEW MEXICO STATIONS

This transmits New Mexico Environment Department (NMED) staff comments concerning the
above-referenced Draft Programmatic Environmental Assessment (DPEA).

Surface Water Quality

The U.S. Environmental Protection Agency (USEPA) requires National Pollutant Discharge
Elimination System (NPDES) Construction General Permit (CGP) coverage for storm water
discharges from construction projects (common plans of development) that will result in the
disturbance (or re-disturbance) of one or more acres, including expansions, of total land
area. Because this project exceeds one acre (including staging areas, etc.), it will require
appropriate NPDES permit coverage prior to beginning construction (small, one - five acre,
construction projects may be able to qualify for a waiver in lieu of permit coverage - see
Appendix D).

Among other things, this permit requires that a Storm Water Pollution Prevention Plan
(SWPPP) be prepared for the site and that appropriate Best Management Practices
(BMPs) be installed and maintained both during and after construction to prevent, to the
extent practicable, pollutants (primarily sediment, oil & grease and construction materials
from construction sites) in storm water runoff from entering waters of the U.S. This permit
also requires that permanent stabilization measures (revegetation, paving, etc.), and
permanent storm water management measures (storm water detention/retention structures,
velocity dissipation devices, etc.) be implemented post construction to minimize, in the long
term, pollutants in storm water runoff from entering these waters. In addition, permittees
must ensure that there is no increase in sediment yield and flow velocity from the

NMED 1

NMED 1: As this is a programmatic document, project-specific design plans are not available at this time. NPDES permits would be applied for by the construction contractor once project-specific construction plans are identified, and engineering plans, Stormwater Pollution Prevention Plans and project-specific NEPA documents are prepared.

construction site (both during and after construction) compared to pre-construction, undisturbed conditions (see Subpart 9.C.1)

You should also be aware that EPA requires that all "operators" (see Appendix A) obtain NPDES permit coverage for construction projects. Generally, this means that at least two parties will require permit coverage. The owner/developer of this construction project who has operational control over project specifications (probably U.S. Customs & Border Protection in this case), the general contractor who has day-to-day operational control of those activities at the site, which are necessary to ensure compliance with the storm water pollution plan and other permit conditions, and possibly other "operators" will require appropriate NPDES permit coverage for this project.

The CGP was re-issued effective July 1, 2003 (see Federal Register/Vol. 68, No. 126/Tuesday, July 1, 2003 pg. 39087). The CGP, Notice of Intent (NOI), Fact Sheet, and Federal Register notice can be downloaded at: <http://cfpub.epa.gov/npdes/stormwater/cgp.cfm>

Air Quality

The project as proposed takes place along the New Mexico-Mexico border in the following New Mexico counties; Hidalgo, Luna, and Doña Ana.

Hidalgo County is considered to be in attainment with all New Mexico and National Ambient Air Quality Standards.

While Luna County is currently considered to be in attainment with New Mexico and National Ambient Air Quality Standards; the AQB has recorded exceedances of the standard for particulate matter 10 micron and less in size (PM10) in the County. In response to the recorded exceedances of the standard for PM10, a Natural Events Action Plan (NEAP) for the County is currently being prepared. Although dust control measures have not been developed for this area to date, to reduce the impact of fugitive dust on the community members during construction-related activities, dust control measures should be taken.

Doña Ana County is currently considered to be in attainment with the NAASQ; however, the AQB has recorded exceedances of the standard for particulate matter (PM10). In response to the recorded exceedances of the standard for PM10, a Natural Events Action Plan (NEAP) for Doña Ana County has been prepared and submitted to the U.S. Environmental Protection Agency for approval. As part of the NEAP, a dust control ordinance (Doña Ana County Ordinance No. 194-2000; Erosion Control Regulation) was adopted by Doña Ana County. To ensure air quality standards are met, applicable local or county regulations requiring noise and/or dust control must be followed; if none are in effect for as specific project area, controlling construction-related air quality impacts during projects should be considered to reduce the impact of fugitive dust and/or noise on community members. The NEAP for Doña Ana County, and County Ordinance 194-2000 if applicable, should be referenced in the final environmental review.

Part of the proposed project area is located in Sunland Park, New Mexico area. The City of Sunland Park is presently designated a maintenance area for the 8-hour National Ambient Air Quality Standard (NAAQS) for ozone.

NMED 1, continued

NMED 2

NMED 2: Thank you for your comment. The affect resource, air quality, is discussed in Section 3.8 of the Draft Programmatic Environmental Assessment (DPEA). The status of air quality as reported in this comment was also included in the DPEA in Section 3.8.3. The Natural Events Action Plan for Dona Ana County is also discussed in Section 3.8.3.

To further ensure air quality standards are met, applicable local or county regulations requiring noise and/or dust control must be followed; if none are in effect, controlling construction-related air quality impacts during projects should be considered to reduce the impact of fugitive dust and/or noise on community members.

Potential exists for temporary increases in dust and emissions from earthmoving, construction equipment, and other vehicles, however the increases should not result in non-attainment of air quality standards. Dust control measures should be taken to minimize the release of particulates due to vehicular traffic and construction. Areas disturbed by the construction activities, within and adjacent to the project area should be reclaimed to avoid long-term problems with erosion and fugitive dust.

NMED 3

All asphalt, concrete, quarrying, crushing and screening facilities contracted in conjunction with the proposed project must have current and proper air quality permits. For more information on air quality permitting and modeling requirements, please refer to 20.2.72 NMAC.

If back up electric generation is used, be advised that records should be kept for hours of operation per generator. An application for a construction permit must be submitted for standby generators used 500 hours per year or more.

NMED 4

The project as proposed should have no long-term significant impacts to ambient air quality.

Petroleum Storage Tanks

The Petroleum Storage Tank Bureau knows of eleven former or current tank facilities, four of which have experienced releases, within the proposed project area for the Office of Border Patrol proposed tactical infrastructure. Some of the sites listed may not be affected by this project. Please check the local street address to see if this information applies. The contractors should remain alert for indications of soil or groundwater contamination in the vicinity of any of the listed sites.

There may be wells or remediation equipment installed at the leak sites. If the design for the proposed tactical infrastructure intersects any part of a remediation system or monitoring well, please contact the bureau to coordinate construction with preservation or modification of the remediation equipment. If contaminated soil or water is encountered during construction, all monitoring, handling and disposal requirements must be met in order to protect workers, the public and the environment, from contaminants. You can contact the PST Bureau at 505 984-1741.

NMED 5

Tank Facility Name	Address	Leak Reported
Columbus Vortac	8 Miles East of Columbus	No
San Jose Fins	222 W. Broadway, Columbus	Yes
US Border Patrol, Columbus	Broadway Avenue	No
Hachita Café	P.O. Box 95	Yes
Hachita Food Mart	4398 Highway 9, Hachita	No
Hachita Supply	Hachita	No

NMED 3: BACMs from the NEAPs are summarized in Section 3.8.3. BACMs and Best Management Practices, as discussed in Section 5.1, for reducing the impacts to air quality would be identified and implemented in future project-specific documents once engineering plans are developed.

NMED 4: All necessary permits and records would be addressed in project-specific documents once engineering plans, environmental documents, and funding procedures are completed.

NMED 5: The list of petroleum tanks with reported leaks was added to the document in the Hazardous Materials section, Section 3.10. Project-specific environmental site assessments would occur as project sites are identified.

Charles H. McGregor, Jr.
May 19, 2006
Page 4

NMDOT Hachits Patrol Yd.	NM 9 MP 14.9
Old Fina Station	Hwy 9
Western NM University	Hachits
Mimbres Store	3090 Hwy 35, Mimbres
Joe E. Montoya	4047 Hwy 61 N, Mimbres

Yes
No
No
Yes
No

NMED 5, continued

We appreciate the opportunity to comment on this document.

Sincerely,



Gedi Cibas, Ph.D.
Environmental Impact Review Coordinator

NMED File No. 2302ER

APPENDIX E
COORDINATION LETTERS



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

27 February 2006

Planning, Environmental and Regulatory Division

SUBJECT: Programmatic Environmental Assessment for Proposed Tactical Infrastructure along the International Border

Mr. Mathew J. Craddock
Bureau of Land Management
Las Cruces District Office
1800 Marquess
Las Cruces, NM 88005

Dear Mr. Craddock:

The U.S. Army Corps of Engineers (USACE), Fort Worth District is acting on behalf of the U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP) in preparing a Programmatic Environmental Assessment (PEA) for tactical infrastructure (TI) along the U.S. – Mexico International Border in the Office of Border Patrol's (OBP) El Paso Sector.

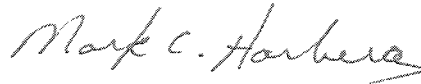
The PEA will address the installation, construction or improvement of patrol roads, drag roads, vehicle and pedestrian barriers, remote video surveillance systems, and permanent lighting structures along the international border in the state of New Mexico that may be required over the next five years. The actual infrastructure required will vary depending upon enforcement strategies and potential impacts to the environment and will be addressed in more detail in station level environmental assessments. Military units, private contractors or a combination thereof would perform the construction and installation activities.

The PEA will analyze the potential for significant adverse or beneficial impacts of the proposed actions. The PEA is a planning level document and is to be followed at a later date by more detailed station specific environmental assessments. The PEA will also describe the cumulative effects of the proposed TI projects in conjunction with other on-going and proposed projects. Enclosed is a map showing the location of the project corridors for the PEA. We are currently in the process of gathering the most current information available for this area and respectfully requests that your agency provide input regarding interests and unique or environmentally sensitive areas that you believe may be affected by the proposed OBP activities.

We intend to provide your agency with a copy of the Draft PEA once completed. Please inform us if additional copies are needed and/or if someone else within your

agency other than you should receive the documents. Your prompt attention to this request is greatly appreciated. If you have any questions, please contact Mr. Charles H. McGregor, Jr. at (817) 886-1708.

Sincerely,

A handwritten signature in dark ink, appearing to read "Mark C. Harber". The signature is fluid and cursive, with a long horizontal stroke at the end.

~~For~~ William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

27 February 2006

Planning, Environmental and Regulatory Division

SUBJECT: Programmatic Environmental Assessment for Proposed Tactical Infrastructure along the International Border

Mr. Richard Galindo
International Boundary and Water Commission
U.S. Section
504 South Miranda Street
Las Cruces, NM 88001

Dear Mr. Galindo:

The U.S. Army Corps of Engineers (USACE), Fort Worth District is acting on behalf of the U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP) in preparing a Programmatic Environmental Assessment (PEA) for tactical infrastructure (TI) along the U.S. – Mexico International Border in the Office of Border Patrol's (OBP) El Paso Sector.

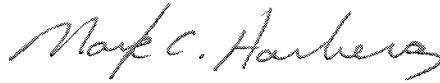
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Sincerely,

A handwritten signature in cursive script, appearing to read "Wm Fickel, Jr.", written in dark ink.

For William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

27 February 2006

Planning, Environmental and Regulatory Division

SUBJECT: Programmatic Environmental Assessment for Proposed Tactical Infrastructure along the International Border

Ms. Lisa Kirkpatrick
Chief, Conservation Services Division
New Mexico Department of Game and Fish
P.O. Box 25112
Santa Fe, NM 87504

Dear Ms. Kirkpatrick:

The U.S. Army Corps of Engineers (USACE), Fort Worth District is acting on behalf of the U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP) in preparing a Programmatic Environmental Assessment (PEA) for tactical infrastructure (TI) along the U.S. – Mexico International Border in the Office of Border Patrol's (OBP) El Paso Sector.

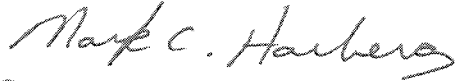
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Sincerely,

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^{for} William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

27 February 2006

Planning, Environmental and Regulatory Division

SUBJECT: Programmatic Environmental Assessment for Proposed Tactical Infrastructure along the International Border

Field Supervisor
U.S. Fish and Wildlife Service
NM Ecological Services State Office
2105 Osuna NE
Albuquerque, NM 87113

Dear Field Supervisor:

The U.S. Army Corps of Engineers (USACE), Fort Worth District is acting on behalf of the U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP) in preparing a Programmatic Environmental Assessment (PEA) for tactical infrastructure (TI) along the U.S. – Mexico International Border in the Office of Border Patrol's (OBP) El Paso Sector.

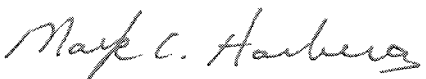
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Sincerely,


For William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 346-2525 Fax: (505) 346-2542

MAR 13 2006

Thank you for your recent request for information on threatened or endangered species or important wildlife habitats that may occur in your project area. The New Mexico Ecological Services Field Office has posted lists of the endangered, threatened, proposed, candidate and species of concern occurring in all New Mexico Counties on the Internet. Please refer to the following web page for species information in the county where your project occurs: http://ifw2es.fws.gov/NewMexico/SBC_intro.cfm. If you do not have access to the Internet or have difficulty obtaining a list, please contact our office and we will mail or fax you a list as soon as possible.

After opening the web page, find New Mexico Listed and Sensitive Species Lists on the main page and click on the county of interest. Your project area may not necessarily include all or any of these species. This information should assist you in determining which species may or may not occur within your project area.

Under the Endangered Species Act, as amended (Act), it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with us further. Similarly, it is their responsibility to determine if a proposed action has no effect to endangered, threatened, or proposed species, or designated critical habitat. If your action area has suitable habitat for any of these species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts. Please keep in mind that the scope of federally listed species compliance also includes any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects.

Candidates and species of concern have no legal protection under the Act and are included on the web site for planning purposes only. We monitor the status of these species. If significant declines are detected, these species could potentially be listed as endangered or threatened. Therefore, actions that may contribute to their decline should be avoided. We recommend that candidates and species of concern be included in your surveys.

Also on the web site, we have included additional wildlife-related information that should be considered if your project is a specific type. These include communication towers, power line safety for raptors, road and highway improvements and/or construction, spring developments and livestock watering facilities, wastewater facilities, and trenching operations.

RECEIVED
BW1 FOIA/CBP 005940

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. We recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands. These habitats should be conserved through avoidance, or mitigated to ensure no net loss of wetlands function and value.

The Migratory Bird Treaty Act (MBTA) prohibits the taking of migratory birds, nests, and eggs, except as permitted by the U.S. Fish and Wildlife Service. To minimize the likelihood of adverse impacts to all birds protected under the MBTA, we recommend construction activities occur outside the general migratory bird nesting season of March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until nesting is complete.

We suggest you contact the New Mexico Department of Game and Fish, and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division for information regarding fish, wildlife, and plants of State concern.

Thank you for your concern for endangered and threatened species and New Mexico's wildlife habitats. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area.

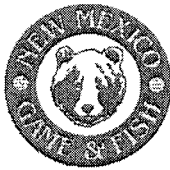
Sincerely,



Russell Holder
Acting Field Supervisor

RECEIVED

GOVERNOR
Bill Richardson



STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way
Post Office Box 25112
Santa Fe, NM 87504
Phone: (505) 476-8008
Fax: (505) 476-8128

STATE GAME COMMISSION

Leo V. Sims, II, Chairman
Hobbs, NM

Dr. Tom Arvas, Vice-Chairman
Albuquerque, NM

David Henderson, Commissioner
Santa Fe, NM

Alfredo Montoya, Commissioner
Alcalde, NM

Peter Pino, Commissioner
Zia Pueblo, NM

Guy Riordan, Commissioner
Albuquerque, NM

M. H. "Dutch" Salmon, Commissioner
Silver City, NM

DIRECTOR AND SECRETARY
TO THE COMMISSION
Bruce C. Thompson

Visit our website at www.wildlife.state.nm.us
For basic information or to order free publications: 1-800-862-9310.

April 1, 2006

Charles H. McGregor
US Army Corps of Engineers
CESWF-PER-EE
819 Talyor Street, Room 3A14
PO Box 17300
Fort Worth, TX 76102-0300

Re: Programmatic Environmental Assessment for Proposed Tactical Infrastructure along the International Border.
NMGF No. 10690

Dear Mr. Charles H. McGregor

In response to your letter dated 27 February 2006, regarding the above referenced project, a list of species of concern that occur in Dona Ana, Luna and Hidalgo Counties has been enclosed. The Department is concerned that increases of infrastructure on the border has the potential to adversely impact wildlife species and we ask that you analyze these potential impacts within the draft programmatic EIS (DPEIS). Some anticipated adverse impacts are the fragmentation of habitat caused by the construction of vehicle and pedestrian barriers. All barriers should be constructed as to allow for the free passage of wildlife. Construction of new roads and the improvement of existing roads will also fragment habitat and impede migration corridors of native wildlife. Increased patrol activity from improved roads can alter migration patterns and cause wildlife to move away from these areas, thus reducing available habitat. Construction of video surveillance systems can adversely impact and cause mortality to raptor and passerine species. Construction of lighting structures can adversely impact bats and possibly interfere with the migration patterns of avian wildlife.

The Department suggests that the DPEIS should disclose the potential adverse impacts to wildlife caused by increasing infrastructure and the cumulative impacts should be analyzed. If proposed projects will have an adverse impact to wildlife species the Department would like to see mitigation measures proposed that would alleviate these impacts.

Other sources of biological information are:

1. Species Accounts: <http://fwie.fw.vt.edu/states/nm.htm>
2. Species Searches: <http://nmnhp.unm.edu/bison/bisonquery.php>
3. New Mexico Wildlife of Concern by Counties List:
http://www.wildlife.state.nm.us/conservation/share_with_wildlife/documents/speciesofconcern.pdf
4. Habitat Handbook Project Guidelines:
http://wildlife.state.nm.us/conservation/habitat_handbook/index.htm
5. For custom, site-specific database searches on plants and wildlife. Go to Data then to Free On-Line Data and follow the directions go to: <http://nmnhp.unm.edu>
6. New Mexico State Forestry Division (505-827-5830) or <http://nmrareplants.unm.edu/index.html> for state-listed plants

3/31/2006

7. For the most current listing of federally listed species always check the U.S. Fish and Wildlife Service at (505-346-2525) or <http://ifw2es.fws.gov/EndangeredSpecies/lists/>.

Thank you for the opportunity to review and comment on your project. If you have any questions, please contact Pat Mathis, Habitat Specialist, at (505) 532-2100 or patrick.mathis@state.nm.us.

Sincerely,



Lisa Kirkpatrick, Chief
Conservation Services Division

LK/pm

xc: Russ Holder, Acting Ecological Services Field Supervisor, USFWS
Luis Rios, SW Area Operations Chief, NMGF
Pat Mathis, SW Area Habitat Specialist, NMGF

NEW MEXICO WILDLIFE OF CONCERN DONA ANA COUNTY

For complete up-dated information on federal-listed species, including plants, see the US Fish & Wildlife Service NM Ecological Services Field Office website at [http://www.fws.gov/lfw2es/New Mexico/SBC_intro.cfm](http://www.fws.gov/lfw2es/New%20Mexico/SBC_intro.cfm). For information on state-listed plants, contact the NM Energy, Minerals and Natural Resources Department, Division of Forestry, or go to <http://nmrareplants.unm.edu/>. If your project is on Bureau of Land Management, contact the local BLM Field Office for information on species of particular concern. If your project is on a National Forest, contact the Forest Supervisor's office for species information.

<u>Common Name</u>	<u>Scientific Name</u>	<u>NMGF</u>	<u>US FWS</u>	<u>critical habitat</u>
Bleached Earless Lizard	Holbrookia maculata ruthveni	s		
Southwestern Fence Lizard	Sceloporus cowlesi	s		
Little White Whiptail	Aspidoscelis gypsi	s		
Brown Pelican	Pelecanus occidentalis	E		
Neotropic Cormorant	Phalacrocorax brasilianus	T		
Bald Eagle	Haliaeetus leucocephalus	T	T	
Northern Goshawk	Accipiter gentilis	s	SOC	
Common Black-Hawk	Buteogallus anthracinus	T	SOC	
Aplomado Falcon	Falco femoralis	E	E	
Peregrine Falcon	Falco peregrinus	T	SOC	
Mountain Plover	Charadrius montanus	s	SOC	
Least Tern	Sterna antillarum	E	E	
Black Tern	Chlidonias niger surinamensis		SOC	
Common Ground-Dove	Columbina passerina	E		
Yellow-billed Cuckoo	Coccyzus americanus	s	C	
Mexican Spotted Owl	Strix occidentalis lucida	s	T	Y
Burrowing Owl	Athene cunicularia		SOC	
Buff-collared Nightjar	Caprimulgus ridgwayi	E		
Broad-billed Hummingbird	Cynanthus latirostris	T		
Violet-crowned Hummingbird	Amazilia violiceps	T		
Costa's Hummingbird	Calypte costae	T		
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	E	Y
Loggerhead Shrike	Lanius ludovicianus	s		
Bell's Vireo	Vireo bellii	T	SOC	
Gray Vireo	Vireo vicinior	T		
Baird's Sparrow	Ammodramus bairdii	T	SOC	
Varied Bunting	Passerina versicolor	T		
Western Small-footed Myotis Bat	Myotis ciliolabrum melanorhinus	s		
Yuma Myotis Bat	Myotis yumanensis yumanensis	s		
Occult Little Brown Myotis Bat	Myotis lucifugus occultus	s		
Long-legged Myotis Bat	Myotis volans interior	s		
Fringed Myotis Bat	Myotis thysanodes thysanodes	s		
Western Red Bat	Lasiurus blossevillei	s	SOC	
Spotted Bat	Euderma maculatum	T		
Pale Townsend's Big-eared Bat	Corynorhinus townsendii pallascens	s	SOC	
Big Free-tailed Bat	Nyctinomops macrotis	s		
Organ Mountains Colorado Chipmunk	Neotamias quadrivittatus australis	T	SOC	
Desert Pocket Gopher	Geomys arenarius	s	SOC	
Pecos River Muskrat	Ondatra zibethicus ripensis	s	SOC	

Red Fox	<i>Vulpes vulpes</i>	s	
Western Spotted Skunk	<i>Spilogale gracilis</i>	s	
Common Hog-nosed Skunk	<i>Conepatus leuconotus</i>	s	
Desert Bighorn Sheep	<i>Ovis canadensis mexicana</i>	E	
Dona Ana Talussnail	<i>Sonorella todseni</i>	T	SOC
Anthony Blister Beetle	<i>Lytta mirifica</i>	s	SOC
Desert Viceroy Butterfly	<i>Limnitis archippus obsoleta</i>		SOC

NEW MEXICO WILDLIFE OF CONCERN HIDALGO COUNTY

For complete up-dated information on federal-listed species, including plants, see the US Fish & Wildlife Service NM Ecological Services Field Office website at [http://www.fws.gov/lfw2es/New Mexico/SBC_intro.cfm](http://www.fws.gov/lfw2es/New%20Mexico/SBC_intro.cfm). For information on state-listed plants, contact the NM Energy, Minerals and Natural Resources Department, Division of Forestry, or go to <http://nmrareplants.unm.edu/>. If your project is on Bureau of Land Management, contact the local BLM Field Office for information on species of particular concern. If your project is on a National Forest, contact the Forest Supervisor's office for species information.

<u>Common Name</u>	<u>Scientific Name</u>	<u>NMGF</u>	<u>US FWS</u>	<u>critical habitat</u>
Roundtail Chub	<i>Gila robusta</i>	E	SOC	
Spikedace	<i>Meda fulgida</i>	T	T	Y
Loach Minnow	<i>Rhinichthys cobitis</i>	T	T	Y
Desert Sucker	<i>Catostomus clarki</i>	s	SOC	
Sonora Sucker	<i>Catostomus insignis</i>	s	SOC	
Colorado River Toad	<i>Bufo alvarius</i>	T		
Chiricahua Leopard Frog	<i>Rana chiricahuensis</i>	s	T	
Lowland Leopard Frog	<i>Rana yavapaiensis</i>	E	SOC	
Bunch Grass Lizard	<i>Sceloporus slevini</i>	T		
Giant Spotted Whiptail	<i>Aspidoscelis burti</i>	T		
Gray-checkered Whiptail	<i>Aspidoscelis dixonii</i>	E	SOC	
Mountain Skink	<i>Eumeces callicephalus</i>	T		
Reticulate Gila Monster	<i>Heloderma suspectum suspectum</i>	E		
Green Rat Snake	<i>Senticolis triaspis intermedia</i>	T		
Yaqui Blackhead Snake	<i>Tantilla yaquia</i>	s		
Mexican Garter Snake	<i>Thamnophis eques megalops</i>	E	SOC	
Narrowhead Garter Snake	<i>Thamnophis rufipunctatus rufipunctatus</i>	T	SOC	
NM Ridgenose Rattlesnake	<i>Crotalus willardi obscurus</i>	E	T	Y
Neotropic Cormorant	<i>Phalacrocorax brasilianus</i>	T		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T	
Northern Goshawk	<i>Accipiter gentilis</i>	s	SOC	
Gray Hawk	<i>Buteo nitidus</i>		SOC	
Common Black-Hawk	<i>Buteogallus anthracinus</i>	T	SOC	
Aplomado Falcon	<i>Falco femoralis</i>	E	E	
Peregrine Falcon	<i>Falco peregrinus</i>	T	SOC	
Gould's Wild Turkey	<i>Meleagris gallopavo mexicana</i>	T	SOC	
Mountain Plover	<i>Charadrius montanus</i>	s	SOC	
Common Ground-Dove	<i>Columbina passerina</i>	E		
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	s	C	
Whiskered Screech Owl	<i>Otus trichopsis</i>	T	SOC	
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	s	T	Y
Burrowing Owl	<i>Athene cunicularia</i>		SOC	
Buff-collared Nightjar	<i>Caprimulgus ridgwayi</i>	E		
Black Swift	<i>Cypseloides niger</i>	s		
Broad-billed Hummingbird	<i>Cynanthus latirostris</i>	T		
White-eared Hummingbird	<i>Hylocharis leucotis</i>	T		
Violet-crowned Hummingbird	<i>Amazilia violiceps</i>	T		
Lucifer Hummingbird	<i>Calothorax lucifer</i>	T		
Costa's Hummingbird	<i>Calypte costae</i>	T		

Elegant Trogon	Trogon elegans	E		
Gila Woodpecker	Melanerpes uropygialis	T		
Northern Beardless-Tyrannulet	Camptostoma imberbe	E		
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	E	Y
Thick-billed Kingbird	Tyrannus crassirostris	E		
Loggerhead Shrike	Lanius ludovicianus	s		
Bell's Vireo	Vireo bellii	T	SOC	
Gray Vireo	Vireo vicinior	T		
Abert's Towhee	Pipilo aberti	T		
Botteri's Sparrow	Aimophila botterii	s		
Baird's Sparrow	Ammodramus bairdii	T	SOC	
Arizona Grasshopper Sparrow	Ammodramus savannarum ammolegus	T		
Yellow-eyed Junco	Junco phaeonotus	T		
Varied Bunting	Passerina versicolor	T		
Arizona Shrew	Sorex arizonae	E	SOC	
Mexican Long-tongued Bat	Choeronycteris mexicana	s	SOC	
Mexican Long-nosed Bat	Leptonycteris nivalis	E	E	
Lesser Long-nosed Bat	Leptonycteris curasoae yerbabuenae	T	E	
Western Small-footed Myotis Bat	Myotis ciliolabrum melanorhinus	s		
Yuma Myotis Bat	Myotis yumanensis yumanensis	s		
Cave Myotis Bat	Myotis velifer	s		
Long-legged Myotis Bat	Myotis volans interior	s		
Fringed Myotis Bat	Myotis thysanodes thysanodes	s		
Western Yellow Bat	Lasiurus xanthinus	T		
Western Red Bat	Lasiurus blossevillii	s	SOC	
Pale Townsend's Big-eared Bat	Corynorhinus townsendii pallescens	s	SOC	
Big Free-tailed Bat	Nyctinomops macrotis	s		
Greater Western Mastiff Bat	Eumops perotis californicus	s		
White-sided Jack Rabbit	Lepus callotis gaillardi	T	SOC	
Black-tailed Prairie Dog	Cynomys ludovicianus ludovicianus	s	SOC	
Mearns' Pocket Gopher	Thomomys bottae mearnsi	s	SOC	
Southern Pocket Gopher	Thomomys umbrinus emotus	T		
Yellow-nosed Cotton Rat	Sigmodon ochrognathus		SOC	
Mexican Gray Wolf	Canis lupus baileyi	E	Exp	
Jaguar	Panthera onca arizonensis	R	E	
White-nosed Coati	Nasua narica	s		
Western Spotted Skunk	Spilogale gracilis	s		
Hooded Skunk	Mephitis macroura milleri	s		
Common Hog-nosed Skunk	Conepatus leuconotus	s		
Desert Bighorn Sheep	Ovis canadensis mexicana	E		
Shortneck Snaggletooth Snail	Gastrocopta dalliana dalliana	E	SOC	
Hacheta Grande Woodlandsnail	Ashmunella hebardi	T	SOC	
Animas Minute Moss Beetle	Limnebius aridus	s	SOC	
Desert Viceroy Butterfly	Limenitis archippus obsoleta		SOC	



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

17 April 2006

Planning, Environmental and Regulatory Division

SUBJECT: Cooperating Agency Status

Brigadier General Jose D. Riojas
Commander, Joint Task Force North
Bldg 11603, SSG Sims Street
Fort Bliss, Texas 79918-0058

Dear General Riojas:

The U.S. Army Corps of Engineers - Fort Worth District is acting on behalf of the U.S. Department of Homeland Security, Customs and Border Protection (CBP) in preparing two Programmatic Environmental Assessments (PEA) to address the potential effects, beneficial and adverse, of the proposed installation, operation and maintenance of various proposed tactical infrastructures (TI) that will include physical barriers, roads, vegetation management and lighting along the international border in the Office of Border Patrol's (OBP) El Paso Sector that covers El Paso County and portions of Hudspeth County in Texas and Dona Ana, Luna, and Hidalgo counties in New Mexico.

In compliance with Section 1501.6 of the Council on Environmental Quality Regulations for Implementing the National Environmental Policy Act, we are inviting Joint Task Force North to be a cooperating agency in the preparation of these PEAs. One assessment will address the impacts of the construction of TI along the international border in the two western counties of Texas and the other along the international border in the state of New Mexico.

The mission of CBP and its agents in the field is to prevent terrorist and terrorist weapons from entering the U.S. This mission involves a diverse, multi-layered approach, aimed at improving security along the international border, Ports of Entry (POE), and extending the physical zone of security beyond the Nation's physical borders. In addition, CBP must also fulfill its traditional mission that includes: controlling the sovereign borders of the U.S. by apprehending individuals attempting to enter the U.S. illegally; stemming the flow of illegal drugs and other contraband, protecting the Nation's agriculture and economic interest from harmful pest and diseases; facilitating international trade; collecting import duties; and enforcing U.S. trade, immigration and other laws of the U.S. at and beyond the Nation's borders.

The installation of various TI is being proposed by the CBP in an effort to enhance the OBP's capability to gain, maintain and extend control of the border in areas between the POEs. In brief, the purpose and need for the proposed TI are to:

- Increase apprehension of illegal aliens, thus improving deterrence,

- Reduce crime along the border areas by enhancing the effectiveness of OBP agents in their daily operations,
- Provide 24-hour operations through the use of technology (e.g., lights) as force multipliers,
- Provide improved access to remote areas along the U.S.-Mexico border,
- Secure the safety of OBP agents and U.S. residents, and
- Improve the ability of OBP agents to rescue IAs in distress.

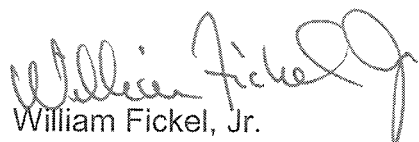
Construction and improvements of TI components would predominantly occur in previously disturbed or unvegetated areas where possible to minimize the impacted footprint to the extent practicable. Both military units and private contractors would perform construction and installation activities. The construction of proposed TI would occur in a prioritized and phased approach over the next 5 years.

The locations of the proposed TI components have been selected based upon the known high illegal traffic areas and the juxtaposition with existing infrastructure to ensure that the optimum benefits to the OBP's mission would be provided. Factors taken into account for location selection were based upon the proximity to existing roads, tactical relevance, power sources, condition of current infrastructure, ability to obtain a lease, easement or right-of-way, and topography.

Based on the common interest shared by both agencies, it is in our best interest to pursue an agreement in the preparation of these documents. We would appreciate knowing of your agency's interest in participating in the NEPA process as a cooperating agency as soon as possible. To this end if you intend to participate, CBP respectfully requests your agency provide any additional existing or draft environmental or cultural documents, technical expertise and possibly resources at your disposal to accomplish the proposed action. Your agency has been provided copies of both preliminary draft programmatic environmental assessment documents for Texas and New Mexico stations and has provided comments to each. Enclosed is a map showing the location of the project corridor. As part of this participation CBP would be asking your agency to continue to review documents and provide comments in an expedited manner to assist us in achieving the milestones in our aggressive schedule.

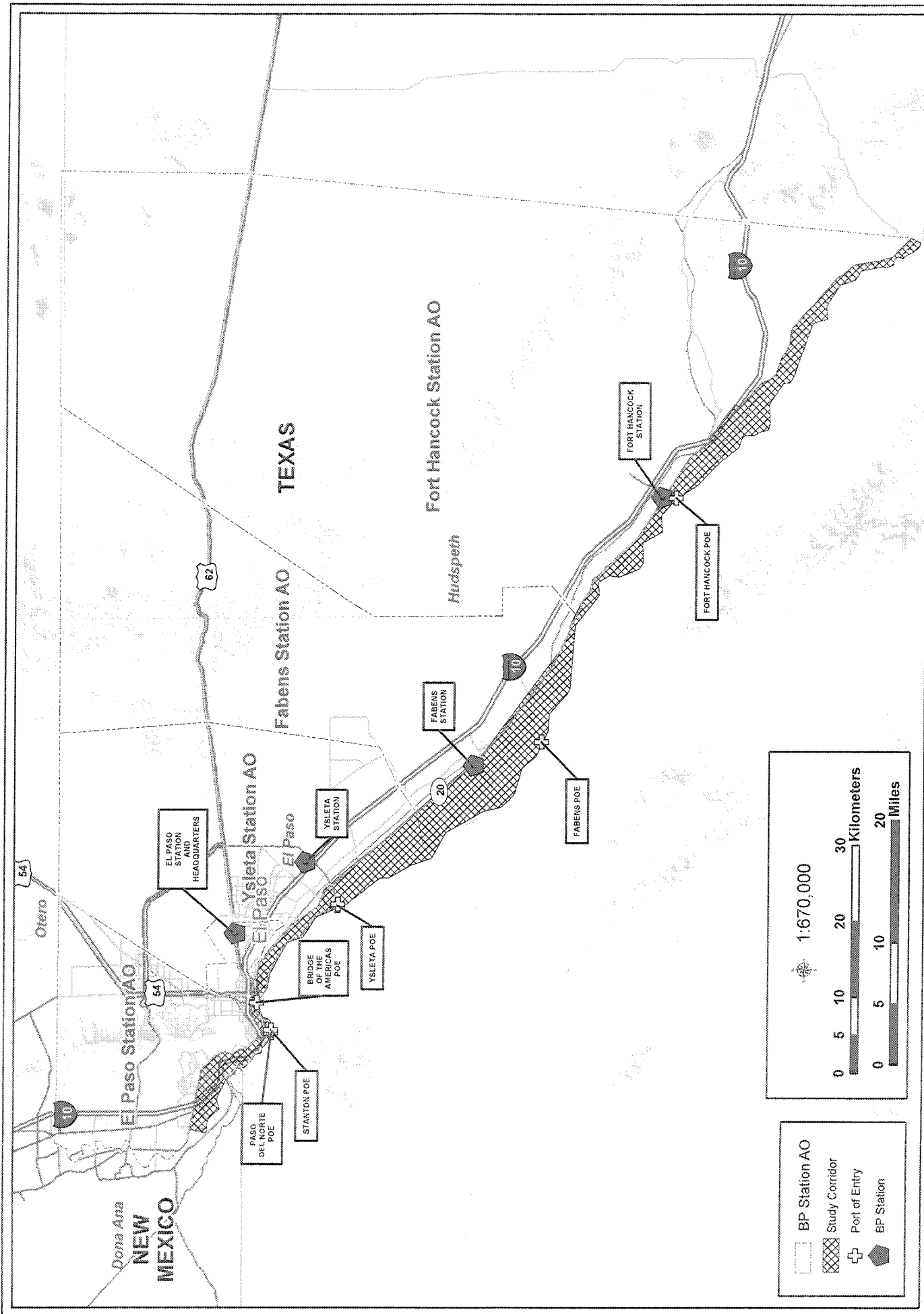
Your prompt attention to this request would be greatly appreciated. If you have any questions, please call Mr. Charles McGregor at (817) 886-1708.

Sincerely,



William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure



El Paso Sector
Texas Stations Study Corridor



February 2006

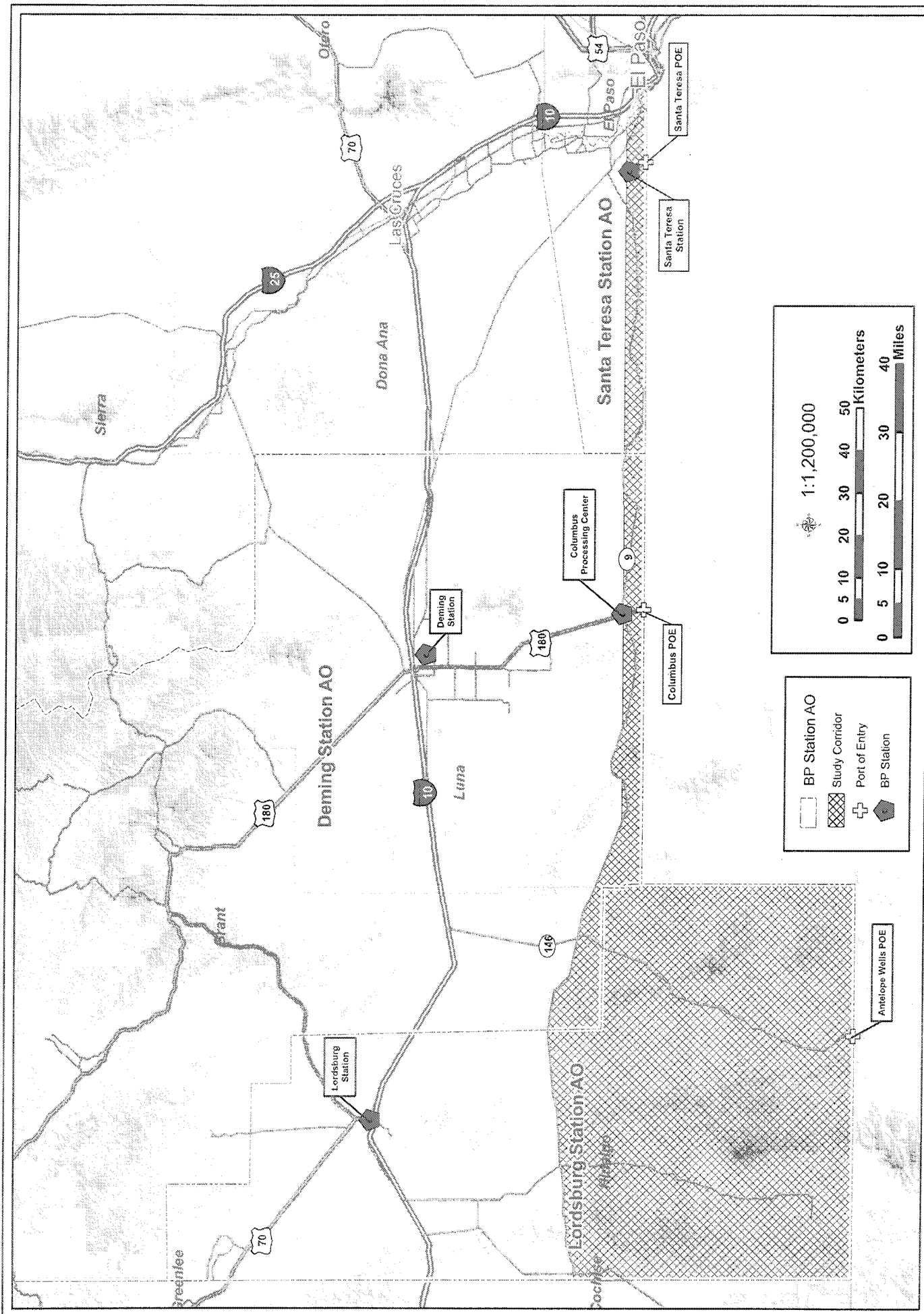


Figure 1: El Paso Sector
New Mexico Stations Study Corridor



United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Las Cruces District Office
1800 Marquess
Las Cruces, New Mexico 88005
www.nm.blm.gov



IN REPLY REFER TO:

2800 (03000)

APR 18 2006

Mr. Charles H. McGregor, Jr.
Department of the Army
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, TX 76102-0300

Dear Mr. McGregor:

We appreciate the opportunity to be a part of the Programmatic Environmental Assessment (PEA) for Proposed Tactical Infrastructure along the International Border. As you are aware, the Bureau of Land Management (BLM), Las Cruces District Office (LCDO) manages land near the International Border. The U.S. Army Corps of Engineer (USACE), U.S. Department of Homeland Security (DHS), and Customs and Border Protection (CBP) proposal to address the tactical infrastructure along the International Border could involve rights-of-way from the BLM.

In response to your April 5, 2006 letter, we agree to serve as a Cooperating Agency with the USACE, DHS, and CBP in development of the PEA. We believe we can provide valuable data on the resources we manage. We look forward to entering into a Memorandum of Understanding, which will identify the roles and responsibilities for our involvement.

Our desire to become a Cooperating Agency will allow us to tier to and use the PEA when analyzing your individual projects. In addition, it will save us additional analysis and DHS/CBP costs incurred during processing of your applications.

We look forward to assisting you in this effort as a Cooperating Agency. If you have any questions regarding this matter, please contact Lori Allen at (505) 525-4454 or at Lori_Allen@nm.blm.gov.

Sincerely,

Edwin L. Roberson
District Manager