

APPENDIX B
Biological Resources Plan



BIOLOGICAL RESOURCES PLAN

**FOR
CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL
INFRASTRUCTURE
FOR
EL PASO SECTOR, NEW MEXICO
LORDSBURG STATION**



**U.S. DEPARTMENT OF HOMELAND SECURITY
U.S. CUSTOMS AND BORDER PROTECTION
U.S. BORDER PATROL EL PASO SECTOR**

Prepared by



DECEMBER 2008

ABBREVIATIONS AND ACRONYMS

BMP	Best Management Practice
BRP	Biological Resources Plan
CBP	U.S. Customs and Border Protection
DAPTF	Declining Amphibians Populations Task Force
DHS	U.S. Department of Homeland Security
GPS	Global Positioning System
GSRC	Gulf South Research Corporation
IA	Illegal Alien
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
LWC	low water crossing
NE	No Effect
NEP	Non-essential Experimental Population
NLAA	Not Likely to Adversely Affect
MAA	May Adversely Affect
SPCCP	Spill Prevention, Control and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan
TI	Tactical Infrastructure
NMDGF	New Mexico Department of Game and Fish
U.S.	United States
USBP	U.S. Border Patrol
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

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EXECUTIVE SUMMARY

United States (U.S.) Department of Homeland Security (DHS), Customs and Border Protection (CBP), U.S. Border Patrol (USBP) plans to construct, operate and maintain approximately 42 miles of tactical infrastructure (TI) in three discrete sections (designated as Sections HV-1, HV-2; HV3; and HV4) in the USBP El Paso Sector. TI consists of vehicle fence, construction roads, and access roads in these three sections along the U.S./Mexico international border in Hidalgo County, New Mexico (Table ES-1). Staging areas, which are required for construction, will also be used while construction activities are ongoing.

Table ES-1. Type and Length (miles) of TI to be Constructed in Each Section of the Project Corridor

Section	Construction Road / Vehicle		Total
	Fence	Access Road	
HV1 - HV2	10.45	10.25	20.7
HV3	5.8	9.56	15.36
HV4	5.98	0	5.98
Total	22.23	19.81	42.04

Eleven Federally listed taxa and one candidate species are known to occur, or could occur within or adjacent to the project area (U.S. Fish and Wildlife Service 2007a) (Table ES-2). Of the species listed in Table ES-2, the project may adversely affect the Chiricahua leopard frog. The project may affect, but is not likely to adversely affect the jaguar, northern aplomado falcon, Mexican long-nosed bat, lesser long-nosed bat, and the New Mexico ridge-nosed rattlesnake.

Within HV-4, the only species with potential to occur are the jaguar, lesser and Mexican long-nosed bats, and northern aplomado falcon. However, HV-4 will not affect agaves; thus, no foraging habitat for the bats will be impacted. Additionally, the Antelope Wells Port of Entry (POE) is located in the middle of the project corridor, which extremely limits the potential for the reclusive jaguar to occur in this area. Therefore, CBP has determined that the only species that could be impacted within HV-4 is the aplomado falcon.

Table ES-2. Federally Listed Species and Critical Habitats Potentially Occurring within the Project Area and the Determination of Effects

Species	Listing/Critical Habitat Designated	Determination of Effect		
		HV1-HV2	HV3	HV-4
FISH				
Loach minnow <i>Tiaroga cobitis</i>	Threatened	NE	NE	NE
Loach minnow Critical Habitat	Proposed	NE	NE	NE
Spikedace <i>Meda fulgida</i>	Threatened	NE	NE	NE
Spikedace Critical Habitat	Proposed	NE	NE	NE
REPTILES AND AMPHIBIANS				
Chiricahua leopard frog <i>Rana chiricahuensis</i>	Threatened	MAA	MAA	NE
New Mexico ridge-nosed rattlesnake <i>Crotalus willardi obscurus</i>	Threatened	NLAA	NLAA	NE
New Mexico ridge-nosed rattlesnake Critical Habitat	Final	NE	NE	NE
BIRDS				
Mexican spotted owl <i>Strix occidentalis lucida</i>	Threatened	NE	NE	NE
Mexican spotted owl Critical Habitat	Final	NE	NE	NE
Northern aplomado falcon* <i>Falco femoralis septentrionalis</i>	Endangered	NLAA	NLAA	NLAA
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	Endangered	NE	NE	NE
Southwestern willow flycatcher Critical Habitat	Final	NE	NE	NE
Yellow-billed cuckoo <i>Coccyzus americanus</i>	Candidate	NE	NE	NE
MAMMALS				
Jaguar <i>Panthera onca</i>	Endangered	NLAA	NLAA	NE
Lesser long-nosed bat <i>Leptonycteris cuasoae yerbabuena</i>	Endangered	NLAA	NLAA	NE
Mexican grey wolf <i>Canis lupus baileyi</i>	Endangered	NE	NE	NE
Mexican long-nosed bat <i>Leptonycteris nivalis</i>	Endangered	NLAA	NLAA	NE

MAA – May Adversely Affect NLAA – Not Likely to Adversely Affect NE – No Effect

* – Experimental Population

Due to lack of habitat near or within the project corridor and because of the lack of known occurrences, CBP has been determined that the project will have no effect on the following species: loach minnow, spikedace, Mexican spotted owl, southwestern willow flycatcher, yellow-billed cuckoo, Mexican grey wolf, least tern, and Rio Grande silvery minnow. Therefore, these species will not be discussed in detail in this

Biological Resources Plan (BRP). No Critical Habitat exists within the project corridor for any protected species.

On April 1, 2008, the Secretary of DHS, pursuant to his authority under Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), exercised his authority to waive certain environmental and other laws in order to ensure expeditious construction of TI along the U.S./Mexico international border. Although the Secretary's waiver means that CBP no longer has any specific legal obligations under these laws, the Secretary committed the DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP strongly supports this objective and remains committed to being a good steward of the environment. To that end, CBP has prepared the following BRP, which analyzes the potential impacts on threatened and endangered species associated with construction of TI in the USBP's El Paso Sector. This BRP also discusses CBP's plans as to how potential impacts on threatened and endangered species can be avoided or mitigated. The BRP will help to guide CBP's efforts going forward.

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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS i

EXECUTIVE SUMMARY iii

1.0 PROJECT DESCRIPTION 1-1

 1.1 LOCATION 1-3

 1.2 DESCRIPTION OF PLANNED ACTION 1-3

 1.2.1 Construction, Operation, and Maintenance 1-3

 1.2.2 Fence Installation 1-3

 1.2.3 Road Improvements 1-8

 1.2.4 Maintenance and Operations 1-12

 1.3 BEST MANAGEMENT PRACTICES 1-12

 1.3.1 General BMPs 1-12

2.0 DESCRIPTION OF THE SPECIES AND THEIR HABITAT 2-1

 2.1 JAGUAR 2-1

 2.1.1 Distribution 2-1

 2.1.2 Habitat Requirements 2-1

 2.1.3 Threats 2-3

 2.2 CHIRICAHUA LEOPARD FROG 2-3

 2.2.1 Distribution 2-3

 2.2.2 Habitat Requirements 2-4

 2.2.3 Threats 2-6

 2.3 MEXICAN LONG-NOSED BAT 2-6

 2.3.1 Distribution 2-6

 2.3.2 Habitat Requirements 2-7

 2.3.3 Threats 2-9

 2.4 NORTHERN APLOMADO FALCON 2-10

 2.4.1 Distribution 2-10

 2.4.2 Habitat 2-10

 2.4.3 Threats 2-12

 2.5 LESSER LONG-NOSED BAT 2-13

 2.5.1 Distribution 2-13

 2.5.2 Habitat 2-13

 2.5.3 Threats 2-13

 2.6 NEW MEXICO RIDGE-NOSED RATTLESNAKE 2-15

 2.6.1 Distribution 2-15

 2.6.2 Habitat 2-17

 2.6.3 Threats 2-17

3.0 ACTION AREA 3-1

4.0 EFFECTS OF THE ACTION 4-1

 4.1 JAGUAR 4-1

 4.2 CHIRICAHUA LEOPARD FROG 4-2

 4.3 MEXICAN AND LESSER LONG-NOSED BATS 4-3

4.4 NORTHERN APLOMADO FALCON..... 4-4
 4.5 NEW MEXICO RIDGE-NOSED RATTLESNAKE 4-5
5.0 DETERMINATION OF EFFECT 5-1
6.0 REFERENCES 6-1

List of Figures

Figure 1-1. Vicinity Map..... 1-2
 Figure 1-2. Planned Action Project Corridor..... 1-5
 Figure 1-3. HV-4 Planned Action Project Corridor..... 1-7
 Figure 1-4. Schematic of Planned Action Tactical Infrastructure..... 1-10
 Figure 2-1. Regional Distribution of the Jaguar (*Panthera onca*) near the Project Area..... 2-2
 Figure 2-2. Regional Distribution of the Chiricahua Leopard Frog (*Rana chiricahuensis*) within the Project Area..... 2-5
 Figure 2-3. Regional Distribution of the Mexican Lesser Long-nosed Bat (*Leptonycteris nivalis*) near the Project Area 2-8
 Figure 2-4. Regional Distribution of the Northern Aplomado Falcon (*Falco femoralis septentrionalis*) 2-11
 Figure 2-5. Regional Distribution of the Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuena*) near the Project Area..... 2-14
 Figure 2-6. Critical habitat for the New Mexico Ridge-nosed Rattlesnake (*Crotalus willardi obsurus*) near the Project Area..... 2-16

List of Tables

Table 4-1. Project Impacts to Vegetation (acres) 4-1
 Table 5-1. Federally Listed Species and Critical Habitats Potentially Occurring within the Project Area and the Determination of Effects..... 5-2

List of Photographs

Photograph 1-1. Vehicle Fence (Normandy-style) 1-8

1.0 PROJECT DESCRIPTION

United States (U.S.) Department of Homeland Security (DHS), Customs and Border Protection (CBP), U.S. Border Patrol (USBP) plans to construct, operate and maintain approximately 42 miles of tactical infrastructure (TI) in three discrete sections (designated as Sections HV1 and HV2; HV3; and HV4) (Figure 1-1) in the USBP El Paso Sector. The TI to be constructed consists of 22.2 miles of vehicle fence and construction roads, and 19.8 miles of access roads in three sections along the U.S./Mexico international border in Hidalgo County, New Mexico. In order to facilitate the construction of TI, staging areas will also be used. Construction is slated to be completed by the end of December 2008.

On April 1, 2008, the Secretary of DHS, pursuant to his authority under Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), exercised his authority to waive certain environmental and other laws in order to ensure expeditious construction of tactical infrastructure along the U.S./Mexico international border. Although the Secretary's waiver means that CBP no longer has any specific legal obligations under these laws, the Secretary committed DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP strongly supports this objective and remains committed to being a good steward of the environment. To that end, CBP has prepared the following BRP, which analyzes the potential impacts on threatened and endangered species associated with construction of TI in the USBP's El Paso Sector. This BRP also discusses CBP's plans as to how potential impacts on threatened and endangered species can be avoided or mitigated. The BRP provides guidance for CBP's future efforts.

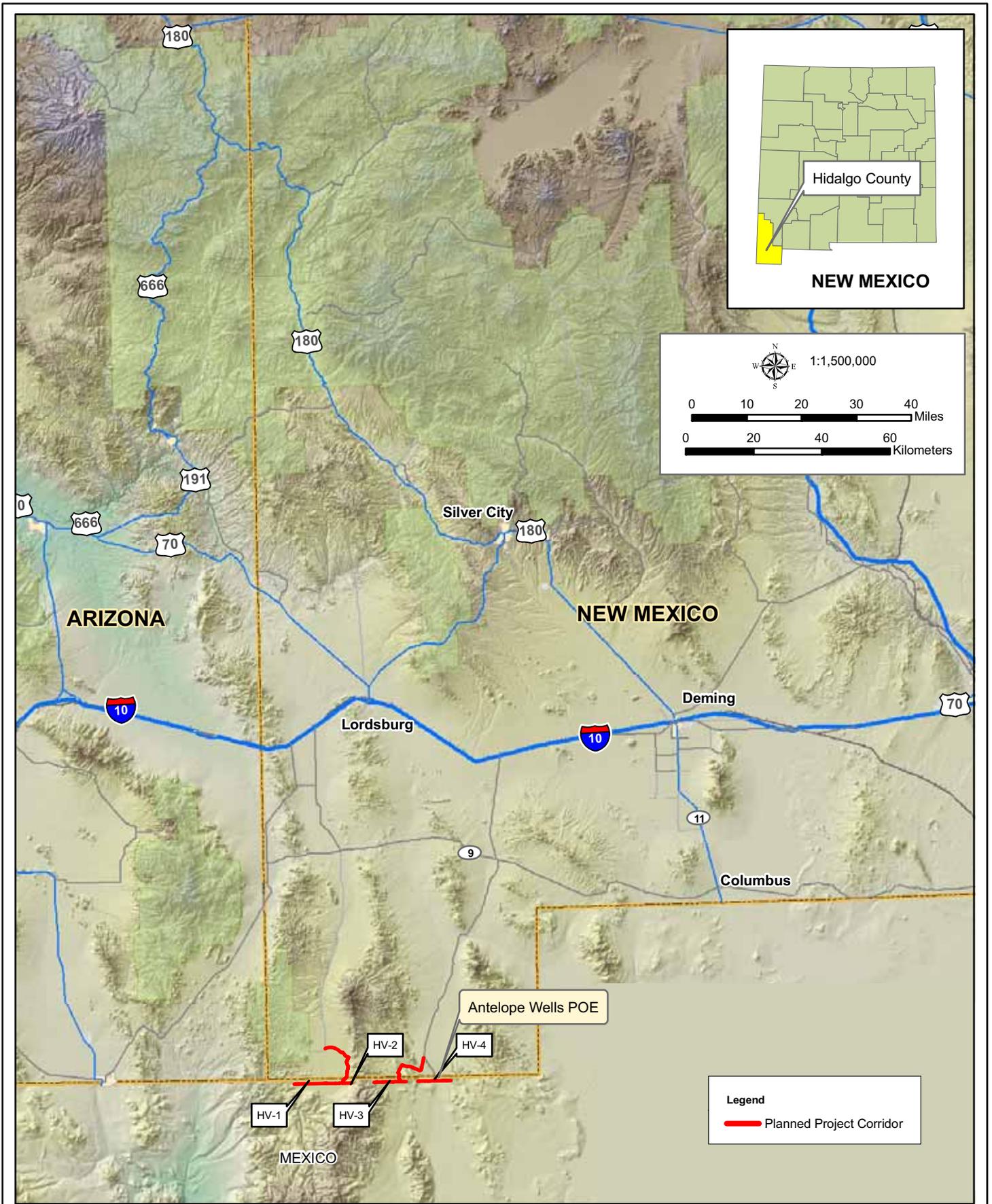


Figure 1-1: Vicinity Map



August 2008

1.1 LOCATION

The Planned TI will be installed immediately adjacent to the U.S./Mexico international border in Hidalgo County, New Mexico (Figures 1-2 and 1-3). The TI is divided among three discrete sections located within the USBP Lordsburg Station's area of operation (see Figure 1-1).

1.2 DESCRIPTION OF PLANNED ACTION

CBP, USBP plans to construct, operate, and maintain approximately 42 miles of TI, (i.e. vehicle fence, and construction an access roads) immediately adjacent to the U.S./Mexico international border in Hidalgo County, New Mexico (see Figure 1-2 and 1-3), in support of the USBP El Paso Sector mission.

1.2.1 Construction, Operation, and Maintenance

The construction activities within the project footprint of the three sections outlined above will consist of the following project components: (1) the installation and maintenance of new vehicle fence; (2) improvements to existing roads for access, construction, maintenance, and patrols; (3) the development of temporary construction staging areas and passing zones, which will be rehabilitated upon completion of construction, and (4) post-construction operation and maintenance.

1.2.2 Fence Installation

The Planned Action consists of constructing, operating, and maintaining approximately 22.2 miles of vehicle fence. The vehicle fence will be placed approximately 3 to 6 feet north of the U.S./Mexico border, within the Roosevelt Reservation. As the name implies, vehicle fences are structures designed to prevent illegal vehicle traffic; however, they are not designed to preclude pedestrian or wildlife movement. The vehicle fence (Normandy-style) to be constructed and installed as part of the

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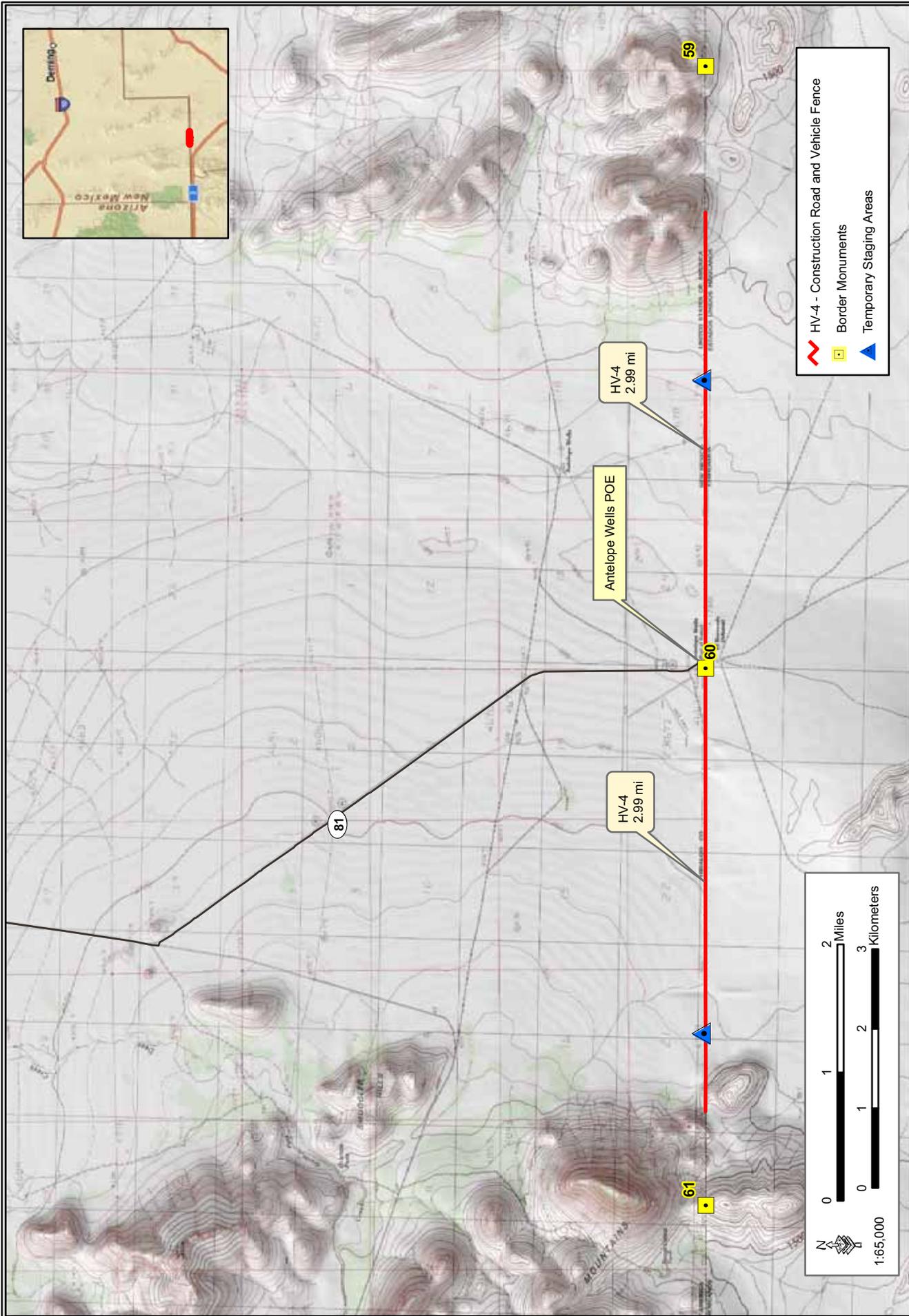


Figure 1-3: HV-4 Planned Action Project Corridor

Planned Action (Photograph 1-1) will be placed along the border and result in little or no permanent ground disturbance. The Normandy-style vehicle fence is typically constructed of welded metal similar to railroad rail. This type of vehicle fence cannot be rolled or moved manually, and must be lifted using a forklift or front-end loader. The barriers will be constructed within the staging areas or Roosevelt



Photograph 1-1. Vehicle Fence (Normandy-style)

Reservation, transported throughout the Project corridor, placed on the ground, anchored to the ground every 24-feet using a concrete or steel anchor only on slopes greater than 20 percent and near washes, and then welded together. A typical section of Normandy-style vehicle fence is 24 feet long and stands 4 to 6 feet high. Additionally, the vehicle fence will be outfitted with pipe, tubing, or a similar material that will parallel the horizontal rail no lower than 16 inches from the ground and no higher than 48 inches for the purposes of preventing livestock from crossing. Big game panels will also be installed every 1,300 feet to allow large ungulates (i.e., mule deer [*Odocoileus hemionus*]) to easily cross the fence. The panels will consist of steel tubing approximately 12 to 16 feet long placed at the same height as the rail on the vehicle fence. The panels will be similar in appearance to a gate.

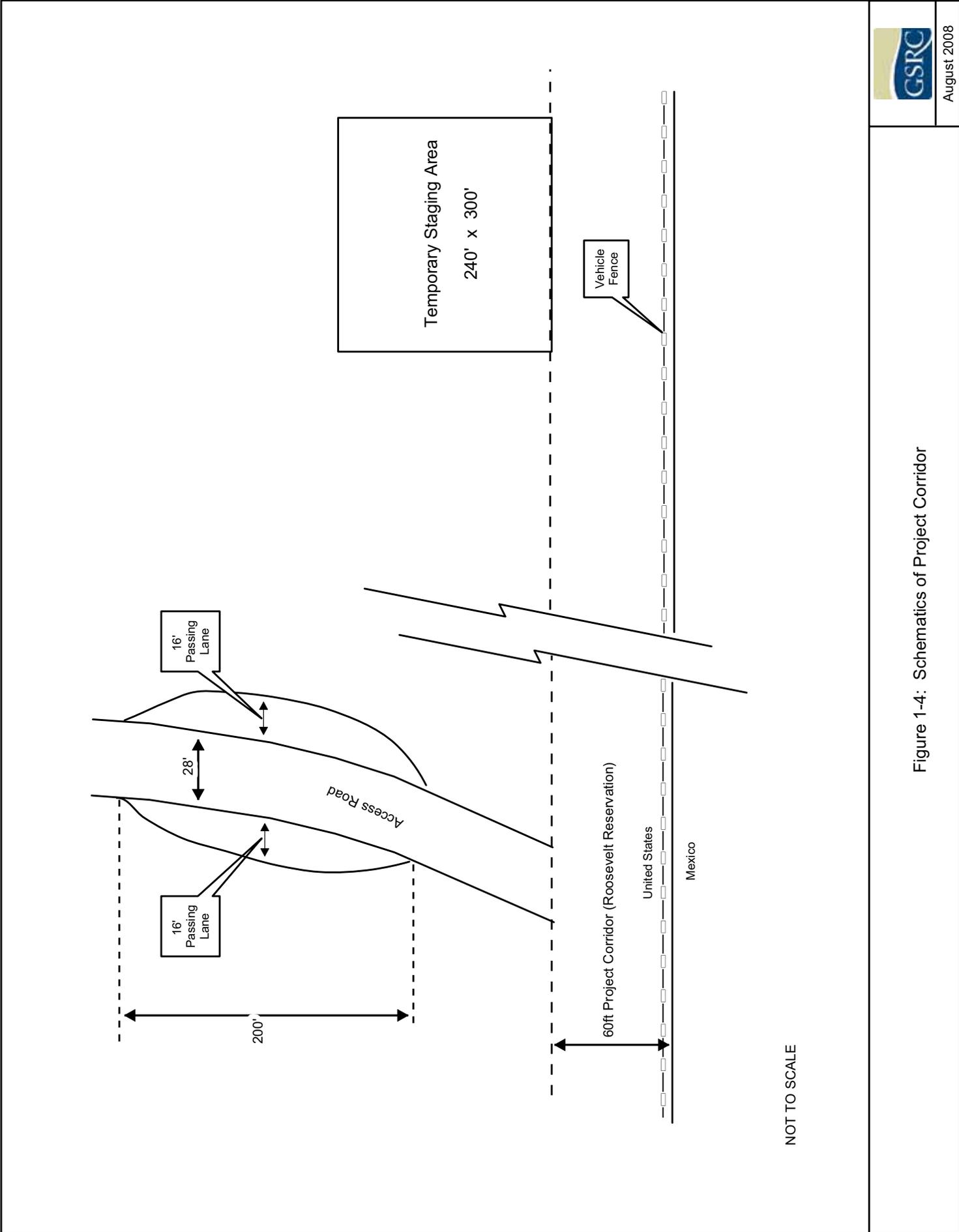
1.2.3 Road Improvements

Construction roads are needed to provide a safe driving surface along the border for construction and future maintenance of the vehicle fence. These are typically 28 feet wide. Water bars will be installed at various locations along the road to direct storm water into parallel ditches or down slope to reduce erosion of the road surface. Upon completion of the construction activities the construction roads will also be used for patrolling, and dragging, as well as maintenance of the vehicle fence.

Access roads provide access to the border fence itself, as well as the border fence construction road. Within the project corridor, road improvements will occur on approximately 19.8 miles of existing access roads. Two north-south oriented roads provide direct access to the border from State Routes 1 and 81 in Hidalgo County. These access roads will not exceed 28-feet in width but will have aggregate placed on them. The aggregate and any other improvements made to these access roads will be removed to the greatest extent practicable within a year of completion of the construction activities.

The improvement of the access and construction roads will include the construction of new drainage structures or low water crossings (LWC). Drainage structures will consist of corrugated pipe or concrete box culverts, while LWCs will consist of concrete slabs designed with suitable approach angles. Culverts may also be incorporated into the design of LWCs, as appropriate. The size and number of culverts required will depend upon the width of the drainage and the expected flood flow volumes and velocities at each of the drainage crossings. Each drainage structure will be designed to ensure that flows are not impeded, thus avoiding creation of backwater areas. The designs will also ensure that water velocity is not increased by the drainage structure. Drainage patterns within the project footprint will not be altered as a result of the Planned Action. Silting basins, rip rap, gabion baskets, and other designs will be used on both ends of the drainage structure to dissipate the water flow energy. Head, tail, and cut-off walls will be constructed, as appropriate, to reduce scouring and ensure the stability of the drainage structure.

In order to facilitate operation of equipment, staging of materials, and construction access within the project corridor along the U.S./Mexico border, six temporary staging areas (240-feet X 300-feet), totaling 10 acres will be created. In addition, 14 passing zones will be developed. These passing zones will be approximately 60 feet wide by 200 feet long and will encompass the improved roadway (28 feet wide). The passing zones are necessary to allow for safe passage of transport vehicles, materials, and equipment (Figure 1-4). The passing zones will temporarily impact approximately 2



NOT TO SCALE

Figure 1-4: Schematics of Project Corridor

acres. Aggregate will be placed in these passing zones; however, the aggregate will be removed to the greatest extent practicable within a year of completing construction activities. The passing zones are necessary to allow for safe passage of transport vehicles and equipment. Upon completion of the construction activities the passing zones will be brought back to preconstruction condition to the greatest extent practicable.

Vegetation will be cleared and grading will occur where needed in the staging areas. Upon completion of construction activities, these staging areas will be rehabilitated.

To account for heat restrictions for adequate concrete drying and curing processes, most concrete pours for low water crossings, other drainage structures, and fencing will need to take place during the pre-dawn hours. However, the possibility exists that work will have to occur on a 24-hour basis. A 24-hour schedule will be implemented only when additional efforts are needed in order to maintain the work task schedule as Federally mandated. In order to facilitate construction activities during these work hours, portable lights will be used. It is estimated that no more than 12 lights will be in operation at any one time at each Project site.

A 6-kilowatt self-contained diesel generator powers these lights. Each unit typically has four 400- to 1000-watt lamps. The portable light systems can be towed to the desired construction location as needed and removed upon completion of construction activities. Lights will be oriented to illuminate the work area and provide illumination sufficient to work within in area up to 200 feet from the light source.

The construction footprint of the vehicle fence will be contained primarily within the 60-foot-wide Roosevelt Reservation (except for the staging areas), which was set aside in 1907 by President Roosevelt as a border enforcement zone. Additionally, all materials and equipment that will be stored onsite will be done so within the designated staging areas. The Planned Action will be constructed by private contractors, though some

military units could be used to assist in road construction. The anticipated dates for construction activities are from mid-September through December 2008.

1.2.4 Maintenance and Operations

There will be no change in overall USBP Sector operations. Upon completion of the TI, CBP will be responsible for repair and maintenance of the fence and road. Such activities will include replacement or repair of fence segments that are vandalized, removal of debris that becomes entrapped along the fence or within any drainage structures, and grading of the road surface. These activities will occur on an as-needed basis; however, routine road maintenance will be expected to occur at least annually.

1.3 BEST MANAGEMENT PRACTICES

The following best management practices (BMPs) will be implemented to avoid or minimize impacts associated with the project. These represent project objectives for implementation to the greatest extent possible and will be incorporated into construction and monitoring contracts.

1.3.1 General BMPs

1. BMPs will be implemented as standard operating procedures during all construction activities. These BMPs will include proper handling, storage, and/or disposal of hazardous and/or regulated materials. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be completed following accepted guidelines, and all construction 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 within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock, etc.) will be used to absorb and contain the spill. Furthermore, any spill of petroleum liquids (e.g., fuel) or material listed on 40 CFR 302 Table 302.4 of a reportable quantity must be cleaned up and reported to the appropriate Federal and state agencies. Reportable quantities of those substances listed on 40 CFR 302 Table 302.4 will be included as part of the Spill Prevention, Control and Countermeasures Plan (SPCCP). A SPCCP will be in

place prior to the start of construction and all personnel will be briefed on the implementation and responsibilities of this plan.

2. All waste oil and solvents will be recycled where practicable. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures.
3. Solid waste receptacles will be maintained at staging areas, work camps, bivouacs, and camp details. Non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Solid waste will be collected and disposed of by a local waste disposal contractor. Non-hazardous waste will remain separate from hazardous waste and contractors will, to the extent practicable, remove excess packaging and other wastes prior to transporting supplies to construction areas.
4. Waste materials and other discarded materials will be removed from the site as quickly as practicable. Nonhazardous waste materials and other discarded materials such as construction waste will be contained until removed from site. This should assist in keeping the project area and surroundings free of litter and reduce the amount of disturbed area needed for waste storage.
5. To reduce the attraction of predators of Federally protected species, all food-related trash items such as wrappers, cans, bottles, and food scraps, will be disposed of in closed containers, removed daily from the project site, and will be recycled to the extent practicable.
6. Waste water (water used for project purposes that is contaminated with construction materials, was used for cleaning equipment and thus carries oils or other toxic materials or other contaminants) will be stored in closed containers on site until removed for disposal. Concrete wash water will not be dumped on the ground, but will be collected and moved offsite for disposal.
7. The perimeter of all areas to be disturbed during construction or maintenance activities will be clearly demarcated using flagging or temporary construction fence, and no construction disturbance outside of that perimeter will be authorized.
8. Within the designated disturbance areas, grading or topsoil removal will be limited to areas where this activity is needed to provide the ground conditions needed for construction or maintenance activities. Minimizing disturbance to soils will enhance the ability to restore the disturbed area after the project is complete.
9. When available, areas already disturbed by past activities or those that will be used later in the construction period will be used for staging, parking, and equipment storage.
10. All access routes into and out of the project disturbance area will be flagged, and no construction travel outside those boundaries will be authorized.

11. To the extent practicable, roads will be designed so that they are not located at or near stream bends or meanders but rather at straight stream reaches where channel stability is enhanced.
12. Roads will be designed and located such that the potential for road bed erosion into Federally protected species habitat will be avoided or minimized.
13. Roads will be designed such that the potential for entrapment of surface flows within the roadbed due to grading should be avoided or minimized. Depth of any pits created will be minimized so animals do not become trapped.
14. Roads will be designed and located such that the widening of existing or created roadbed beyond the design parameters due to improper maintenance and use will be avoided or minimized.
15. Roads will be designed and located such that excessive use of unimproved roads that results in their deterioration such that it affects any surrounding federally protected species habitat areas will be minimized.
16. The Contractor will maintain existing roads during construction and return the existing roads to pre-construction conditions once construction is complete, unless road was upgraded. The width of all roads that are created or maintained by the Contractor will be measured and recorded using Global Positioning System (GPS) coordinates and provided to the Government by the construction Contractor. Maintenance actions should not increase the width of the road bed or the amount of disturbed area beyond the road bed.
17. No pets owned or under the care of the construction contractor or construction workers will be permitted inside the Project's construction boundaries, adjacent native habitats, or other associated work areas. This BMP does not apply to any animals under service to the USBP (such as canine and horse patrols).
18. If construction or maintenance work activities would continue at night, all lights will be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers, the minimum foot candles needed will be used, and the number of lights should be minimized.
19. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared by the contractor prior to construction activities and BMPs described in the SWPPP will be implemented to reduce erosion.
20. Within the designated disturbance area, grading or topsoil removal will be limited to areas where this activity is needed to provide the ground conditions needed for construction or maintenance activities. Minimizing disturbance to soils will enhance the ability to restore the disturbed area after the project is complete.
21. Materials such as gravel or topsoil will be obtained from existing developed or previously used sources not from undisturbed areas adjacent to the project area.
22. Transmission of disease vectors and invasive non-native aquatic species can occur if construction vehicles cross infected or infested streams or other waters and water or mud remains on the vehicle. If these vehicles subsequently cross or enter uninfected or non-infested waters, the disease or invasive species may be

- introduced to the new area. To prevent this, crossing of streams or marsh areas with flowing or standing water will be avoided, and if not, the vehicle sprayed with a 10 percent bleach solution or allowed to dry completely to kill any organisms.
23. Pumps, hoses, tanks and other water storage devices will be cleaned and disinfected with a 10 percent bleach solution at an appropriate facility (this water is not to enter any surface water area) before use at another site, if untreated surface water was used. If a new water source is used that is not from a treated or groundwater source, the equipment will require additional cleaning. This is important to kill any residual disease organisms or early life stages of invasive species that may affect local populations of Federally protected species.
 24. Materials used for on-site erosion control in uninfested native habitats will be free of non-native plant seeds and other plant parts to limit potential for infestation. Since natural materials cannot be certified as completely weed-free, if such materials are used, there will be follow up monitoring to document establishment of non-native plants and appropriate control measures should be implemented for a period of time to be determined in the site restoration plan.
 25. During follow-up monitoring and during maintenance activities, invasive plants found on the site will be removed. Removal will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. Herbicides must be used according to label directions. If herbicides are used the treated plants should be left in place. Training to identify non-native invasive plants will be provided for CBP personnel or contractors as necessary.
 26. Fill material, if required, brought in from outside the project area will be identified as to source location and will be weed free to the extent practicable.
 27. The USFWS lists Federally protected species with the potential of occurring in Hidalgo County, New Mexico. It is the Contractor's responsibility to be aware of these species and if any of these species are encountered the Contractor will take appropriate measures, potentially including temporarily suspending work.
 28. If an individual Federally listed species is found in the Project corridor, work will cease in the area of the species until either a qualified biological monitor can safely remove the individual in accordance with accepted species-handling protocols or it moves away on its own, if appropriate and to the extent practicable and construction schedule permitting. Such occurrences will be documented by the biological monitor. All construction and maintenance projects in Federally listed habitats should have a designated biological monitor on site during the work. The biological monitor should document implementation of construction-related BMPs as designed for the Project to reduce the potential for adverse effects on the species or their habitats. Reports from the biological monitor should be used for developing the Project Report.
 29. A training plan regarding protected species will be developed in coordination with USFWS for construction personnel. At a minimum, the program will include the following topics: occurrence of the listed and sensitive species in the area, their general ecology, sensitivity of the species to human activities, protection afforded

these species, and project features designed to reduce the impacts to these species and promote continued successful occupation of the project area environs. Included in this program will be color photos of the listed species, which will be shown to the employees. Following the education program, the photos will be posted in the contractor and resident engineer office, where they will remain through the duration of the project. The selected Contractor's construction manager will be responsible for ensuring that the Contractor's employees are aware of the listed species.

31. Water for construction and maintenance will be hauled into the project corridor from existing wells located either near the project corridor or from municipal supplies in other towns in Hidalgo, Grant, or Luna Counties. It is assumed that for road construction approximately 0.5 acre-foot per mile of water would be needed for dust suppression and compaction. This water will be consumed during the construction activities, which will be completed by December 2008.
32. Water storage on the project area should be in closed on-ground containers located on upland areas and not in washes.
33. For purposes of construction, infrastructure sites will only be accessed using designated, existing roads. Parking will be in designated disturbed areas. This should limit the development of multiple trails to such sites and reduce the effects to Federally protected species habitat in the vicinity.
34. Standard construction procedures will be implemented to minimize the potential for erosion and sedimentation during construction. All work will cease during heavy rains, and will not resume until conditions are suitable for the movement of equipment and materials. All fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment area consisting of an impervious floor and bermed sidewalls capable of holding the volume of the largest container stored therein. The refueling of machinery will be completed following accepted guidelines, and all construction vehicles will have drip pans during storage to contain minor spills and drips. Portable lights, once established, will be fueled in place with proper containment measures. No refueling or storage will take place within 100 feet of a drainage channel or structure. Other design measures will be implemented, such as straw bales, silt fencing, aggregate materials, wetting compounds, and re-vegetation with native plant species, where possible, to decrease erosion and sedimentation. Furthermore, a contractor will complete a SWPPP before construction activities begin.
35. All equipment maintenance, staging, laydown, and dispensing of fuel, oil, or any other such activities, will occur in designated upland areas. The designated upland areas will be located in such a manner as to prevent any runoff from entering waters of the U.S., including wetlands.
36. If construction or maintenance work activities occur at night, all lights will be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers, the minimum wattage needed will be used, and the number of lights should be minimized.

37. The Contractor will not conduct any construction related activities in areas that have not been previously surveyed for biological resources.
38. Construction equipment will possess properly working mufflers and will be kept properly tuned to reduce backfires.
39. Noise levels for day or night construction and maintenance should be minimized. All generators should be in baffle boxes (a sound-resistant box that is placed over or around a generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.

BMPs for Temporary Impacts

The following apply as off-setting conservation measures for temporary impacts:

1. Site restoration of temporarily disturbed areas such as staging areas and construction access routes will be monitored for invasive plants as appropriate.
2. During follow-up monitoring of any restoration areas, invasive plants that appear on the site will be removed. Mechanical removal will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. Herbicides must be used according to label directions. The monitoring period will be defined in the site restoration plan. Training to identify nonnative invasive plants will be provided for CBP contractor personnel, as necessary.
3. Temporary impact areas will be restored in-kind, except temporary impacts on disturbed habitat and non-native grassland. In general, native areas should be revegetated with the most appropriate native plant palette following completion of the work.
4. Native species will be used for revegetation purposes.

Species-Specific BMPs

In addition to the General BMPs outlined above, the following measures will be implemented to the maximum extent practicable, to avoid, minimize, or offset impacts associated with the project on the Federally listed jaguar, Chiricahua leopard frog, northern aplomado falcon, New Mexico ridge-nosed rattlesnake, lesser long-nosed bat, and Mexican long-nosed bat.

Jaguar (*Panthera onca*)

During any construction activities, if a jaguar is seen within 1 mile of construction activities, any work that could disturb the jaguar will cease. For construction vehicle operations, this will entail stopping the vehicle until the jaguar moves away. Vehicles

can continue on at reduced speeds (10–15 miles per hour) once the jaguar has moved away. For construction, the biological monitor will request that work be suspended until the jaguar moves out of the area. As the schedule permits, construction crews may be advised to wait up to 3 hours from the initial sighting for the jaguar to move beyond 1 mile away from the project activity or vehicle. After such time, if the construction schedule permits, project personnel may retreat from the area in the direction from which they came. During maintenance activities, appropriately trained construction staff will suspend maintenance activities until the jaguar moves away, if practicable.

Chiricahua Leopard Frog (*Rana chiricahuensis*)

Disease prevention protocols will be employed if the project is in areas known or likely to harbor chytridiomycosis (consult with USFWS to identify these areas). In such cases, if construction vehicle/equipment use will occur in more than one frog habitat, the contractor will ensure that all equipment is clean and dry or disinfected before it moves to another habitat.

All road improvements will be designed to minimize the risk of erosion or adverse effects to aquatic habitats of the frog. Routes that cross seasonally or perennially flowing streams will be avoided to the extent practicable. If not avoidable, crossings will be designed to minimize effects to streams through use of culverts or other design features that protect natural substrates and flows. If construction or maintenance projects cannot avoid working in aquatic sites that provide suitable breeding habitat for the frog, in order to prevent spread of disease, construction equipment and vehicles will be disinfected or allowed to dry thoroughly before such equipment is moved to another wetland or aquatic site.

Any use or storage of chemicals or fuels within the construction corridor or staging areas will be kept at least 0.3 mile from suitable frog sites to the greatest extent practicable. No pumping of water from suitable breeding sites will occur for road maintenance, dust control, mixing concrete or other purposes. No transfer of water or mud among suitable breeding sites will occur. Use of herbicides to control unwanted

invasive plants at facilities or roadsides is an acceptable management technique when used according to label directions such that introduction of the herbicides to the frog's aquatic habitats does not occur.

Chiricahua leopard frogs found within the project corridor and could be potentially affected by any construction activities will be captured and translocated by a qualified biologist to the closest and safest area of suitable habitat. Any relocation efforts or handling of Chiricahua leopard frogs will be coordinated with the FWS and New Mexico Department of the Game and Fish (NMDGF) to ensure proper handling of individuals and appropriate relocation site selection. The biologist will coordinate with the appropriate property owners to allow for any Chiricahua leopard frogs to be placed in areas selected as suitable translocation sites. The USFWS will assist CBP in locating qualified biological monitors. During the removal of frogs, a qualified biologist will maintain a complete record of all Chiricahua leopard frogs encountered and moved. The date, time of capture, and specific location of capture (using GPS) will be recorded and provided to the USFWS as part of the final Project Report. To avoid transferring disease or pathogens between aquatic habitats during surveys and handling of Chiricahua leopard frogs, the qualified biologist will follow the Declining Amphibian Populations Task Force (DAPTF) - Fieldwork Code of Practice (DAPTF 2008) or newer version, when available.

Mexican Long-nosed Bat (*Leptonycteris nivalis*) and Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuena*)

Areas containing agaves which provide a forage base for the bat will be avoided if possible. If they cannot be avoided, then agaves will be purchased and planted at an appropriate ratio to replace lost agave plants to ensure no bat forage materials are eliminated due to project activities. Container planting will be done in accordance with a restoration plan that includes success criteria and monitoring. The effects of night lighting on bats are largely unknown. Since several important foraging areas containing known roosts are on the Mexico side of the border near the project corridor, placement of temporary work lights in extensive areas may compromise cross-border foraging

ability. CBP will consider location and direction (orientation) of temporary construction lighting to the extent practicable.

New Mexico Ridge-nosed Rattlesnake (*Crotalus willardi obscurus*)

Construction of roads and fences that would require land clearing, will be coordinated with land managers relative to wildland fire management plans to ensure guidelines are followed.

Measures to prevent the ignition of wildfire (for example, not parking construction vehicles over flammable vegetation) will be included as part of the training program for protection of natural resources and implemented by the Contractor. Training will include information on the habitat of the rattlesnake and its normal behavior, and provide guidance for movement on foot or in vehicles within rattlesnake habitat. While this training is directed toward the New Mexico ridge-nosed rattlesnake, the overriding message will be that avoidance of all snakes observed on the landscape is the usual operation. The Contractor will avoid killing any snakes unless there is a particular emergency situation.

During construction, any rattlesnakes observed in the project area will be avoided and allowed to leave the area on their own. No intentional harassment of any snake is allowed by Contractor personnel except as deemed necessary by the biological monitor or in case of emergency that involves human health or life.

Individual New Mexico ridge-nosed rattlesnakes found in the immediate construction zone will be relocated by the biological monitor to a nearby safe location in accordance with accepted species handling protocols.

Northern Aplomado Falcon (*Falco femoralis septentrionalis*)

The planned action will be designed to prevent or minimize to the greatest extent practicable effects to the grasslands of the valleys near the project area where this species may nest in the future.

2.0 DESCRIPTION OF THE SPECIES AND THEIR HABITAT

2.1 JAGUAR

The jaguar was listed as an endangered species on July 22, 1997 without critical habitat (62 *Federal Register* [FR] 39147). The non-U.S. population was listed as endangered on March 30, 1972 (37 FR 6476) (USFWS 2000).

2.1.1 Distribution

The historic range of the jaguar included a wide belt from the central U.S. to central Mexico (USFWS 1997). Although the greatest abundance of jaguars occurs in tropical environments of Mexico, the range of northern populations extends into southeastern Arizona and southwestern New Mexico. Historical (i.e., pre-1950) and recent (i.e., 1990s) sightings of the jaguar in New Mexico have occurred in the Black Range and San Andres Mountains of Sierra County, the Datil Mountains of Catron County, and the Peloncillo Mountains of Hidalgo County (Menke and Hayes 2003). Jaguars can breed year round; however, reported occurrences in the U.S. are likely to be males hunting at the northern extent of their range. Figure 2-1 indicates the regional distribution of the jaguar, based upon historic and recent observations.

2.1.2 Habitat Requirements

Little is known about habitat preferences of jaguars in the northern portion of their range. Jaguars hunt a variety of prey throughout their range, and are likely to be supported in large part by javelina (*Tayassu tajacu*) and mule deer (*Odocoileus hemionus*) in the southwestern U.S. Although livestock can also provide prey, management practices such as grazing regimes can degrade habitats and reduce abundance of other prey. Factors which are thought to improve habitat suitability include low human density, proximity to water, abundant prey, and rugged terrain (Menke and Hayes 2003). Although jaguar detections over the last 10 years have

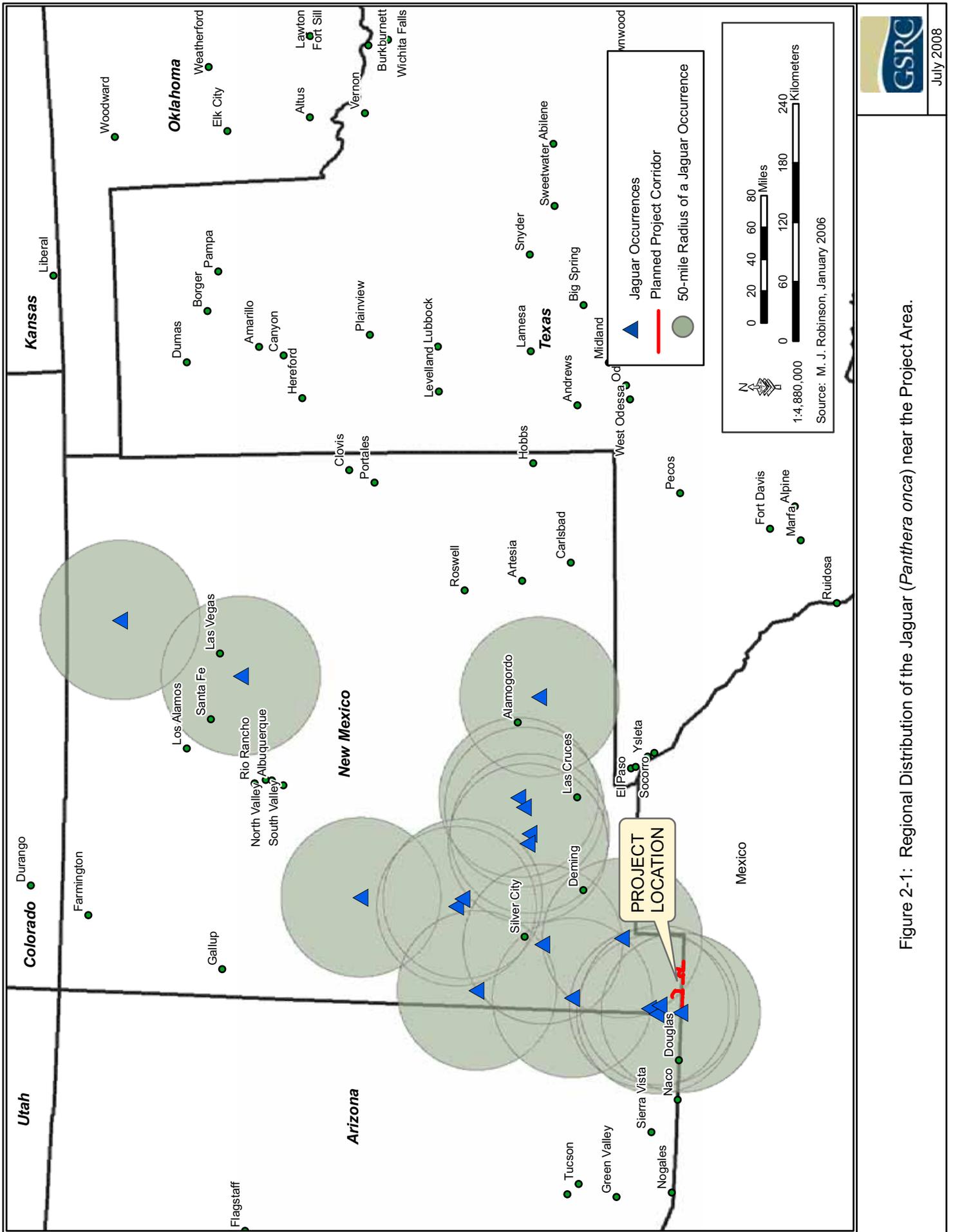


Figure 2-1: Regional Distribution of the Jaguar (*Panthera onca*) near the Project Area.

primarily occurred in Madrean oak woodland communities, jaguars have also been documented in open mesquite grasslands and desert scrub/grasslands on the desert valley floor (USFWS 2000). Jaguars could potentially utilize habitats throughout the project area.

2.1.3 Threats

The current status of the jaguar in the action area is unknown; however, CBP assumes the species is potentially present based on recent sightings in New Mexico. Loss, fragmentation, and modification of jaguar habitat have contributed to population declines throughout much of the species' range. Roads may have direct impacts to jaguars and their habitat, including road-kill, disturbance, habitat fragmentation, changes in prey numbers or distribution, and providing increased access for legal or illegal hunting.

Illegal hunting was a primary reason for declines of the U.S. population, and continues to threaten the jaguar population in Mexico (USFWS 2000). Although large areas of jaguar habitat in Mexico are being protected, habitat loss and fragmentation continues to threaten the species in the northern portion of its range. Potential habitats in the U.S. are as extensive as those occupied by the population of jaguars in northern Sonora, Mexico. Thus jaguar habitat in the U.S. may become increasingly important if threats to jaguars and jaguar habitat in Mexico continue.

2.2 CHIRICAHUA LEOPARD FROG

The Chiricahua leopard frog was listed as an endangered species on June 13, 2002 (67 FR 40790) (USFWS 2008).

2.2.1 Distribution

The Chiricahua leopard frog was historically found in a variety of aquatic habits of southeastern Arizona, west-central and southwestern New Mexico, and northern Mexico (USFWS 2007b). In New Mexico, the majority of populations occur north of I-10 within

the Gila and San Francisco basins. Chiricahua leopard frog populations could potentially occur in smaller numbers within cattle ponds and holding tanks throughout the southwest corner of New Mexico, including sites in the project area.

The current status of the Chiricahua leopard frog in the project area is unknown; however, past survey records indicate that the species occurred in at least some suitable habitats (Figure 2-2). Surveys conducted from the mid-1980s to the present reported the Chiricahua leopard frog as absent from 85 percent of historical localities in central and southeastern Arizona (272 locations); west-central and southwestern New Mexico (182 locations); and in Mexico (34 locations) (DAPTF 2008). In 2007, there were 30 to 35 populations remaining in New Mexico, with less than 10 occurring south of Interstate 10 (DAPTF 2008). Because the Chiricahua leopard frog exhibits a life history that predisposes them to high rates of extirpation and re-colonization, absence from at least some historical sites is expected. However, numerous studies indicate that declines and extirpations of Chiricahua leopard frogs are at least in part caused by predation and possibly competition by non-native aquatic organisms. Extant populations of Chiricahua leopard frogs are primarily limited to habitats subject to drying or near drying, such as stock tanks. Although non-native competitors are largely absent from these habitats, such areas are subject to drying during droughts and, therefore, are not considered stable habitat for the species (DAPTF 2008).

2.2.2 Habitat Requirements

The Chiricahua leopard frog is known to occur in cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,300 to 8,900 feet (USFWS 2008). Competition with non-native predators (e.g., American bullfrogs [*Rana catesbeiana*], fishes, and crustaceans) has limited the Chiricahua leopard frog to marginal habitats where these competitors are absent (USFWS 2008). The breeding season varies depending upon elevation. At higher elevations (above 5,900 feet) the breeding season occurs between May and October, while at lower, warmer elevations (below 5,900 feet) the breeding season occurs from February through June (USFWS 2008). The species requires permanent or semi-permanent pools for breeding, water characterized by low

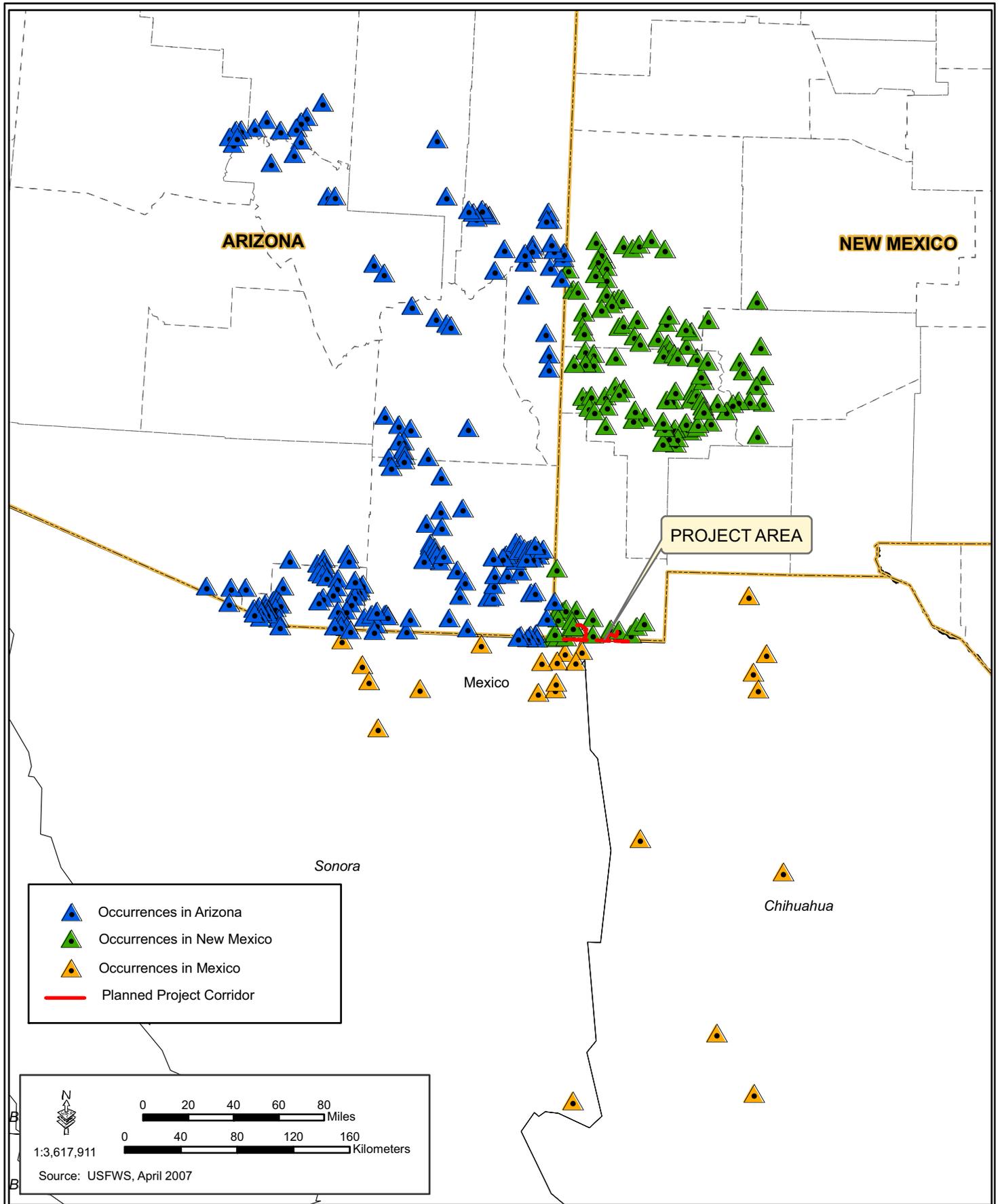


Figure 2-2: Regional Distribution of the Chiricahua Leopard Frog (*Rana chiricahuensis*) within the Project Area.



July 2008

levels of contaminants and moderate pH, and may be excluded or exhibit periodic die-offs where a pathogenic fungus is present.

2.2.3 Threats

Threats to this species include predation by non-native organisms, especially American bullfrogs, fish, and crayfish (USFWS 2008). Other factors limiting the frog's population numbers include fungal disease Chytridiomycosis; drought; floods; degradation and loss of habitat as a result of water diversions and groundwater pumping. Livestock management that degrades frog habitats, catastrophic wild fire (fire-prone upland habitats) resulting from a long history of fire suppression, mining, development, and other human activities; disruption of metapopulation dynamics; increased chance of extirpation or extinction resulting from small numbers of populations and individuals existing in dynamic environments; and environmental contamination such as runoff from mining operations and airborne contaminants from copper smelters (USFWS 2007d) are other limiting factors. Loss of Chiricahua leopard frog populations fits a pattern of global amphibian decline, suggesting other regional or global causes of decline may be important as well, such as elevated ultra-violet radiation, pesticides or other contaminants, or climate change.

2.3 MEXICAN LONG-NOSED BAT

The Mexican long-nosed bat was listed as an endangered species in 1988 with no designated critical habitat. A recovery plan was published by the USFWS in 1994 (USFWS 1994b).

2.3.1 Distribution

The Mexican long-nosed bat is a migratory species whose range includes southern New Mexico, southwest Texas and most of Mexico (USFWS 1994b, USFWS 2001). This species is endemic to Mexico but migrates north to portions of northern Mexico and the southwestern U.S. to breed and brood young.

In New Mexico, the species has been observed in the Pelloncillo, Animas, and Big Hatchet Mountains with other potential roost and foraging habitat in the Sierra Rica and Alamo Hueco Mountains in Hidalgo County, New Mexico. Population estimates for the Mexican long-nosed bat are difficult to obtain due to the lack of information on the species in Mexico such as variability in its characteristically opportunistic use of known roosts, and the lack of information regarding roost locations in New Mexico (USFWS 1994b). However, surveys of known roosts indicate that total population numbers in the U.S. are relatively small. No confirmed estimates of Mexican long-nosed bat population numbers are available for the suspected roost in the Animas Mountains. The potential distribution of the Mexican long-nosed bat and its foraging habitat within and/or near the project corridor are presented in Figure 2-3.

2.3.2 Habitat Requirements

The species is colonial and usually roosts in natural caves, but can also use mines, culverts, and hollow trees (Texas Parks and Wildlife Department [TPWD] 2008a). The use of roosts is driven by the availability of seasonally dependent forage opportunities. These bats are seasonal (April - September) residents of southeastern Arizona, and possibly extreme western Arizona (Cochise, Pima, Santa Cruz, Graham, Pinal and Maricopa counties, Arizona) (USFWS 1994b). Most births of young likely occur in May; however, there is some evidence to support the occurrence of a second birth peak in September. When young bats are old enough to fledge, adults will abandon juvenile bats and return south until the following breeding/migration season. Juveniles will abandon roosting sites in the southwestern U.S. and return to Mexico and return to breed the following year (USFWS 1994b).

Forage plants for the Mexican long-nosed bats include the nectar and fruit of night blooming cacti and agaves. Mexican long-nosed bats have been documented to travel up to 40 miles from a roost to suitable forage (USFWS 1994b).

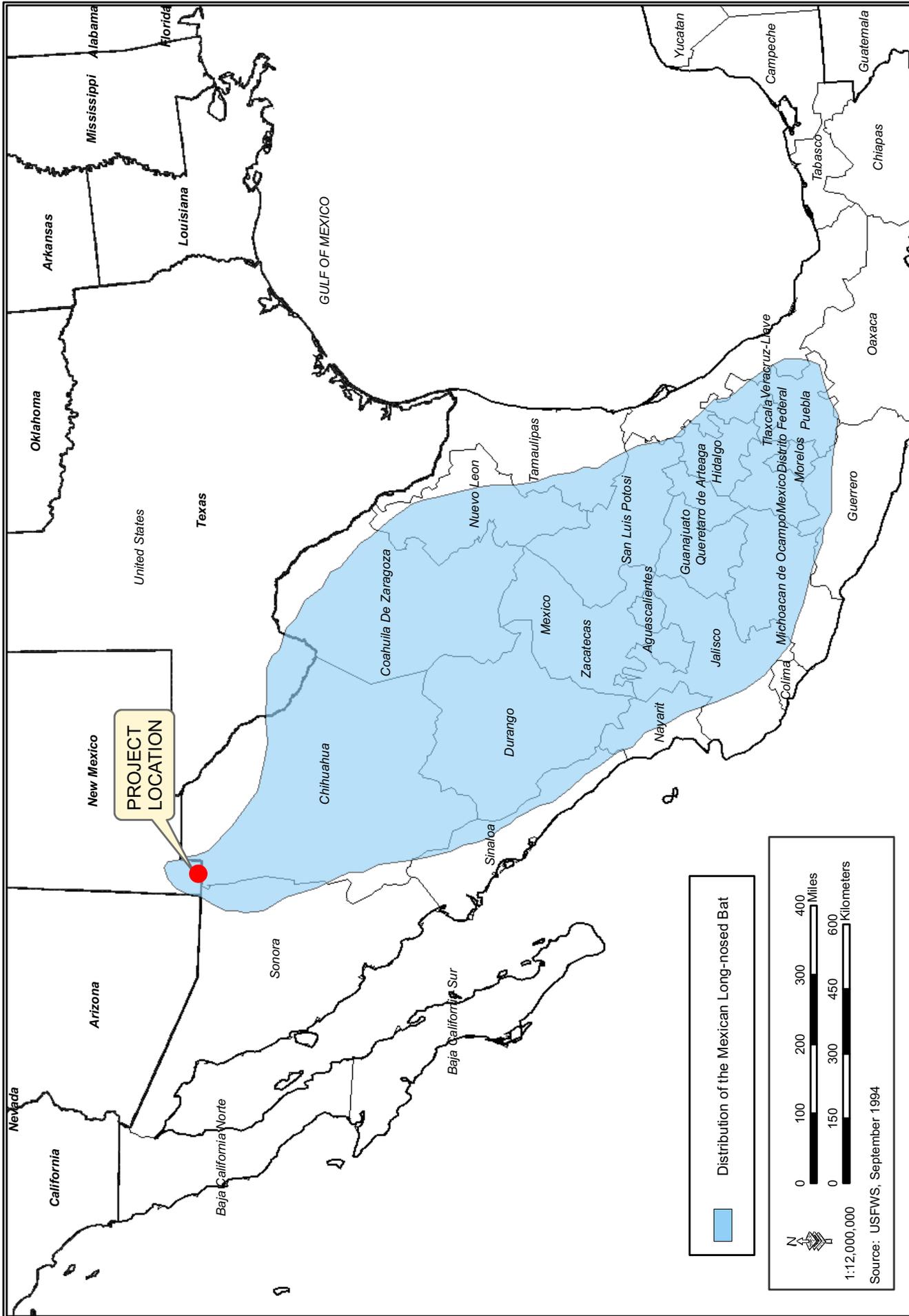


Figure 2-3: Regional Distribution of the Mexican Long-nosed Bat (*Leptonycteris nivalis*) near the Project Area.

2.3.3 Threats

Loss of roost and foraging habitat, as well as loss of individual bats during animal control programs, particularly in Mexico has contributed to the current endangered status of the species (TPWD 2008a). Roost sites are extremely sensitive to disturbance. Smaller day roosts can be abandoned in response to very limited disturbance. The ability of the Mexican long-nosed bat to use man-made structures such as mines is not well documented. Activities that adversely affect the density and productivity of forage materials for the bat such as columnar cacti and paniculate agaves may adversely affect population numbers. Excessive harvest of agaves in Mexico, collection of cacti in the U.S., and conversion of habitat due to urban expansion, agricultural uses, livestock grazing, and other development may contribute to the decline of populations. Activities that directly or indirectly promote invasions or increased density of non-native grasses, particularly Lehmann lovegrass (*Eragrostis lehmanniana*), Mediterranean grass (*Schismus barbatus*), and species of *Bromus*, may result in increased fire frequency and intensity, which can adversely affect cactus populations, thereby affecting the regional abundance of the Mexican long-nosed bat (USFWS 1994b).

The Mexican long-nosed bat recovery plan provides protective actions needed for the recovery of the bat (USFWS 1994b). Protection of all known roost sites and food plants within a radius of 50 miles around known roosts will help prevent this species from going extinct. In addition, the protection of food resources along migratory pathways may be important to the survival of the species. Specifically, the following actions are needed for recovery:

- (1) Protect known roost sites;
- (2) Determine foraging needs and protect foraging habitat;
- (3) Determine and control other threats and limiting factors; and
- (4) Model population viability.

2.4 NORTHERN APLOMADO FALCON

The northern aplomado falcon was listed as endangered by the USFWS on February 25, 1986 (USFWS 1999). On 26 July 2006, the USFWS announced a final rule to reintroduce the northern aplomado falcon in historical habitats in southern New Mexico and Arizona (71 FR, No. 143). In August 2006, this program started with the re-introduction of 11 individuals released in south central New Mexico. Under this ruling, the northern aplomado falcon is being re-established under Section 10(j) of the ESA, and classified it as a non-essential experimental population (NEP). The geographic boundary includes all of New Mexico and Arizona population. The NEP designation does not require land managers to specifically manage for reintroduced falcons. No designated or proposed critical habitat currently exists for the falcon.

2.4.1 Distribution

Historically, northern Aplomado falcons were known to occur throughout grassland and savannah habitats along the southern Gulf of Mexico coast of Texas, along both sides of the Rio Grande, southern New Mexico, southeastern Arizona, Mexico, and as far south as Guatemala and El Salvador. The last naturally occurring pair to breed in the U.S. was recorded in New Mexico in 1952 (USFWS 2005). Since 1985, efforts to reintroduce the species into the U.S. have resulted in at least 39 breeding pairs in Texas and adjacent Taumalipas, Mexico. In 2005, the USFWS proposed the establishment of a non-essential breeding population in New Mexico and Arizona through the introduction of captive-bred falcons on private and public lands of southern New Mexico. The potential distribution of the northern aplomado falcon within and/or near the project corridor is presented in Figure 2-4.

2.4.2 Habitat

Northern Aplomado falcons occupy a variety of grassland habitats. Scattered trees or shrubs are required for hunting, roosting, and nesting, and the bird prefers to hunt where the understory consists of grasses and scattered shrubs. In New Mexico, habitat is primarily limited to open or isolated grasslands with occasional scrub trees for

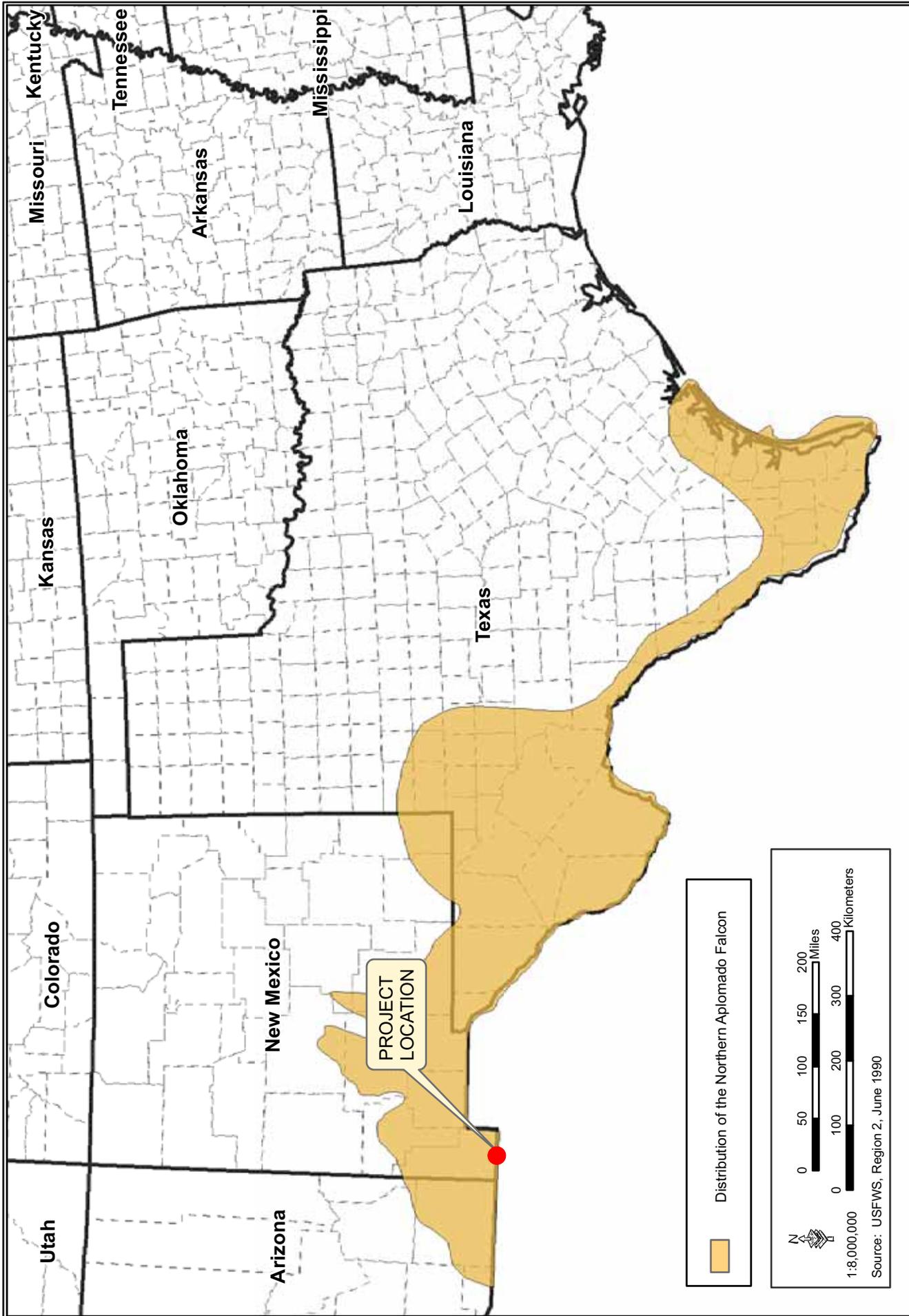


Figure 2-4: Regional Distribution of the Northern Aplomado Falcon (*Falco femoralis septentrionalis*).

perching and nesting. In particular, yuccas (*Yucca* sp.) have been documented to be the preferred nesting platforms in New Mexico (USFWS 2005). As described earlier, the project corridor bisects a variety of Chihuahuan Desert habitat.

Northern Aplomado falcons form life-long breeding pairs. Eggs are laid between January and July and hatching occurs in April and May. Fledging usually occurs within 35 days, but young continue to feed with their parents for at least another month. Pairs often hunt cooperatively and feed on medium-sized birds, insects, rodents, bats, and reptiles (USFWS 2005).

2.4.3 Threats

Several factors of habitat loss have contributed to the decline of this species throughout its range including conversion of land for development, cattle grazing, agriculture, and water management uses. It is postulated that pesticide exposure probably had the greatest effect and is likely the most significant cause of extirpation from the U.S. Current threats include the continued use of pesticides outside the U.S., shrub encroachment throughout Chihuahuan Desert grasslands, low densities of prey in some areas, and the increasing presence of the great-horned owl (*Bubo virginianus*) which preys upon smaller birds, thus competing with the northern aplomado falcon.

Several studies and data were used to evaluate the project corridor for its potential suitability for the northern aplomado falcon. A recent study conducted by the New Mexico Cooperative Fish and Wildlife Research Unit designed to provide land managers with information that would assist them in making validation decisions regarding the predictive habitat model provided initial information. The approach was to dissect a predictive model and evaluate the components of suitability values (Young et al. 2005). Using the criteria described in this analysis, the relationship of habitat in the project area to local populations is considered “low suitability” habitat for the aplomado falcon.

2.5 LESSER LONG-NOSED BAT

The lesser long-nosed bat was listed as an endangered species on September 30, 1988 (USFWS 1994a).

2.5.1 Distribution

Historically, lesser long-nosed bats ranged from central Arizona and southwest New Mexico through much of Mexico to El Salvador (USFWS 1994a). Records exist for occurrences in the Peloncillo, Animas, and Big Hatchet Mountains of New Mexico. Other potential roost and foraging sites include the Sierra Rica and Alamo Heuco Mountains. Their current range is similar to historic; however, the number of occupied roost sites and the number of individuals per colony have recently declined drastically. These bats are seasonal (April - September) residents of southeastern Arizona, the bootheel of New Mexico, and possibly extreme southern Arizona (Cochise, Pima, Santa Cruz, Graham, Pinal and Maricopa counties, Arizona) (USFWS 1994a). The potential distribution of the lesser long-nosed bat and its foraging habitat within and/or near the project corridor is presented in Figure 2-5.

2.5.2 Habitat

Lesser long-nosed bats primarily inhabit desert scrub habitat in the U.S. portion of its range. In Mexico, the species occurs up into high elevation pine-oak and ponderosa pine forests. Altitudinal range is from 1,600 to 11,500 feet. These bats roost in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti are present. They forage at night on nectar, pollen, and fruit of agaves (*Agave* spp.), and columnar cacti such as saguaro (*Carnegiea gigantea*), and organ pipe cactus (*Stenocereus thurberi*) (USFWS 2001d).

2.5.3 Threats

Considerable evidence exists for the interdependence of *Leptonycteris* bat species and certain agaves and cacti. Excess harvest of agaves in Mexico, the collection of cacti in the U.S., and the conversion of habitat for agricultural uses, livestock grazing,

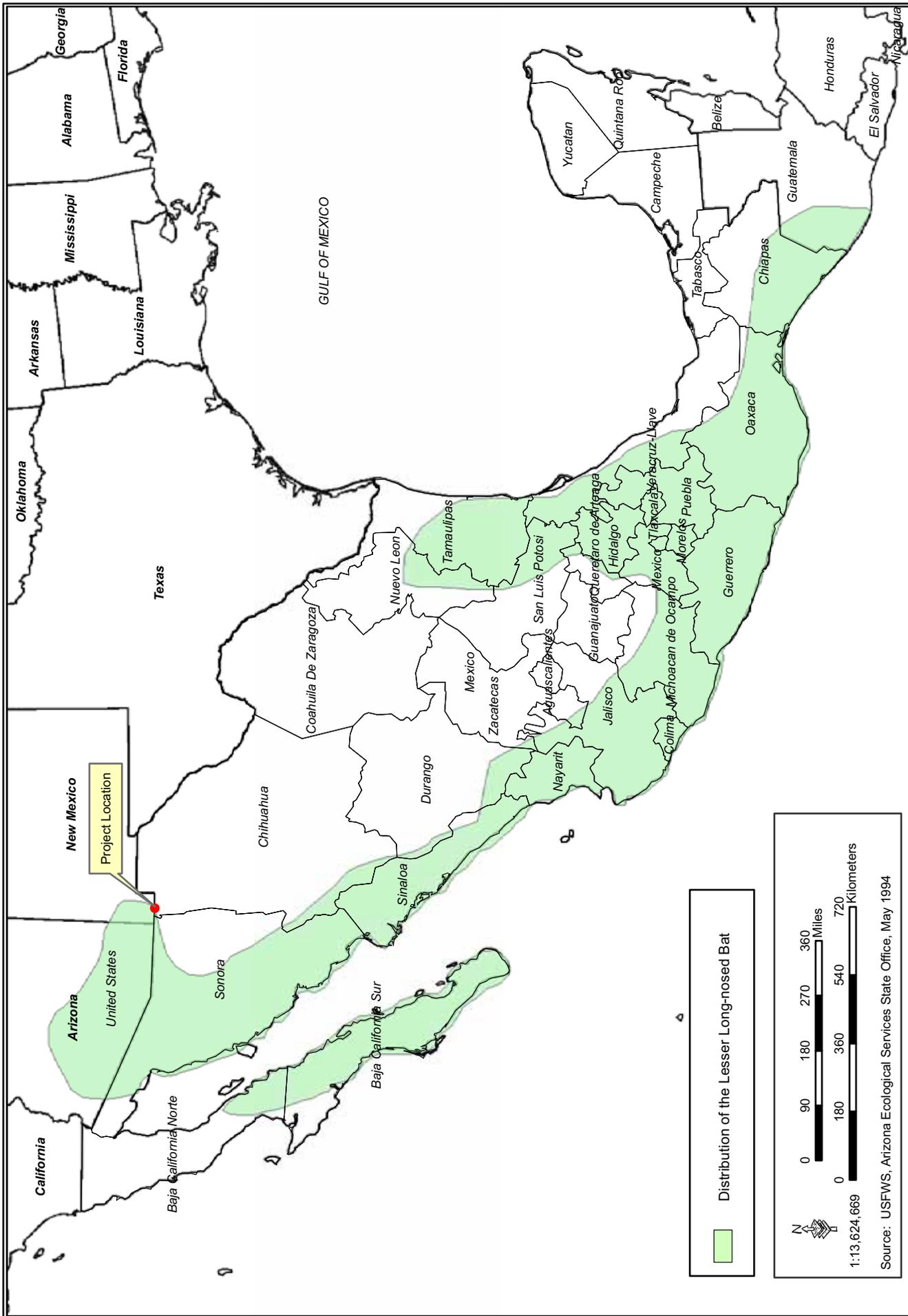


Figure 2-5: Regional Distribution of the Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuena*) near the Project Area.

wood-cutting, and other development may contribute to the decline of long-nosed bat populations. These bats are particularly vulnerable due to many individuals using only a small number of communal roosts (USFWS 1994a).

2.6 NEW MEXICO RIDGE-NOSED RATTLESNAKE

In January 1975 the New Mexico ridge-nosed rattlesnake was given legal protection as a threatened species with designated critical habitat by the USFWS in 1978 (USFWS 1985) and as endangered by the NMDGF in 1990 (USFWS 2002).

2.6.1 Distribution

New Mexico ridge-nosed rattlesnakes occur from southeastern Arizona and southwestern New Mexico, south through portions of Chihuahua and Sonora, Mexico to southern Durango and southwestern Zacatecas (USFWS 1985). Nearest the project corridor, populations of this species have been known to occur in the Animas Mountains of New Mexico and the adjacent Sierra San Luis of Chihuahua (Harris and Simmons 1976) and are suspected to occur in the Sonora portion of the Sierra San Luis as well (Figure 2-6).

The distribution of the New Mexico ridge-nosed rattlesnake in the Animas Mountains of southwestern New Mexico is limited to four areas of canyon bottom and adjacent slopes totaling approximately 1 to 2 square miles (USFWS 1985). This area was designated by the USFWS as critical habitat for the New Mexico ridge-nosed rattlesnake in 1978 (USFWS 1985). An additional area comprising approximately 6 square miles surrounds the critical habitat within the Animas Mountain range; however, the occurrence of this species in this area is not substantiated (USFWS 1985). Records of observations of the rattlesnake in New Mexico consist of an area approximately 2 miles long and approximately 60 to 600 feet wide, along the bottom of Indian Creek Canyon (USFWS 1985). No other populations are suspected to occur within a range that will be affected by the Planned Action.

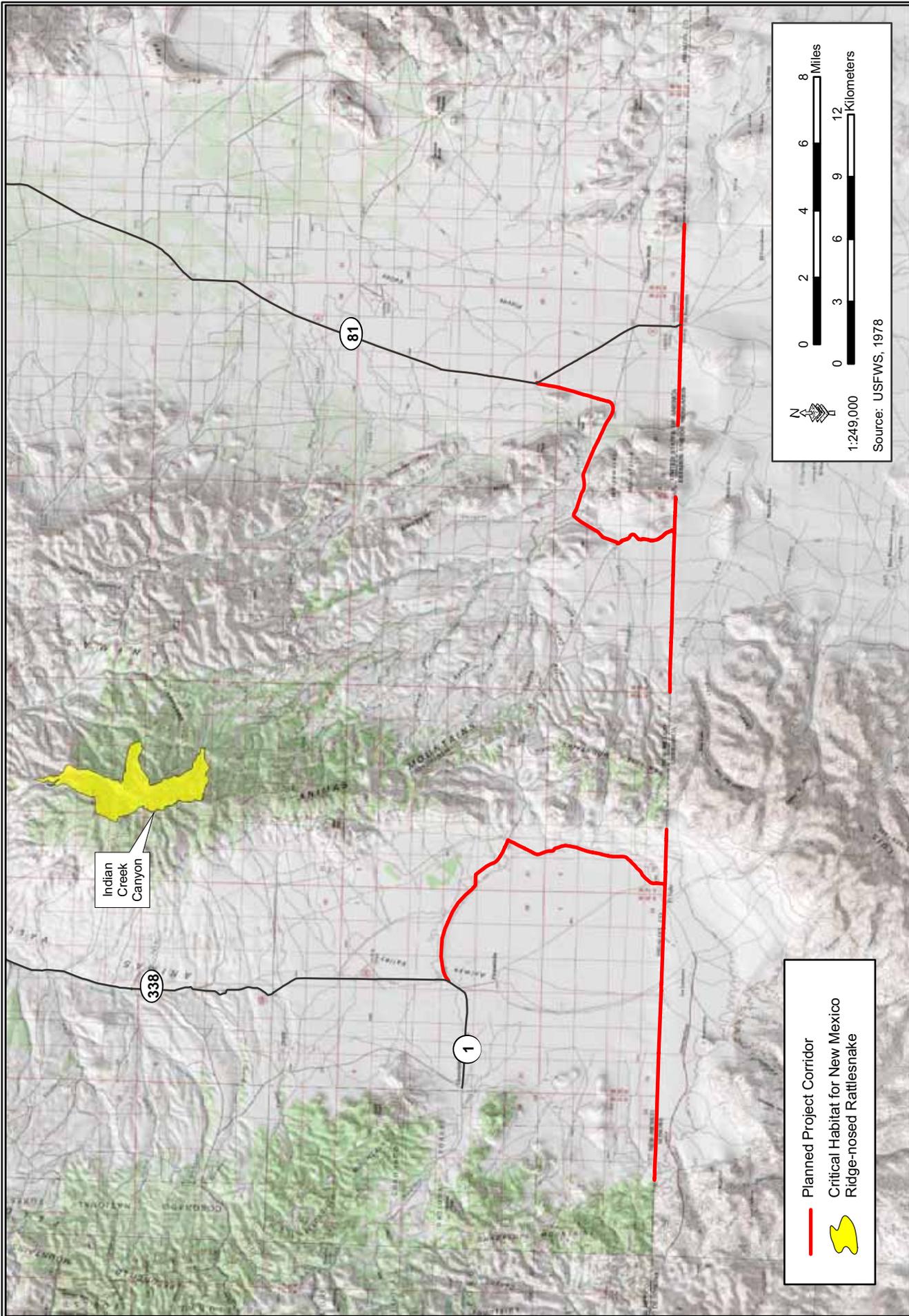


Figure 2-6: Critical Habitat for the New Mexico Ridge-nosed Rattlesnake (*Crotalus willardi obsurus*) near the Project Area.

2.6.2 Habitat

In general, New Mexico ridge-nosed rattlesnakes prefer mountainous terrain at moderate elevations (i.e., 5,350 to 9,000 feet above sea level) within the Animas Mountains. The closest known habitat is located approximately 9 miles north of the closest access road to be used as part of the Project. The species generally prefers mesic conditions occupied by pine-oak habitats in sheltered canyon bottoms containing scattered rocks and leaf litter. Deep narrow canyons that provide a greater potential for mesic conditions relative to surrounding habitats are especially important for the persistence of the species population in the northern and relatively arid portions of the rattlesnake's range (USFWS 1985).

The New Mexico ridge-nosed rattlesnake's diet consists of a broad range of prey including small mammals, birds, lizards, arthropods, and other snakes (Applegarth et al. 1980). Reproduction and birthing periods generally occur between early August through mid-October, with the majority of births occurring in mid-September (Klauber 1972). Armstrong and Murphy (1979) concluded that the greatest potential for elevated roaming and foraging activities occurs during the rainy season from July through August and coincides with a greater abundance of prey at that time.

2.6.3 Threats

Natural threats to the ridge-nosed rattlesnake include predation, starvation and pathogenic related diseases which are still not well understood (Johnson 1983). Other threats, more important to the decline in population numbers of the rattlesnake include the collection and harvesting of individuals, and alteration of habitat such as fire, cattle grazing, mining, development, and the harvesting of wood or other renewable resources occupying critical habitat areas (USFWS 1985).

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3.0 ACTION AREA

The action area includes vehicle fence and construction road activities, construction access roads, and construction staging areas. More specifically, the action area includes all TI segments, encompassing the area south of State Route 1 between border monuments 69 and 62 (excluding the San Luis Mountain range), and associated access road improvements connecting the border construction road near monument 66 and both planned access road improvements connecting State Route 81 to the border construction road between monuments 63 and 64 (i.e., HV-1 through HV-3). The action area also includes the project corridor along the U.S/Mexico border between border monuments 61 and 59 (HV-4).

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4.0 EFFECTS OF THE ACTION

The following analysis of the effects of the project on Chiricahua leopard frog, jaguar, lesser long-nosed bat, Mexican long-nosed bat, northern aplomado falcon, and New Mexico ridge-nosed rattlesnake and designated critical habitat is based on literature research, habitat surveys, professional scientific judgment, experience and coordination with USFWS.

The Planned Action will permanently impact a total of approximately 228 acres of desert grassland, conifer/mixed woodland, and riparian vegetative habitats (Table 4-1).

Table 4-1. Project Impacts to Vegetation (acres)

Section	Desert Grassland	Conifer/Mixed Woodland
HV1	24.4	0.7
HV2	84.2	2
HV3	70.5	1.2
HV4	41.6	0
Subtotal	223.6	3.9
	Total	227.5

4.1 JAGUAR

Potential Adverse Effects

All portions of the project corridor within HV-1 through HV-4 are located within the known habitat range of the jaguar. However, the likelihood of the jaguar occupying HV-4 is extremely limited because of the location of the Antelope Wells POE and associated vehicle traffic in relation to HV-4. Therefore, only 186 acres of suitable habitat (HV-1 through HV-3) will be permanently disturbed due to construction and maintenance of the border construction road, vehicle fence and improvements to access roads. This loss of suitable habitat would be minimal in comparison to the vast amounts of similar habitat in the region. Fragmentation has occurred in the region in

the form of the existing border road, cattle fence, and roads located south of the project corridor in Mexico (i.e., Mexico 15). Therefore, potential fragmentation impacts are considered minimal. Human presence and construction related disturbance could result in temporary avoidance of the area and affect forage opportunities for this species. However, the likelihood of the jaguar avoiding these areas once the TI is completed, is negligible. Therefore, these potential impacts are considered temporary and discountable. Additionally, areas of potential movement corridors to the west and east of the project corridor would be unaffected because the terrain is too steep for vehicle traffic. The implementation of BMPs as described in Section 1.3.1 would reduce the potential impacts to habitats and minimize disturbance. Therefore, the project may affect, but is not likely to adversely affect the jaguar.

BMPs as discussed in Section 1.3.1 will be implemented during the activities discussed in the Planned Action and it is anticipated that there will be little to no effect on the regional abundance of the jaguar. Additionally, jaguar migration routes will not be interrupted as gaps between the rails or other structures of the vehicle fence will be wide enough to allow the jaguar to pass through the fence.

Potential Beneficial Effects

Attempts to illegally cross this section of the international border are often in vehicles. Therefore, the project could benefit the jaguar by decreasing the number of illegal vehicle crossings in the project area, and subsequently decreasing the extent of human disturbance in this area.

4.2 CHIRICAHUA LEOPARD FROG

Potential Adverse Effects

The project may adversely affect the Chiricahua leopard frog. The increased ability for patrol and dragging to occur as a result of the improved access and construction roads will increase the potential adverse effects to the frog. The disturbance of soils during construction and road improvement could result in erosion of soils. If substantial soil

loss occurs, downstream aquatic habitats could be substantially impacted. Potential effects to aquatic habitats include: decreased water quality, alteration of stream substrates, and burial of riparian vegetation. Erosion features such as rills and gullies can substantially alter local hydrology and can result in stream bank erosion. During and following construction activities, the erosion of soils into these habitats could affect water quality, cover eggs, and affect egg buoyancy. Any spill of gasoline or petroleum product within 0.3 mile of potentially occupied habitats could affect groundwater and subsequently degrade water quality. The operation of heavy equipment and construction vehicles within 0.3 mile of potentially occupied habitat could result in the take of individuals. However, with the implementation of BMPs described in Section 1.3.1, these adverse effects would be avoided or minimized. No hazardous materials will be stored within 0.3 mile of Chiricahua leopard frog habitat or locations of known occurrences.

Potential Beneficial Effects

Similar types of beneficial effects would be expected for the Chiricahua leopard frog as those that are discussed for the jaguar.

4.3 MEXICAN AND LESSER LONG-NOSED BATS

Potential Adverse Effects

The project may affect, but is not likely to adversely affect the Mexican and lesser long-nosed bats. Because the locations of potential roosts are unknown, it is assumed that they could occur within 5 miles of construction activities. However, impacts to roosting bats are not expected to occur, since construction activities are scheduled to begin in mid-September, which is outside of the bat occupancy season.

Potential impacts to foraging areas may occur from the disturbance of soils which could promote the expansion of non-native invasive species. However, the implementation of BMPs would minimize any impacts related to invasive species.

Vegetation removal can result in the immediate loss of foraging habitat within HV-1, HV-2, and HV-3 segments. Approximately 86 agaves could be removed as a result of the Project; however, BMPs discussed in Section 1.3.1 would offset this loss of potential foraging habitat resulting in a negligible impact to the bats foraging opportunities. Regardless of the BMPs to be implemented, due to the minimal amount of agaves removed in relation to the vast amounts that occur in the project region, this Project would result in discountable impacts to foraging habitat.

Potential Beneficial Effects

Similar types of beneficial effects regarding vehicle traffic would be expected for the Mexican and lesser long-nosed bats as is discussed for the jaguar. Furthermore, abandoned man-made structures utilized as bat roosting sites may be retained as a safe haven for bats if the opportunity for illegal aliens (IA) to utilize abandoned man-made structures as a temporary shelter is minimized by the Planned Action.

4.4 NORTHERN APLOMADO FALCON

Potential Adverse Effects

The project may affect, but is not likely to adversely affect the northern aplomado falcon. There are no known nests occurring within or near the project footprint and no documented observations of the falcon have been recorded in the vicinity of the Project area. Based on results from a survey of the project area conducted by GSRC biologists in June 2008, potential roosting sites were observed; however, no individuals or signs of individuals (i.e., nests) were observed within or near the project footprint. Impacts to the northern aplomado falcon could occur through the removal of potential foraging and nesting habitat. The implementation of BMPs discussed in Section 1.3.1 would minimize potential impacts of foraging habitat of the northern aplomado falcon.

Potential Beneficial Effects

Although no falcon individuals or signs of falcon activity were observed, during the most recent field survey of the project area (June 2008) grassland habitat most likely

containing an array of potential prey to satisfy dietary habitat requirements was observed. By implementing the Planned Action and reducing the amount of illegal vehicle traffic through this area, which could be potentially utilized by the falcon, disturbance to falcon habitat will be reduced. Thus, long term benefits to the aplomado falcon are expected to occur.

4.5 NEW MEXICO RIDGE-NOSED RATTLESNAKE

Potential Adverse Effects

The project may affect but is not likely to adversely affect the New Mexico ridge-nosed rattlesnake. Alteration of habitat by fire, cattle grazing, mining, development, and the harvesting of wood or other renewable resources in critical habitat areas has been documented to indirectly affect the potential for sustained population numbers of the rattlesnake (USFWS 1985). Currently, no New Mexico ridge-nosed rattlesnake Critical Habitat or suitable habitat exists within areas directly affected by the Project. However, Critical habitat does exist approximately 9 miles northeast of the Project. The only potential direct impact which could negatively affect the rattlesnake would be from construction vehicles running over individuals. The increased ability for patrols to occur as a result of the improved access roads will increase the potential for vehicle strikes as well. However, the likelihood of a construction or patrol vehicle strike on an individual is extremely limited as the access and construction roads are very distant (approximately 9 miles) from known areas of rattlesnake populations. The implementation of BMPs discussed in Section 1.3.1 would minimize potential impacts to New Mexico ridge-nosed rattlesnake and associated rattlesnake foraging habitat.

Potential Beneficial Effects

Critical habitat for the New Mexico ridge-nosed rattlesnake as well as known populations of individuals would benefit from implementation of the Planned Action by reducing impacts from IA vehicular traffic.

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5.0 DETERMINATION OF EFFECT

Table 5-1 summarizes the Federally listed species and critical habitat that are known to occur near the U.S.-Mexico international border in Hidalgo County, New Mexico, thus having the potential to occur within or near the project corridor. There are 11 Federally listed taxa and one candidate species that are known to occur or have the potential to occur within or adjacent to the project corridor. Additionally, none of the listed species have designated critical habitat in the within the project corridor.

Of the species listed in Table 5-1, the Chiricahua leopard frog may be adversely affected. The project may affect, but is not likely to adversely affect the jaguar, Mexican long-nosed bat, lesser long-nosed bat, northern aplomado falcon, and New Mexico ridge-nosed rattlesnake. Through extensive literature research, past experience, coordination with USFWS and NMDGF, and professional scientific opinion, it has been determined that the project will have no effect on the loach minnow, spikedace, southwestern willow flycatcher, Mexican spotted owl, yellow-billed cuckoo, or the Mexican grey wolf.

Table 5-1. Federally Listed Species and Critical Habitats Potentially Occurring within the Project Area and the Determination of Effects

Species	Listing/Critical Habitat Designated	Determination of Effect		
		HV1-HV2	HV3	HV-4
FISH				
Loach minnow <i>Tiaroga cobitis</i>	Threatened	NE	NE	NE
Loach minnow Critical Habitat	Proposed	NE	NE	NE
Spikedace <i>Meda fulgida</i>	Threatened	NE	NE	NE
Spikedace Critical Habitat	Proposed	NE	NE	NE
REPTILES AND AMPHIBIANS				
Chiricahua leopard frog <i>Rana chiricahuensis</i>	Threatened	MAA	MAA	NE
New Mexico ridge-nosed rattlesnake <i>Crotalus willardi obscurus</i>	Threatened	NLAA	NLAA	NE
New Mexico ridge-nosed rattlesnake Critical Habitat	Final	NE	NE	NE
BIRDS				
Mexican spotted owl <i>Strix occidentalis lucida</i>	Threatened	NE	NE	NE
Mexican spotted owl Critical Habitat	Final	NE	NE	NE
Northern aplomado falcon* <i>Falco femoralis septentrionalis</i>	Endangered	NLAA	NLAA	NLAA
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	Endangered	NE	NE	NE
Southwestern willow flycatcher Critical Habitat	Final	NE	NE	NE
Yellow-billed cuckoo <i>Coccyzus americanus</i>	Candidate	NE	NE	NE
MAMMALS				
Jaguar <i>Panthera onca</i>	Endangered	NLAA	NLAA	NE
Lesser long-nosed bat <i>Leptonycteris cuasoae yerbabuena</i>	Endangered	NLAA	NLAA	NE
Mexican grey wolf <i>Canis lupus baileyi</i>	Endangered	NE	NE	NE
Mexican long-nosed bat <i>Leptonycteris nivalis</i>	Endangered	NLAA	NLAA	NE

MAA – May Adversely Affect NLAA – Not Likely to Adversely Affect NE – No Effect
 * – Experimental Population

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