



# ENVIRONMENTAL STEWARDSHIP PLAN FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE U.S. Border Patrol San Diego Sector, California

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

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**October 2008**  
BW FOIA CBP 000001



## COVER SHEET

### ENVIRONMENTAL STEWARDSHIP PLAN FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE U.S. BORDER PATROL SAN DIEGO SECTOR, CALIFORNIA

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

**Coordinating Agencies:** Bureau of Land Management (BLM), Palm Springs South Coast Field Office; U.S. Army Corps of Engineers (USACE)-Los Angeles District; U.S. Fish and Wildlife Service (USFWS); and the United States Section, International Boundary and Water Commission (USIBWC).

**Affected Location:** U.S./Mexico international border in San Diego County, California.

**Project Description:** The Project includes the construction, operation, and maintenance of tactical infrastructure, to include a primary pedestrian fence, supporting patrol roads, and other infrastructure in two distinct sections along the U.S./Mexico international border within USBP's San Diego Sector. The fence sections will be approximately 0.8 miles and 3.6 miles in length. Constructed access and patrol roads to support each fence section will be 0.8 miles and 5.8 miles, respectively.

**Report Designation:** Environmental Stewardship Plan (ESP).

**Abstract:** CBP plans to construct, operate, and maintain approximately 4.4 miles of pedestrian fence and 6.6 miles of access and patrol roads. Tactical infrastructure consists of primary pedestrian fence, patrol and access roads in two sections along the U.S./Mexico international border in San Diego County, California. The first section designated as A-1 consists of 3.6 miles of primary pedestrian fence, supported by an access and patrol road that will be approximately 5.8 miles in length and will start at the Puebla Tree and end at Boundary Monument 250. Although most of Section A-1 is within the Otay Mountain Wilderness (OMW), portions of Section A-1 will be south of the OMW. In areas where the construction access road is not adjacent to the fence, trails suitable for light-tracked vehicles will be constructed for the purposes of fence installation and maintenance. Section A-1 will not connect to any existing fence. Approximately 65 percent of the 5.8 miles of access and patrol road and 17 percent (2,300 feet) of fence will be on the OMW. The OMW is on public lands administered by the BLM. The second section designated as A-2A, approximately 0.8 miles in length, will connect with an existing border fence west of Tecate, California. This fence section is an extension of existing fence near Tecate Peak and will pass through a riparian area. Some portions of the fence

sections will be on privately owned land parcels. Lights will not be constructed as part of the Project.

This ESP evaluates potential environmental impacts associated with the project and provides planned Best Management Practices and potential mitigations for unavoidable negative impacts.

The public may obtain additional copies of the ESP from the Project Web site at [www.BorderFencePlanning.com](http://www.BorderFencePlanning.com); by emailing [information@BorderFencePlanning.com](mailto:information@BorderFencePlanning.com); or by written request to Mr. Loren Flossman, Program Manager, Secure Border Initiative (SBI) Tactical Infrastructure, 1300 Pennsylvania Ave, NW, Suite 7.2C, Washington, DC 20229, Tel: (877) 752-0420, Fax: (703) 752-7754.

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**FOR THE**  
**CONSTRUCTION, OPERATION, AND MAINTENANCE**  
**OF TACTICAL INFRASTRUCTURE**  
**U.S. BORDER PATROL SAN DIEGO SECTOR,**  
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**U.S. Department of Homeland Security**  
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**U.S. Border Patrol**

**OCTOBER 2008**



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## EXECUTIVE SUMMARY

### Background

On April 1, 2008, the Secretary of the U.S. Department of Homeland Security (DHS), pursuant to his authority under Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) of 1996 as amended, exercised his authority to waive certain environmental and other laws in order to ensure the expeditious construction of tactical infrastructure along the U.S./Mexico Border. The tactical infrastructure described in this Environmental Stewardship Plan (ESP) is covered by the Secretary's April 1, 2008, waiver (see **Appendix A**). Although the Secretary's waiver means that U.S. Customs and Border Protection (CBP) no longer has any specific legal obligations under these laws, the Secretary committed the Department 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 ESP, which analyzes the potential environmental impacts associated with construction of tactical infrastructure in the USBP's San Diego Sector. The ESP also discusses CBP's plans as to how it can mitigate potential environmental impacts. The ESP will guide CBP's efforts going forward.

As it moves forward with the Project described in this ESP, CBP will continue to work in a collaborative manner with local governments, state and Federal land managers, and the interested public to identify environmentally sensitive resources and develop appropriate best management practices (BMPs) to avoid or minimize adverse impacts resulting from the installation of tactical infrastructure.

### Goals and Objectives of the Project

The Project will provide USBP agents with the tools necessary to strengthen their control of the U.S. border between ports of entry (POEs) in the USBP San Diego Sector. The Project will help to deter illegal entries within the USBP San Diego Sector by improving enforcement efficiency, thus preventing terrorists and terrorist weapons, illegal aliens, drugs, and other cross-border violators and contraband from entering the United States, while providing a safer work environment for USBP agents. The U.S. Border Patrol (USBP) San Diego Sector has identified two discrete areas along the border that experience high levels of illegal entry. Illegal entry activity typically occurs in areas that are remote and not easily accessed by USBP agents, near POEs where concentrated populations might live on either side of the border, or in locations that have quick access to U.S. transportation routes.

The Project is being carried out pursuant to Section 102 of IIRIRA, 8 United States Code (U.S.C.) § 1103 note. In Section 102(b) of IIRIRA, Congress called for the installation of fencing, barriers, roads, lighting, cameras, and sensors on

not less than 700 miles of the southwestern border. This total includes certain priority miles of fencing that are to be completed by December 2008. Section 102(b) further specifies that these priority miles are to be constructed in areas where it will be practical and effective in deterring smugglers and aliens attempting to gain illegal entry into the United States.

## Public Outreach and Agency Coordination

CBP notified relevant Federal, state, and local agencies of the Project and requested input on environmental concerns such parties might have regarding the Project. CBP has coordinated with the U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); Bureau of Land Management (BLM); State Historic Preservation Office (SHPO); and other Federal, state, and local agencies.

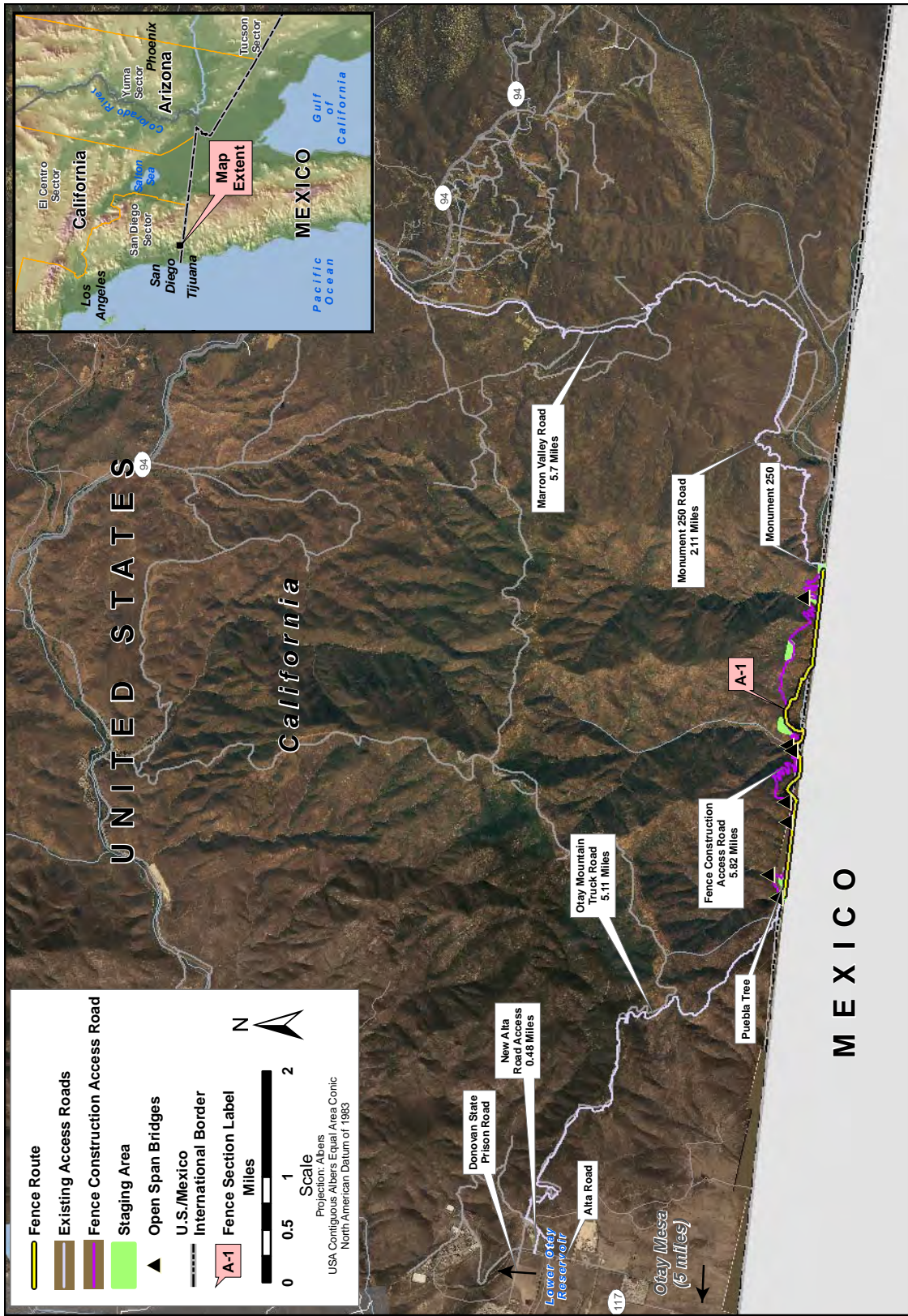
A Draft Environmental Impact Statement (EIS) was prepared, copies were mailed to interested parties, it was posted on a public Web site, and a 45-day public review and comment period was announced. A public open house was advertised and held at the San Diego Convention Center on January 17, 2008. The open house was attended by 30 people. Although the Secretary issued the waiver, CBP has continued to work in a collaborative manner with agencies and has considered and incorporated agency and public comments into this ESP. CBP responses to public comments on the Draft EIS will also be provided on the *www.BorderFencePlanning.com* Web site. Analyses from the Draft EIS have been used to develop this ESP; the waiver was issued before completion of the EIS.

## Description of the Project

CBP plans to construct, operate, and maintain tactical infrastructure consisting of two discrete sections of primary pedestrian fence, patrol and access roads along the U.S./Mexico international border in the USBP San Diego Sector, California. Tactical infrastructure includes the installation of fence sections in areas of the border that are not currently fenced. Locations are based on the USBP San Diego Sector's assessment of local operational requirements where such infrastructure will assist USBP agents in stopping illegal cross-border activities. Congress appropriated funds for this Project in CBP's Fiscal Year (FY) 2007 and 2008 Border Security Fencing, Infrastructure, and Technology Appropriations (Public Law [P.L.] 109-295; P.L. 110-161).

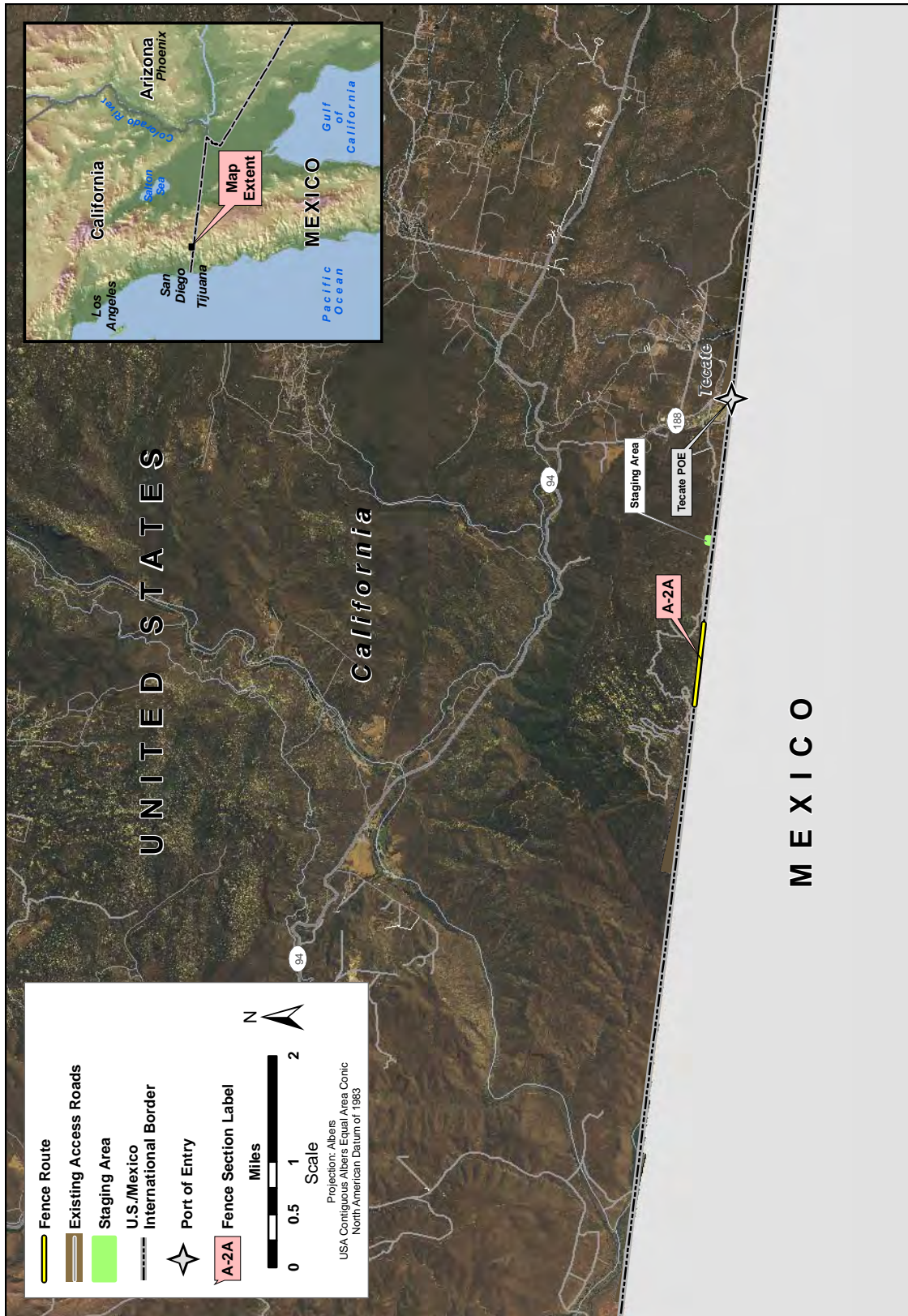
The tactical infrastructure will be constructed in two sections (designated as Sections A-1 and A-2A) along the U.S./Mexico international border within the USBP San Diego Sector, in San Diego County, California (see **Figures ES-1** and **ES-2**). Section A-1 is approximately 3.6 miles in length and will start at Puebla Tree and end at Boundary Monument 250. This section of fence will be adjacent to and on the Otay Mountain Wilderness (OMW), and will follow the U.S./Mexico





Sources: Revised A-1 Alignment: Granite Construction Company, June 11, 2008, Critical Habitats: U.S. Fish and Wildlife Service 2002

Figure ES-1. Tactical Infrastructure – Section A-1



Source of Critical Habitats: U.S. Fish and Wildlife Service 2002

Figure ES-2. Tactical Infrastructure – Section A-2A

international border where topography allows, deviating from the border to follow the construction access road where topography does not allow, such as descent to canyon bottoms. The length of construction access road to support the construction operation and maintenance of the fence will be approximately 5.8 miles. In areas where the construction access road is not adjacent to the fence, trails suitable for light-tracked vehicles will be constructed for the purposes of fence installation and maintenance. These trails will require clearing of brush and boulders and minor grading. Rocky outcrops might require leveling for safe travel and fence construction.

The OMW is on public lands administered by BLM. The wilderness boundary is at least 100 feet from the U.S./Mexico international border. The corridor between the OMW and the U.S./Mexico international border is public land administered by the BLM. Approximately 35 percent of the patrol and access road (2 miles) will occur in this corridor between the U.S./Mexico international border and the wilderness boundary. Due to steep topography, approximately 65 percent of the length of the construction access road and approximately 17 percent (2,300 feet) of the primary pedestrian fence will extend into the OMW.

Section A-2A is approximately 0.8 miles in length and will connect with existing border fence west of Tecate, California. This fence section will be constructed along the southeastern border of Tecate Peak, and will pass through a riparian area. It will encroach on a mix of privately owned land parcels and public land administered by the BLM. Construction of this fence section will include an upgrade to an access road west of Tecate.

## Environmental Impacts, Mitigation, and Best Management Practices

**Table ES-1** provides an overview of potential environmental impacts by specific resource area. **Chapters 2** through **12** of this ESP evaluate these impacts. **Appendix E** of the ESP details additional BMPs and mitigation associated with the Project.

CBP followed specially developed design criteria to reduce adverse environmental impacts and will implement mitigation measures to further reduce or offset adverse environmental impacts without compromising operational requirements. Design criteria to reduce adverse environmental impacts include selecting a location for tactical infrastructure that will avoid or minimize impacts on environmental and cultural resources, consulting with Federal and state agencies and other stakeholders to avoid or minimize adverse environmental impacts and develop appropriate BMPs, and avoiding physical disturbance and construction of solid barriers in wetlands/riparian areas and streambeds, where practicable. BMPs will include implementation of a Construction Mitigation and Restoration (CM&R) Plan, Spill Prevention Control and Countermeasure (SPCC) Plan, Storm Water Pollution Prevention Plan (SWPPP), Environmental Protection Plans (EPPs), Dust Control Plan, Fire Prevention and Suppression Plan, and Unanticipated Discovery Plan.

CBP will enter into a programmatic mitigation agreement with the Department of the Interior (DOI) and fund a mitigation pool for adverse impacts that cannot be avoided.

The following discussion elaborates on the nature of the characteristics that might relate to various impacts:

- *Short-term or long-term.* These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- *Direct or indirect.* A direct impact is caused by an action and occurs contemporaneously at or near the location of the action. An indirect impact is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- *Negligible, minor, moderate, or major.* These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.
- *Adverse or beneficial.* An adverse impact is one having adverse, unfavorable, or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

**Table ES-1. Summary of Environmental Impacts, Mitigation, and BMPs**

<b>Resource Area</b>	<b>Impacts of the Project</b>	<b>BMPs/Mitigation</b>
<b>Air Quality</b>	Short-term minor to major adverse impacts will be expected.	BMPs to reduce dust and control PM <sub>10</sub> emissions. Construction equipment will be kept in good operating condition to minimize exhaust. Construction speed limits will not exceed 35 miles per hour.
<b>Noise</b>	Short-term moderate and long-term negligible to minor adverse impacts will be expected.	Mufflers and properly working construction equipment will be used to reduce noise. Generators will have baffle boxes, mufflers, or other noise abatement capabilities. Blasting mats will be used to minimize noise and debris.
<b>Land Use</b>	Short- and long-term minor adverse and long-term minor beneficial impacts will be expected.	None required.
<b>Visual Resources</b>	Short- and long-term moderate adverse impacts will be expected.	None required.
<b>Geology and Soils</b>	Short- and long-term major adverse impacts will be expected.	Construction-related vehicles will remain on established roads while traveling to and from the work site and areas with highly erodible soils will be avoided when possible. Gravel or topsoil will be obtained from developed or previously used sources.
<b>Water Use and Quality</b>		
<b>Hydrology and Groundwater</b>	Short- and long-term minor direct adverse impacts will be expected	None required.
<b>Surface Waters, Wetlands, and Other Waters of the United States</b>	Short- and long-term minor adverse impacts will be expected.	Construction activities will stop during heavy rains. All fuels, oils, and solvents will be collected and stored. Where practicable alternatives exist stream crossings will not be located at bends to protect channel stability. Equipment maintenance, staging, laydown, or fuel dispensing will occur upland to prevent runoff. Fence types will allow conveyance of water.

Resource Area	Impacts of the Project	BMPs/Mitigation
<b>Floodplains</b>	Short- and long-term negligible to minor adverse impacts will be expected.	None required.
<b>Biological Resources</b>		
<b>Vegetation</b>	Short- and long-term moderate to major, adverse impacts, and short- and long-term minor beneficial impacts	Construction equipment will be cleaned to minimize spread of nonnative species. Removal of trees and brush in habitats of federally listed species will be limited to the smallest amount needed to meet the objectives of the project. Invasive plants that appear on the Project site will be removed. Impacted areas will be revegetated with native species.
<b>Wildlife and Aquatic Resources</b>	Short- and long-term minor to moderate adverse impacts and long-term beneficial impacts will be expected.	Environmental monitor onsite during construction to account for occurrences of special status species. If federally protected species are encountered, monitor can recommend the temporary suspension of construction activities to the construction manager. Ground disturbance outside of migratory bird nesting season will require migratory bird nest survey and possible removal and relocation. Small openings will be integrated into fence design to allow for passage of small animals. Bollard fence will allow transboundary migration of small animals. To prevent entrapment of wildlife all excavated holes or trenches will either be covered or provided with wildlife escape ramps. All poles and posts will be covered to prevent entrapment and discourage roosting.

Resource Area	Impacts of the Project	BMPs/Mitigation
<b>Special Status Species</b>	Short- and long-term minor to major adverse, and minor beneficial impacts will be expected.	Environmental monitor onsite during construction to account for occurrences of special status species. If Federally protected species are encountered, construction will stop until the biological monitor can safely remove the individual or it moves away on its own. Bollard fence will allow transboundary migration of small animals.
<b>Cultural Resources</b>	Long-term minor adverse impacts will be expected.	Any cultural resources discovered will halt construction until authorized to proceed by a qualified archaeologist who will consult with the appropriate resource agencies as appropriate.
<b>Socioeconomic Resources and Safety</b>	Short- term minor direct and indirect beneficial impacts will be expected.	None required.
<b>Hazardous Materials and Wastes</b>	Short-term and long-term minor adverse impacts will be expected.	All waste oil and solvents shall be recycled. All non-recyclable hazardous wastes shall be collected, handled, and disposed of in accordance with all Federal, state, and local regulations. Waste materials will be removed from the site as quickly as possible.

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ENVIRONMENTAL STEWARDSHIP PLAN  
FOR CONSTRUCTION, OPERATION, AND MAINTENANCE OF  
TACTICAL INFRASTRUCTURE  
U.S. BORDER PATROL SAN DIEGO SECTOR, CALIFORNIA

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# 1. GENERAL PROJECT DESCRIPTION

## 1.1 INTRODUCTION TO THE ENVIRONMENTAL STEWARDSHIP PLAN

On April 1, 2008, the Secretary of the U.S. Department of Homeland Security (DHS), pursuant to his authority under Section 102(c) of Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), exercised his authority to waive certain environmental and other laws to ensure the expeditious construction of tactical infrastructure along the U.S./Mexico international border. The tactical infrastructure described in this Environmental Stewardship Plan (ESP) is covered by the Secretary's April 1, 2008, waiver (73 Federal Register [FR] 65, pp. 18293–24, **Appendix A**). Although the Secretary's waiver means that CBP no longer has any specific legal obligations under these laws, the Secretary committed the Department to responsible environmental stewardship of our valuable natural and cultural resources.

CBP strongly supports this and the Secretary's commitment to responsible environmental stewardship. To that end, CBP has prepared the following ESP, which analyzes the potential environmental impacts associated with construction of tactical infrastructure in the United States Border Patrol's (USBP) San Diego Sector. The ESP also discusses CBP's plans as to how it can mitigate potential environmental impacts. The ESP will guide CBP's efforts going forward.

As it moves forward with the Project described in this ESP, CBP will continue to work in a collaborative manner with local governments, state and Federal land managers, and the interested public to identify environmentally sensitive resources and develop appropriate best management practices (BMPs) to avoid or minimize adverse impacts resulting from the installation of tactical infrastructure.

This ESP is divided in to 14 chapters plus 7 appendices. The first chapter presents a detailed description of the Project. Subsequent chapters present information on the resources present, and evaluate the direct, indirect, and cumulative effects of the Project. The ESP also describes measures CBP has identified—in consultation with Federal, state, and local agencies—to avoid, minimize, or mitigate impacts on the environment, whenever possible. The following resource areas are presented in this ESP: air quality; noise; land use, recreation, and aesthetics; geological resources and soils; water use and quality; biological resources (i.e., vegetation, wildlife and aquatic species, special status species); cultural resources; socioeconomic resources, environmental justice, and the protection of children; and hazardous materials and wastes. Some environmental resources were not included in this ESP because they were not relevant to the analysis. These potential resource areas include utilities and infrastructure (omitted because the Project will not impact any utilities or similar infrastructure), roadways and traffic (omitted because the Project will not be accessible from public roadways), sustainability (omitted because the Project will

use minimal amounts of resources during construction and maintenance), and human health and safety (omitted because construction workers will be subject to Occupational Safety and Health Administration standards and the Project will not introduce new or unusual safety risks to the extent possible).

**Appendix A** presents the published Secretary's waiver pursuant to IIRIRA. **Appendix B** provides information on primary pedestrian and vehicle fence designs. **Appendix C** provides air quality emissions calculations. **Appendix D** presents the Biological Survey Report. **Appendix E** contains the Biological Resources Plan. **Appendix F** contains detailed maps of fence sections and **Appendix G** contains detailed maps of fence sections showing soils.

CBP will follow specially developed design criteria to reduce adverse environmental impacts and will implement mitigation measures to further reduce or offset adverse environmental impacts to the extent possible. Design criteria to reduce adverse environmental impacts include avoiding physical disturbance and construction of solid barriers in wetlands/riparian areas and streambeds. Consulting with Federal and state agencies and other stakeholders has augmented efforts to avoid or minimize adverse environmental impacts. Developing BMPs appropriate to the protection of natural and cultural resources will be utilized to the extent practicable to minimize any potential negative impacts to existing resources.

## 1.2 USBP BACKGROUND

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

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

U.S. Border Patrol (USBP) has nine administrative sectors along the U.S./Mexico international border. Each sector is responsible for implementing an optimal combination of personnel, technology, and infrastructure appropriate to its

operational requirements. The USBP San Diego Sector is responsible for 7,000 square miles of southern California and 66 miles of the U.S./Mexico international border. Within the USBP San Diego Sector, areas for tactical infrastructure improvements have been identified that will help the Brown Field and Chula Vista Stations gain more effective control of the border and significantly contribute to USBP's priority mission of homeland security.

### **1.3 GOALS AND OBJECTIVES OF THE PROJECT**

The goal of the project is to increase border security within the USBP San Diego Sector with an ultimate objective of reducing illegal cross-border activity. The Project further meets the objectives of the Congressional direction in the Fiscal Year (FY) 2007 DHS Appropriations Act (Public Law [P.L.] 109-295), Border Security Fencing, Infrastructure, and Technology appropriation to install fencing, infrastructure, and technology along the border.

The Project will provide USBP agents with the tools necessary to strengthen their control of the U.S. borders between POEs in the USBP San Diego Sector. The Project will help to deter illegal entries within the USBP San Diego Sector by improving enforcement efficiency, thus preventing terrorists and terrorist weapons, illegal aliens, drugs, and other cross border violators and contraband from entering the United States, while providing a safer work environment for USBP agents. The USBP San Diego Sector has identified two discrete areas along the border that experience high levels of illegal cross-border activity. This activity typically occurs in remote areas and in areas that are not easily accessed by USBP agents, near POEs where concentrated populations might live on either side of the border, or in locations that have quick access to U.S. transportation routes.

### **1.4 DESCRIPTION OF THE PROJECT**

CBP plans to install tactical infrastructure consisting of two sections of fence, patrol roads, and access roads along the U.S./Mexico international border in the USBP San Diego Sector, California. The tactical infrastructure will be installed in areas of high illegal entry.

The Project includes installation of primary pedestrian fence sections in areas of the border that are not currently fenced. The locations of tactical infrastructure are based on the USBP San Diego Sector's assessment of local operational requirements where such infrastructure will assist USBP agents in reducing illegal cross-border activities and contribute significantly to its priority homeland security mission.

The tactical infrastructure will be constructed in two distinct sections within the USBP San Diego Sector in San Diego County, California. These two sections of pedestrian fence are designated as Sections A-1 and A-2A, and are 3.6 and 0.8 miles in length, respectively. Each tactical infrastructure section will be an

individual project that could proceed independent of the other section. **Table 1-1** presents general information for each section.

**Table 1-1. Tactical Infrastructure for USBP San Diego Sector**

Section Number	Associated USBP Station	General Location	Length of Section (miles)
A-1	Brown Field/Chula Vista	Pack Trail - from Puebla Tree to Monument 250	3.6
A-2A	Brown Field	West of Tecate	0.8
<b>Total</b>			<b>4.4</b>

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

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

In addition, the International Boundary and Water Commission (IBWC) has design criteria for tactical infrastructure to avoid adverse impact on floodplains, levees, and flood control operations (IBWC 2007). Examples of primary pedestrian and vehicle fence are included in **Appendix B**.

Section A-1 will be approximately 3.6 miles in length and will start at Puebla Tree and end at Boundary Monument 250. Section A-1 will be adjacent to the U.S./Mexico international border where topography allows. The fence will deviate from the border to follow a new construction access road where conditions warrant, such as descent to canyon bottoms.

The fence will be constructed around the United States Section, International Boundary and Water Commission (USIBWC) monuments and locked gates will be installed at each monument to allow for access to the monuments. The length of construction access road to support the construction, operation and maintenance of the fence will be approximately 5.8 miles. Aggregate and soil

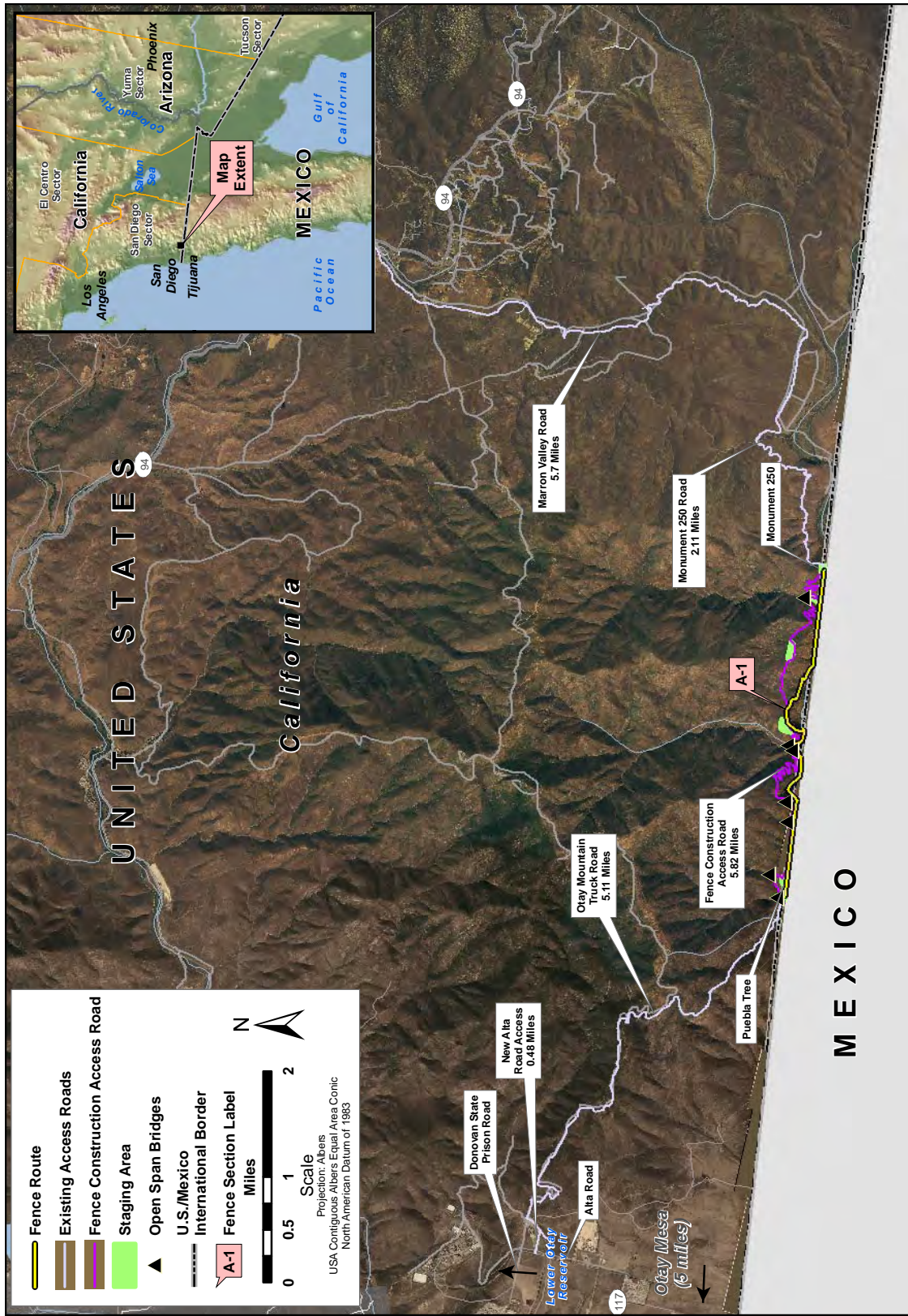


stabilizing or binding agents (such as RoadOyl or Pennzsuppress) will be added to the surface of the construction access road to reduce erosion and maintenance activities. An additional layer of the soil stabilizing agent will be applied to the road surface on an annual basis. When applied according to label directions, the soil stabilizers will be nontoxic to terrestrial and aquatic organisms. Maps of the route are shown in **Figures 1-1** and **1-2**. In areas where the patrol road will not be adjacent to the fence, trails suitable for light-tracked vehicles will be constructed for the purposes of fence installation and maintenance. These trails will require clearing of brush and boulders and minor grading. Rocky outcrops might require leveling for safe travel and fence construction. A total of seven open span bridges ranging from 40 to 60 feet in length will be constructed to cross larger washes and ephemeral streams located in Copper and Buttewig canyons. **Figure 1-3** shows a schematic drawing of the type of bridge to be used.

Approximately 35 percent of the construction access road will occur on the Roosevelt Reservation and Bureau of Land Management (BLM) land between the U.S./Mexico international border and the Otay Mountain Wilderness (OMW) boundary. Due to steep topography and the need to avoid unstable geological conditions, approximately 65 percent of the length of the construction access road and approximately 2,300 feet of the primary pedestrian fence (17 percent) will extend into the OMW.

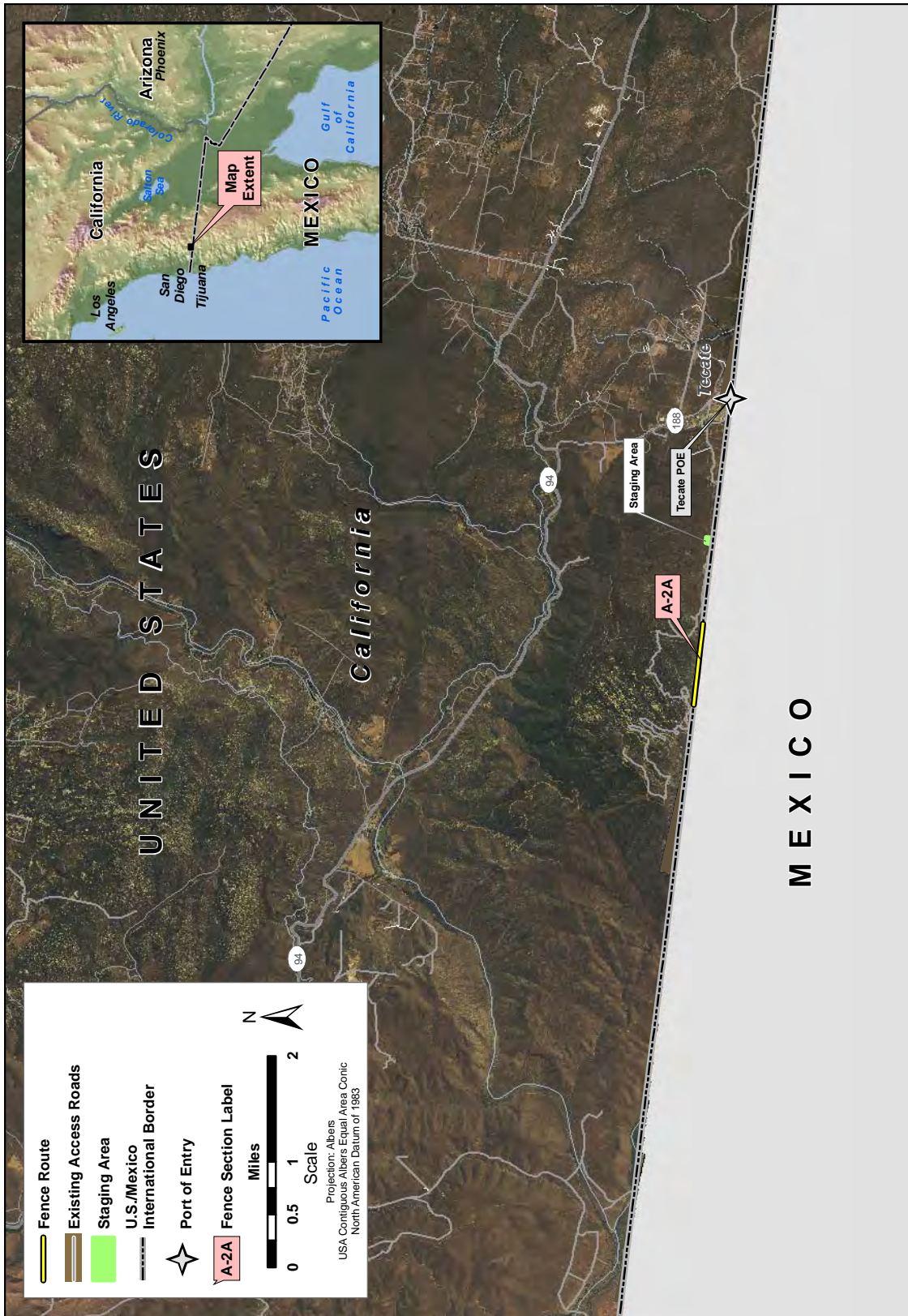
Section A-2A will be approximately 0.8 miles in length and will connect with existing border fence west of Tecate, California. Section A-2A will be an extension of an existing fence near Tecate Peak, will be constructed along the southeastern border of Tecate Peak, and will pass through a riparian area. This fence section will encroach on a mix of privately owned land parcels and public land administered by the BLM. Construction of this fence section will necessitate an upgrade to an access road west of Tecate (see **Figure 1-2**).

The tactical infrastructure for Section A-2A will potentially impact an approximate 60-foot-wide corridor. Steep topography at Section A-1 will necessitate a wider impact corridor where more extensive cutting and filling will be required. This corridor will include primary pedestrian fence, construction access roads, and construction staging areas. **Figure 1-4** presents a schematic drawing of the impact corridor. In areas of Section A-1 where the fence separates from the road, a disturbance corridor no greater than 60 feet in width is anticipated. The area of temporary and permanent impact within the two construction corridors (including new road construction and staging areas) will be approximately 102.2 acres for Section A-1 (22.5 acres temporary and 79.7 acres permanent) and approximately 7.7 acres for Section A-2A (2.0 acres temporary and 5.7 acres permanent). It is estimated that approximately 270,000 cubic yards (cy) of cut-and-fill disturbance will be required to construct Section A-1 and an estimated 30,000 cy of cut-and-fill disturbance will be required for Section A-2A.



Sources: Revised A-1 Alignment: Granite Construction Company, June 11, 2008, Critical Habitats: U.S. Fish and Wildlife Service 2002

Figure 1-1. Tactical Infrastructure – Section A-1



Source of Critical Habitats: U.S. Fish and Wildlife Service 2002

Figure 1-2. Tactical Infrastructure – Section A-2A

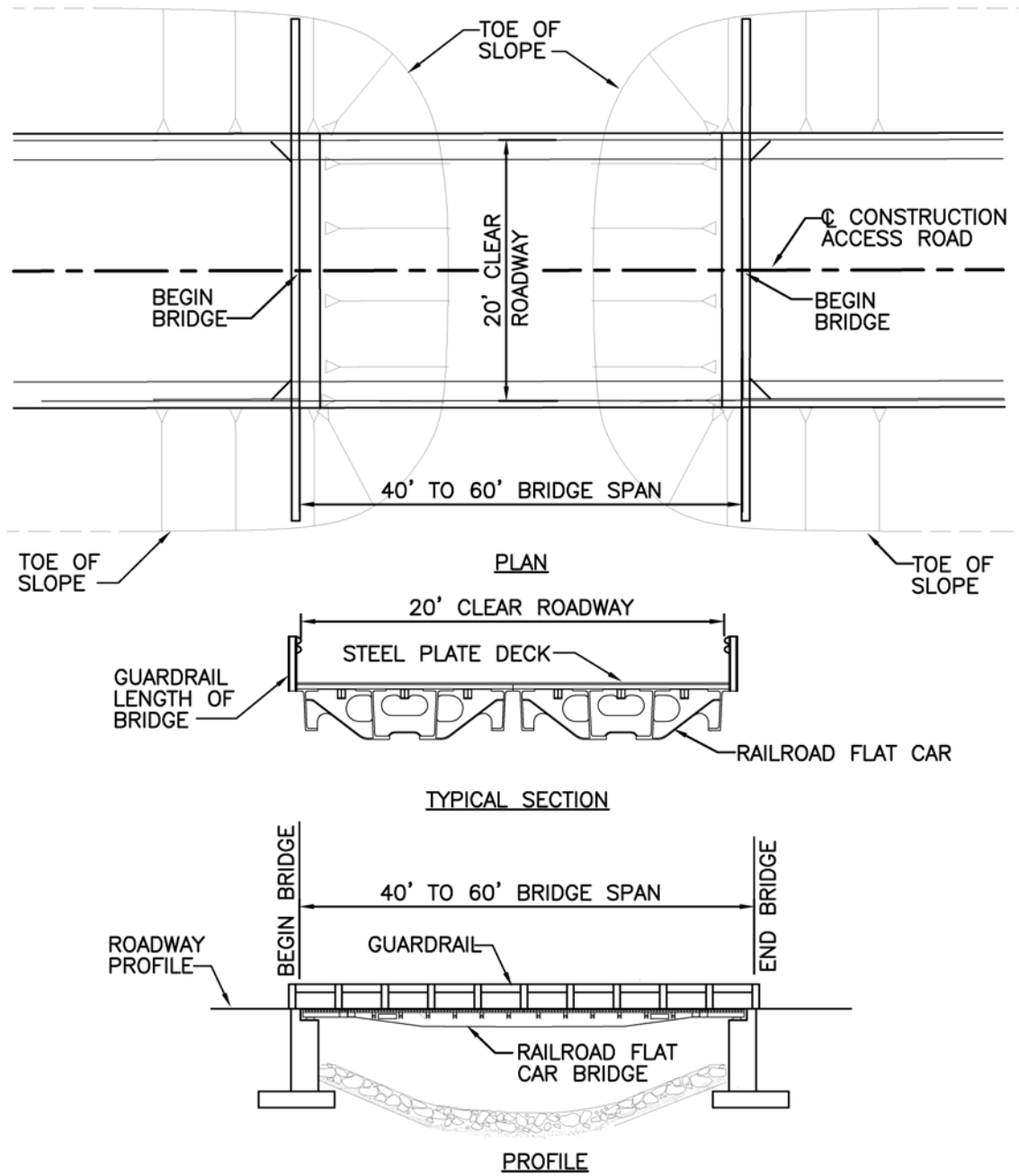


Figure 1-3. Typical Open Span Bridge

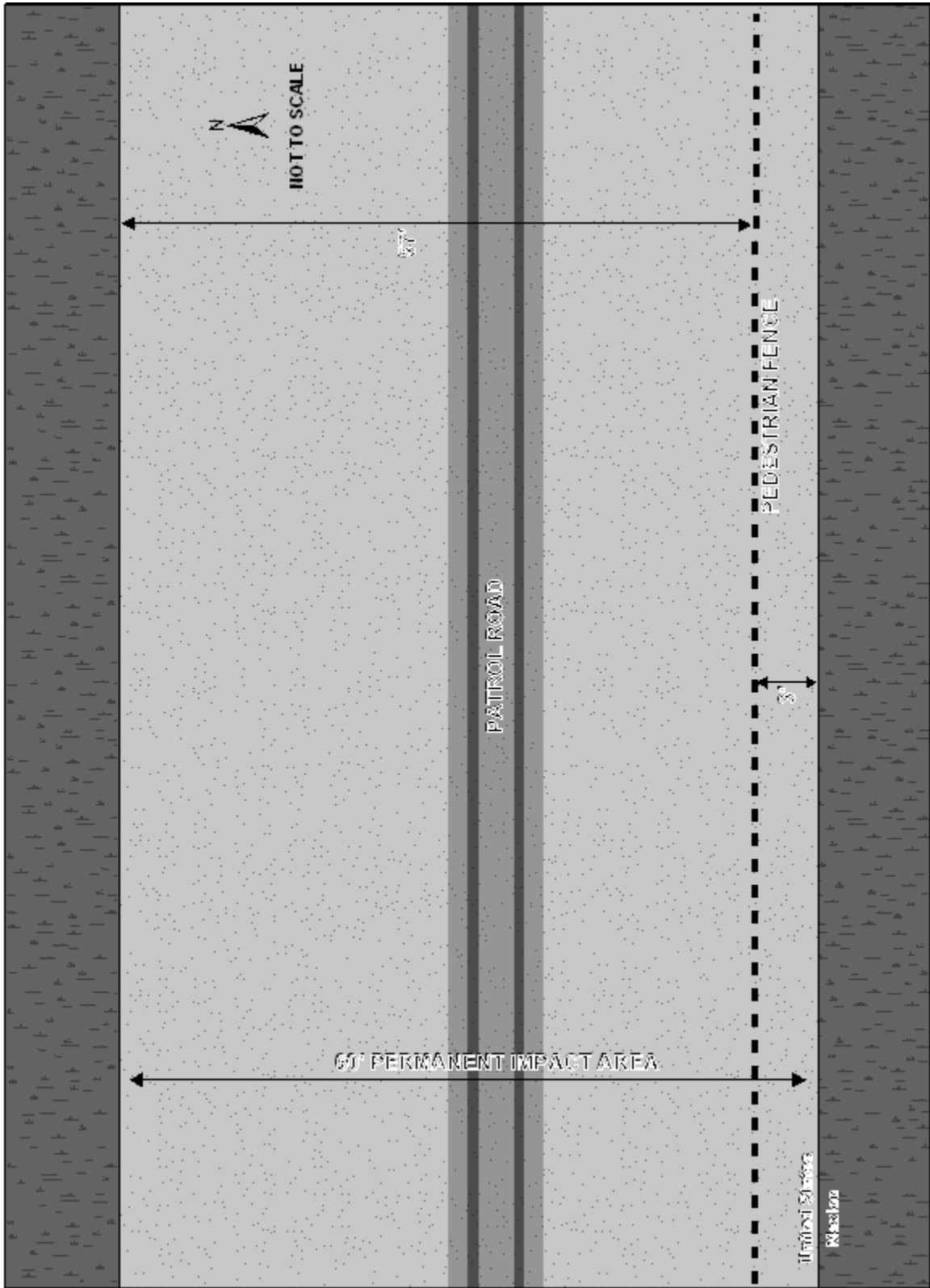


Figure 1-4. Schematic Drawing of Impact Corridor

Wherever possible, existing roads will be used to access the Sections A-1 and A-2A areas. These access roads will require some improvements in places to allow for the passage of commercial construction equipment. To the west of Section A-1, approximately 5.1 miles of existing access road will be utilized. A new access road will be constructed starting at the intersection of Alta and Donovan Prison Roads for a distance of approximately 0.5 miles.

Both Sections A-1 and A-2A will require the installation of Personnel-Vehicle Fence Type 1, additional details related to PV-1 are provided in Appendix B.

To the east of Section A-1, approximately 7.8 miles of existing road will be utilized, which encroaches on the OMW. Part of this road is designated as the Monument 250 Road. Certain upgrades to this portion were recently addressed in an Environmental Assessment (EA) (*Monument 250 Road Improvement Project, Office of Border Patrol, San Diego Sector, Brown Field Station, San Diego County, California*). This ESP incorporates relevant information discussed in the *Monument 250 Road Improvement Project EA* by reference. Additional widening and drainage upgrades not evaluated in the EA will be necessary. It is estimated that an additional 75,000 cy of cut-and-fill disturbance will occur in association with access road upgrades and new road construction. To the west of Section A-1, certain points along Otay Mountain Truck Road and the spur to Puebla Tree construction access roads might require widening at various locations to allow for the safe travel of large construction vehicles. To the east of Section A-1, similar improvement might be required to Marron Valley Road (see **Figure 1-1**). Up to 103.2 additional acres could be permanently impacted by possible improvements and use of Otay Mountain Truck Trail and Marron Valley Road as access roads.

In Section A-2A, it is anticipated that Tecate Mission Road will serve as the access road. Up to 34.5 acres could potentially be permanently impacted by possible improvements to Tecate Mission Road.

An additional 24.5 acres (22.5 acres for A-1 and 2.0 acres for A-2A) will be temporarily disturbed for use as construction staging areas. The tactical infrastructure and staging areas will occur on BLM, city of San Diego, or San Diego County land.

Fence maintenance will either be performed by USBP San Diego Sector personnel or contracted personnel. The fences will be made from nonreflective steel. No painting will be required. Fence maintenance will include removing any accumulated debris on the fence after a rain event to avoid potential future flooding. Sand that builds up against the fence and brush will also be removed as needed. Brush removal could include mowing, removal of small trees, and application of herbicide if needed.

Construction of other tactical infrastructure might be required in the future as mission and operational requirements are continually reassessed. To the extent

that other current and future actions in the study area are known, they are discussed in **Chapter 12**, “Related Projects and Potential Effects.”

## 1.5 PUBLIC OUTREACH AND COORDINATION

CBP notified relevant Federal, state, and local agencies of the Project and requested input on potential environmental concerns such parties might have regarding the Project. CBP has coordinated with the U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); BLM; State Historic Preservation Office (SHPO); and other Federal, state, and local agencies. A Draft Environmental Impact Statement (EIS) was prepared, copies were mailed to interested parties, it was posted on a public Web site, and a 45-day public review and comment period was announced. A public open house was advertised and held at the San Diego Convention Center, California, on January 17, 2008. Although the Secretary issued the waiver, CBP has continued to work in a collaborative manner with agencies and has considered and incorporated agency and public comments into this ESP. CBP responses to public comments on the Draft EIS will also be provided on the [www.BorderFencePlanning.com](http://www.BorderFencePlanning.com) Web site.

Although the Secretary of DHS issued the waiver, and thus, CBP has no responsibilities under the National Environmental Policy Act (NEPA) for this Project, CBP reviewed, considered, and incorporated comments received from the public and other Federal, state, and local agencies, as appropriate, during the preparation of this ESP.

In addition to the past public involvement and outreach program, CBP has continued to coordinate with various Federal and state agencies during the development of this ESP. These agencies are described in the following paragraphs.

- U.S. Section, International Boundary and Water Commission. CBP has coordinated with USIBWC to ensure that any construction along the international border does not adversely affect International Boundary Monuments or substantially impede floodwater conveyance within international drainages.
- U.S. Army Corps of Engineers (USACE), Los Angeles District. CBP has coordinated all activities with USACE to identify potential jurisdictional waters of the United States, including wetlands, and to develop measures to avoid, minimize or compensate for losses to these resources.
- U.S. Fish and Wildlife Service. CBP has coordinated extensively with USFWS to identify listed species that have the potential to occur in the impact corridor and has cooperated with the USFWS to prepare a Biological Resources Plan (BRP) that presents the analysis of potential effects on listed species and the BMPs proposed to reduce or offset any adverse impacts. A copy of the BRP is contained in **Appendix E**.

- BLM, Palm Springs South Coast Field Office. CBP has coordinated with BLM to identify environmental impacts, land management plans, and to identify appropriate mitigation measures.
- California Department of Fish and Game (CDFG). CBP has coordinated with CDFG to identify biological resources.

## 1.6 BMPS AND MITIGATION PLAN

CBP applied various design criteria to reduce adverse environmental impacts associated with the Project, including selecting a route that will avoid or minimize effects on environmental and cultural resources. Nonetheless, CBP has determined that construction, operation, and maintenance of tactical infrastructure in USBP San Diego Sector will result in adverse environmental impacts. These impacts will be most adverse during construction. Mitigation resources that are available during implementation of the Project include the following:

- CBP will require construction contractors to prepare Environmental Protection Plans (EPPs) that include BMPs on General Construction Activities, soils, cultural resources, air and water quality, noise, vegetation, and biological resources. These BMPs are specified in construction documents. BMPs specifically developed to protect sensitive species are included in the BRP (see **Appendix E**).
- CBP will implement a Construction, Mitigation, and Restoration Plan; Spill Prevention Control and Countermeasure (SPCC) Plan; Blasting Specifications, Dust Control Plan; Fire Prevention and Suppression Plan; and Unanticipated Discovery Plan for Cultural Resources to protect natural and cultural resources and residential areas during construction and operation of the Project.
- CBP will continue to coordinate, with the USFWS, the CDFG, California SHPO, Native American tribes, and others to seek technical advice on potential appropriate BMPs and mitigations for the Project.
- An environmental inspection and Mitigation and Monitoring Plan will be prepared to ensure compliance by contractors with all mitigation measures.
- CBP will enter into a programmatic mitigation agreement with the Department of the Interior (DOI) and fund a mitigation pool for adverse impacts that cannot be avoided.
- **Appendix D** contains the Biological Survey Report for the Project. **Appendix E** contains the BRP.



## 2. AIR QUALITY

### 2.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the Clean Air Act (CAA) for the tactical infrastructure segments addressed in this ESP, the Secretary committed the Department to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CAA as the basis for evaluating potential environmental impacts and appropriate mitigations.

The air quality in a given region or area is measured by the concentrations of various pollutants in the atmosphere. The measurements of these "criteria pollutants" in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ), or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

The Clean Air Act (CAA) directed USEPA to develop National Ambient Air Quality Standards (NAAQS) for pollutants that have been determined to affect human health and the environment. NAAQS are currently established for six criteria air pollutants: ozone ( $\text{O}_3$ ), carbon monoxide (CO), nitrogen dioxide ( $\text{NO}_2$ ), sulfur dioxide ( $\text{SO}_2$ ), respirable particulate matter (including particulates equal to or less than 10 microns in diameter [ $\text{PM}_{10}$ ] and particulates equal to or less than 2.5 microns in diameter [ $\text{PM}_{2.5}$ ]), and lead (Pb). The primary NAAQS are ambient air quality standards to protect the public health; secondary NAAQS specify levels of air quality to protect the public welfare such as effects on vegetation, crops, wildlife, economic values, and visibility.

States designate any area that does not meet the national primary or secondary ambient air quality standard for a criteria pollutant as a nonattainment area. For  $\text{O}_3$ , each designated nonattainment area is classified as marginal, moderate, serious, severe, or extreme, based on ambient  $\text{O}_3$  concentrations. The California Environmental Protection Agency (Cal/EPA), California Air Resources Board (CARB) has delegated responsibility for implementation of the Federal CAA and California CAA to local air pollution control agencies.

The State of California adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS) for criteria pollutants. The California standards are more stringent than the Federal primary standards. **Table 2-1** presents the primary and secondary NAAQS and SAAQS.

**Table 2-1. National and State Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standard Concentration	National Standard	
			Primary	Secondary
<b>O<sub>3</sub></b>	1-Hour <sup>c</sup>	0.09 ppm (180 µg/m <sup>3</sup> )	----	Same as Primary Standard
	8-Hour <sup>b</sup>	0.070 ppm (137 µg/m <sup>3</sup> )	0.08 ppm (157 µg/m <sup>3</sup> )	
<b>PM<sub>10</sub></b>	24-Hour <sup>a</sup>	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Same as Primary Standard
	Annual Arithmetic Mean <sup>d</sup>	20 µg/m <sup>3</sup>	----	
<b>PM<sub>2.5</sub></b>	24-Hour <sup>f</sup>	No separate State Standard	35 µg/m <sup>3</sup>	Same as Primary Standard
	Annual Arithmetic Mean <sup>e</sup>	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	
<b>CO</b>	8-Hour <sup>a</sup>	9.0 ppm (10 mg/m <sup>3</sup> )	9.0 ppm (10 mg/m <sup>3</sup> )	None
	1-Hour <sup>a</sup>	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	
<b>NO<sub>2</sub></b>	Annual Arithmetic Mean	0.030 ppm (56 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard
	1-Hour	0.18 ppm (338 µg/m <sup>3</sup> )	----	
<b>SO<sub>2</sub></b>	Annual Arithmetic Mean	----	0.030 ppm (80 µg/m <sup>3</sup> )	----
	24-Hour <sup>a</sup>	0.04 ppm (105 µg/m <sup>3</sup> )	0.14 ppm (365 µg/m <sup>3</sup> )	----
	3-hour <sup>a</sup>	----	----	0.5 ppm (1300 µg/m <sup>3</sup> )
	1-Hour	0.25 ppm (655 µg/m <sup>3</sup> )	----	
<b>Pb</b>	30-Day Average	1.5 µg/m <sup>3</sup>	----	----
	Calendar Year	----	1.5 µg/m <sup>3</sup>	Same as Primary Standard

Pollutant	Averaging Time	California Standard Concentration	National Standard	
			Primary	Secondary
Visibility Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer visibility of 10 miles or more due to particles when relative humidity is less than 70 percent	No Federal Standards	
Sulfates	24-Hour	25 µg/m <sup>3</sup>		
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m <sup>3</sup> )		
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m <sup>3</sup> )		

Sources: USEPA 2007a and CARB 2007a

Notes: Parenthetical values are approximate equivalent concentrations.

<sup>a</sup> Not to be exceeded more than once per year.

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

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

<sup>d</sup> To attain this standard, the expected annual arithmetic mean PM<sub>10</sub> concentration at each monitor within an area must not exceed 50 µg/m<sup>3</sup>.

<sup>e</sup> To attain this standard, the 3-year average of the annual arithmetic mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.

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

ppm = parts per million

µg/m<sup>3</sup> = micrograms per cubic meter

mg/m<sup>3</sup> = milligrams per cubic meter

USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated in nonattainment but is now in attainment, and unclassifiable means that there is not enough information to appropriately classify an AQCR, so the area is considered in attainment.

**Greenhouse Gases.** Many chemical compounds found in the Earth’s atmosphere act as “greenhouse gases.” These gases allow sunlight to enter the

atmosphere freely. When sunlight strikes the Earth's surface, some of it is reflected back towards space as infrared radiation (heat). Greenhouse gases absorb this infrared radiation and trap the heat in the atmosphere. Over time, barring other influences, the trapped heat results in the phenomenon of global warming.

In April 2007, the U.S. Supreme Court declared that carbon dioxide (CO<sub>2</sub>) and other greenhouse gases are air pollutants under the CAA. The Court declared that the USEPA has the authority to regulate emissions from new cars and trucks under the CAA.

Many gases exhibit these "greenhouse" properties. The majority of greenhouse gases comes from natural sources but is also contributed to by human activity. Additional information on sources of greenhouse gases is included in **Chapter 2.3**.

## 2.2 AFFECTED ENVIRONMENT

The Project is located within San Diego County, California, within the San Diego Interstate Air Quality Control Region (SDIAQCR). The SDIAQCR is composed of San Diego County, California. San Diego County is within a Federal Subpart 1 (Basic) and State nonattainment area for 8-hour O<sub>3</sub>, Federal moderate maintenance area for CO, and State nonattainment area for PM<sub>10</sub> and PM<sub>2.5</sub>. San Diego County is in attainment/unclassified for all other criteria pollutants.

## 2.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Regulated pollutant emissions from the Project will not contribute to or affect local or regional attainment status with the NAAQS. The Project will generate air pollutant emissions during construction and maintenance of the tactical infrastructure.

**Construction Projects.** Major, short-term, adverse impacts are expected from construction emissions and land disturbance associated with the Project.

The construction projects will generate total suspended particulate and PM<sub>10</sub> emissions as fugitive dust from ground-disturbing activities (e.g., grading, trenching, soil piles) and from combustion of fuels in construction equipment. Fugitive dust emissions will be greatest during the initial site preparation activities and will vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

Construction operations will also result in emissions of criteria pollutants as combustion products from construction equipment. These emissions will be of a temporary nature. The NAAQS emissions factors and estimates were generated

based on guidance provided in USEPA AP-42, Volume II, *Mobile Sources*. Fugitive dust emissions for various construction activities were calculated using emissions factors and assumptions published in USEPA's AP-42 Section 11.9.

For purposes of this analysis, the Project duration and affected impact corridor that will be disturbed (presented in **Chapter 1**) were used to estimate fugitive dust and all other pollutant emissions. The construction emissions presented in **Table 2-2** include the estimated construction PM<sub>10</sub> emissions associated with the Project. These emissions will produce slightly elevated short-term PM<sub>10</sub> ambient air concentrations. However, the impacts will be temporary, and will fall off rapidly with distance from the construction sites. Considering that Project emissions will occur equally between Calendar years 2008 and 2009, the emissions of NAAQS pollutant is not high; will not contribute to the deterioration of the air quality in the region; will not exceed the *de minimis* threshold limits for any single year; and will not exceed 10 percent of the regional values even if all emissions were attributed to a single year.

**Table 2-2. Estimates of Total Construction Emissions from the Project in Tons**

Description	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>
Construction Emissions	97.058	14.468	113.389	1.941	72.672
Haul Truck Emissions	1.716	0.528	2.877	0.135	2.041
Generator Emissions	19.882	1.623	4.283	1.307	1.398
<b>Total Project Emissions</b>	<b>118.655</b>	<b>16.619</b>	<b>120.459</b>	<b>3.384</b>	<b>76.110</b>
Federal annual <i>de minimis</i> Threshold	100	50	100	NA	100
SDIAQCR Regional Emissions	76,343	95,371	605,178	2,007	72,011
Percent of SDIAQCR Regional Emissions	0.155	0.017	0.020	0.169	0.106

Source: USEPA 2007b

The construction emissions presented in **Table 2-2** include the estimated total emissions from construction equipment exhaust associated with the Project and operation of diesel-powered generators. Early phases of construction projects involve heavier diesel equipment and earthmoving, resulting in higher nitrogen oxide (NO<sub>x</sub>) and PM<sub>10</sub> emissions. Later phases of construction projects involve more light gasoline equipment, resulting in more CO and volatile organic compound (VOC) emissions. However, the impacts will be temporary, fall off rapidly with distance from the construction site, and will not result in any long-term impacts.

**Haul Truck Emissions.** Minor, short-term, adverse impacts are expected from haul truck emissions to transport the required cut-and-fill materials along the impact corridor.

Large amounts of cut-and-fill are required from both onsite and offsite for the Project. It is assumed that approximately 291,222 cy of cut material and 306,268 cy of fill material will be required from the impact corridor in order to construct Sections A-1 and A-2A. In addition, approximately 60,000 cy of fill materials will be needed from off site and another 60,000 cy of cut waste will have to be removed from the Project. Each haul truck is assumed to transport 10 cy of material. Furthermore, all onsite haul trucks will travel approximately 2 miles round trip and all offsite fill and waste materials will be transported an average of 10 miles round trip. This equates to approximately 71,739 haul truck loads traveling 239,478 miles (average of 249.46 miles per working days). Emissions factors for these heavy-duty diesel vehicles were taken from AP-42, Volume II, *Mobile Sources* to estimate emissions. Details of these emissions calculations can be found in **Appendix C**.

**Generators.** The Project's activities will require six diesel-powered generators to power construction equipment. It is assumed that these generators will be approximately 75 horsepower and operate approximately 8 hours per day for 190 working days. The emissions factors and estimates were generated based on guidance provided in USEPA AP-42, Volume I, *Stationary Internal Combustion Sources*.

**Operations and Maintenance Activities.** After construction is completed, the USBP San Diego Sector will begin vehicular patrols along Sections A-1 and A-2A. The vehicles used for surveillance of the existing border area are currently generating criteria pollutants and will not introduce new pollutant sources. Therefore, no net increase of criteria pollutant emissions is expected as a result of this project.

The construction of new tactical infrastructure will increase maintenance activities. Maintenance activities associated with the Project will be comparable to current maintenance within the USBP San Diego Sector. The air emissions associated with maintenance will be a negligible contribution to overall air quality in the SDIAQCR. No long-term adverse impacts on air quality are expected.

**Greenhouse Gases.** The Project will result in CO<sub>2</sub> emissions from the operation of construction vehicles, including haul trucks and generators. Using emissions coefficients reported by the Energy Information Administration (EIA 2007), operation of construction vehicles will result in an estimated 146 tons of CO<sub>2</sub>, and operation of generators will result in an estimated 274 tons CO<sub>2</sub>. Therefore, short-term greenhouse gas emissions associated with construction activities will total approximately 420 tons of CO<sub>2</sub>. These emissions estimates are included in **Appendix C**.

Maintenance activities associated with the Project will be comparable to ongoing maintenance with other similar fence sections, which are summarized under *Operations and Maintenance Activities* above. The Project will result in negligible CO<sub>2</sub> emissions associated with maintenance activities.

The USEPA has estimated that the total greenhouse emissions for California were 427 million metric tons of carbon equivalent (MMTCE) in 1990 (CARB 2007b). The short-term CO<sub>2</sub> emissions associated with construction (420 tons) represent less than 0.0001 percent of the total estimated California CO<sub>2</sub> inventory. Long-term increases in CO<sub>2</sub> emissions will result from increased maintenance activities. The Project is expected to have a negligible contribution to CO<sub>2</sub> and greenhouse gases.

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## 3. NOISE

### 3.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the laws covered by the waiver for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations on noise resources

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Sound is measured in decibels. "A-weighted" decibels (dBA) denote the frequency range for what the average human ear can sense. "A-weighted" denotes the adjustment of the frequency content of a sound-producing event to represent the way in which the average human ear responds to the audible event. Noise levels associated with construction equipment, vehicle operations, and aircraft operations are analyzed using dBA. C-weighted sound level measurement correlates well with physical vibration response of buildings and other structures to airborne sound. Impulsive noise resulting from demolition activities and the discharge of weapons are assessed in terms of C-weighted decibels (dBC).

Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. Affected receptors are specific (i.e., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis. Studies specifically conducted to determine noise impacts on various human activities show that about 90 percent of the population is not significantly bothered by outdoor sound levels below 65 dBA (USEPA 1974). Studies of community annoyance in response to numerous types of environmental noise show that an A-weighted day-night average sound level (ADNL) correlates well with impact assessments and that there is a consistent relationship between ADNL and the level of annoyance.

**Ambient Sound Levels.** Noise levels in residential areas vary depending on the housing density and location. As shown in **Figure 3-1**, a suburban residential work processes. **Table 3-1** lists noise levels associated with common types of construction equipment that are likely to be used under the Project. Construction area is about 55 dBA, which increases to 60 dBA for an urban residential area, and 80 dBA in the downtown section of a city.

**Table 3-1. Predicted Noise Levels for Construction Equipment**

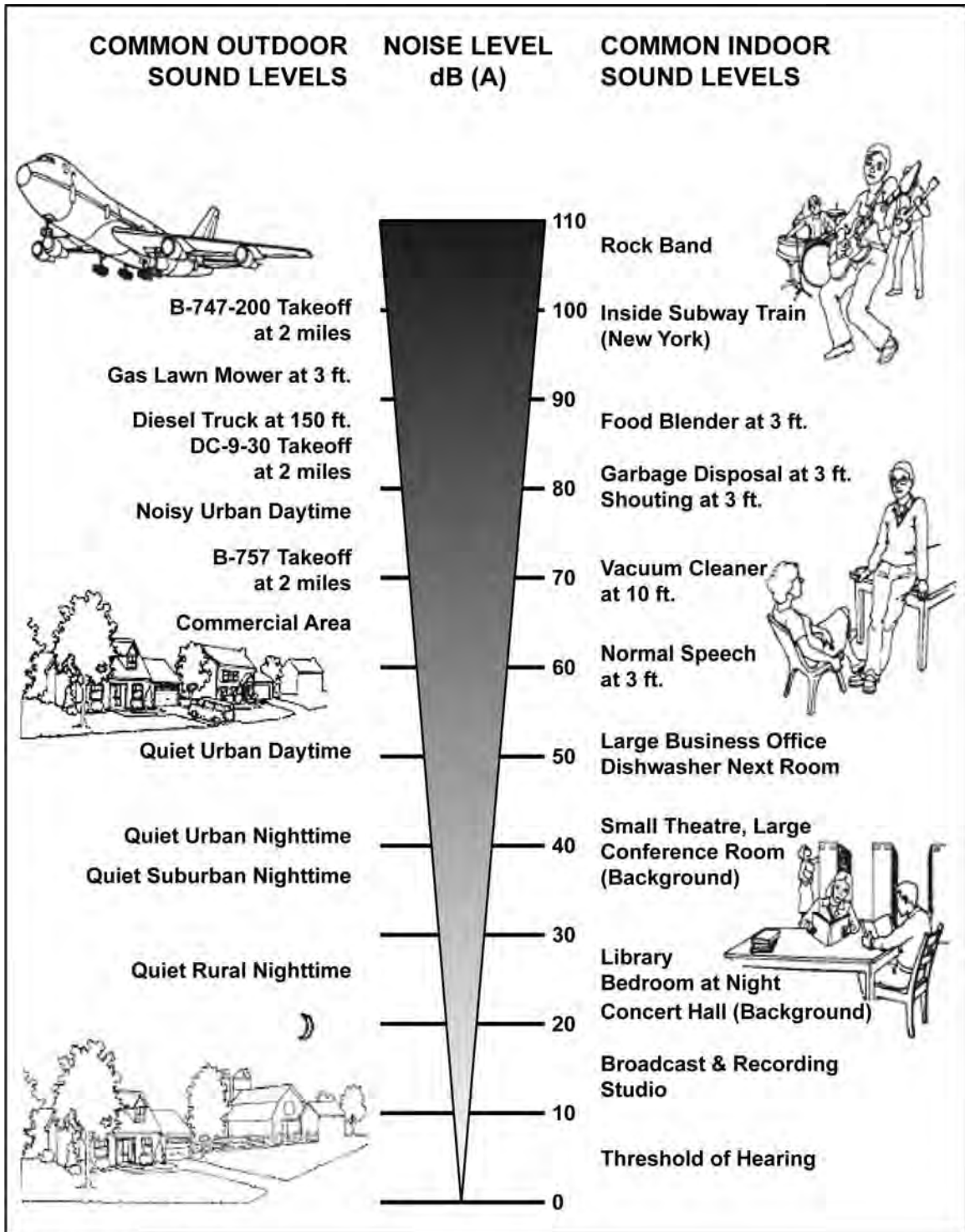
<b>Construction Category and Equipment</b>	<b>Predicted Noise Level at 50 feet (dBA)</b>
<b>Clearing and Grading</b>	
Bulldozer	80
Grader	80–93
Truck	83–94
Roller	73–75
<b>Excavation</b>	
Backhoe	72–93
Jackhammer	81–98
<b>Building Construction</b>	
Concrete mixer	74–88
Welding generator	71–82
Pile driver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

Source: COL 2001

**Construction Sound Levels.** Building construction, modification, and demolition work can cause an increase in sound that is well above the ambient level. A variety of sounds come from graders, pavers, trucks, welders, and other equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

## 3.2 AFFECTED ENVIRONMENT

Section A-1 of the border fence is in a remote area along the U.S./Mexico international border between Puebla Tree and Boundary Monument 250. As such, the ambient acoustical environment in the impact corridor is likely to be equivalent to the noise levels in a rural area. Aircraft and vehicle traffic are likely the largest noise contributors in the vicinity of the Section A-1.



Source: Landrum & Brown 2002

Figure 3-1. Common Noise Levels

The closest major transportation route in the vicinity of Section A-1 is State Route (SR) 94. SR 94 runs in a northwest-southeast direction and lies about 3.5 miles north of the U.S./Mexico international border. Direct access to the border is obtained by several small dirt roads. SR 94 passes by several residential areas.

Section A-2A is west of the city of Tecate, California. Tecate, Mexico, is heavily populated; however, an existing fence reduces the noise from Tecate, Mexico, from impacting U.S. residents in the vicinity of the impact corridor. There is one residential home in the United States that is approximately 250 feet from the impact corridor. The ambient acoustical environment in this area is likely to be equivalent to the noise levels in a rural or suburban area.

Major transportation routes in the vicinity of Section A-2A include SR 94, SR 188, and Mexican Federal Highway-2. SR 94 is approximately 1.5 miles north, SR 188 is approximately 2 miles east, and the Mexican Federal Highway-2 is approximately 1.8 miles south of the Section A-2A. Direct access to the impact corridor can be obtained from Tecate Mission Road, which abuts the current sections of border fence and the city of Tecate, California.

### 3.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Short-term moderate adverse impacts are expected under the Project. Sources of noise from the Project will include blasting, the operation of construction equipment, noise from construction vehicles, and USBP activity such as vehicle noise.

**Blast Noise.** As discussed in **Chapter 1**, two sections of primary pedestrian fence along the U.S./Mexico international border will be constructed. As part of the construction, particularly for Section A-1, blasting will need to occur to enable construction of the fence and related infrastructure.

Blast noise was modeled with the Blast Noise Prediction computer program, BNoise 2.0, using an application that estimates single event noise levels. The noise from blasting activities varies depending on the type of explosive, the amount, and the type of material that will be subject to the explosion. To estimate the noise from blasting under the Project, several different amounts of TNT were used, ranging from 2.2 pounds to 8.8 pounds. Noise from blasting generates an average noise level of approximately 117 to 126 dBC at 100 feet. Blasting activities will only occur during the construction period. As such, short-term moderate adverse noise impacts are anticipated as a result of the blasting during construction activities.

**Construction Noise.** The construction of the access road, fence, and related tactical infrastructure will result in noise impacts on the populations in the vicinity of the Project.

- The closest residence between Puebla Tree and Boundary Monument 250, proximate to Valle Redondo, California, is approximately 7,000 feet south of Section A-1. Populations in this area will experience noise levels of approximately 43 dBA from construction activities.
- The closest residence between Puebla Tree and Boundary Monument 250, in the town of Dulzura, California, is approximately 14,000 feet north of Section A-1. Populations in this area will experience noise levels of approximately 37 dBA from construction activities.
- The closest residence west of Tecate is approximately 250 feet from Section A-2A. This residence will experience noise levels of approximately 72 dBA from construction activities.

Implementation of the Project will have temporary, minor, adverse effects on the noise environment from the use of heavy equipment during construction activities.

**Vehicular Noise.** Noise impacts from increased construction traffic will be temporary in nature. These impacts will most likely be confined to normal working hours and will last only as long as the construction activities are ongoing. However, SR 94 and SR 188 pass by several residential areas. It is anticipated that the Project will have short-term moderate adverse noise impacts as a result of the increase in traffic, most notably in the areas around Dulzura and Tecate.

**USBP Operations.** Given that the closest population is about 7,000 feet away from the impact corridor, and the USBP already operates in this area, the increase in noise from USBP operations will be negligible to minor.

Impacts of noise to wildlife are discussed in **Chapter 8**.

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## 4. LAND USE

### 4.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations associated with land use.

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

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

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

### 4.2 AFFECTED ENVIRONMENT

The impact corridor will traverse approximately 4.4 miles of public lands within southern San Diego County (see **Table 4-1**). Approximately 3.6 miles (17,600

feet) in Section A-1 and 0.8 miles (approximately 3,900 feet) in Section A-2A, will be traversed by the Project.

**Table 4-1. Land Ownership Along the Impact Corridor**

Fence Section	Land Ownership	Length of Fence Section (feet)	Length of Fence Section (miles)
A-1	Public	17,600	3.6
A-2A	Public	3,900	0.8
<b>Total</b>		<b>21,320</b>	<b>4.4</b>

Approximately 35 percent of the impact corridor within Section A-1 will be within the Federal government’s 60-foot Roosevelt Reservation and BLM land along the U.S./Mexico international border, with the remainder on the OMW (designated as all lands 100 feet north of the Pack Trail). However, the entire length of fence within Section A-2A will be within the Federal government’s 60-foot Roosevelt Reservation (the reservation is discussed further on **page 4-5**).

Land uses identified in the analysis include those uses that are traversed by or located immediately adjacent to the impact corridor and could be affected by construction, operation, or maintenance of the Project. The land use data presented in this ESP utilize land use designations that are compiled and maintained by the San Diego Association of Governments (SANDAG) for use in its programs and projects within San Diego County (SANDAG 2007a). The land use information is continuously updated using aerial photography, the San Diego County Assessor Master Property Records file, and other ancillary information. In addition, the land use data are reviewed by each of the local jurisdictions and the County of San Diego to ensure their accuracy. The current SANDAG land use inventory identifies more than 90 land use categories. However, for this analysis these categories were generalized into the following nine land use categories: Residential, Industrial, Transportation, Commercial, Office, Public Facilities, Recreation and Open Space, Agriculture, and Vacant and Undeveloped Land (see **Table 4-2**).

The tactical infrastructure, including access roads and staging areas, and impact corridor will be located on land designated as Public Facilities (Jail/Prison), Agriculture (Field Crops), Recreation and Open Space (Open Space Park or Preserve), Residential (Spaced Rural Residential), and Vacant and Undeveloped Land (see **Table 4-2**).

Specific land use data were gathered from various regional and local planning and environmental documents, aerial photography, and other research. **Table 4-3** identifies the specific land uses that occur in the vicinity of the Project. The



**Table 4-2. General Land Use Categories**

<b>General Land Use Category</b>	<b>SANDAG General Land Use Designations</b>	<b>Example Land Uses</b>
Residential	Spaced Rural Residential, Single-Family Residential, Multi-Family Residential, Mobile Home Park, Group Quarters, Hotel/Motel/ Resort	Single family houses; multi-family residences such as duplexes, townhouses, condominiums; mobile home parks; group quarters such as jails/prisons, dormitories, military barracks; hotels, motels, resorts
Public Facilities	Public Services, Hospitals, Military Use, Schools	Cemeteries, religious facilities; libraries; post offices; fire or police stations; cultural facilities; social service agencies; hospitals; health care facilities; military facilities; educational institutions
Recreation and Open Space	Commercial Recreation, Parks	Tourist attractions; stadiums/arenas; racetracks; golf courses; convention centers; marinas; fitness clubs/swim clubs; campgrounds; theaters; regional and local parks; recreation areas/centers; wildlife and nature preserves; open space lands; beaches; neighborhood landscaped open spaces
Agriculture	Agriculture	Orchards or vineyards; nurseries, greenhouses, dairies, ranches; row crops; pasture or fallow field crops
Vacant and Undeveloped Land	Vacant	Historical and existing vacant and undeveloped land not placed in another land use category

Source: SANDAG 2007a

figures displayed in **Appendix F** show the location of the impact corridor and the proximity of adjacent and intersecting land uses. The following is a description of the specific land uses that occur in the vicinity of the Project.

**George F. Bailey Detention Facility.** This is a maximum-security correctional facility operated by the San Diego County Sheriff's Department. This facility is sited within a complex that also houses the East Mesa Detention Facility and the San Diego Correctional Facility. It is the largest of all the facilities operated under the San Diego County Sheriff's jurisdiction with a rated capacity of between 1,330 and 1,670 inmates (SDCSD 2002). The facility is approximately 0.5 miles northwest of the new access road at the intersection of Alta and Donovan Prison Roads.

**Table 4-3. Land Uses in the Vicinity of the Impact Corridor**

<b>Fence Section</b>	<b>Jurisdiction</b>	<b>General Land Use Category</b>	<b>Specific Land Uses</b>
A-1	Unincorporated San Diego County	Public Facilities	George F. Bailey Detention Facility, East Mesa Detention Facility, San Diego Correctional Facility
	State of California	Public Facilities	Richard J. Donovan Correctional Facility
	Unincorporated San Diego County	Agriculture/ Vacant and Undeveloped Land	Kuebler Ranch Site
	BLM	Recreation and Open Space	OMW
	USIBWC	Recreation and Open Space	Roosevelt Reservation
	City of San Diego	Recreation and Open Space	Marron Valley Preserve
A-2A	USIBWC	Recreation and Open Space	Roosevelt Reservation
	BLM	Recreation and Open Space	Kuchamaa Area of Critical Environmental Concern (ACEC)
	Unincorporated San Diego County	Residential/ Vacant and Undeveloped Land	Private residence

**East Mesa Detention Facility.** This is a medium-security facility built in conjunction with the George F. Bailey Detention Facility for use by the San Diego County Sheriff's Department. It houses 490 inmates, but is rated for approximately 340 to 510 inmates. The facility includes a central laundry and food production for this and other facilities, and is operated with the use of inmate workers at the site (SDCSD 2007).

**San Diego Correctional Facility.** This is a minimum- to medium-security facility that is privately managed by Corrections Corporation of America (CCA). It includes 1,232 beds and houses male and female inmates for Immigrations and Customs Enforcement (ICE) and the U.S. Marshals Service (CCA 2007).

**Richard J. Donovan Correctional Facility.** This is a state correctional facility operated by the California Department of Corrections and Rehabilitation (CDCR) that houses medium- to high-security inmates (CDCR 2007). The facility is

approximately 0.8 miles west of the new access road at the intersection of Alta and Donovan Prison Roads.

**Kuebler Ranch Site.** Kuebler Ranch is the site of an old ranch, but also includes an important archaeological site (SDAC 2007). This site is immediately north of the new access road at the intersection of Alta and Donovan Prison Roads.

**Pack Trail.** The Pack Trail is a footpath/pack-trail along the U.S./Mexico international border within BLM land. The Pack Trail traverses the San Ysidro Mountains beginning on the west end at Puebla Tree and ends at Border Monument 250. The Pack Trail is primarily used for hiking, with limited use by all-terrain vehicles (ATVs). The Pack Trail access road will generally follow the general path of the Pack Trail unless severe topography makes it unfeasible.

**Otay Mountain Wilderness.** This 18,500-acre wilderness area was designated by Congress in 1999 through the Otay Mountain Wilderness Act, and is managed by the BLM, Palm Springs-South Coast Field Offices. Management direction for the area has focused on conservation of the area's flora, fauna, ecologic, geologic, cultural, and scenic values as well as the protection of its wilderness values. As part of the Border Mountains Special Recreation Management Area (SRMA), OMW provides opportunities for low-impact recreation, including hiking, backpacking, equestrian use, camping, picnicking, nature study, and hunting (BLM 1994). The OMW includes stands of rare Tecate Cypress and 15 to 20 other sensitive vegetative species. The northern end of the OMW also contains the Cedar Canyon Area of Critical Environmental Concern (ACEC) and a grazing allotment (BLM 1999). Approximately 50 percent of the primary pedestrian fence, Pack Trail access road, and staging areas will be on the OMW.

**Roosevelt Reservation.** This is an area of land President Theodore Roosevelt reserved from entry and set apart as a public reservation in 1907 consisting of all public lands within 60 feet of the international boundary between the United States and Mexico within the State of California and the Territories of Arizona and New Mexico. Known as the "Roosevelt Reservation," this land withdrawal was found "necessary for the public welfare ... as a protection against the smuggling of goods." The proclamation excepted from the reservation all lands, which, as of its date, were (1) embraced in any legal entry; (2) covered by any lawful filing, selection, or rights of way duly recorded in the proper U.S. Land Office; (3) validly settled pursuant to law; or (4) within any withdrawal or reservation for any use or purpose inconsistent with its purposes (CRS 2006). Portions of the tactical infrastructure, including the primary pedestrian fence, Pack Trail access road, and staging areas, will be located within the Roosevelt Reservation.

**Marron Valley Preserve.** The Marron Valley Preserve consists of approximately 2,600 acres owned and maintained by the City of San Diego Water Department. This area has been designated "Cornerstone Lands" under the City of San Diego

Multiple Species Conservation Program (MSCP) Subarea Plan because it is considered an essential building block for creating a viable habitat preserve system. Much of the area is currently leased by the city for cattle grazing, however as part of its designation as Cornerstone Lands, the city will place conservation easements on portions of the preserve, which then can be used as a Conservation Land Bank and sold as mitigation credits to public entities, public utility/service providers, and private property owners doing projects in San Diego County and needing mitigation (City of San Diego 1997). A small portion of the primary pedestrian fence, Pack Trail access road, and one staging area will be within the Marron Valley Preserve near Boundary Monument 250. An additional staging area to be used during upgrades of Monument 250 Road will also be located within the Preserve, east of Mine Canyon Wash.

**Kuchamaa ACEC<sup>1</sup>.** The Kuchamaa ACEC was established for the protection of Native American religious heritage values, including lands at Tecate Peak and Little Tecate Peak (BLM 1994). The boundary of the Kuchamaa ACEC that encompasses Tecate Peak is approximately 500 feet west of the end of Section A-2A.

### 4.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Constructing the fence and access roads will result in short- and long-term, minor, adverse and beneficial impacts on land use. The severity of the adverse impacts will vary depending on the disruption to land uses and the need for rezoning to accommodate the fence and access road. Short-term, minor, adverse impacts will occur from construction and use of staging areas during the construction. Impacts on land use will vary depending on potential changes in land use and the land use of adjacent properties.

Short-term, minor, adverse impacts due to construction activities and long-term, minor, adverse impacts due to the presence of the primary pedestrian fence and the associated preclusion of use of the affected land will occur on residential land uses. There is no residential land use along Section A-1; however, the eastern end of the impact corridor of Section A-2A will traverse residential land with several structures. Therefore, Section A-2A will affect landowners whose property will be traversed or is adjacent to the impact corridor.

Construction along the border usually requires the government to acquire some interest in the land. The Secretary of DHS is authorized (8 U.S.C 1103) to contract for and buy any interest in land adjacent to or in the vicinity of the international land border when the Secretary deems the land essential to control

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<sup>1</sup> Areas of Critical Environmental Concern (ACECs) were authorized in Section 202(c)(3) of the Federal Land Policy and Management Act of 1976. ACECs are areas where special management attention is needed to protect and prevent irreparable damage to important historic, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards. The ACEC designation indicates that the BLM recognizes that an area has significant values, and establishes special management measures to protect those values (BLM 1994).

and guard the border against any violation of immigration law. The acquisition of land is a negotiable process that will be carried out between USBP and individual landowners on a case-by-case basis.

The fence and access roads will traverse both public and private lands. Construction of the tactical infrastructure will require CBP to acquire various interests in the land. These methods include, among other things, acquiring permanent easements, rights-of-way (ROWs), or outright purchase. The Secretary of Homeland Security has the authority to contract for or buy an interest in land that is adjacent to or in the vicinity of the U.S./Mexico international border when the Secretary deems the land essential to control and guard the boundaries and borders of the United States (8 U.S.C. § 1103(b)).

No long-term changes to land use within the Roosevelt Reservation will occur because this area is designated for border enforcement. However, use of construction staging areas will result in temporary and short-term changes to land use, but upon completion of construction, the staging areas will be rehabilitated and returned to their original condition.

Short-term, minor, indirect, adverse impacts on recreation and open land uses, including the recreation and open space uses of the OMW, Pack Trail, and the Marron Valley Preserve, will occur during construction of Section A-1. These impacts will be short-term and localized to staging and construction areas. Short- and long-term minor adverse impacts on the MSCP will result from the Project as a result of incompatibility with the MSCP. No adverse impacts on recreation will be expected after construction, during operation of the Project. Additional long-term adverse land use impacts could occur if the Project precludes use of some portion of the Marron Valley Preserve as a conservation land bank and incompatible land uses with the MSCP. This impact could be lessened by coordination with the City of San Diego during the land acquisition process, and possibly compensating the city for removal or disturbance of the lands in the land bank.

Long-term, indirect, beneficial impacts on recreational and open space areas will occur as a result of decreased illegal cross-border activity onto the OMW. In addition, by reducing the amount of illegal cross-border activity within and adjacent to the impact corridor, disturbance to lands north of this corridor will be reduced or possibly eliminated.

No impacts will occur on land use of the Kuchamaa ACEC or the Kuebler Ranch Site.

No impacts will occur on the public facility land uses, including the detention and correctional facilities, in the vicinity of the impact corridor.

Within Section A-1, portions of U.S. land will be south of the fence, therefore since this land will be difficult and possibly unsafe to access, its value will decrease substantially.

## 5. VISUAL RESOURCES

### 5.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations associated with visual resources.

Visual resources include both natural and man-made features that influence the visual appeal of an area for residents and visitors. Visual resources can be defined as the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Various Federal Agencies have developed Visual Management programs to assist in the analysis and mitigation of impacts to visual resources resulting from their various activities. Within the Department of the Interior which has overarching responsibility for several Land Management Agencies, to include the Bureau of Land Management (BLM), National Park Service, and the USFWS, CBP has determined that the most appropriate Visual Management system to analyze impacts from the Project has been developed by BLM.

In order to meet its responsibility to maintain the scenic values of public lands, BLM has developed a Visual Resources Management (VRM) system based on human perceptions and expectations in the context of the existing landscape. Different levels of scenic values require different levels of management. Determining how an area should be managed first requires an assessment of the area's scenic values. For management purposes, BLM has developed Visual Resource Classes.

1. *Class I Objective.* The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes but also allows very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
2. *Class II Objective.* The objective of this class is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities are allowed, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. New projects can be approved if they blend in with the existing surroundings and don't attract attention.

3. *Class III Objective.* The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities might attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. New projects can be approved that are not large-scale, dominating features.
4. *Class IV Objective.* The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities can dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of predominant natural features (BLM 1986a).

## 5.2 AFFECTED ENVIRONMENT

As discussed in **Chapter 4**, the majority of the Project will be on Federal lands managed by the BLM. The area surrounding Section A-1 falls into two classes. The OMW is classified as a Class I Visual Resource and the BLM-managed lands surrounding the OMW are designated as a Class III Visual Resource.

Although Section A-2A of the Project is mostly on private property, the area would be designated as a Class III Visual Resource under the BLM VRM system.

To properly assess the contrasts between the existing conditions and the Project, it is necessary to break each down into the basic features (i.e., landform/water, vegetation, and structures) and basic elements (i.e., form, line, color, and texture) so that the specific features and elements that cause contrast can be accurately identified.

General criteria and factors used when rating the degree of contrast are as follows:

- *None.* The element contrast is not visible or perceived.
- *Weak.* The element contrast can be seen but does not attract attention.
- *Moderate.* The element contrast begins to attract attention and dominate the characteristic landscape.
- *Strong.* The element contrast demands attention, cannot be overlooked, and is dominant in the landscape.

When applying the contrast criteria, the following factors are considered:



1. *Distance.* The contrast created by a Project usually is less as viewing distance increases.
2. *Angle of Observation.* The apparent size of a Project is directly related to the angle between the viewer's line-of-sight and the slope upon which the Project is to take place. As this angle nears 90 degrees (vertical and horizontal), the maximum area is viewable.
3. *Length of Time the Project Is In View.* If the viewer can only view the Project for a short period of time, the contrast might not be of great concern. If the Project can be viewed for a long period of time, the contrast could be very significant.
4. *Relative Size or Scale.* The contrast created by the Project is directly related to its size and scale as compared to the immediate surroundings.
5. *Season of Use.* Contrast ratings should consider the physical conditions that exist during the heaviest or most critical visitor-use season, such as snow cover and tree defoliation during the winter, leaf color in the fall, and lush vegetation and flowering in the spring.
6. *Light Conditions.* The amount of contrast could be substantially affected by the light conditions. The direction and angle of light can affect color intensity, reflection, shadow, form, texture, and many other visual aspects of the landscape. Light conditions during heavy periods must be a consideration in contrast ratings.
7. *Recovery Time.* The amount of time required for successful revegetation should be considered. Few projects meet the VRM management objectives during construction activities. Recovery usually takes several years and goes through several phases (e.g., bare ground to grasses, to shrubs, to trees).
8. *Spatial Relationships.* The spatial relationship within a landscape is a major factor in determining the degree of contrast.
9. *Atmospheric Conditions.* The visibility of a Project due to atmospheric conditions such as air pollution or natural haze should be considered.
10. *Motion.* Movements such as waterfalls, vehicles, or plumes draw attention to a Project (BLM 1986b).

### 5.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

The construction activity associated with the Project will result in both temporary and permanent moderate contrasts to both Class I and Class III Visual Resources.

The construction of access roads and fences in a Class I Visual Resource area is a strong contrast to the OMW and also represents a moderate to strong contrast in areas of lesser class designation. The following paragraphs discuss factors that might offset the strong contrasts.

In most areas of Section A-1, the fence will be screened from view by elevation and undulating terrain. **Figure 5-1** displays the degree to which the tactical infrastructure is visible from various trailheads within the OMW. Public viewing is also limited in this area because of low visitation frequency.

In Section A-2A, the fence will connect to an existing fence and patrol roads, which greatly reduces the overall contrast created by the Project. **Figure 5-2** demonstrates that, although visibility is high from certain elevated vantage points (by design for observation of the border), there is limited line of sight from other locations. Line of sight from Tecate Peak appears to be negligible.

Over time, the changes to the landscape caused by construction and repair of access roads will dissipate substantially, therefore reducing the contrast of viewable sections of both sections. Additionally, the presence of the fence will protect the area's natural vistas from continuing degradation by trash, foot trails, and potential wildfires associated with cross-border violators. The illegal grazing of cattle herded into the area by Mexican farmers will also be lessened, therefore reducing the potential for the introduction of unwanted and unsightly invasive species.

There are numerous design techniques and construction practices that can be used to reduce the visual impacts from surface-disturbing projects. These methods will be used in conjunction with BLM's visual resource contrast rating process wherein both the existing landscape and the Project are analyzed for their basic elements of form, line, color, and texture. The design techniques and construction practices include the following:

- Partial clearing of the limits of construction rather than clearing the entire area. Leaving islands of vegetation results in a more natural look.
- Using irregular clearing shapes.
- Feathering/thinning the edges of the cleared areas. Feathering edges reduces strong lines of contrast. To create a more natural look along an edge, a good mix of vegetation species and sizes should be retained.
- Hauling in or hauling out excessive earth cut or fill in sensitive viewing areas.
- Rounding or warping slopes (shaping cuts and fills to appear as natural forms).
- Bending slopes to match existing landforms.
- Retaining existing rock formations, vegetation, and drainage whenever possible.
- Split-face rock blasting (cutting rock areas so that the resulting rock forms are irregular in shape, as opposed to making uniform "highway" rock cuts).

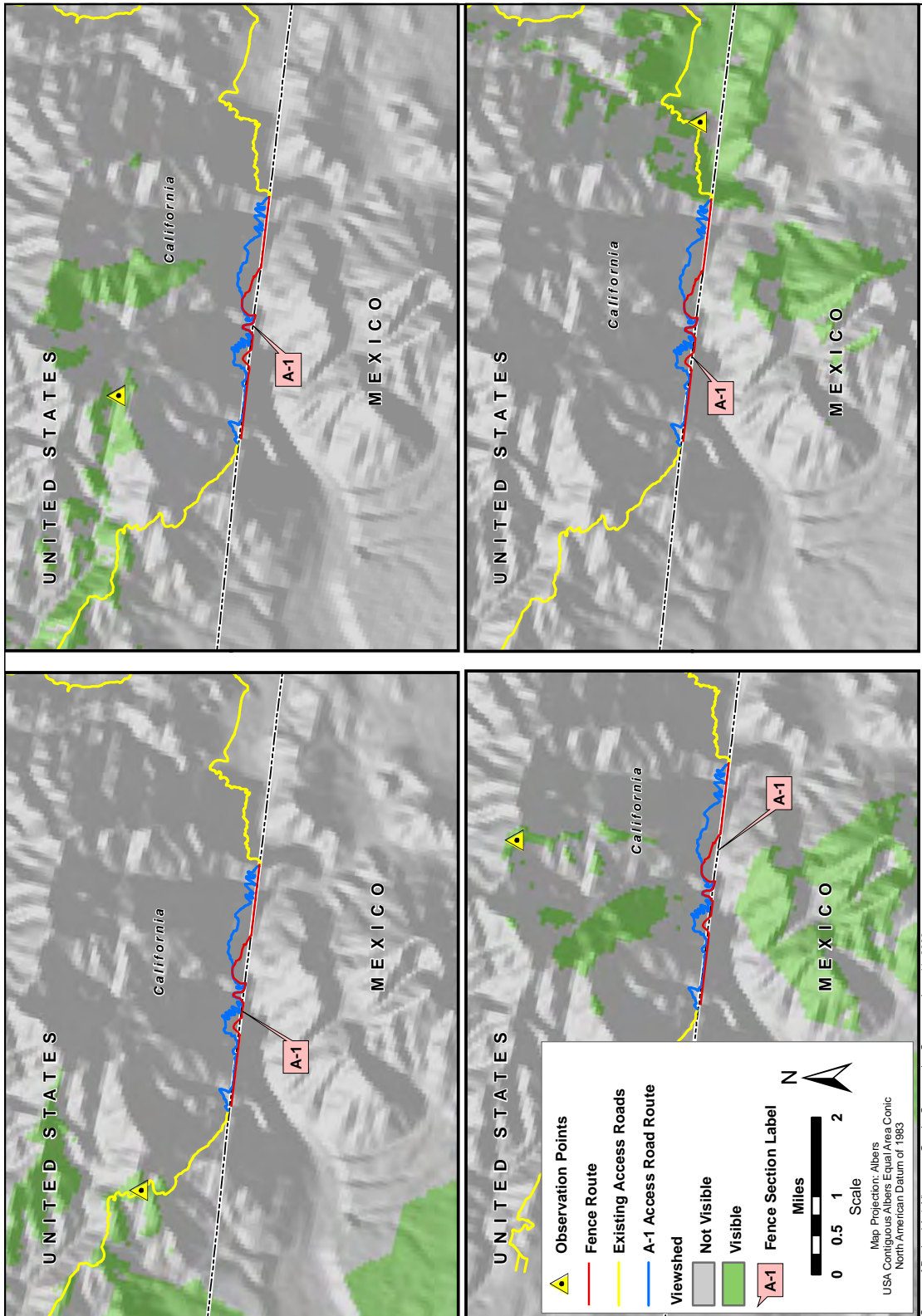


Figure 5-1. Viewsheds Associated with Section A-1

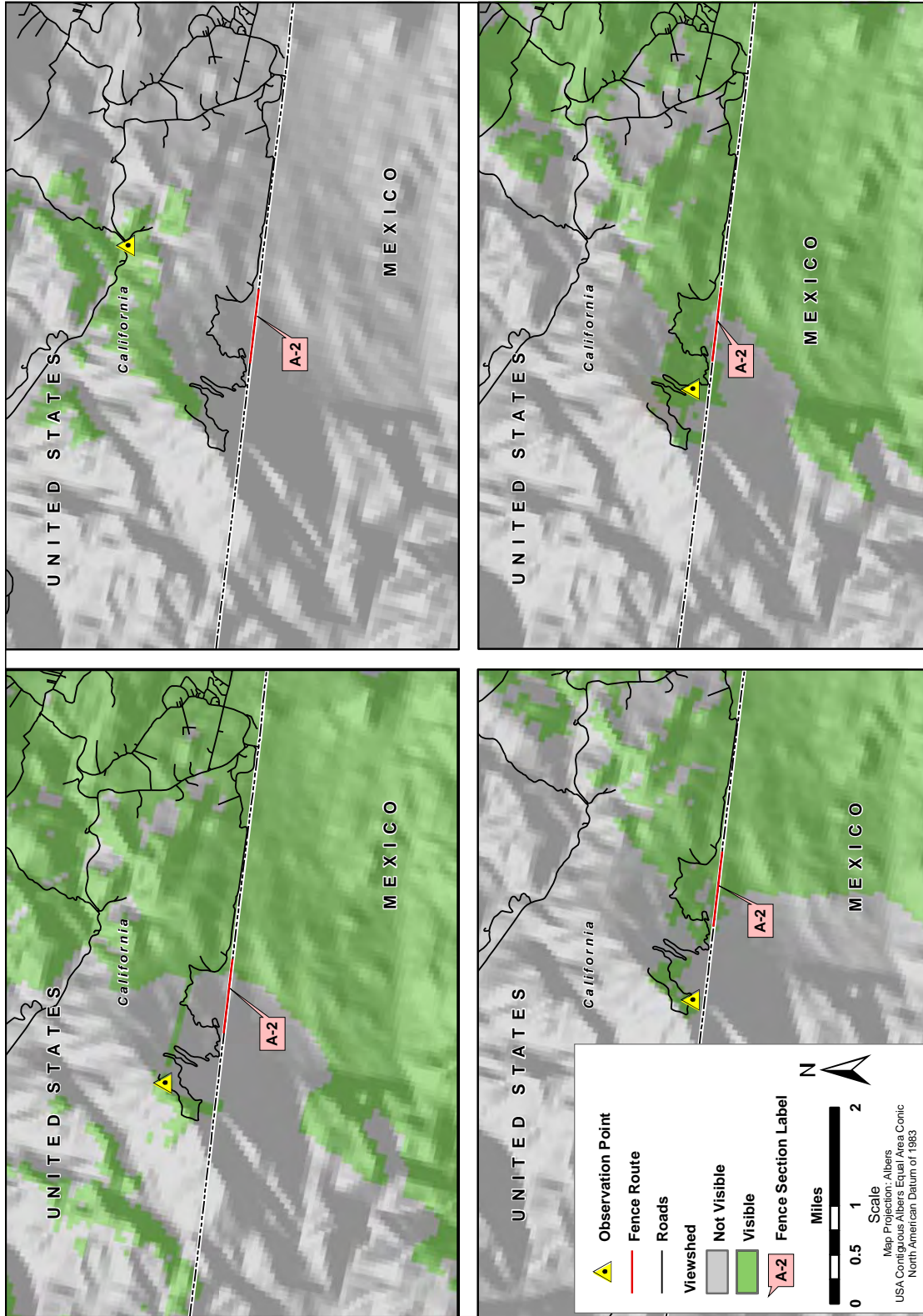


Figure 5-2. Viewsheds Associated with Section A-2A

- Toning down freshly broken rock faces through the use of asphalt emulsions and rock stains.
- Using retaining walls to reduce the amount and extent of earthwork.
- Retaining existing vegetation by using retaining walls, reducing surface disturbance, and protecting roots from damage during excavations.
- Avoiding soil types that will generate strong contrasts with the surrounding landscape when they are disturbed.
- Prohibiting dumping of excess earth and rock on downhill slopes.
- Striping, saving, and replacing topsoil (6-inch surface layer) on disturbed earth surfaces.
- Mulching cleared areas.
- Furrowing slopes.
- Using planting holes on cut-and-fill slopes to retain water.
- Choosing native plant species.
- Fertilizing, mulching, and watering vegetation.
- Replacing soil, brush, rocks, and forest debris over disturbed earth surfaces when appropriate, thus allowing for natural regeneration rather than introducing an unnatural looking grass cover.

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## 6. GEOLOGY AND SOILS

### 6.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations associated with geological and soils resources.

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

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

Site-specific geological resources typically consist of surface and subsurface materials and their inherent properties. Principal factors influencing the ability of geological resources to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), topography, and soil stability.

Soils are the unconsolidated materials overlying bedrock or other parent material. They develop from weathering processes on mineral and organic materials and are typically described in terms of their landscape position, slope, and physical and chemical characteristics. Soil types differ in structure, elasticity, strength, shrink-swell potential, drainage characteristics, and erosion potential, which can affect their ability to support certain applications or uses. In appropriate cases, soil properties must be examined for compatibility with particular construction activities or types of land use.

The Farmland Protection Policy Act (FPPA) and Natural Resources Conservation Service (NRCS) pertain to activities on prime and unique farmland, as well as farmland of statewide and local importance (see 7 Code of Federal Regulations [CFR] Part 658, 5 July 1984). The Visalia sandy loam (5–9 percent slopes) is designated as a prime farmland soil. However, none of the area within the impact corridor is being used for agricultural purposes.

## 6.2 AFFECTED ENVIRONMENT

**Physiography and Topography.** USBP San Diego Sector occupies southeastern San Diego County, California, along the U.S./Mexico international border. The sector is in the Peninsular Range Physiographic Province of California, which is characterized by the northwest-trending Peninsular Range. Specifically, USBP San Diego Sector is in the San Ysidro Mountains, a sub-section of the Laguna Mountains section of the Peninsular Range. The topographic profile of USBP San Diego Sector is characterized by steep slopes. Elevations in USBP San Diego Sector range from about 500 to 1,350 feet above mean sea level (MSL) along Section A-1 and about 1,850 to 2,300 feet above MSL along Section A-2A (TopoZone.com 2007).

**Geology.** USBP San Diego Sector is within the Peninsular Range geomorphic region which consists predominantly of Mesozoic Era metavolcanic, metasedimentary, and plutonic rocks. The Peninsular Range region is underlain primarily by plutonic (e.g., granitic) rocks that formed from the cooling of molten magmas generated during subduction of an oceanic crustal plate that was converging on the North American Plate between 140 and 90 million years ago. During this time period, large amounts of granitic rocks accumulated at depth to form the Southern California Batholith. The intense heat of these plutonic magmas metamorphosed the ancient sedimentary rocks which were intruded by the plutons. These metasediments became marbles, slates, schist, quartzites, and gneiss currently found in the Peninsular Range region (Demere 2007).

**Soils.** Nine soil map units occur in USBP San Diego Sector. Generally, the soils of USBP San Diego Sector are well-drained to excessively drained, have varying permeability, and occur on moderately steep to very steep slopes with the exception of the Riverwash map unit (0–4 percent slopes) and the Visalia sandy loam soil map unit (5–9 percent slopes). The Visalia sandy loam (5–9 percent slopes) was the only soil map unit listed as prime farmland. The soil map units within the impact corridor are classified as nonhydic soils (NRCS 2007). Hydic soils are soils that are saturated, flooded, or ponded for long enough during the growing season to develop anaerobic (oxygen-deficient) conditions in their upper part. The presence of hydic soil is one of the three criteria (hydic soils, hydrophytic vegetation, and wetland hydrology) used to determine that an area is a wetland based on the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987).

The properties of soils identified in USBP San Diego Sector are described in **Table 6-1**. See **Appendix G** for a map of soil units within Section A-1 and Section A-2A.



**Table 6-1. Properties of the Soil Types Found Throughout the Areas of the Project**

<b>Name</b>	<b>Map Unit Symbol</b>	<b>Type</b>	<b>Slope</b>	<b>Drainage</b>	<b>Hydric*</b>	<b>Farmland Importance</b>	<b>Properties</b>
Acid igneous rock land	AcG	NA	15–75 percent	NA	NA	NA	Found on mountain slopes and mountains and parent material consists of acid igneous rock.
Andersen	AuF	Very gravelly sandy loam	9–45 percent	Somewhat excessively drained	No	None	Found on alluvial fans. Permeability is moderately rapid.
Cieneba	CmE2	Rocky coarse sandy loam	9–30 percent	Somewhat excessively drained	No	None	Found on foothills and hills. Permeability is moderately rapid in soil, slower in weathered granite.
Cieneba-Fallbrook	CnE2	Rocky sandy loam	9–30 percent	Somewhat excessively to well-drained	No	None	Found on foothills and hills. Permeability of the Cieneba component is moderately rapid in soil, slower in weathered granite. Permeability of the Fallbrook component is moderately slow.
Cieneba-Fallbrook	CnG2	Rocky sandy loam	30–65 percent	Somewhat excessively to well-drained	No	None	Found on foothills and hills. Permeability of the Cieneba component is moderately rapid in soil, slower in weathered granite. Permeability of the Fallbrook component is moderately slow.

Name	Map Unit Symbol	Type	Slope	Drainage	Hydric*	Farmland Importance	Properties
Metamorphic rock land	MrG	NA	30–75 percent	Excessively drained	NA	NA	Found on mountain slopes and mountains and parent material consists of metasedimentary or metavolcanic rocks.
Riverwash	Rm	NA	0–4 percent	Excessively drained	NA	NA	Found on drainageways and parent material consists of sandy, gravelly, or cobbly alluvium derived from mixed sources.
San Miguel-Exchequer	SnG	Rocky silt loam	9–70 percent	Well-drained	No	None	Found on mountain slopes and mountains. Permeability is moderately to very low.
Visalia	VaC	Sandy loam	5–9 percent	Well-drained	No	Prime	Found on alluvial fans. Permeability is moderately rapid.

Source: NRCS 2007

Notes:

\* No = Not listed as a hydric soil for San Diego County, California

Yes = Listed as a hydric soil for San Diego County, California

NA = Not available

### 6.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

**Physiography and Topography.** Short- and long-term, minor, adverse impacts on the natural topography will occur as a result of implementing the Project. Grading, blasting, contouring, and trenching associated with the installation of the fence and patrol roads will temporarily and permanently impact approximately 102.2 acres for Section A-1 and 7.7 acres for Section A-2A, which could result in minor alterations of the existing microtopography. Any additional topographic alterations associated with the installation of the Project are expected to be minor. Project site will be regraded and contoured following tactical infrastructure installation. This will minimize modifications to existing flood-flow characteristics.

**Geology.** Short- and long-term, negligible to minor adverse impacts on geologic resources will occur at locations where bedrock is at the surface and blasting will be necessary to grade for fence placement or patrol and access road development. Geologic resources will affect the placement of the fence or patrol and access roads due to the occurrence of bedrock at the surface, or as a result of structural instability. In most cases, it is expected that Project design and engineering practices could be implemented to mitigate geologic limitations to site development.

**Soils.** Short- and long-term minor to moderate direct, adverse impacts on soils in USBP San Diego Sector are expected as a result of implementing the Project. Soil disturbance and compaction due to grading, contouring, and trenching associated with the installation of the fence and patrol road will impact approximately 102.2 acres for Section A-1 and 7.7 acres for Section A-2A. It is estimated that approximately 270,000 cy of cut-and-fill disturbance will be required to construct Section A-1 and an estimated 30,000 cy of cut-and-fill disturbance will be required for Section A-2A. Clean soil will be obtained from commercially and economically viable sources. All soil borrow sources will be analyzed to avoid adverse environmental impacts. Displaced soil will be properly stockpiled to prevent erosion and sedimentation and excess soils will be disposed of properly if not utilized during regrading and recontouring activities following installation of the fence. Any necessary disposal sites will be located in areas determined to pose the least potential for adverse erosion and sedimentation impacts and environmental effects on habitat, water quality, and the like. Implemented BMPs consistent with a Storm Water Pollution Prevention Plan (SWPPP) will be utilized to minimize or avoid adverse environmental impacts. In areas where soils have not been previously disturbed by land uses prior to this Project; minor adverse effects on natural soil structure and soil organisms are expected.

CBP will require the construction contractor to prepare EPPs to include a SWPPP with BMPs, and sediment and erosion control plans, for the Project. Increased soil erosion due to the construction activities will be minimized with the implementation of BMPs as established during the development of the SWPPP. Implementing these BMPs will minimize soil erosion impacts in areas of steep

slopes. Soil disturbance on steep slopes has the potential to result in excessive erosion due to instability of the disturbed soils and high runoff energy and velocity. Adverse effects associated with sediments that could potentially be transported from construction sites and deposited in the Tijuana River will be minimized as a result of implementation of the BMPs as established in the SWPPP. Construction activities expected to directly impact the existing soils as a result of grading, excavating, placement of fill, compaction, and mixing or augmentation necessary to prepare the sites for development of the fence sections and patrol roads and associated utility lines will also be avoided or minimized by the proper implementation of the BMPs. Due to the arid climate of the region, wind erosion could potentially impact disturbed soils in areas where vegetation has been removed. However, following construction activities, the areas disturbed will be revegetated with native species to the maximum extent practicable to reestablish native plant communities and help stabilize soils.

Additional soil disturbance could occur during and following construction of the tactical infrastructure. The Visalia sandy loam (5–9 percent slopes) is designated as a prime farmland soil. However, none of the area within the impact corridor in the United States is being used for agricultural purposes. The impact corridor selected for border fence and patrol road development will be linear and limited in extent; therefore, any impacts as a result of the Project to designated prime farmland soils will be considered negligible to minor.

## 7. WATER USE AND QUALITY

### 7.1 HYDROLOGY AND GROUNDWATER

#### 7.1.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Clean Water Act (CWA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for hydrology and groundwater.

Hydrology and groundwater relate to the quantity and quality of the water resource and its demand for various human purposes. Hydrology addresses the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere, and is expressed as water occurrence, distribution, movement, and balances in the ecosystem. Hydrologic characteristics are affected primarily by temperature and total precipitation, evapotranspiration rates, topography which determines rate and direction of flow, and soil and geologic properties which determine the rate of subsurface flow and recharge to the groundwater reservoir. Groundwater consists of subsurface hydrologic resources. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

The Safe Drinking Water Act (SDWA) of 1974 (42 U.S.C. 2011-300) establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. The Project has no potential to affect public drinking water supplies.

#### 7.1.2 Affected Environment

USBP San Diego Sector is in the South Coast hydrologic region of California. This area is characterized by a semiarid climate due to low annual precipitation of 15 to 20 inches (38 to 51 centimeters). Temperatures range from as low as 43 degrees Fahrenheit (°F) in the winter to almost 90 °F in the summer. Due to the semiarid climate, vegetation consists of shrublands which can be sparse. Sparse groundcover in combination with rugged terrain and steep slopes results in rapid runoff velocity and high erosion potential during precipitation events.

In Section A-1, channelized surface runoff flows in two north-to-south flowing intermittent tributaries and several ephemeral drainages that drain into the Tijuana River. The two intermittent tributaries intersect the impact corridor and

drain Copper and Buttewig canyons. The Tijuana River flows east to west parallel to, but outside the impact corridor. The river is predominantly on the Mexican side of the border in the impact corridor. In Section A-2A, surface runoff flows via tributary washes into a north-to-south-oriented intermittent tributary of the Tijuana River, or to the north into Potrero Creek which then flows to the west into Cottonwood Creek. Cottonwood Creek then flows to the south and west and into the Tijuana River.

USBP San Diego Sector is not in the immediate vicinity of any confined groundwater basins in the United States (CADWR 2003). Groundwater is generally present under unconfined, or water-table conditions as is evidenced by the properties of the impact corridor soils. The depth to water table is greater than 80 inches in all soil map units except for in the Riverwash map unit, which occurs in association with the Tijuana River Valley. The water table is at a depth of approximately 60 to 72 inches in the Riverwash soil series. The water-yielding materials in the impact corridor consist primarily of unconsolidated alluvial fan deposits. The consolidated volcanic and carbonate rocks that underlie the unconsolidated alluvium are a source of water if the consolidated rocks are sufficiently fractured or have solution openings (NRCS 2007).

### 7.1.3 Direct and Indirect Effects of the Project

Short- and long-term, minor, direct, adverse impacts on surface hydrology are expected as a result of implementing the Project. Under the Project, blasting, grading, and contouring would be expected to alter the topography and remove vegetation, and stable boulders, cobbles, and gravel which could potentially increase erosion and runoff velocity during heavy precipitation events. Construction activities associated with tactical infrastructure development in Sections A-1 and A-2A will disturb approximately 109.9 acres. EPPs, SWPPPs, and sediment and erosion control plans will be developed and BMPs will be implemented to minimize potential for channel scour and sediment runoff during construction. Revegetating the area with native vegetation following construction is expected to reduce impacts associated with channel and bank scour due to increased erosion.

Placement of the tactical infrastructure across washes on steep slopes could alter the natural hydrological characteristics of the washes and affect their ability to convey flows within the existing channels. The existing channel morphology is expected to adjust to accommodate changes in flow characteristics. The adjustment could result in increased channel scour, shifts in channel alignment, and changes in depositional characteristics of the channels. Analysis of the hydraulics and hydrology characteristics of the washes and incorporation of design features to ensure proper conveyance of flows through the tactical infrastructure will minimize potential for changes in the natural channel characteristics of the washes. The use of freestanding bridges will aid in minimizing changes to flow characteristics of the larger channels. Following construction, periodic maintenance will ensure that flow through the tactical

infrastructure will continue to be conveyed as designed. Maintenance of flow structures will minimize potential for impacts on natural channel morphology and associated downstream effects on water quality and channel flow characteristics.

Water will be required for pouring concrete, for soil compaction associated with cut-and-fill operations, and watering of road and ground surfaces for dust suppression during construction. Because of the remote location of the impact corridor, the drilling of up to two water wells might be required. Once construction is completed, it is likely that both wells will be maintained for fire suppression and operational dust control. Based on 100 gallons of water per cy of cut-and-fill, approximately 35 million gallons of water will be required for soil compaction associated with cut-and-fill operations to accommodate tactical infrastructure development. Additional water will be needed for pouring concrete and dust suppression. Water use associated with implementation of the Project is not expected to affect water supply requirements for municipal or other uses. If it was determined that groundwater resources in the proximity of the tactical infrastructure alignment were not sufficient to accommodate water needs during construction, additional sources of water will be identified and used. Water not lost to evaporation during watering of surfaces during construction will potentially contribute to aquifer recharge through downward seepage.

Implementation of storm water and spill prevention BMPs developed consistent with the SWPPPs, EPPs, and other applicable plans and regulations will minimize potential runoff or spill-related impacts on groundwater quality during construction

## 7.2 SURFACE WATERS, WETLANDS, AND OTHER WATERS OF THE UNITED STATES

### 7.2.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Clean Water Act (CWA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for surface waters, wetlands, and other waters of the United States.

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

Waters of the United States are defined within the Clean Water Act (CWA), as amended, and jurisdiction is addressed by the USEPA and the USACE. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable

waters that are relatively permanent where the tributaries typically flow year-around or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries (USDOJ 2007).

Wetlands and riparian habitats represent some of the most ecologically important and rare vegetation communities on desert landscapes. They provide keystone habitat for a wide array of plant and animal species including resident and migrating birds, amphibian and fish species, mammals, and insects. Vegetation production and diversity are usually very high in and around these mesic to aquatic sites, with many plant species adapted only to these unique environments. In addition, wetlands and riparian zones provide a variety of hydrologic functions vital to ecosystem integrity. These include water filtration of sediment, groundwater recharge, and nutrient/chemical capture (USFS 1995). Development and conversion of wetlands and riparian zones affects wildlife diversity, carrying capacity, and hydrologic regime. Changes to and removal of wetlands can cause effects that are proportionally greater than elsewhere in an ecosystem (Graber 1996).

Wetlands have been defined by agencies responsible for their management. The term “wetland” used herein, is defined using USACE conventions. The USACE has jurisdiction to protect wetlands under Section 404 of the CWA using the following definition:

. . . areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3[b]). Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands have three diagnostic characteristics that include: (1) over 50 percent of the dominant species present must be classified as obligate, facultative wetland, or facultative, (2) the soils must be classified as hydric, and (3) the area is either permanently or seasonally inundated, or saturated to the surface at some time during the growing season of the prevalent vegetation (USACE 1987).

Wetlands are protected as a subset of “waters of the United States” under Section 404 of the CWA. The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands).

## **7.2.2 Affected Environment**

Field surveys were conducted in Sections A-1 and A-2A on January 14 through 16, 2008, to delineate jurisdictional wetlands and other waters of the United States within the impact corridors associated with the fence alignments. Delineations were also conducted along access roads and in staging areas



associated with the fence alignments. Formal delineations were conducted within a 150-foot corridor associated with the fence alignments, 60 feet to either side of the center line of access roads, and within staging areas. Due to revisions of planned access roads in Marron Valley (Section A-1) and near the town of Tecate (Section A-2A), an additional survey was conducted on July 8, 2008. Section A-2 includes wetlands and other waters of the United States delineated within the project corridor associated with the access road alignment near the town of Tecate. WL29 and WL30 in Section A-1 and WL34 through WL41 in Section A-2A are no longer within the project assessment corridors as a result of revision to the access road locations and alignments (see **Table 7-1**).

Determination of the occurrence and extent of jurisdictional wetlands and other waters of the United States was based on the application of procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, Technical Report ERDC/EL TR-06-16 (USACE 2006). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Determination of the extent of jurisdictional washes and other waters of the United States in the impact corridors was based on characterization of the landward extent of the ordinary high water mark (OHM). Indicators used to determine the occurrence and extent of jurisdictional washes included the presence of developed channels, typically 2 feet or greater in width; the occurrence of an OHM; the absence of fine sediments along flow paths; distinct changes in the vegetative assemblage or larger or more dense vegetation than surrounding areas; the presence of cut banks; the presence of litter, debris, or wrack lines; occurrence of desiccation cracks or other indicators of hydrology; and other indicators of the occurrence of intermittent water flow regimes.

All wetlands and other waters of the United States within the impact corridors were delineated.

**Table 7-1** provides the section locations, wetland or other waters of the United States types, delineated acreages, and potential impact acreages in Sections A-1, A-2 and A-2A. The following text provides general descriptions of wetlands and other waters of the United States identified within the impact corridors in Sections A-1, A-2 and A-2A.

**Table 7-1. Delineated Acreages and Potential Acreage of Impacts on Wetlands and Other Waters of the United States**

WL ID	Wetland or Other Waters of the United States Type	Delineated Area (acres)	Potential Impacts (acres)
<b>Section A-1</b>			
WL1	Wash	0.07	0.07
WL2	Wash	0.28	0.24
WL3	Wash	0.25	0.06
WL4	Wash	0.07	0.07
WL5	Wash	0.01	0.01
WL6	Wash	0.22	0.10
WL7	Wash	0.22	0.05
WL8	Wash	0.08	0.05
WL9	Riverine wetland (Copper Canyon)	0.42	0.24
WL10	Riverine wetland (Buttewig Creek)	5.61	0.74
WL11	Wash	0.01	0.01
WL12	Wash	0.01	0.01
WL13	Wash	0.01	0.01
WL14	Wash	0.02	0.02
WL15	Wash	0.19	0.08
WL16	Wash	0.06	0.05
WL17	Wash	0.02	0.02
WL18	Wash	0.01	0.01
WL19	Wash	0.01	0.00
WL20	Wash	0.10	0.08
WL21	Wash	0.44	0.22
WL22	Wash	0.13	0.13
WL23	Emergent seep and stream	0.32	0.02
WL24	Stream	0.72	0.56
WL24A	Stream	0.12	0.01
WL25	Stream	0.47	0.27
WL26	Wash	0.09	0.03
WL27	Wash	0.18	0.15
*WL29	Pond	**0.05	0.00
*WL30	Concrete channel	**0.03	0.00

WL ID	Wetland or Other Waters of the United States Type	Delineated Area (acres)	Potential Impacts (acres)
<b>Section A-1 (continued)</b>			
WL41	Wash	0.10	0.05
WL42	Wash	0.36	0.06
WL43	Wash	0.13	0.04
WL44	Wash	0.44	0.08
WL45	Wash	0.19	0.07
WL46	Wash	0.13	0.05
WL47	Wash	0.09	0.04
WL48	Wash	0.11	0.04
WL49	Wash	0.05	0.03
WL50	Wash	0.05	0.05
WL51	Wash	0.07	0.03
WL52	Wash	0.08	0.08
WL53	Wash	0.08	0.04
WL54	Stream (Dulzera Creek)	0.07	0.05
<b>Section A-2</b>			
WL31	Wash	0.04	0.03
WL32	Wash	0.10	0.08
WL33	Riverine wetland	0.65	0.38
WL55	Riverine wetland	0.09	0.07
WL56	Wash	0.04	0.04
WL57	Wash	0.04	0.02
WL58	Wash	0.04	0.04
<b>Section A-2A</b>			
*WL34	Wash	**0.06	0.00
*WL35	Wash	**0.10	0.00
*WL36	Wash	**0.02	0.00
*WL37	Wash	**0.02	0.00
*WL38	Wash	**0.06	0.00
*WL39	Wash	**0.02	0.00
*WL40	Wash	**0.48	0.00
<b>Totals</b>		<b>15.86</b>	<b>4.68</b>

## Notes:

\* Delineated wetlands or other waters of the United States no longer in the project area.

\*\*Delineated area not added to the total delineated acres.

Based on the field surveys, 35 ephemeral wash channels, 4 non-vegetated intermittent streams, and 3 vegetated wetlands cross, or occur within the fence or access road alignments in Section A-1. The three vegetated wetlands occur in association with streams. Wetlands and other waters of the United States delineated in Section A-1 were designated as WL1 through WL27; WL29 and WL30, which are no longer in the project alignment; and WL41 through WL54.

WL1 is characterized by two ephemeral wash channels that cross under the existing access road (Puebla Tree Road) on the western side of Section A-1. The channels cross under the existing road via culverts and join to form one channel approximately 70 feet downstream of the road.

WL2 through WL8 are ephemeral washes that drain from north to south on steep slopes into the Tijuana River along the fence alignment in Section A-1.

WL9 is a riverine wetland associated with an intermittent stream that flows south across the fence alignment in Copper Canyon. The stream flows into the Tijuana River. Vegetation associated with the wetland is characterized by *Populus fremontii*, *Tamarix ramosissima*, *Salix lasiolepis*, and *Baccharus salicifolia*. WL26 is an ephemeral wash that directs flows from west to east down steep slopes into WL9 within the project area. Vegetation occurring on the banks of the wash within the project area is characterized by *Quercus agrifolia* and *Baccharis salicifolia*.

WL10 is a riverine wetland associated with Buttewig Creek, an intermittent stream that flows south across the fence alignment in Buttewig Canyon. The stream flows into the Tijuana River.

WL11 through WL20 are ephemeral washes that cross the access road (Monument 250 Road) that adjoins the Section A-1 fence alignment on its eastern end. The washes drain from north to south on steep slopes into the Tijuana River.

WL21 and WL22 are ephemeral wash channels within Mine Canyon Wash. The west channel (WL21) is approximately 40 feet wide at the access road crossing and is characterized by a cobble/boulder substrate. Vegetation occurring in the west wash channel is characterized by *Artemisia californica*, *Quercus agrifolia*, *Cupressus forbesii*, and *Baccharis salicifolia*. The east channel (WL22) at the access road crossing is approximately 25 feet wide and is characterized by a sand/gravel/cobble substrate. Vegetation occurring in the east wash channel is characterized by *Malosma laurina* and *Baccharis salicifolia*.

WL23 is characterized by an overbank emergent wetland associated with a narrow unnamed intermittent stream. The emergent component of WL23 occurs at the headwater end of the stream in association with Donahoe Spring. The spring was developed as a water supply in the past, but is in disrepair. Vegetation in the emergent wetland is characterized by *Juncus mexicanus*. The

emergent wetland component pinches out downstream where WL23 is characterized by a narrow intermittent stream. The stream flows north and east, outside of the impact corridor, then under Marron Valley Road where it flows into an unnamed intermittent stream (WL24) that flows south and into Cottonwood Creek. Cottonwood Creek then flows to the southwest and into the Tijuana River.

WL24 is an intermittent stream that drains into Marron Valley. It flows from north to south into Cottonwood Creek, which then flows to the southwest and into the Tijuana River. Marron Valley Road crosses WL24 seven times and is adjacent to it for much of its length. The drainage varies from a relatively shallow cobble or gravelly wash at the north end of its association with Marron Valley Road, to a steep-walled bedrock-lined ravine at the south end. The drainage supports a variety of vegetation communities along its length, including oak woodland, sycamore woodland, and willow scrub, as well as patches of *Typha* sp. and *Juncus mexicanus*. Notable species observed in the drainage include *Tamarix* sp. and *Iva hayesiana*.

WL24a is an ephemeral wash that directs flows from west to east into WL24 just upstream of the confluence of WL23 with WL24.

WL25 is an intermittent stream that flows north to south along Marron Valley Road and into WL 24 just east of the intersection of Marron Valley Road and Otay Mountain Truck Trail. WL25 is crossed by Marron Valley Road three times in the project area. Vegetation occurring in association with WL25 is similar to vegetation occurring in association with WL24.

WL27 is an ephemeral wash that directs flows from west to east into WL25. Vegetation occurring on the banks of the wash within the project area is characterized by *Malosma laurina*, *Eriogonum* sp., and *Selaginella bigelovii*.

WL41 through WL47 are ephemeral washes that drain from west to east on steep slopes, then under Marron Valley Road into WL24.

WL48, WL49 and WL50 are ephemeral washes that drain in a general northeast to southwest direction, under Marron Valley Road, and into WL24 west of Marron Valley Road.

WL51, WL52, and WL53 are shallow ephemeral washes that drain in a general west to east direction, under Marron Valley Road into WL54.

WL54 is Dulzura Creek. Dulzura Creek is an intermittent stream that drains from south to north under Marron Valley Road and along Highway 94. The creek then flows in a general east to west direction and into Jamul Creek, which then flows east into the Lower Otay Reservoir. Within the project area, WL54 occurs in association with woodland characterized by *Quercus agrifolia*, *Platanus racemosa*, *Toxicodendron diversilobum*, *Bromus diandrus*, *Bromus rubus*, and *Avena* sp. Some *Fraxinus velutina* and *Salix* sp. also occurs in association with

the intermittent stream. The channel is approximately 10 feet across at base and is characterized by a sand/gravel/cobble substrate.

Wetlands and other waters of the United States identified in Section A-2 include 5 ephemeral washes and 2 riverine wetlands associated with intermittent streams. Wetlands and other waters of the United States delineated in Section A-2 were designated as WL31 through WL33 and WL55 through WL58.

WL31 and WL32 are ephemeral washes that cross under the west branch of the access road to the western end of the Section A-2 fence. WL31 drains west to east and WL32 drains northwest to southeast down steep side slopes associated with Tecate Peak. The two washes join down slope and to the east of the access road, then continue to direct flows to the southeast and into WL33 just south of the border in Mexico.

WL33 is characterized by a riverine wetland associated with an intermittent stream and tributary ephemeral wash that drain to the south into Mexico. WL33 crosses under the access road and the A-2 fence alignment near its eastern end. The intermittent stream associated with WL33 flows over a rock ledge then levels out just prior to flowing into Mexico. Vegetation associated with the riverine wetland component of WL33 is characterized by *Arundo donax*, *Salix goodingii*, *Ambrosia psilostachya*, and *Vinca major*.

WL55 is characterized by a riverine wetland associated with an intermittent stream that drains north to south under Tecate Mission Road, and dissipates near the US/Mexico border. Vegetation associated with the riverine wetland component of WL55 is characterized by *Salix lasiolepis*, *Salix goodingii*, and *Baccharis salicifolia*. Other species characterizing the banks of the intermittent stream include *Quercus agrifolia*, *Toxicodendron diversilobum*, *Datura stramonium*, *Hirschfeldia incana*, and *Baccharis sarothroides*. There is a bridge structure that crosses WL55 on the existing road alignment.

WL56 is an ephemeral wash that directs flows from a culvert, south across the proposed access road, and then appears to end at the existing US/Mexico border fence at the town of Tecate. North of the culvert the drainage is characterized as a broad sandy wash approximately 25 feet wide. Vegetation characterizing the banks of the wash includes some *Tamarix* sp. and *Baccharis sarothroides*. South of the culvert and north of the access road the drainage narrows to 3 feet wide and vegetation on the banks is characterized by *Salix goodingii*.

WL57 is an ephemeral wash that directs flows south across the access road. The wash channel widens then becomes indistinct before crossing the access road. The wash directs flows to the south into Mexico.

WL58 is an ephemeral wash that directs flows south across the access road and into Mexico. There is a concrete pad across the unpaved access road at the wash crossing to prevent erosion.

**Surface Water Quality.** The Tijuana River Watershed has been used as a wastewater conduit for several decades and recurring problems due to raw sewage overflows from Mexico continue to occur and are being addressed using cross-border efforts. The *FY 2005-2006 Tijuana River Watershed Urban Runoff Management Program* prepared by San Diego County and the cities of San Diego and Imperial Beach indicated that several high priority constituents of concern (COCs) such as bacterial indicators (total/fecal coliform and enterococcus), the pesticide Diazinon, and total suspended solids (TSS)/turbidity have consistently had the highest occurrence in the Tijuana River Watershed since 2002. They occur in the upper and lower reaches of the watershed. The nutrients ammonia and phosphorus have a medium frequency of occurrence and methylene blue active substances and copper have a low frequency of occurrence in the watershed (SeaWorld Inc. 2007). **Table 7-2** identifies the potential sources of COCs.

**Table 7-2. Potential Sources of COCs**

COC	Frequency of Occurrence in Watershed	Potential Sources of Contamination
Bacterial Indicators (total/fecal coliform and enterococcus)	High	Domestic animals, sewage overflow, septic systems, wildlife
Pesticides (Diazinon)	High	Agriculture, commercial and residential landscaping, industrial waste
TSS/Turbidity	High	Agriculture, grading/construction, slope erosion
Nutrients (ammonia and phosphorus)	Medium	Agriculture, sewage overflow, septic systems
Organic Compounds	Low	Agriculture, commercial and residential landscaping, sewage overflow, septic systems
Trace Metals (copper)	Low	Automobiles, industrial waste

Source: SeaWorld Inc. 2007

### 7.2.3 Direct and Indirect Effects of the Project

Minor short- and long-term impacts on wetlands and other waters of the United States in Section A-1 are expected. Based on field surveys, 35 ephemeral wash channels, 4 non-vegetated intermittent streams, and 3 vegetated wetlands cross, or occur within the fence or access road alignments in Section A-1. The three vegetated wetlands occur in association with streams.

Placement of tactical infrastructure adjacent to wetlands and across wash channels or streams will result in potential short-term impacts on the wetlands and other waters of the United States as a result of land disturbance and

associated erosion and sedimentation. Erosion and sediment controls and storm water management practices (discussed below) will be implemented during construction to minimize potential for adverse effects on wetlands adjacent to the tactical infrastructure alignment and to the washes or streams crossed by the alignment. Long-term effects are expected as a result of the placement of fill associated with construction of the fence, new patrol or access roads, or upgrades to existing patrol or access roads. Placement of the tactical infrastructure across washes on steep slopes could also alter the natural hydrological characteristics of the washes and affect their ability to convey flows within the existing channels. The existing channel morphology is expected to adjust to accommodate changes in flow characteristics. The adjustment could result in increased channel scour, shifts in channel alignment, and changes in depositional characteristics of the channels. Analysis of the hydraulics and hydrology of the washes and incorporation of design features to ensure proper conveyance of flows through the tactical infrastructure will minimize potential for changes in the natural channel characteristics of the washes. The use of freestanding bridges will aid in minimizing changes to flow characteristics of the larger channels. Following construction, periodic maintenance will ensure that flow through the tactical infrastructure will continue to be conveyed as designed. Maintenance of flow structures will minimize potential for impacts on natural channel morphology and associated downstream effects on water quality and channel flow characteristics. Maximum acreages of direct impacts on wetland and other waters of the United States in Section A-1 are provided in **Table 7-1**. Impacts on the wetlands and washes will be avoided to the maximum extent practicable.

Minor short- and long-term impacts on wetlands and washes in Section A-2 are expected. The primary pedestrian fence will extend approximately 0.7 miles to the west of the existing fence at Tecate. The access road in Section A-2 follows Tecate Mission Road from east to west, then an unimproved road adjacent to the border to the east end of the new fence alignment. The access road then follows an existing unimproved road up steep slopes to the west end of the fence section at Tecate Peak. The fence and access roads cross 5 ephemeral wash channels and two riverine wetlands associated with intermittent streams in Section A-2.

Impacts associated with the placement of tactical infrastructure adjacent to wetlands and across wash or stream channels in Section A-2 will be similar to those discussed for Section A-1. Maximum acreages of direct impacts on wetlands and other waters of the United States in Section A-2 are provided in **Table 7-1**. Impacts on the wetlands and washes will be avoided to the maximum extent practicable and mitigation determined necessary to offset unavoidable impacts will be implemented.

Implementation of the Project is expected to have minor, short-term adverse effects on surface water quality as a result of potential erosion and associated transport of sediments into downstream surface waters. Proper engineering practices, erosion and sediment controls, and storm water BMPs will be



implemented during and after construction to reduce potential adverse impacts on water quality associated with erosion and sedimentation. CBP will require the construction contractor to prepare EPPs to include a SWPPP with BMPs, and sediment and erosion control plans, for the Project.

Adverse effects on jurisdictional wetlands, washes, and other waters of the United States will be avoided and minimized to the maximum extent practicable. In addition, impacts on water quality will be avoided and minimized. Coordination with the USACE Los Angeles District, San Diego Office, and the California State Water Control Board will continue to ensure minimization of adverse effects on water quality, and wetlands and other waters of the United States in Sections A-1 and A-2. Appropriate mitigation will be developed and implemented.

## **7.3 FLOODPLAINS**

### **7.3.1 Definition of the Resource**

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Clean Water Act (CWA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for floodplains.

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

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

recreational and preservation activities, to reduce the risks to human health and safety.

### **Section A-1**

Section A-1 is addressed in the September 29, 2006, FEMA Flood Insurance Rate Map (FIRM) Panel No. 06073C2225F for San Diego County, California. This panel has a Zone D designation and has not been printed. Zone D is used to classify areas where there are possible but undetermined flood hazards. In areas designated as Zone D, no analysis of flood hazards has been conducted (FEMA 2006). During the 2007 survey (see **Appendix D**), it was determined that Section A-1 will cross two riparian corridors associated with Copper Canyon and Buttewig Canyon. Though intermittent and incised in the impact corridor, these riparian crossings might have associated floodplains.

### **Section A-2A**

According to the June 19, 1997, FEMA FIRM Panel No. 06073C2250F for San Diego County, California, Section A-2A is located in Zone X or “areas determined to be outside the 500-year floodplain” (FEMA 1997).

## **7.3.2 Direct and Indirect Effects of the Project**

During the 2007 biological survey to support this ESP (see **Appendix D**), it was observed that Section A-1 would cross intermittent washes associated with Copper and Buttewig canyons. Based on field observations, these intermittent washes might have narrow associated floodplains. Analysis using FEMA FIRMs was inconclusive. This panel has not been printed due to its Zone D designation. Zone D is used by FEMA to designate areas where there are possible but undetermined flood hazards. In areas designated as Zone D, no analysis of flood hazards has been conducted (FEMA 2006). Prior to construction, hydraulic modeling would be conducted to determine impacts on floodplains.

No impacts associated with the 100-year or 500-year floodplains are expected as a result of the construction of Section A-2A. According to the FEMA FIRM Panel No. 06073C2250F for San Diego County, California, Section A-2 is in Zone X or “areas determined to be outside the 500-year floodplain.” However, Section A-2 would cross an intermittent tributary of the Tijuana River with potential for minor adverse effects associated with erosion and sedimentation in the event of a high-volume storm event or flooding during site construction. Properly designed erosion and sediment controls and storm water management practices implemented during construction activities would minimize potential for adverse impacts.

## 8. BIOLOGICAL RESOURCES

### 8.1 VEGETATION

#### 8.1.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations associated with vegetation resources.

Vegetation resources include native or naturalized plants and serve as habitat for a variety of animal species. Wetlands are discussed in **Chapter 7**. This section describes the affected environment for native and nonnative vegetation to support the discussion of potential impacts on those resources. This analysis is based on site surveys conducted in October 2007 through January 2008. The fence and patrol road alignments were revised in June 2008 and additional surveys were conducted of the new areas impacted by the revised corridor. More detailed information on vegetation resources, including descriptions of vegetation classifications, species observed, and the survey methodology is contained in the Biological Survey Report prepared to support this ESP (see **Appendix D**).

#### 8.1.2 Affected Environment

The impact corridor and associated access roads are on Otay Mountain (Section A-1) and the southeastern side of Tecate Peak (Section A-2). Both of these mountains are widely considered by botanists to be islands for endemic plants (plants with very restricted ranges). The large numbers of locally endemic species combined with more common species creates both unique vegetation assemblages and an unusually high diversity of plant species.

The Jepson Manual (Hickman 1996) describes California vegetation using combined features of the natural landscape including vegetation types, plant communities, geology, topography, and climatic variation. The Jepson Manual places the impact corridor in the California Floristic Province, Southwestern California Region and the Peninsular Ranges Subdivision. A Flora of San Diego County (Beauchamp 1986) describes plants occurring in the impact corridors as belonging to the Otay Mountain Floral district. This assemblage consists of very restricted plants occurring on peaks of cretaceous metavolcanic rock in an island-like fashion, with intervening areas covered by grasslands, sage scrub, and chamise chaparral.

NatureServe (2007) defines ecological systems as representing recurring groups of biological communities that are found in similar physical environments and are influenced by similar ecological processes such as fire or flooding. Ecological systems represent classification units that are readily identifiable by conservation and resource managers in the field. “Natural Communities Descriptions” (Holland 1986) incorporated a combination of abiotic factors, species composition, and geographic ranges to describe natural communities. The Holland descriptions are the most commonly used descriptions in San Diego County and the basis for vegetation analyses in all of the regional habitat management plans. A Manual of California Vegetation (Sawyer and Keeler-Wolf 1995) defines a quantitative approach to the vegetation classification in California. These quantitative descriptions are more commonly used in other parts of the State of California, outside of San Diego County.

The following vegetation associations found in the impact corridors were prepared with the intent of bridging all three classification systems. **Table 8-1** provides translation between the differing systems, and a framework for the vegetation discussed in this section. The Holland system will be used for the vegetation discussions within this section. **Appendix D** shows the location of the habitats in Section A-1 and Section A-2, and portions of the respective access roads. Access roads discussed within this section are also identified in **Figures 1-1** and **1-2**.

**Southern mixed chaparral** is defined as a tall chaparral without any single species dominating the habitat. The southern mixed chaparral found near Sections A-1 and A-2A is typically dominated by some combination of the following shrubs: chamise (*Adenostema fasciculatum*), lilac (*Ceanothus sp.*), laurel leafed sumac (*Malosma laurina*), mission manzanita (*Xylococcus bicolor*), chaparral pea (*Pickeringia montana*), or scrub oak (*Quercus sp.*). The understory usually consists of common rock rose (*Helianthemum scoparium*) and deerweed (*Lotus scoparius*). Southern mixed chaparral is the second most abundant habitat within the Sections A-1 and A-2A. In Section A-2A it is primarily found along the access roads. In Section A-1 the southern mixed chaparral is found throughout the fence corridor and access roads.

**Mafic southern mixed chaparral** is similar to southern mixed chaparral, but a significant component of the chaparral consists of species with restricted ranges or soils. The dominant species in the mafic chaparral areas near Section A-1 are southern mountain misery (*Chamaebatia australis*), chaparral pea (*Pickeringia montana*), Otay lilac (*Ceanothus otayensis*), Ramona lilac (*Ceanothus tomentosus*), and yerba santa (*Eriodictyon trichocalyx*). Additionally Otay manzanita (*Arctostaphylos otayensis*), Cleveland's sage (*Salvia clevelandii*), Cedros island scrub oak (*Quercus cedrosensis*), and wooly blue curls (*Trichostema lanatum*) often are found in abundance within the habitat. Mafic southern mixed chaparral was not observed near Section A-2. This habitat

**Table 8-1. Vegetation Communities Observed During Biological Surveys  
(Equivalencies Between Systems)**

NatureServe	Holland	Sawyer & Keeler-Wolf
Southern California Dry Mesic Chaparral CES206.930	Southern Mixed Chaparral 37120	Chamise-Mission Manzanita-Woollyleaf Ceanothus Series
Southern California Dry Mesic Chaparral CES206.930	Southern Mixed Chaparral 37120	Scrub Oak Series
Southern California Dry Mesic Chaparral CES206.930	Mafic Southern Mixed Chaparral 37122	Chamise-Mission Manzanita-Woollyleaf Ceanothus Series
Southern California Coastal Scrub CES206.933	Diegan Coastal Sage Scrub 32500	California Encelia Series
Southern California Coastal Scrub CES206.933	Diegan Coastal Sage Scrub 32500	California Sagebrush- California Buckwheat Series
Southern California Coastal Scrub CES206.933	Diegan Coastal Sage Scrub 32500	California Buckwheat- White Sage Series
<i>Baccharis salicifolia</i> riparian shrubland CEGL003549	Mulefat scrub 63310	Mulefat Series
<i>Quercus agrifolia/Toxicodendron diversilobum</i> woodland CEGL002866	Southern Coast Live Oak Riparian forest 61310	Coast Live Oak Series
California maritime chaparral CES206.929	Whitethorn chaparral 37532	Chaparral Whitethorn Series
<i>Bromus herbaceus</i> alliance A.1813	Nonnative grassland 42200	California Annual Grassland Series
<i>Adenostema fasciculatum</i> shrubland CEGL002924	Chamise Chaparral 37200	Chamise Series
No equivalent	Southern Interior Cypress Forest 83330	Tecate Cypress Stand
No equivalent	Disturbed 11300	No equivalent
No equivalent	Landscaped 12000	No equivalent
No equivalent	Developed 12000	No equivalent
California Central Valley and Southern Grassland CES206.942	Valley Needle Grassland 42110	Foothill Needlegrass Series
Burned Riparian Scrub N/A	Burned Riparian Scrub N/A	Burned Riparian Scrub

occurs along the Otay Truck Trail access road, fence route, staging areas, and patrol road in Section A-1. This habitat is one of the vegetation types associated with the rare and unusual vegetation for which the OMW is known.

**Diegan coastal sage scrub** was observed throughout the impact corridors. This was the second most common habitat observed near Sections A-1 and A-2. It is most common at the lower elevations and in areas of past disturbance. Coastal sage scrub is a low-growing habitat that rarely exceeds 4 feet in height. The coastal sage scrub species dominant in the impact corridors are San Diego sunflower (*Viguiera laciniata*), flat-topped buckwheat (*Eriogonum fasciculatum*), deerweed (*Lotus scaprius*), and coastal sage (*Artemisia californica*). In Section A-1 large areas of coastal sage scrub occur at the low elevations along Otay Mountain Truck Trail and Marron Valley Access Roads and along the fence alignment of Section A-2A. Coastal sage scrub is less abundant in the Section A-2A fence corridor and at the eastern end of the Section A-2A access road.

**Mulefat scrub** is found in the bottom of the Puebla Tree drainage/Wild Bill's Draw. The mulefat scrub found within the impact corridor is dominated by a combination of mulefat (*Baccharis salicifolia*) and San Diego marsh elder (*Iva hayesiana*). There are few willows in these areas. Mulefat scrub also occurred in the drainage along Marron Valley Road prior to the recent wildfires.

**Southern coast live oak riparian forest** is found along the larger drainages in the impact corridors. Southern coast live oak woodlands were observed patchily along every portion of the impact corridor except for the Otay Mountain Truck Trail access road. The canopy of this habitat can be either open or closed coast live oaks (*Quercus agrifolia*) intermixed with a diverse riparian understory. Willows, mulefat, and other more mesic plant species are found among the oak trees. The bottoms of Copper, Buttewig, and Mine canyons all supported this habitat. Southern coast live oak riparian forest is common along Marron Valley Road where the road parallels tributaries of Dulzura and Cottonwood creeks. A small unnamed drainage on the eastern edge of the Tecate fence segment and another one at the eastern end of the Tecate Access road support southern coast live oak woodlands.

**Whitethorn chaparral** is dominated by the whitethorn lilac (*Ceanothus leucodermis*). This habitat was observed in the rocky outcrops at the west end of Section A-2. This occurrence had burned in 2005 and was recovering. Wild oats had invaded the area after the fire and were a codominant species. The Matillija poppy (*Romneya coulteri* var. unk.) is abundant in this habitat.

**Nonnative grassland** is a nonnative naturalized habitat that sometimes requires mitigation when impacted. Nonnative grasslands differ from disturbed areas due to being predominantly vegetated with exotic forbs or grasses. Areas of nonnative grassland can differ significantly in their appearance and species composition. The nonnative grassland areas within the area are dominated by wild oats (*Avena* sp.) and bromes. A large area of nonnative grassland occurs

near the west end of Section A-2. There are also areas of nonnative grasslands along Marron Valley Road and at Kuebler Ranch along the western end of Otay Mountain Truck Trail access road.

**Chamise chaparral** in the impact corridors is similar to southern mixed chaparral, but dominated by the shrub species, chamise (*Adenostema fasciculatum*). Chamise chaparral typically is less diverse than similar chaparral-type habitat. Common Rock rose (*Helianthemum scoparium*) and ashy spike moss (*Selaginella cinerescens*) are typical understory plants in chamise chaparral. This habitat was observed along Section A-1. One patch of chamise chaparral occurs along the access road for Section A-2.

**Southern interior cypress forest** in the form found on Section A-1 is a nearly endemic habitat to San Diego County, and the largest Tecate cypress (*Cupressus forbesii*) stands in the county occur here. The habitat is dominated by Tecate cypress, which when fully mature can reach approximately 30 feet in height. The series of recent wildfires (i.e., 1996, 2003, 2005, and 2007) have left only about 80 acres of mature stands of Tecate cypress in San Diego County. A handful of mature trees occur immediately along the Otay Mountain Truck Trail. The understory of Tecate cypress stands are usually very depauperate of species, but what few species occur there are often rare, including the Otay lotus and Gander's pitcher sage. The largest area of cypress forests are found along the Otay Mountain Truck Trail Access Road. Small stands of Tecate cypress (not mapped as cypress forest) can be found in the drainages along Section A-1.

**Valley Needle** Grasslands are usually found in clay soils and often are associated with rare species of plants. There are typically coastal sage scrub species scattered throughout most healthy valley needle grasslands. Very few pure stands of native grasslands remain, and most are at least partially dominated by exotic grasses and forbes. The Valley Needle Grasslands found in the impact corridor are partially disturbed. This habitat is found along the Marron Valley access road to Section A-1.

**Burned Riparian Scrub** is a description used for this specific Project and not found in the habitat classification manuals. This habitat defines areas that are clearly riparian in nature, but burned so much that there is not enough vegetation to identify the habitat type. Generally these are riparian habitats without trees. Mulefat scrub, southern willow scrub, and other riparian vegetation were likely present before a fire. After a fire it is uncertain what habitats will appear in these areas. This habitat is found in drainages along the Marron Valley Access Road for Section A-1.

**Disturbed** areas lack native vegetation and show evidence of soil disturbance. Disturbed areas were observed on Kuebler Ranch at Alta Road, along the Tecate access road, and along Marron Valley Road including the staging area east of Mine Canyon.

**Landscaped** areas are areas where exotics have been planted near existing residences. Two residential properties within Section A-2A impact corridor have landscaping. Several residences along Marron Valley Road also have landscaping (these were mapped as undifferentiated exotic habitat).

**Developed** areas are constructed, paved, or concreted, with no remaining habitat values. While not technically distinct from landscaping it is a useful distinction to make in planning. There is a set of buildings on Kuebler Ranch which qualifies as developed. The western edge of Tecate along the eastern edge of the Section A-2A access road is also developed.

A recent wildfire (October 2007) burned through portions of the Section A-1 and all of Section A-2A areas during the field survey. Prior to the wildfire, field work had been completed for Section A-2A but not the associated staging area and access road. Field work had also been completed for all but approximately one-half mile of Section A-1. The surveys also were completed for the part of the Monument 250 Road, and approximately one-quarter mile of the very eastern part of the access along the Puebla Tree Spur to Otay Mountain Truck Trail. After the wildfires the entire Section A-2A area had burned as well as the Marron Valley access road for Section A-1. The remainder of the Puebla Tree Spur to Otay Mountain Truck Trail, and the remaining accessible portions of Section A-1 had not burned and were surveyed.

Even before the recent fire, the vegetation in the impact corridors was recovering from prior wildfires (1996, 2003, and 2005). The vegetation recovery from past wildfires had been slowed by drought conditions in San Diego County. All vegetation types occurring in the impact corridor are impacted by foot traffic from illegal border crossings. The severity of impacts on the vegetation varies considerably. All areas along the fence portion of Section A-1 show signs of impacts from illegal cattle and horse grazing. Prior burns, drought, border activity, and grazing have degraded much of the vegetation in Section A-1. Most of the upland habitats are heavily grazed and in poor condition. The vegetation along the drainage edges and the canyon bottoms appear to be thriving even with the environmental stress.

Two kinds of existing impacts from border activities are physically evident. The first activity is the access roads used by the border patrol, which are bare of vegetation. The second impact is the large number of informal overlapping footpaths stretching north from the border. The areas most heavily impacted by footpaths have more than 10 parallel paths within approximately 100 feet. Other areas have as few as one trail approximately every 100 feet.

The vegetation near Section A-2A is not impacted by grazing. This area shows signs of recovering from recent wildfires and impacts from illegal cross-border activities. There are existing dirt access roads and numerous footpaths running south to north. Near the western end of the existing fence there is a disturbed coast live oak riparian forest associated with an unnamed drainage. This riparian



area is in poor condition due to a farmhouse creating disturbance and a large number of exotic species amongst the oak trees. Additional information on existing vegetation can be found in **Appendix D**.

A total of 205 species of plants were observed in the Section A-1 area during the biological surveys conducted for this Project, and 89 species were observed in the Section A-2A area (see **Table 8-2**). Botanical surveys were done in October 2007 through February 2008. Additional areas were surveyed in June 2008 on the revised alignment. For species not observable during the surveys, habitat was assessed for their potential to occur. The plant species assessed included all potential State- and Federal-listed species, MSCP covered plant species and species from the 2004 BLM sensitive species list to the area.

### 8.1.3 Direct and Indirect Effects of the Project

Construction of Sections A-1 and A-2A will impact vegetation resources. Impacts from construction of Section A-1 include cut-and-fill required to build the fence and a permanent impact area adjacent to the fence. The total permanent impact on vegetation from fence construction is expected to be 20 acres. Five types of habitat will be adversely impacted by the construction of Section A-1 (see **Table 8-3**). Thirteen of the 20 acres will be southern mixed chaparral.

The Section A-1 patrol road will deviate from the fence where topography does not allow for construction of both adjacent to each other. Permanent impacts from the patrol road include a 24-foot-wide road and required cut-and-fill areas. The impacts described here are only for those areas that do not overlap impacts from fence construction. Approximately 60 acres of vegetation will be permanently impacted by construction of the patrol road (see **Table 8-3**). An additional 22.5 acres of temporary impacts will occur from the use of staging areas.

The maximum potential impact from possible improvements and use of Otay Mountain Truck Trail and Marron Valley Road as access roads is 103.2 acres of habitat, nearly half of which is Diegan Coastal Sage scrub.

Construction of the Section A-2A fence and patrol road will impact approximately 5.7 acres of habitat. An additional 2 acres will be temporarily impacted for the Section A-2A staging area. Up to 34.5 acres might be impacted by possible improvements to Tecate Mission Road for access.

The construction, operation, and maintenance of tactical infrastructure in Sections A-1 and A-2A has the potential to permanently impact up to 215.9 acres of vegetation, 7.5 acres of unvegetated or landscaped areas, and temporarily impact an additional 24.5 acres of vegetation. Potential benefits of the Project will occur from reduced foot traffic across Sections A-1 and A-2. The Project will reduce the potential risk of fire frequency by reducing the number of people

Table 8-2. Plant Species Observed During Biological Surveys

Scientific Name	Common Name	Family	A-1	A-2
<i>Achnatherum coronatum</i>	Giant ricegrass	Poaceae	X	X
<i>Acourtia microcephala</i>	Sacapellote	Asteraceae		X
<i>Adenostoma fasciculatum</i>	Chamise	Rosaceae	X	X
<i>Ageratina adenophora</i>	Sticky snakeroot	Asteraceae	X	
<i>Ambrosia psilostachya</i>	Cuman ragweed	Asteraceae	X	X
<i>Arctostaphylos glauca</i>	Bigberry manzanita	Ericaceae	X	
<i>Arctostaphylos otayensis</i>	Otay manzanita	Ericaceae	X	
<i>Artemisia californica</i>	Coastal sagebrush	Asteraceae	X	X
<i>Arundo donax</i>	Giant reed	Poaceae	X	X
<i>Asclepias fascicularis</i>	Mexican whorled milkweed	Asclepiadaceae	X	
<i>Atriplex semibaccata</i>	Australian saltbush	Chenopodiaceae	X	
<i>Avena sp.</i>	Oat	Poaceae	X	X
<i>Baccharis salicifolia</i>	Mulefat	Asteraceae	X	
<i>Baccharis sarothroides</i>	Desertbroom	Asteraceae	X	X
<i>Bassia scoparia</i>	Burningbush	Chenopodiaceae	X	
<i>Bebbia juncea</i>	Sweetbush	Asteraceae	X	
<i>Bloomeria crocea</i>	Common goldenstar	Liliaceae	X	
<i>Bothriochloa barbinodis</i>	Cane bluestem	Poaceae	X	
<i>Brassica nigra</i>	Black mustard	Brassicaceae	X	
<i>Brickellia californica</i>	California brickellbush	Asteraceae	X	X
<i>Brodiaea sp.</i>	Brodiaea	Liliaceae	X	
<i>Bromus diandrus</i>	Ripgut brome	Poaceae	X	X
<i>Bromus hordeaceus ssp. hordeaceus</i>	Soft brome	Poaceae	X	
<i>Bromus madritensis</i>	Compact brome	Poaceae	X	X
<i>Bromus rubens</i>	Red brome	Poaceae		X
<i>Bromus sp.</i>	Brome	Poaceae	X	
<i>Calandrinia ciliata</i>	Fringed redmaids	Portulacaceae	X	
<i>Calochortus sp.</i>	Mariposa lily	Liliaceae	X	
<i>Calochortus weedii</i>	Mariposa lily	Liliaceae	X	
<i>Calystegia macrostegia</i>	Island false bindweed	Convolvulaceae	X	X
<i>Camissonia sp.</i>	Suncup	Onagraceae	X	
<i>Carex spissa</i>	San Diego sedge	Cyperaceae	X	X
<i>Castilleja sp.</i>	Indian paintbrush	Scrophulariaceae	X	X
<i>Caulanthus sp.</i>	Wild cabbage	Brassicaceae	X	
<i>Ceanothus leucodermis</i>	Chaparral whitethorn	Rhamnaceae		X
<i>Ceanothus tomentosus</i>	Woolyleaf ceanothus	Rhamnaceae	X	
<i>Ceanothus xotayensis</i>	Otay Mountain	Rhamnaceae	X	

Scientific Name	Common Name	Family	A-1	A-2
	ceanothus			
<i>Centaurea melitensis</i>	Maltese star-thistle	Asteraceae	X	X
<i>Ceratonia sp.</i>	Caratonia	Fabaceae	X	
<i>Cercocarpus montanus var. minutiflorus</i>	Smooth mountain mahogany	Rosaceae	X	
<i>Chamaebatia australis</i>	Southern mountain misery	Rosaceae	X	
<i>Chamaesyce sp.</i>	Sandmat	Euphorbiaceae	X	
<i>Cheilanthes sp.</i>	Lipfern	Pteridaceae	X	
<i>Chenopodium sp.</i>	Goosefoot	Chenopodiaceae	X	
<i>Chlorogalum sp.</i>	Soapplant	Liliaceae	X	
<i>Chrysanthemum sp.</i>	Daisy	Asteraceae	X	
<i>Cirsium occidentale</i>	Cobwebby thistle	Asteraceae	X	X
<i>Cirsium vulgare</i>	Bull thistle	Asteraceae	X	
<i>Clematis pauciflora</i>	Ropevine clematis	Ranunculaceae	X	X
<i>Cleome isomeris</i>	Bladderpod spiderflower	Capparaceae	X	
<i>Cneoridium dumosum</i>	Bush rue	Rutaceae		X
<i>Comarostaphylis diversifolia</i>	Summer holly	Ericaceae	X	
<i>Conyza sp.</i>	Horseweed	Asteraceae	X	
<i>Cordylanthus rigidus</i>	Stiffbranch bird's beak	Scrophulariaceae	X	X
<i>Corethrogyne filaginifolia var. filaginifolia</i>	Common sandaster	Asteraceae	X	
<i>Crassula connate</i>	Sand pygmyweed	Crassulaceae	X	
<i>Croton setigerus</i>	Dove weed	Euphorbiaceae	X	X
<i>Cryptantha sp.</i>	Cryptantha	Boraginaceae	X	X
<i>Cupressus forbesii</i>	Tecate cypress	Cupressaceae	X	X
<i>Cuscuta sp.</i>	Dodder	Cuscutaceae	X	
<i>Cylindropuntia prolifera</i>	Coastal cholla	Cactaceae	X	
<i>Cynara cardunculus</i>	Cardoon	Asteraceae	X	
<i>Daucus pusillus</i>	American wild carrot	Apiaceae	X	X
<i>Deinandra sp.</i>	Tarweed	Asteraceae	X	
<i>Delphinium sp.</i>	Larkspur	Ranunculaceae		X
<i>Delphinium cardinalis</i>	Scarlet larkspur	Ranunculaceae	X	
<i>Dendromecon rigida</i>	Tree poppy	Papaveraceae	X	
<i>Dichelostemma capitatum ssp. Capitatum</i>	Bluedicks	Liliaceae	X	
<i>Dichondra occidentalis</i>	Western dichondra	Convolvulaceae	X	
<i>Diplacus aurantiacus ssp. aurantiacus</i>	Orange bush monkeyflower	Scrophulariaceae	X	X
<i>Distichlis spicata</i>	Saltgrass	Poaceae	X	

Scientific Name	Common Name	Family	A-1	A-2
<i>Dodecatheon clevelandii</i>	Padre's shootingstar	Primulaceae	X	
<i>Dudleya edulis</i>	Fingertips	Crassulaceae	X	
<i>Dudleya pulverulenta</i>	Chalk dudleya	Crassulaceae	X	X
<i>Ehrendorferia chrysantha</i>	Golden eardrops	Fumariaceae	X	X
<i>Ephedra californica</i>	California jointfir	Ephedraceae	X	X
<i>Epilobium canum</i>	Hummingbird trumpet	Onagraceae	X	
<i>Erigeron foliosus</i>	Leafy fleabane	Asteraceae		X
<i>Eriodictyon trichocalyx</i>	Hairy yerba santa	Hydrophyllaceae	X	X
<i>Eriogonum fasciculatum</i> var. <i>fasciculatum</i>	Flat-topped buckwheat	Polygonaceae	X	
<i>Eriogonum fasciculatum</i> var. <i>foliosum</i>	Flat-topped buckwheat	Polygonaceae	X	
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	Flat-topped buckwheat	Polygonaceae	X	
<i>Eriogonum fasciculatum</i> var. <i>unknown</i>	Flat-topped buckwheat	Polygonaceae		X
<i>Eriogonum gracile</i>	Slender woolly buckwheat	Polygonaceae	X	
<i>Eriophyllum confertiflorum</i>	Golden-yarrow	Asteraceae	X	X
<i>Erodium botrys</i>	Longbeak stork's bill	Geraniaceae	X	X
<i>Erodium cicutarium</i>	Redstem stork's bill	Geraniaceae	X	
<i>Erodium moschatum</i>	Musky stork's bill	Geraniaceae	X	
<i>Erodium sp.</i>	Stork's bill	Geraniaceae	X	
<i>Eschscholzia californica</i>	California poppy	Papaveraceae	X	
<i>Eucalyptus sp.</i>	Gum	Myrtaceae	X	X
<i>Euthamia occidentalis</i>	Western goldentop	Asteraceae	X	X
<i>Ferocactus viridescens</i>	San diego barrel cactus	Cactaceae	X	
<i>Filago sp.</i>	Cottonrose	Asteraceae	X	X
<i>Foeniculum vulgare</i>	Seet fennel	Apiaceae	X	
<i>Galium aparine</i>	Stickywilly	Rubiaceae	X	
<i>Galium sp.</i>	Bedstraw	Rubiaceae	X	
<i>Gastridium phleoides</i>	Nitgrass	Poaceae	X	
<i>Gutierrezia californica</i>	San Joaquin snakeweed	Asteraceae	X	
<i>Gutierrezia sarothrae</i>	Broom snakeweed	Asteraceae	X	
<i>Gutierrezia sp.</i>	Snakeweed	Asteraceae	X	
<i>Hazardia squarrosa</i>	Sawtooth goldenbush	Asteraceae	X	X
<i>Hedypnois cretica</i>	Cretanweed	Asteraceae	X	
<i>Helianthemum scoparium</i>	Bisbee Peak rushrose	Critaceae	X	
<i>Helianthus sp.</i>	Sunflower	Asteraceae	X	X
<i>Hemizonia fasciculata</i>	Fasicled tarplant	Asteraceae	X	

Scientific Name	Common Name	Family	A-1	A-2
<i>Hesperoyucca whipplei</i>	Chaparral yucca	Agavaceae	X	
<i>Heteromeles arbutifolia</i>	Toyon	Rosaceae	X	
<i>Hirschfeldia incana</i>	Shortpod mustard	Brassicaceae	X	X
<i>Hymenoclea monogyra</i>	Singlewhorl burrobush	Asteraceae	X	
<i>Hypochaeris glabra</i>	Smooth cat's ear	Asteraceae	X	
<i>Hypochaeris sp.</i>	Cat's ear	Asteraceae		X
<i>Isocoma menziesii</i>	Menzies' goldenbush	Asteraceae	X	
<i>Iva hayesiana</i>	San Diego povertyweed	Asteraceae	X	
<i>Jepsonia parryi</i>	Parry's jepsonia	Saxifragaceae	X	
<i>Juncus acutus</i>	Spiny rush	Juncaceae	X	
<i>Juncus sp.</i>	Rush	Juncaceae	X	
<i>Juncus sp. 2</i>	Rush	Juncaceae	X	
<i>Keckiella antirrhinoides</i>	Snapdragon penstemon	Scrophulariaceae	X	X
<i>Keckiella cordifolia</i>	Heartleaf keckiella	Scrophulariaceae	X	
<i>Keckiella ternata</i>	Scarlet keckiella	Scrophulariaceae	X	
<i>Lamarckia aurea</i>	Goldentop grass	Poaceae	X	
<i>Lathyrus sp.</i>	Pea	Fabaceae	X	
<i>Lepechinia ganderi</i>	Gander's pitcher sage	Lamiaceae	X	
<i>Lepidium sp.</i>	Pepperweed	Brassicaceae	X	X
<i>Lomatium sp.</i>	Desertparsley	Apiaceae	X	
<i>Lonicera subspicata</i>	Southern honeysuckle	Caprifoliaceae	X	X
<i>Lotus argophyllus</i>	Silver bird's-foot trefoil	Fabaceae		X
<i>Lotus scoparius</i>	Common deerweed	Fabaceae	X	X
<i>Lupinus concinnus</i>	Bajada lupine	Fabaceae	X	
<i>Lupinus hirsutissimus</i>	Stinging annual lupine	Fabaceae	X	
<i>Lythrum californicum</i>	California loosestrife	Lythraceae	X	
<i>Malocothamnus fasciculatus</i>	Mendocino bushmallow	Malvaceae	X	X
<i>Malocothamnus sp.</i>	Bushmallow	Malvaceae	X	
<i>Malosma laurina</i>	Laurel sumac	Anacardiaceae	X	X
<i>Malva sp.</i>	Mallow	Malvaceae	X	
<i>Marah macrocarpus</i>	Cucamonga manroot	Cucurbitaceae	X	X
<i>Marrubium vulgare</i>	Horehound	Lamiaceae	X	X
<i>Melica frutescens</i>	Woody melicgrass	Poaceae	X	
<i>Melica imperfecta</i>	Smallflower melicgrass	Poaceae	X	X
<i>Melilotus sp.</i>	Sweetclover	Fabaceae		X
<i>Mentzelia mircrantha</i>	San luis stick plant	Loasaceae	X	
<i>Mimulus brevipes</i>	Widethroat yellow	Scrophulariaceae	X	X

Scientific Name	Common Name	Family	A-1	A-2
	monkeyflower			
<i>Mimulus guttatus</i>	Seep monkeyflower	Scrophulariaceae		X
<i>Mirabilis laevis var. laevis</i>	Desert wishbone-bush	Nyctaginaceae	X	
<i>Nassella sp.</i>	Needlegrass	Poaceae	X	X
<i>Navartetia sp.</i>	Pincusionplant	Polemoniaceae	X	
<i>Nicotiana glauca</i>	Tree tobacco	Solanaceae	X	X
<i>Olea europaea</i>	Olive	Oleaceae	X	
<i>Opuntia littoralis</i>	Coastal pricklypear	Cactaceae	X	
<i>Osmadenia tenella</i>	False rosinweed	Asteraceae	X	
<i>Oxalis albicans</i>	Radishroot woodsorrel	Oxalidaceae	X	
<i>Oxalis pes-caprae</i>	Bermusa buttercup	Oxalidaceae	X	
<i>Paeonia californica</i>	California peony	Paeoniaceae	X	X
<i>Pectocarya sp.</i>	Combseed	Boraginaceae	X	
<i>Pellaea sp.</i>	Cliffbrake	Pteridaceae	X	X
<i>Penstemon sp.</i>	Beardtongue	Scrophulariaceae	X	X
<i>Penstemon spectabilis</i>	Showy penstemon	Scrophulariaceae	X	
<i>Phacelia cicutaria</i>	Caterpillar phacelia	Hydrophyllaceae		X
<i>Phacelia sp.</i>	Phacelia	Hydrophyllaceae	X	
<i>Pholistoma racemosum</i>	Racemed fiestaflower	Hydrophyllaceae	X	
<i>Pickeringia montana</i>	Chaparral pea	Fabaceae	X	
<i>Pinus sp.</i>	Pine	Pinaceae	X	X
<i>Pityrogramma sp.</i>	Goldback fern	Pteridaceae	X	X
<i>Plantago erecta</i>	Dotseed plantain	Plantaginaceae	X	X
<i>Plantago lanceolata</i>	Narrowleaf plantain	Plantaginaceae	X	
<i>Platanus racemosa</i>	California sycamore	Platanaceae	X	
<i>Polypogon monspeliensis</i>	Annual rabbitsfoot grass	Poaceae	X	
<i>Populus fremontii</i>	Fremont cottonwood	Salicaceae		X
<i>Porophyllum gracile</i>	Slender poreleaf	Asteraceae	X	
<i>Prunus ilicifolia</i>	Hollyleaf cherry	Rosaceae	X	X
<i>Pseudognaphalium biolettii</i>	Two-color rabbit-tobacco	Asteraceae	X	X
<i>Pseudognaphalium californicum</i>	Ladies' tobacco	Asteraceae	X	
<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed	Asteraceae	X	
<i>Pseudognaphalium stramineum</i>	Cottonbatting plant	Asteraceae	X	X
<i>Pterostegia drymarioides</i>	Granny's hair net	Polygonaceae	X	
<i>Quercus agrifolia</i>	California live oak	Fagaceae	X	
<i>Quercus berberidifolia</i>	Scrub oak	Fagaceae		X

Scientific Name	Common Name	Family	A-1	A-2
<i>Quercus cedrosensis</i>	Cedros Island oak	Fagaceae	X	
<i>Quercus engelmannii</i>	Engelmann oak	Fagaceae	X	
<i>Quercus sp.</i>	Oak	Fagaceae	X	
<i>Raphanus sativus</i>	Cultivated radish	Brassicaceae	X	
<i>Rhamnus crocea</i>	Redberry buckthorn	Rhamnaceae	X	
<i>Rhamnus ilicifolia</i>	Hollyleaf redberry	Rhamnaceae	X	
<i>Rhus integrifolia</i>	Lemonade sumac	Anacardiaceae	X	
<i>Rhus ovate</i>	Sugar sumac	Anacardiaceae	X	X
<i>Ribes sp.</i>	Currant	Grossulariaceae	X	
<i>Romneya coulteri</i> var. <i>Unk.</i>	Coulter's Matilija poppy	Papaveraceae	X	X
<i>Rosa sp.</i>	Rose	Rosaceae	X	
<i>Rumex crispus</i>	Curly dock	Polygonaceae	X	
<i>Rumex sp.</i>	Dock	Polygonaceae	X	
<i>Sairocarpus nuttallianus</i>	Violet snapdragon	Scrophulariaceae		X
<i>Salix gooddingii</i>	Goodding's willow	Salicaceae	X	X
<i>Salix lasiolepis</i>	Arroyo willow	Salicaceae	X	X
<i>Salsola tragus</i>	Prickly Russian thistle	Chenopodiaceae	X	
<i>Salvia apiana</i>	White sage	Lamiaceae	X	X
<i>Salvia clevelandii</i>	Fragrant sage	Lamiaceae	X	
<i>Salvia columbariae</i>	Chia	Lamiaceae		X
<i>Salvia mellifera</i>	Black sage	Lamiaceae	X	
<i>Salvia munzii</i>	Minz's sage	Lamiaceae	X	
<i>Sambucus nigra</i> ssp. <i>canadensis</i>	American black elderberry	Caprifoliaceae	X	
<i>Schinus molle</i>	Peruvian peppertree	Anacardiaceae	X	X
<i>Schismus barbatus</i>	Common Mediterranean grass	Poaceae		X
<i>Scirpus sp.</i>	Bulrush	Cyperaceae		X
<i>Scrophularia californica</i>	California figwort	Scrophulariaceae	X	X
<i>Selaginella bigelovii</i>	Bushy spikemoss	Selaginellaceae	X	X
<i>Selaginella cinerascens</i>	Mesa spikemoss	Selaginellaceae	X	
<i>Sidalcea malviflora</i>	Dwarf checkerbloom	Malvaceae	X	
<i>Silene gallica</i>	Common catchfly	Caryophyllaceae	X	
<i>Silene laciniata</i>	Fringed Indian pink	Caryophyllaceae	X	
<i>Simmondsia chinensis</i>	Joboba	Simmondsiaceae	X	
<i>Solanum sp.</i>	Nightshade	Solanaceae	X	
<i>Sonchus sp.</i>	Sowthistle	Asteraceae	X	
<i>Stachys rigida</i>	Rough hedgenettle	Lamiaceae	X	
<i>Stephanomeria virgata</i>	Rod wirelettuce	Asteraceae	X	
<i>Stylocline gnaphalioides</i>	Mountain neststraw	Asteraceae	X	X

Scientific Name	Common Name	Family	A-1	A-2
<i>Tamarix ramosissima</i>	Saltcedar	Tamaricaceae	X	
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	Fendler's meadowrue	Ranunculaceae	X	
<i>Thysanocarpus</i> sp.	Fringepod	Brassicaceae		X
<i>Toxicodendron diversilobum</i>	Pacific poison oak	Anacardiaceae	X	X
<i>Trichostema lanatum</i>	Woolly blue curls	Lamiaceae	X	
<i>Typha</i> sp.	Cattail	Typhaceae		X
<i>Urtica dioica</i>	Stinging nettle	Urticaceae	X	
<i>Vicia</i> sp.	Vetch	Fabaceae	X	
<i>Viguiera laciniata</i>	Torchleaf goldeneye	Asteraceae	X	X
<i>Vinca major</i>	Bigleaf periwinkle	Apocynaceae		X
<i>Xanthium</i> sp.	Cocklebur	Asteraceae		X
<i>Xylococcus bicolor</i>	Mission manzanita	Ericaceae	X	X
<i>Yucca schidigera</i>	Mojave yucca	Agavaceae	X	X
<b>Total Species Richness</b>			<b>205</b>	<b>89</b>

crossing and camping on OMW. This is a benefit to all vegetation resources in and around Otay Mountain and Tecate Peak. The vegetation has suffered a higher-than-average fire frequency over the past 12 years, with four catastrophic wildfires affecting one or both these mountains.

The Project could also reduce adverse impacts on vegetation from trampling and the creation of informal footpaths by reducing cross-border violator traffic through the OMW. Cross border grazing impacts north of the tactical infrastructure will also be eliminated. Cross-border grazing impacts will likely increase in the area between the tactical infrastructure and the international border.

In summary, the Project will result in short- and long-term moderate to major, adverse impacts, and short- and long-term minor beneficial impacts on vegetation resources

## 8.2 WILDLIFE AND AQUATIC RESOURCES

### 8.2.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations associated with wildlife and aquatic resources.



**Table 8-3. Acreage of Estimated Impacts of Project**

Habitat	Section A-1				Section A-2			Total
	Fence Section	Patrol Road	Staging Areas (temporary impacts)	Access Roads	Fence Section	Staging Areas (temporary impacts)	Tecate Access Road	
Southern Mixed Chaparral 37120	13.0	25.6	6.0	8.1	0.0	0.0	13.3	66.0
Mafic Southern Mixed Chaparral 37122	*	14.8	9.3	8.7	0.0	0.0	0.0	32.8
Diegan Coastal Sage Scrub 32500	6.4	18.0	1.3	48.5	4.1	0.0	8.5	86.8
Mulefat scrub 63310	0.2	0.2	0.5	0.0	0.0	0.0	0.0	0.9
Southern Coast Live Oak Riparian forest 61310	0.4	1.4	0.4	5.7	0.4	0.0	0.3	8.6
Whitethorn chaparral 37532	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
Nonnative grassland 42200	0.0	0.0	5.0	13.0	0.9	2.0	7.9	28.8
Chamise Chaparral 37200	0.0	0.0	0.0	6.8	0.0	0.0	1.9	8.7
Southern Interior Cypress Forest 83330	0.0	0.0	0.0	7.5	0.0	0.0	0.0	7.5
Disturbed 11300	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.7
Landscaped 12000	0.0	0.0	0.0	3.5	0.0	0.0	0.2	3.7
Developed 12000	0.0	0.0	0.0	0.8	0.0	0.0	2.4	3.2

Note: \*Less than 0.05 acres

This section provides a description of the habitat and wildlife and aquatic species observed and anticipated to occur in the area of the Project. Species addressed in this section include those which are not listed as threatened or endangered by the Federal or state government. Sensitive species are those classified by CDFG as species of special concern (SC), species included in the San Diego County MSCP, and those identified as sensitive by the BLM. The County of San Diego has a greater number of threatened and endangered species than any other county in the continental United States. More than 200 plant and animal species occur in the county that are federally or state-listed as endangered, threatened, or rare; proposed or candidate for listing; or otherwise considered sensitive. The MSCP was developed to provide natural resources guidance for where future development should and should not occur, to streamline and coordinate procedures for review and permitting, and to better assess impacts on biological resources (MSCP 1998).

The MSCP is a comprehensive habitat conservation planning program in San Diego County which provides for a regional process to authorize incidental take of protected species for urban development and for the conservation of multiple species and their habitat within a 582,243-acre planning area in southwestern San Diego County. The MSCP planning area includes 12 local jurisdictions in southern coastal San Diego County. Local jurisdictions implement their respective portions of the MSCP Plan through subarea plans that describe specific implementing mechanisms for the MSCP Plan. This includes the City of San Diego and the County of San Diego subarea plans. Both the County and City of San Diego have finalized their respective subarea plans and have received take authorizations under the MSCP.

The MSCP Plan, and each subarea plan prepared pursuant to the MSCP Plan, is intended to serve as a multiple species habitat conservation plan (HCP) pursuant to Section 10(a)(2)(A) of the Endangered Species Act (ESA). An HCP is required for issuance of a permit for incidental take of listed species pursuant to Section 10(a)(1)(B) of the Act. An HCP can also serve as a Natural Communities Conservation Plan (NCCP) pursuant to the State of California's NCCP Act of 1991, provided findings are made that the plan is consistent with the NCCP Act.

The MSCP Plan proposes the authorization of incidental take of 85 species, including 20 listed animal and plant species, 8 species currently proposed for Federal listing as endangered or threatened, and 1 candidate for Federal listing. All 85 species will hereafter be referred to as Covered Species. This proposed list of species for which take is authorized is based upon full implementation of the MSCP Plan (MSCP 1998).

The BLM Manual 6840 provides policy and guidance, consistent with appropriate laws, for the conservation of special status species of plants and animals, and the ecosystems upon which they depend. The sensitive species designation is normally used for species that occur on BLM-administered lands for which BLM

has the capability to significantly affect the conservation status of the species through management.

### 8.2.2 Affected Environment

The fence alignment lies within the Peninsular Ranges Province and is part of the warm-temperate scrublands biotic community. These scrublands are dominated by the California chaparral and coastal scrub communities which provide suitable habitats for a number of species (i.e., bats, rodents, salamanders, snakes, and lizards, plus a variety of waterfowl, shorebirds, and rangeland/forest birds) adapted to this environment. The warm temperate scrublands biotic community of the Peninsular Ranges has a diversity of faunal elements to coincide with the varied habitats within the fence alignment and related access roads. The San Ysidro area, including the Otay Mountain, Cerro San Isidro, San Miguel Mountain, and Tecate Peak, supports some of the largest remaining intact patches of Diegan coastal sage scrub (including coastal sage scrub with abundant cactus patches) in the border region, supporting core populations of California gnatcatchers and coastal cactus wrens (*Campylorhynchus brunneicapillus couesi*). This area also supports mafic chaparral communities, important riparian habitat along the Tijuana and Tecate rivers, and vernal pools on the mesa tops. The Thorne's hairstreak butterfly (*Mitoura thornei*) is an endemic species here, whose larvae are obligate to Tecate cypress (CBI 2004). The chaparral along the border between Otay Mountain and Jacumba likely serves as an important dispersal corridor for some bird species including the gray vireo (*Vireo vicinior*) and sage sparrow (*Amphispiza belli*).

The native faunal components of the Peninsular Range support more than 400 species of birds, which are dominated by warblers, ducks, sandpipers and phalaropes, gulls and terns, sparrows and towhees, and tyrant flycatchers. The majority of these species are present in the spring and fall, when neotropical migrants (e.g., flycatchers and warblers) pass through on their way to either summer breeding or wintering grounds, and during winter when summer resident birds (i.e., robins, kinglets, and sparrows) from the north arrive to spend the winter. The majority of the mammalian species found in the Peninsular Range are evening bats and rodents, with rodents being the most common. Frogs are considered the most abundant and common of the amphibian species. Iguanid lizards and colubrid snakes are the most dominant reptiles inhabiting the Peninsular Range (CBP 2007b).

#### Section A-1

The fence and patrol road alignment will start at the Puebla Tree, a well-known border patrol landmark, and end at Boundary Monument 250. Topographically, the terrain is steep along most of the alignment. The alignment skirts the mid-span of the mountain, so that steep upslopes lead out of canyons, and steep downslopes lead into canyons. There are two canyons that the fence alignment

crosses; from west to east, these are Copper and Buttewig. In addition, Wild Bill's Draw is a drainage located at the west end of the fence alignment.

Grazing by unauthorized cattle occurs on much of Section A-1, which was observed during natural resources surveys. Numerous north-south-trending footpaths have been created over much of the mountain from cows and cross-border violators. Portions of the mountain burned during the 2003 cedar fire and show signs of recovering. Much of the area where coastal sage scrub communities are dominant (a large area of the Pack Trail) are considered disturbed and of poor quality. Areas of chaparral are of moderate quality, and riparian areas dominated by coast live oak in the canyon bottoms are considered high-quality habitat.

In addition to the fence and patrol road construction, the Otay Truck Trail Access Road and the Marron Valley Access Road will require improvements for access to the construction site. A 60 foot wide corridor centered on the existing roads was surveyed for this analysis. Some or all of this corridor might actually be impacted by construction. The impact corridor along the Otay Truck Trail is primarily upland habitats including coastal sage scrub, southern interior cypress forest, and southern mafic chaparral. The Marron Valley access road impact corridor was mostly burned during the 2007 fires. The impact corridor includes a mixture of riparian and upland habitats including coastal sage scrub and riparian woodlands.

### **Section A-2A**

High-quality coastal sage scrub habitat exists in much of the section dominated by flat-topped buckwheat (*Eriogonum fasciculatum*) and laurel sumac (*Malosma laurina*). An occupied house with a fenced yard is within the section where the area is dominated by coast live oak riparian habitat. The understory of this habitat is primarily nonnative species. The western edge of the section is a non-native grassland, with dominant species being brome grass (*Bromus* sp.) and wild oat (*Avena* sp).

A series of access roads come from Tecate in the east to near the west end of the fence segment. A 60-foot-wide potential impact corridor was surveyed along these roads. These access roads were burned in the 2007 fires. The alignment for Section A-2A was surveyed prior to the fire, and the access roads and staging area were surveyed after the fire.

### **Species Potentially Present and Observed**

The California Natural Diversity Database (CNDDDB) is a CDFG-maintained inventory of data on the location and status of sensitive species in California. Non-listed wildlife species (i.e., those that are not threatened or endangered) included in the CNDDDB records for the Otay Mountain and Tecate quadrangles, which therefore have the potential to occur within or near the impact corridor, are listed in **Table 8-4**.

**Table 8-4. Non-Listed Sensitive Wildlife Species  
in the CNDDDB Records Near the Impact Corridor**

Common Name	Scientific Name	SD County Quad <sup>1</sup>	State Status	CDFG Status
<b>Invertebrates</b>				
Thorne's hairstreak	<i>Callophrys thornei</i>	OM	None	None
<b>Amphibians</b>				
Western spadefoot	<i>Spea hammondi</i>	OM	None	SC
<b>Reptiles</b>				
Coast (San Diego) horned lizard	<i>Phrynosoma coronatum</i> ( <i>blainvillii</i> population)	OM, T	None	SC
Coast patch-nosed snake*	<i>Salvadora hexalepis virgulata</i>	OM	None	SC
Coastal western whiptail	<i>Aspidoscelis tigris stejnegeri</i>	OM	None	None
Orange-throated whiptail*	<i>Aspidoscelis hyperythra</i>	OM, T	None	SC
Two-striped garter snake	<i>Thamnophis hammondi</i>	OM	None	SC
<b>Birds</b>				
Burrowing owl	<i>Athene cunicularia</i>	OM	None	SC
California horned lark	<i>Eremophila alpestris actia</i>	OM	None	SC
Coastal cactus wren	<i>Campylorhynchus brunneicapillus sandiegensis</i>	OM	None	SC
Golden eagle*	<i>Aquila chrysaetos</i>	T	None	SC
Yellow-breasted chat	<i>Icteria virens</i>	OM	None	SC
<b>Mammals</b>				
American badger	<i>Taxidea taxus</i>	OM	None	SC
Northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	OM	None	SC
San Diego black-tailed jackrabbit*	<i>Lepus californicus bennettii</i>	OM	None	SC
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	OM	None	SC
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	OM	None	SC
Western mastiff bat	<i>Eumops perotis californicus</i>	T	None	SC

Source: CDFG 2007

Notes:

OM = Otay Mountain Quadrangle Map; T = Tecate Quadrangle Map; SC = Species of special concern designation (CDFG Designation)

\* Denotes species also covered under the Regional MSCP

Common wildlife species observed during the October 2007 thru February 2008 and the additional June 2008 surveys are listed in **Appendix D**. Sixty-four species of vertebrates were recorded during the surveys, including 4 reptiles, 1 amphibian, 53 birds, and 6 mammals. In addition, 32 insects were observed and identified during the surveys (see **Appendix D**). An additional 52 invertebrate species were identified. The following 8 state species of concern were observed. Species below that are preceded by an asterisk are also covered under the Regional MSCP.

- Harbison dun skipper (larva) (*Euphyes vestris harbisoni*)
- Coast patch-nosed snake (*Salvadora hexalepis virgultea*)
- \*Orange-throated whiptail lizard (*Cnemidophorus hyperythrus beldingi*)
- \*Copper's hawk (*Accipiter cooperii*)
- \*Golden eagle (*Aquila chrysaetos*)
- \*Northern harrier (*Circus cyaneus*)
- \*Rufous-crowned sparrow (*Aimophila ruficeps*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*).
- Coast Horned Lizard (*Phrynosma coronatum* ssp. *blainvillei*)
- California gnatcatcher (*Polioptila californica*).

Although the following species are not in the CNDDDB database for the impact corridor and no individuals of these species were observed, potential habitat for them does occur within or near the impact corridor:

- Hermes copper butterfly (*Lycaena hermes*) (SC)
- Thorne's hairstreak (*Callophrys thornei*) (SC, MSCP, BLM)
- Quino checkerspot butterfly (see **Chapter 8.3**).

Aquatic and riparian systems and the associated woodlands (i.e., oaks, willows and cottonwoods) are important to most wildlife resources and occur within the study area. These types of systems would occur in riparian vegetation along most of the coastal streams (i.e., San Luis Rey, San Diego, Sweetwater, Otay, and Tijuana rivers; Jamul and Campo creeks) and valley foothill and montane (areas in the mountains) regions.

There are no state-listed species of fish within the two quads (Otay Mountain and Tecate) along Sections A-1 and A-2. There are several riparian habitats located in canyon bottoms on Section A-1 and Marron Valley access road, as well as riparian areas on Section A-2A and its access roads. These areas are important resources.

### 8.2.3 Direct and Indirect Effects of the Project

Impacts on wildlife from the Project will occur directly from construction of the Section A-1 and A-2A, construction of the Section A-1 patrol road, use of the staging areas, and any improvements needed for the access roads to allow for the construction equipment and materials to be brought to the site. Direct

impacts could also result from the construction of two wells and potential access to those wells.

Impacts will also occur indirectly from increased noise during construction, and potential increased erosion from the cut and fills for the Project. Impacts from erosion are discussed in **Chapters 6.3** and **7.2.3**.

A potential benefit from fence construction is the reduction of foot traffic and grazing north of the fence. The fence construction will also decrease fire potential for the area.

Construction of the fence, staging areas, and patrol road in Section A-1 will result in a barrier to movement for large non-flying animals and general loss of wildlife habitat (quantified in **Chapter 8.1.3**). During the dry season large non-flying animals will have their movement patterns potentially altered as some might have to travel further to access a water supply.

The patrol road would potentially increase wildlife mortality, by providing new vehicle access to the south side of Otay Mountain. The access road improvements for construction will be permanent impacts depending on the extent of improvements required.

Section A-2A construction, staging area, and access road improvements will be smaller scale than the Section A-1, but have the same types of impacts.

Indirect impacts from construction include noise from the vehicles, generators, and other related activities. Construction noise is anticipated to result in short-term, moderate, adverse effects on wildlife. Noise levels after construction are anticipated to return to close to current levels. Elevated noise levels during construction could result in reduced communication ranges, interference with predator/prey detection, or habitat avoidance. More intense effects on wildlife resulting with intense pulses of noise associated with blasting, could potentially result in behavioral change, disorientation, or hearing loss. Predictors of wildlife response to noise include noise type (i.e., continuous or intermittent), prior experience with noise, proximity to a noise source, stage in the breeding cycle, activity, and age. Prior experience with noise is the most important factor in the response of wildlife to noise, because wildlife can become accustomed (or habituate) to the noise. The rate of habituation to short-term construction is not known, but it is anticipated that wildlife will be displaced from the areas where the habitat is cleared and the fence and associated tactical infrastructure constructed, and temporarily dispersed from areas adjacent to the impact corridors during construction periods. See **Chapter 3** for additional details on expected noise levels associated with the Project.

The Tijuana River is considered a migration corridor for many species. The fence will be constructed well above the river; however, side canyon crossings through live oak riparian vegetation and habitat (e.g., Copper, Buttewig, Mine

canyons and smaller ones) could be impacted. Side canyons are from 10 to 60 meters across and the larger ones have channels incised to 5 to 8 meters deep. They are strewn with boulders up to 2 meters diameter. Riparian bottoms in the areas along the Pack Trail consist of mature oaks.

The Project plans to bridge two riparian corridors (in the bottoms of Copper Canyon and Buttewig Canyon). There will likely be impacts from the construction of bridge footings, but these impacts will be less than filling the canyons for road and fence construction.

There is a potential for Herme's copper, Thorne's hairstreak, and Harbison dun skipper to occur along the access roads that lead to the Puebla Tree (west side of the Pack Trail). These three species rely on a host plant redberry (*Rhamnus crocea*), Tecate cypress (*Cupressus forbesii*), and San Diego sedge (*Caryx spisa*), respectively (Klein 2007). Loss of their host plants and habitat will impact these butterflies in those areas disturbed by the construction.

Impacts on mammals are expected to be minor, due to their ability to disperse. Impacts on reptiles are expected moderate. This is due to their inability to disperse as quickly as other wildlife.

There will be impacts on aquatic resources in the impact corridor. Aquatic species and their habitat would potentially continue to be indirectly impacted in the short term through potential habitat alteration and loss due to erosion.

In the long term, the fence will reduce or eliminate illegal cross-border activity through this area. This will allow the slopes to revegetate and the riparian habitat to return to a more natural state (reduced grazing impacts). These changes are anticipated to result in a long-term benefit for some species.

## 8.3 SPECIAL STATUS SPECIES

### 8.3.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the ESA for the tactical infrastructure segments addressed in this ESP, the Secretary committed the Department to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the ESA as the basis for evaluating potential environmental impacts and appropriate mitigations.

The ESA provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the United States or elsewhere. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species.



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

The California Endangered Species Act (CESA) states that all native species of fish, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a substantial decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved.

### 8.3.2 Affected Environment

There are 17 federally listed taxa that have the potential to occur within or near the fence corridors in southern San Diego County: 2 crustaceans, 1 butterfly, 1 amphibian, 3 birds, and 10 plants. Of these, 2 birds and 5 plants are also state-listed (see **Table 8-5**). A description of the biology of each federally listed species potentially occurring within the fence corridor is provided in the *Draft Biological Survey Report: USBP San Diego Sector, Brown Field Station* (see **Appendix D**). Federal- and state-listed species potentially occurring in the impact corridor and their potential habitats are briefly described below.

The native faunal components of the Peninsular Range, in which the Project will occur, support more than 400 species of birds, which are dominated by wood warblers, swans, geese, ducks, sandpipers and phalaropes, gulls and terns, sparrows and towhees, and tyrant flycatchers. The majority of these species are present in the spring and fall, when neotropical migrants (e.g., flycatchers and warblers) pass through on their way to either summer breeding or wintering grounds, and during winter when summer resident birds (i.e., robins, kinglets, and sparrows) from the north arrive to spend the winter. A number of migratory birds are known to pass through or otherwise use the border region between California and Baja California. Some of these species fly through this general area to avoid having to cross the Gulf of California (CBI 2004). Examples of such species include olive-sided flycatcher (*Contopus cooperi*), dusky flycatcher (*Empidonax oberholseri*), yellow-rumped warbler (*Dendroica coronata*), green-tailed towhee (*Pipilo chlorurus*), and fox sparrow (*Passerella iliaca*).

Onsite inspection of habitats within the potential fence alignment was conducted by USFWS-approved species specialists in October 2007 through February 2008. A revised alignment added additional areas outside the original alignment which were surveyed in June 2008. Due to the timing of the surveys, and the wildfires that burned portions of the impact corridor in November 2007, there was only one observation (California gnatcatcher) of state or Federal threatened or endangered animal species. Species observed in each of the two impact corridors are provided in **Appendix D**. Potential habitat was evaluated to the extent possible given the wildfires and the time of year.

**Table 8-5. Federal and State Threatened and Endangered Species Potentially Occurring Within the Impact Corridor**

Scientific Name	Common Name	Federal Status	State Status
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	E	
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	E	
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	E	
<i>Bufo californicus</i>	Arroyo toad	E	
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	T	
<i>Vireo bellii pusillus</i>	Least Bell's vireo	E	E
<i>Empidonax trailii extimus</i>	Southwestern willow flycatcher	E	E
<i>Ambrosia pumila</i>	San Diego ambrosia	E	
<i>Eryngium aristulatum var. parishii</i>	San Diego button-celery	E	E
<i>Deinandra conjugens</i>	Otay tarplant	T	E
<i>Pogogyne nudiuscula</i>	Otay Mesa mint	E	E
<i>Navarretia fossalis</i>	Spreading navarretia	T	
<i>Fremontodendron mexicanum</i>	Mexican flannelbush	E	
<i>Orcuttia californica</i>	California Orcutt grass	E	E
<i>Monardella linoides ssp. Viminea</i> <i>Monardella stoneana</i>	Willow/Jennifer's monardella	E	E
<i>Acanthomintha ilicifolia</i>	San Diego thornmint	T	E
<i>Baccharis vanessae</i>	Encinitas baccharis	T	E

Notes: T – Threatened, E – Endangered

In addition, element occurrence data were acquired from NatureServe for inclusion in the environmental consequences analyses. These data indicate documented occurrences of several listed taxa or their habitats near the impact corridor (see **Table 8-6**).

Section A-2A of the Project presented suitable habitat only for one listed species (Quino checkerspot butterfly) during the biological surveys which were completed before the area burned in October 2003. No records from the NatureServe data are in or near Section A-2. Therefore, the affected environment for Section A-2A is not described further in this section except where it applies to the Quino checkerspot butterfly.

The remainder of this section focuses on the impact corridor for Section A-1. A brief description of which species are anticipated to be found within the Section A-1 impact corridor, based on potential habitat and historic data, is provided below. More detailed descriptions of the federally listed species can be found in **Appendix D**.

**Table 8-6. Listed Species for which Individuals or Habitat are Documented In or Near<sup>a</sup> the Impact Corridor by NatureServe**

Scientific Name	Common Name	Federal Status	State Status	Fence Section <sup>b</sup>
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	E		A-1
<i>Euphydryas editha quino</i>	quino checkerspot butterfly	E		A-1
<i>Bufo californicus</i>	arroyo toad	E		A-1
<i>Polioptila californica californica</i>	coastal California gnatcatcher	T		A-1
<i>Monardella linoides ssp. viminea</i> <i>Monardella stoneana</i>	Willow/Jennifer's Monardella	E	E	A-1
<i>Baccharis vanessae</i>	Encinitas baccharis	T	E	A-1

Notes:

<sup>a</sup> Within one mile of the impact corridor, including fence alignments and access roads.

<sup>b</sup> A-1 = fence section south of Otay Mountain.

T – Threatened, E – Endangered

**San Diego Fairy Shrimp (SDFS).** This species is listed as endangered under the ESA and is covered by the Regional MSCP. The SDFS is a vernal pool specialist that is found in small, shallow vernal pools. Unlike other species associated with vernal pools, this fairy shrimp is also occasionally found in ditches and road ruts with similar conditions to those of vernal pools.

NatureServe data indicate a record for SDFS near the connection of the Otay Mountain Truck Trail to Alta Road. The record appears to have been from a road ditch or rut as the area indicated by the record is currently an existing and active road. The only other occurrence of SDFS near the impact corridor is approximately 0.8 miles south of Monument 250 Road. Surveys of the access roads found no evidence of vernal pools in the impact corridors; therefore, this species is not carried forward for discussion in **Chapter 8.3.3**.

**Quino Checkerspot Butterfly (Quino).** This species is listed as endangered under the ESA. It is considered a species of concern by CDFG, but currently does not have coverage under the Regional MSCP. Host plants are dwarf plantain (*Plantago erecta*), Purple owl's clover (*Castilleja exserta*), White snapdragon (*Antirrhinum coulterianum*), woolly plantain (*Plantago patagonica*), and bird's beak (*Cordylanthus rigidus*). The plants are annuals which thrive in clay soils but can also occur in other soil types.

Adult Quino were observed on the mesa along the Pack Trail in March 2005 just above the Puebla Tree access (Klein 2007). There is a record of adults on the

hill just north of the mesa, and adults were found in March 2007 along the Monument 250 Road on the east side of the impact corridor (Klein 2007). In addition, NatureServe data indicate additional locations for Quino within one mile of the fence corridor and access roads, primarily on the east and west ends of the Section A-1 impact corridor. The apparent absence of locations along the central portion of the alignment is undoubtedly due to the difficulty of accessing this area and not to true absence of the species in this area. Potential habitat (three of the host plant species) was observed along the 5-mile stretch for Section A-1 during the recent surveys and the species is assumed to be present. Host plant(s) occur along most of the Pack Trail, suitable habitat occurs throughout the entire mountain, and adults occur along the Otay Mountain Truck Trail which is the access to get to Puebla Tree. Therefore, the Pack Trail, Puebla Pack Trail, and Monument 250 Truck Trail are considered suitable Quino habitat and considered to be occupied.

Prior to the 2007 fires, suitable habitat was observed along the Section A-2A alignment (Klein 2007), there are no records of Quino checkerspot butterfly in the NatureServe data from in or near Section A-2A. There are occurrences distantly to the west and east of the site. Quino checkerspot butterfly is addressed in **Chapter 8.3.3**.

**Arroyo Toad.** The arroyo toad is listed as endangered under the ESA and is considered a species of concern by CDFG, and is covered under the MSCP. The arroyo toad requires shallow, slow-moving stream habitats, and riparian habitats that are disturbed naturally on a regular basis, primarily by flooding. Adjacent stream banks can be sparsely to heavily vegetated with trees and shrubs such as mulefat (*Baccharis* spp.), California sycamore (*Platanus racemosa*), cottonwoods (*Populus* spp.), coast live oak (*Quercus agrifolia*), and willows (*Salix* spp.) (USFWS 1999). For breeding, the arroyo toad uses open sites such as overflow pools, old flood channels, and pools with shallow margins, all with gravel bottoms. This species aestivates in sandy terraces adjacent to the stream habitat.

No habitat for this species was observed within the impact corridor during the field surveys for this Project. NatureServe (2007) data indicate a record south of the Marron Valley access road. The existing access road traverses the northern boundary of the aestivation habitat associated with this record. This species is assumed to be present and is addressed in the Environmental Consequences section.

**Coastal California Gnatcatcher (CAGN).** This species is listed as threatened under the ESA, is considered a species of concern by CDFG, and is covered by the Regional MSCP. The CAGN occurs almost exclusively in the coastal sage scrub community with occasional populations in the chaparral. Its southern limit coincides with the southern distributional limit of this vegetation community. The coastal sage scrub community is composed of low-growing, summer deciduous, and succulent plants including coastal sagebrush (*Artemisia californica*), various

species of sage (*Salvia* spp.), California buckwheat (*Eriogonum fasciculatum*), lemonadeberry (*Rhus integrifolia*), California encelia (*Encelia californico*), pricklypear and cholla cactus (*Opuntia* spp.), and various species of *Isocoma* (NatureServe 2007). CAGN is nonmigratory and its breeding season extends from late February to July.

A single CAGN was observed during the December surveys. It was found near the western edge of the Otay Mountain Truck Trail Access Road. The 2003 fire burned through much of the impact corridor of Section A-1, the habitat in and near the impact corridor is often sparse for CAGN occupancy in its current condition (Clark 2007). However, with continued regrowth, habitat could become suitable in the future. Impacts on current and potential future habitat for CAGN are addressed in **Chapter 8.3.3**.

**Least Bell's Vireo (LBV).** This species is listed as endangered under both the ESA and the CESA. It is also covered by the Regional MSCP. LBV is an obligate riparian species during its breeding season and prefers early successional habitat. The woodlands it inhabits are often structurally diverse and lie along watercourses including southern willow scrub, mulefat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, and cottonwood bottomland forest (USFWS 1998). LBV is a migratory species that arrives at its southern California breeding grounds in mid-March to early April and usually departs in September.

No records of LBV are known from in or near the impact corridor. However, bands of suitable riparian habitat occur along the Tijuana River and Cottonwood Creek just south of the impact corridor. Therefore, this species is assumed to be present in that riparian habitat and potential impacts on LBV are discussed in **Chapter 8.3.3**.

**Southwestern Willow Flycatcher (SWF).** This species is listed as endangered by both the ESA and the CESA. It is also covered by the Regional MSCP. SWF usually breeds in dense or patchy riparian habitats along streams or other wetlands near standing water or saturated soils. Common tree and shrub species composing nesting habitat include willows (*Salix* spp.), seepwillow (aka mulefat (*Baccharis* spp.), boxelder (*Acer negundo*), stinging nettle (*Urtica* spp.), blackberry (*Rubus* spp.), cottonwood (*Populus* spp.), arrowweed (*Tessaria sericea*), tamarisk (aka salt-cedar; *Tamarix ramosissima*), and Russian olive (*Elaeagnus angustifolia*). Habitat characteristics vary widely across its range, but some similar characteristics include distribution of open spaces within dense shrub thickets (USFWS 2002). As a neotropical migrant, the southwestern willow flycatcher only spends 3 to 4 months in the breeding grounds arriving in early May to early June and departing between mid-August and early September (USFWS 2002).

No records of SWF are known from in or near the impact corridor. No suitable habitat for this species was observed in or near the impact corridor. However,

the riparian woodland habitat along the Tijuana River has the potential to provide suitable habitat in the future, as it reaches taller heights. Therefore, potential impacts on this species are discussed in **Chapter 8.3.3**.

**San Diego Ambrosia.** This species is listed as endangered under the ESA and is covered under the Regional MSCP. It primarily occupies the upper terraces of rivers and drainages as well as in open grasslands, openings in coastal sage scrub, and occasionally in the areas adjacent to vernal pools. Species found near the ambrosia include saltgrass (*Distichlis spicata*), mulefat (*Baccharis salicifolia*), desertbroom (*Baccharis sarathroides*), California buckwheat, and dove weed (*Croton setigerus*). This ambrosia primarily occupies gravelly or sterile clay soils (University of California 2007).

No records of San Diego ambrosia are known from in or near the impact corridor. The closest known record for this species is miles to the north, on the other side of Otay Mountain and the wilderness area. No individuals of this species or potential habitat were observed during the October 2007 through January 2008 surveys. Therefore, this species is dismissed from further analysis in this ESP.

**San Diego Button-Celery.** This species is listed as endangered under the ESA and the CESA, and is also covered under the Regional MSCP. It is an endemic species of vernal pools of southern California and northern Mexico. Vernal pools are seasonal wetlands where the proliferation of flora and fauna can be related to the Mediterranean climate that prevails throughout their range.

No records of San Diego button-celery are known from in or near the impact corridor. The closest known record for this species is over a mile west of the end of the Alta Road access to Otay Mountain Truck Trail; well beyond potential impacts resulting from the Project. Surveys of the impact corridors found no evidence of vernal pools, so this species will not be expected. Therefore, this species is not carried forward for discussion in **Chapter 8.3.3**.

**Otay Tarplant.** This species is listed as threatened under the ESA, as endangered under the CESA, and is covered under the Regional MSCP. The Otay tarplant is restricted to clay soils, subsoils, or lenses. Historically, the Otay tarplant occupied areas vegetated with native grassland, open coastal sage scrub, and maritime succulent scrub. Currently, it occupies those communities, but is also found on the margins of disturbed sites and cultivated fields.

One record of Otay tarplant is known from south of the west end of the western access road. This record is well outside the impact corridor and no impacts on individuals in that area, if they still exist, are anticipated. Potential habitat was observed in the impact corridor. Otay tarplant is addressed in **Chapter 8.3.3**.

**Otay Mesa Mint.** This species is listed as endangered under both the ESA and the CESA, and is covered by the Regional MSCP. The Otay Mesa mint is an endemic species of vernal pools of Otay Mesa in southern California.

No records of Otay Mesa mint are known from in or near the impact corridor. The closest known record for this species is over a mile west of the end of Otay Mountain Truck Trail; well beyond potential impacts resulting from the Project. Surveys of the impact corridors found no evidence of vernal pools, so this species will not be expected. Therefore, this species is not carried forward for discussion in **Chapter 8.3.3**.

**Spreading Navarretia.** This species is listed as threatened under the ESA, and is covered by the Regional MSCP. It is a vernal pool specialist that is found in small, shallow vernal pools. Unlike other species associated with vernal pools, this species is also occasionally found in ditches and road ruts with similar conditions to those of degraded vernal pools.

No records of spreading navarretia are known from in or near the impact corridor. The closest known record for this species is more than 4 miles west of the end of Otay Mountain Truck Trail; well beyond potential impacts resulting from the Project. Surveys of the impact corridors found no evidence of vernal pools, so this species will not be expected. Therefore, this species is not carried forward for discussion in **Chapter 8.3.3**.

**Mexican Flannelbush.** This species is listed as endangered under the ESA. It is not covered by the Regional MSCP. The flannelbush occurs primarily in closed-canopy coniferous forests dominated by Tecate cypress (*Cupressus forbesii*) and southern mixed chaparral, often in metavolcanic soils. The chaparral that the flannelbush occupies has dense shrub cover of moderate height characterized by chamise (*Adenostoma fasciculatum*), buckbrush (*Ceanothus* sp.) hollyleaf redberry (*Rhamnus ilicifolia*), manzanita (*Arctostaphylos* sp.), scrub oak (*Quercus berberidifolia*), sugar sumac (*Rhus ovate*), laurel sumac (*Malosma laurina*), toyon (*Heteromeles arbutifolia*), California buckwheat, and black sedge (*Salvia mellifera*).

No record of Mexican flannelbush is known from within or near the impact corridor. The nearest record is more than 2 miles north, and several ridges away from the closest portion of the impact corridor. No impacts on individuals in that area, if they still exist, will be anticipated. Therefore, this species is dismissed from further analysis in this ESP.

**California Orcutt Grass.** This species is listed as endangered under both the ESA and the CESA, as well as covered by the Regional MSCP. This species occurs in the beds of dried vernal pools, typically in grassland or chaparral (Smith and Berg 1988).

No records of this grass are known from in or near the impact corridor. The closest known record for this species is more than 4 miles west of the end of the western access road, well beyond potential impacts resulting from the Project. Surveys of the impact corridor and access roads found no evidence of vernal

pools in the impact corridors, so impacts to this species are not expected. Therefore, this species is not carried forward for discussion in **Chapter 8.3.3**.

***Encinitas Baccharis***. This species is listed as threatened under the ESA and endangered under the CESA. It is also covered under the Regional MSCP. This perennial is known to occur on Otay Mountain.

No records of this species are known from in or near the impact corridor. The closest known record is well over a mile north up Copper Canyon from the impact corridor. The only impacts on individuals at the Copper Canyon location, if they still exist, would be beneficial due to reduced cross-border violator traffic through the area. Therefore, this species is not carried forward for discussion in **Chapter 8.3.3**.

***Jennifer's Monardella***. Taxonomically, the Federal-listed endangered sub-species willowy monardella was elevated to a species and split into two separate species. The USFWS has not recognized this taxonomic split and officially considers both willowy monardella and Jennifer's monardella to be the same endangered subspecies of monardella. This subspecies is listed as endangered under the ESA. The species now recognized as Jennifer's monardella occurs primarily along flat rocky drainages with seasonal water flows.

There are only eight known records of Jennifer's monardella. Six records are from the United States, and all occurrences are associated with Otay Mountain and Tecate Peak. Two occurrences are in Mexico, one of which is also associated with Otay Mountain. Two of the known records are near Section A-1. There is a documented occurrence not far upstream of the Project in Wild Bill's Draw. Also in Mexico, downstream of the Project in Wild Bill's Draw, is a documented occurrence of Jennifer's monardella (Rebman 2008). There is also a record of this species some distance upstream in Copper Canyon. Surveyors looked for this species during the October 2007 through January 2008 surveys and did not observe any in the impact corridor. Negative surveys at that time of year are not conclusive since monardella species are known to sometimes lose all surface foliage and resprout from roots in the spring. Therefore, this species is carried forward for discussion in **Chapter 8.3.3**.

***San Diego Thornmint***. This species is listed as threatened under the ESA and endangered by the CESA. This species is covered by the Regional MSCP. San Diego thornmint is an annual plant known to occur in perennial native grasslands and mesic clay lenses on Las Posas and San Miguel exchequer soils. This species is typically found in association with other clay endemics including Palmer's grappling hook (*Harpogonella palmeri*), chocolate lilies (*Fritillaria biflora*), and the exotic false brome (*Brachypodium distachyon*).

The majority of the A-1 fence and patrol road alignment is on San Miguel exchequer soils. Microhabitat specific to the San Diego thornmint was not observed during winter/fall surveys. There are no known records for this species



near the impact corridor. Only the presence of appropriate soil mapping type within the known range of the species suggests any potential. The timing of the surveys and the presence of appropriate soils make it impossible to exclude a low potential for occurrence of this species and so it has been carried forward for discussion in **Chapter 8.3.3**.

### **Summary**

The following listed species or their habitats have the potential to occur within or near the impact corridor and therefore have the potential to be impacted by implementation of the Project:

- Quino checkerspot butterfly
- Arroyo toad
- Coastal California gnatcatcher
- Willowy/Jennifer's Monardella
- San Diego thornmint
- Least Bell's vireo
- Southwestern willow flycatcher
- Otay Tarplant.

Potential impacts on these species, and on migratory birds as a group, are addressed in **Chapter 8.3.3**.

### **8.3.3 Direct and Indirect Effects of the Project**

The USFWS has provided critical feedback on the location and design of fence sections to avoid, minimize, or mitigate potential impacts on listed species or designated critical habitat. CBP has developed the BRP in coordination with the USFWS. Potential impacts on federally listed species and migratory birds are based on currently available data.

#### **Quino Checkerspot Butterfly (Quino)**

This species occupies grasslands, remnant forblands, juniper woodlands, and open scrub and chaparral communities that support the larval host plants and provide a variety of adult nectar resources. The larval host plants are annuals that thrive in clay soils but can also occur in other soil types.

Adult Quino have been observed in numerous locations within and near the east and west ends of the impact corridor. The apparent absence of locations along the central portion of the alignment is undoubtedly due to the difficulty of accessing this area and not to true absence of the species in this area. Potential habitat (three of the host plant species) was observed along the 5-mile stretch for Section A-1 during the October 2007 through February 2008 surveys and the species is assumed to be present throughout.

Based on the known locations and observed potential habitat for this species, implementation of the Project is anticipated to result in the permanent loss of up to approximately 92 acres of suitable habitat for this species in Section A-1, will be impacted by the Project.

Although BMPs will be implemented to avoid and minimize impacts on individuals during construction, there is a relatively high likelihood that some individual of the species would be killed during construction. This butterfly's biology is somewhat unique for butterflies in general in that the 3rd or 4th larval growth (instar) will enter into its winter stasis (diapause) sometime in May. It remains this way until sufficient winter rains stimulate plant growth. If sufficient plant growth occurs, then the caterpillars come out of diapause and continue their feeding until they reach larval maturity, pupate, and then finally emerge as adults. If the winter rains are appropriate, caterpillars could emerge from diapause sometime in January. Pupation would occur sometime in February and adults would emerge in March. Once adults emerge, the cycle begins all over. Depending on the amount and timing of the rains the timeline would shift either earlier or later. Diapause typically occurs in or near the host plant patch upon which the larvae were feeding prior to entering diapause. Adults will disperse to suitable habitat and are known to disperse anywhere from 1 to 3 kilometers a year. Sometimes dispersal could be further if wind assisted.

The best scenario to reduce impacts on individual Quino checkerspot butterflies would be for construction (i.e., clear or remove host plants from the 60-foot impact corridor) to start immediately after emergence of the adults in March. However, since individual variation in time of emergence occurs, some Quino are likely still in pupation and would be unable to disperse away from the impact area. Therefore, even under this best-timing scenario, some individuals would still likely be killed. Numbers of individuals lost to construction would increase from this minimum, depending upon the timing of land clearing for the construction effort. Indirect impacts from construction and subsequent operation of the access and patrol roads include dust impacts on individuals and habitat that would extend beyond the boundaries of the impact corridor. Increased settling of dust on larval host species and on nectar-providing species for the adults could reduce palatability of larval host plants and reduce availability of nectar to adults. With the use of BMPs to reduce dust emissions during construction, these impacts are going to be minimized to the maximum extent practicable.

A potential benefit anticipated to result from implementation of the Project is the reduction of foot traffic and grazing impacts on habitat for this species. This area currently receives heavy foot traffic and illegal cattle grazing. These activities undoubtedly result in adverse impacts due to reduction of habitat quantity and quality. The expected reduction of these illegal activities in the areas north of the fence could result in a benefit for this species.

## **Arroyo Toad**

The arroyo toad occupies shallow, slow-moving stream habitats, and riparian habitats that are disturbed naturally on a regular basis, primarily by flooding. Adjacent stream banks can be sparsely to heavily vegetated with trees and shrubs such as mulefat (*Baccharis* spp.), California sycamore (*Platanus racemosa*), cottonwoods (*Populus* spp.), coast live oak (*Quercus agrifolia*), and willows (*Salix* spp.) (USFWS 1999) but must be sandy enough for the toads to burrow into the substrate. For breeding, the arroyo toad uses open sites such as overflow pools, old flood channels, and pools with shallow margins, all with gravel bottoms. This species aestivates in sandy terraces adjacent to the stream habitat.

No habitat for this species was observed within the alignment or access road corridors during the field surveys for this Project. NatureServe data indicate an occurrence approximately 0.8 miles south of the Marron Valley access road. The existing access road traverses the northern boundary of the aestivation habitat associated with this record. Impacts on the portion of the existing access road that intersects the aestivation habitat is straight, so that upgrades, if any are required, would only require widening the road and work would not extend significantly beyond the widened area (no cut and fill are expected).

## **Coastal California Gnatcatcher**

This species occurs almost exclusively in mature coastal sage scrub habitat with occasional populations in chaparral. Due to the wildfires of 2003 which burned through the impact corridor, suitable habitat does not currently occur within or near the impact corridor and no impacts on individual birds are anticipated from construction. However the coastal sage scrub and chaparral vegetation that is in the impact corridor might become suitable habitat if it is allowed to mature. There is mature coastal sage scrub and occupied habitat near the western end of the Otay Truck Trail Access road. A single bird was observed in chaparral near the coastal sage scrub margin during the December 26, 2007 survey. The degree of impacts depends on the extent of road work required in those areas. If the entire 60 foot access corridor was used then the combined maximum impacts from the Project would be the loss of approximately 74.2 acres of CAGN habitat.

A potential benefit anticipated to result from implementation of the Project is the reduction of foot traffic and grazing impacts on habitat for this species. This area currently receives heavy foot traffic and illegal cattle grazing. These activities undoubtedly result in adverse impacts due to reduction of habitat quantity and quality. The expected reduction of these illegal activities in the areas north of the fence could result in a benefit for this species.

### **Least Bell's Vireo**

LBV is a migratory species that requires early-successional riparian habitat during its breeding season which extends from mid-March to September in southern California. No records of LBV are known from in or near the impact corridor. However, two narrow bands of suitable riparian habitat occur along the Tijuana River and Cottonwood Creek south of the impact corridor. Therefore, this species is assumed to be present in that riparian habitat.

The riparian woodlands south of the impact corridor could be impacted by increased noise levels during construction; noise from operation and maintenance activities are anticipated to return to ambient. If breeding pairs of LBV occur within this strand of habitat, the elevated noise level might interfere with communication and breeding behaviors. Implementation of the Project could reduce or even terminate the use of this riparian corridor as a staging area for cross-border violators, allowing the habitat to flourish and LBV to conduct normal behaviors in this habitat without human disturbance.

### **Southwestern Willow Flycatcher**

This neotropical migrant usually breeds in dense or patchy riparian habitats along streams or other wetlands near standing water or saturated soils. The breeding season can extend from early May to early September.

No records of SWF are known from in or near the impact corridor. No suitable habitat for this species was observed in or near the impact corridor. However, the riparian woodland habitat along the Tijuana River and Cottonwood Creek has the potential to provide suitable habitat in the future, as it increases in stature.

The strands of potential future habitat would receive no direct impacts from construction, operation, or maintenance activities associated with the Project. The Project could reduce or even terminate the use of this riparian corridor as a staging area for cross-border violators, allowing the habitat to mature and future SWF to conduct normal behaviors in the mature habitat with reduced or no human disturbance.

### **Jennifer's Monardella**

Jennifer's monardella is a late-spring flowering perennial that is known to occasionally die back to only its root structure during the fall. This species is typically found along a drainage. There are records for this species near the impact corridor, but no individuals were observed during the fall and winter surveys. Any occurrences in the impact corridor would have been detectable if they were more than a few individual plants.

The Project has the potential to impact a small previously unknown occurrence of this species.

### **Otay Tarplant**

Otay tarplant is a summer flowering species that prefers disturbed habitat. There are no records of the species in the impact corridors. The species is known to occur to both the east and west of Section A-1. The most suitable habitat for this species are the areas near the sloped Mima Mound topography north of the Marron Valley Access Road from Mine Canyon to Mine Road.

The Project could potentially create habitat for this species by both exposing appropriate soils during cutting and filling, and the creation of disturbance habitat in those exposed soils. This would be a benefit. The Project has the potential to impact unknown occurrence of this species.

### **San Diego Thornmint**

San Diego thornmint is a spring annual. There are no records of this species within the impact corridor; however, there are appropriate soils throughout the construction areas for Section A-1. Without spring surveys it is not possible to exclude this species from occurring in the impact corridor.

The Project has a low potential to impact an unknown occurrence of this species.

### **Migratory Birds**

Construction will adversely affect migratory birds by disturbing habitat, habitat conversion, increased mortality during construction, and subsequent disturbance from the use of patrol roads and noise. More than 200 acres of vegetation will be cleared along the impact corridor. Impacts on migratory birds could be substantial, given the potential timing of fence construction. However, implementation of BMPs to avoid or minimize adverse impacts could markedly reduce their intensity. These BMPs include pre-construction surveys, onsite monitors, and temporary suspension of construction to removal migratory birds, if needed.

However, implementation of BMPs to avoid or minimize adverse impacts could markedly reduce their intensity. The following is a list of BMPs recommended for reduction or avoidance of impacts on migratory birds:

- If all ground disturbing activities cannot be completed outside of migratory bird nesting season (approximately 1 February to 31 August) prior to the start of the project an environmental monitor will conduct migratory bird surveys at the project site before activities begin.
- The environmental monitor will locate and clearly mark bird nests 48 hours prior to ground disturbing activities. Active nests will be removed and relocated prior to clearing and ground disturbing activities. Migratory bird habitat will be removed to prevent the return of birds.
- Clearing, grubbing, and all other ground disturbing activities will be limited to areas cleared of migratory bird nests.

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## 9. CULTURAL RESOURCES

### 9.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific obligation under the National Historic Preservation Act (NHPA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the NHPA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for cultural resources.

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

Other cultural resources laws and regulations include the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archeological Resources Protection Act (ARPA) (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes. Archaeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points and bottles).

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered for the NRHP. More recent structures, such as Cold War-era resources, might warrant protection if they have the potential to gain significance in the future.

Resources of traditional, religious, or cultural significance to Native American tribes or other community groups can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants,

animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture. Traditional cultural resources might include the locations of historical or mythological events, traditional hunting or gathering areas, sacred areas, or any other location of traditional cultural importance.

**Ethnographic Context.** The Area of Potential Effect (APE) for the Project lies in the southern portion of San Diego County within the historical territory of the Kumeyaay people. Kumeyaay is a native term referring to all Yuman-speaking peoples living in the region from the San Dieguito River south to the Sierra Juarez in Baja California and roughly west of the present-day Salton Sea.

**Prehistoric Context.** Southern San Diego County contains archaeological evidence of human use and occupation that spans the known periods of prehistory. Dated to the Holocene, the earliest sites are known as the San Dieguito complex (i.e., 9,000–7,500 years ago), so-named because the culture was first defined at a site along San Dieguito River, about 20 miles north of the APE for the Project. The archaeological remains from these sites consist of large, stemmed projectile points and finely made scraping and chopping tools, which were used for hunting and processing large game animals (Moratto 1984).

The La Jolla complex (i.e., 7,500–2,000 years ago) followed the San Dieguito complex. La Jolla sites are recognized by abundant millingstone assemblages in shell middens often located near lagoons and sloughs. This complex is associated with a shift from hunting to a more generalized subsistence strategy relying on a broader range of resources, including plants, shellfish, and small game. La Jolla sites occur in larger numbers than those of the preceding San Dieguito complex, and are found across a greater range of environmental zones.

As elsewhere during late prehistory in southern California, the Yuman complex (i.e., 1,300–200 years ago) was a time of cultural transformation. Beginning about 1,000 years ago, Yuman-speaking groups moved into the San Diego area. These later populations are recognized by distinctive small projectile points, ceramic vessels, and an increase in the use of mortars. The acorn became an increasingly important component of the diet, although subsistence pursuits from earlier periods continued. The number of Yuman-complex sites dramatically outnumbers those from the earlier periods.

**Historic Context.** The historical period includes Spanish expeditions of the Alta California coast. In the 1760s, spurred on by the threat to Spanish holdings in Alta California by southward expansion of the Russian sphere of influence, the Spanish government began planning for the colonization of Alta California (Rolle 1978). Mission San Diego de Alcalá was established on July 16, 1769, at the present-day location of the San Diego Presidio. For the next 50 years, mission influence grew in southern California. Mission San Luis Rey de Francia, north of San Diego in present-day Oceanside, was established on June 13, 1798. The



mission economy was based on farming and open-range ranching over vast expanses of territory.

Mexican independence from Spain in 1821 was followed by secularization of the California missions in 1832. Between 1833 and 1845, the newly formed Mexican government began to divide up the immense church holdings into land grants. By the 1840s, ranches, farms, and dairies were being established throughout the El Cajon Valley, along the Sweetwater River, and in nearby areas.

The rancho era in California was short-lived and, in 1848, Mexico ceded California to the United States under the Treaty of Guadalupe Hidalgo. Growth of the region was comparatively rapid after succession. Subsequent gold rushes, land booms, and transportation development all played a part in attracting settlers to the area. San Diego County was created in 1850, the same year that the City of San Diego was incorporated. Over the next 20 years, the county's population increased sixfold and the city population more than tripled. By the late 1800s, the county was still growing and a number of outlying communities developed around the old ranchos and land grants, in particular areas in the southern limits of the county (Collett and Cheever 2002).

Throughout the early 20<sup>th</sup> century, most of San Diego County remained primarily rural. Like most of southern California, this region changed rapidly following World War II when the pace of migration and growth quickened. Today, southern San Diego County has transformed into a burgeoning metropolis with unprecedented urban expansion. The remoteness of the impact corridor has resulted in a generally undeveloped appearance with the exception of access roads, heavily used footpaths, and the accumulation of modern trash.

**Previously Recorded Resources.** An archaeological site record and archival search was conducted at the South Coastal Information Center in accordance with NHPA Section 106 (36 CFR 800.4a [2, 3, and 4]). The archaeological site record and archival search were conducted to identify and collect data for cultural resources sites and isolates recorded within a 0.5-mile radius of the Project APE. A search of the National Archaeological Data Base also was completed in an effort to identify cultural resources management reports for previously completed cultural resources management activities (archaeological survey or evaluation excavations) in or near the APE. Finally, the NRHP was reviewed for information on historic properties that are or have the potential to be listed.

A letter to initiate consultation was sent to 14 tribal groups with cultural links to the impact corridor. This letter was provided to initiate consultation and solicit comment on traditional cultural properties and areas of concern. No responses have been received to date.

A review of the archaeological site records and archival information, including site (CA-SDI) and Primary (P-37) plot U.S. Geological Survey (USGS) maps (Otay Mountain and Tecate, California 7.5-minute quads) and the National

Archaeological Data Base indicates that two cultural resources studies have been conducted within the vicinity of the APE (Foster and Jenkins 1984, Cotterman and Espinoza 2002). These studies covered large areas associated with the Otay Mountain Pack Trail (sometimes known as the Pack Trail) and with Heard Ranch.

Previously recorded archaeological resources include six prehistoric sites, five isolates, and an historic trail (see **Table 9-1**). Five of the recorded sites are along the Pack Trail and the sixth is near, but not within the Section A-2A impact corridor. The five sites along the trail are all within the APE based on site mapping information.

**Table 9-1. Previously Recorded Archaeological Resources**

Site Number	Site Description
P-37-015715	Isolate-Interior dacite flake
P-37-015716	Pack Trail
P-37-024688	Isolate-Dark gray basalt flake
P-37-024689	Isolate- Light brown dacite core and light brown dacite flake
P-37-024690	Isolate-Brown dacite flake
P-37-024691	Isolate-Gray basaltic flake
CA-SDI-16368	Sparse lithic artifact scatter
CA-SDI-16369	Small flaked lithic artifact and prehistoric ceramic scatter
CA-SDI-16370	Seasonal camp with two milling features and a sparse flaked lithic artifact scatter
CA-SDI-16371	Sparse flaked lithic artifact scatter
CA-SDI-16372	Dense flaked lithic artifact scatter
CA-SDI-9968	Extensive bedrock milling features with sparse flaked lithic artifact scatter

An intensive pedestrian survey of the entire impact corridor was completed in November 2007. As a result of realignments to the Section A-1, an additional survey was conducted in June 2008. The surveys were completed under a Fieldwork Authorization Permit granted by the BLM Palm Springs/South Coast Field Office Field Office (Permit No. CA-08-03). Conditions at the time of the survey were optimal for pedestrian coverage of the project areas. Several weeks prior to the November 2007 survey, a severe wildfire burned all of the Section A-2A impact corridor and affected smaller portions of the Section A-1 impact corridor.

## 9.2 AFFECTED ENVIRONMENT

The results of the archeological survey assessment are summarized below and included in a cultural resources report provided to the BLM and California SHPO.

***The Pack Trail (P-37-015716).*** The Pack Trail winds over chaparral-covered slopes on the flank of the San Ysidro Mountains. The conditions are rocky and generally sloped with a series of north-south-trending ridges cut by deep canyons created by runoff to the Tijuana River from the mountain. The elevation ranges from 440 to 1,330 feet above MSL. According to Mitchell (1997) the Pack Trail averaged approximately 20 inches in width and was formed by clearing brush and pushing “conspicuous” rocks to the side. The trail was difficult to follow in its entirety as heavy vegetation, topography, and “hundreds” of footpaths from migrant human groups and large livestock activity obscure the primary path. Mitchell surveyed the trail in 1996, after a wildfire cleared vegetation from a large section of the trail. The trail was resurveyed in 2002 by Chambers Group, Inc. (2002) and found to be nearly 1 to 3 meters in width along its full length, brush-free, and easy to follow despite the many intersecting footpaths. Chambers noted the possibility that the trail had been altered through the use of picks and shovels to excavate a more suitable path along the steep ridge slopes and to form a more defined pathway. The trail ranges from a surface manifestation to a path that is excavated as much as 60 centimeters into the hillsides. The trail runs parallel to the international border and within 1 meter of the border in many areas and more than 550 meters from the border in other areas.

The research completed by Mitchell (1997) concluded that the trail was constructed in the 1930s or 1940s to bring fencing material up the steep mountain flanks to construct a fence along the border. Mitchell (1997) presented the notion that the barbed wire fence was constructed to maintain a separation of livestock and not as a means of controlling human population movement. Mitchell (1997) and the Chambers Group, Inc. (2002) both concluded that the Pack Trail is not associated with any persons or events of particular importance in regional transportation history and is not the work of a master and in the Chambers Group view the trail has been substantially modified from the original form and, as such, the trail is not eligible for nomination to the NRHP.

The pedestrian survey completed in November 2007 confirmed both the configuration and condition of the trail. The inspection and survey followed the existing trail, beginning at the western end. There were no associated historic or prehistoric artifacts identified within the narrow confines of the trail.

***CA-SDI-16368.*** CA-SDI-16368 was recorded by the Chambers Group in 2002 and described as a sparse lithic scatter approximately 18 meters north of the U.S./Mexico international border. CA-SDI-16368 is described as a single metavolcanic boulder measuring approximately 1.1 by 0.85 meters with several pieces of rock chipped from the surface of this boulder. The Chambers Group described the shatter as representing an opportunistic prehistoric quarry.

According to the California Department of Parks and Recreation (CDPR) site record, the site is bisected by the Pack Trail. There was no evidence of flakes or shatter found at the plotted or Universal Transverse Mercator- (UTM) based location.

*CA-SDI-16369.* CA-SDI-16369 is recorded as a prehistoric ceramic and stone artifact scatter approximately 8 meters north of the Otay Mountain Truck Trail and 50 meters north of the U.S./Mexico international border. As plotted, the site is outside the impact corridor. The site is recorded as containing approximately 70 sherds of prehistoric pottery, approximately 10 pieces of stone shatter, and a core. In addition to the artifacts, a single granite outcrop was described as having a possible milling slick. The site record indicates that a subsurface component to this resource was not expected. As plotted, this site is on the Mexico side of the border and is outside the existing Project.

*CA-SDI-16370.* CA-SDI-16370 is a sparse lithic scatter with two associated milling slicks. This site is recorded at the convergence of three tributaries of the Tijuana River, with materials found in both the United States and Mexico. The site is reported to be 10 meters south of the Pack Trail. During the initial survey (Chambers Group Inc. 2002), approximately 16 pieces of debitage (shatter) were found scattered over an area 18 meters by 10 meters. Two milling slicks were identified on a boulder in Mexico. As plotted, this site is in Mexico and the stone artifacts were not relocated during the current survey.

*CA-SDI-16371.* CA-SDI-16371 is categorized as a sparse lithic scatter with approximately 8 pieces of chipping waste and a single metavolcanic core scattered over an area 8 by 4 meters. As recorded, the site is plotted on a southeast-facing slope, 30 meters northwest of the bottom of Buttewig Canyon (Chambers Group Inc. 2002). The site form indicated that a subsurface component to the site was not expected. This site was not relocated during the current survey.

*CA-SDI-16300.* CA-SDI-16300 is a moderately dense stone artifact scatter at the intersection of Puebla Tree and White Cross Road. This site is not within the Otay Mountain Truck Trail route, but along an access road to the Project. The site is approximately 800 by 600 meters in size and is on the eastern side of a small hill. Artifacts include approximately 300 pieces of chipping waste and several cores. The site was identified during the current survey at the location plotted on the site record. Although the recorded information for this resource suggests that CA-SDI-16300 is potentially eligible for NRHP nomination, eligibility evaluations have not been conducted. This site appears to be one of several opportunistic quarries where available fine-grained metavolcanic stone was tested for suitability for prehistoric tool manufacture. There was no evidence at the site of a buried component or of formal tools such as blades, performs, or hammerstones.

**Previously Recorded Isolates.** Four prehistoric isolates (P-37-15715, P-37-024688, P-37-024689, and P-37-024691) were recorded by the Chambers Group in 2002. Each isolate is a single piece of metavolcanic chipping waste (flake or shatter) with no other associated artifacts or features. None of the isolates were relocated during the current survey. As defined, isolates are not eligible for National Register consideration since they do not contain the potential to address regional research questions.

**Newly Recorded Resources.** During the course of the pedestrian survey, two newly discovered archaeological sites and two isolated finds were identified and recorded. Both archaeological sites are small, prehistoric quarries with a limited amount of debitage scattered over the ground surface. These quarries represent opportunistic extraction and sampling of the naturally occurring metavolcanic stone to determine its overall suitability for creating flaked-stone implements. It appears that these naturally occurring outcrops were examined for quality stone material, which was reduced with the removal of cortex followed by the transport of usable stone to various field camps and habitation areas for further reduction and tool manufacture. The locations of these field camps and habitation areas are not known, although it is likely there are a number of them in the Project vicinity.

The individual artifacts found at the newly discovered sites do not represent a specific period of occupation other than an association with the broad prehistoric past. The previously recorded site CA-SDI-16300 and the two newly discovered sites CA-SDI-18578 and -18579 are representative of special use prehistoric quarry areas. The study area contains a number of exposed Santiago Peak metavolcanic cobbles or boulders that are suitable for making prehistoric tools. This is a fine-grained stone, generally blue to blue-green in color which provides a predictable fracture plane and is seen throughout the southern part of San Diego County as a source stone for flaked stone tools. Based on the current survey these small quarry locales do not include an associated buried deposit or other evidence of prehistoric settlement or use.

The appropriate CDPR forms have been completed and were submitted to the South Coastal Information Center for assignment of official trinomials and Primary designations. Those trinomials are used here.

**Truck Trail – CA-SDI-18578.** Truck Trail CA-SDI-18578 represents a location where a limited number of flakes were removed from small metavolcanic cobbles. This site is on a small, plateau that is bisected by the Truck Trail. The site assemblage consists of approximately 50 pieces of fine-grained metavolcanic debitage. This material appears to have been removed from several moderately sized metavolcanic cobbles. The site appears to have been created by “testing” or extraction of usable stone material for making formal tools such as scrapers and projectile points. With the exception of a few cores and the debitage, no other artifacts were found. The artifact scatter measures

approximately 20 by 30 meters, with the majority of the artifacts found on the north side of the Truck Trail.

Vegetation within the site area consists of burned scrub with sparse, low growing ground cover. Because of recent wildfires, the ground surface visibility was excellent. The artifact scatter measures approximately 20 by 30 meters, with the majority of the artifacts found on the north side of the Truck Trail. Given the soil conditions and the geology of the area the potential for a subsurface deposit is considered very low for this site.

*Truck Trail – CA-SDI-18579.* Truck Trail CA-SDI-18579 is a small flake scatter with a scraper and a broken mano. The site is at the east end of the Truck Trail, on a small plateau overlooking the Tijuana River drainage. As with CA-SDI-18578, this site is defined by a number of moderate-sized metavolcanic cobbles that appear to have been tested for suitability for the creation of flaked stone tools. The resulting debitage and cores are what define this site area. The area is also used as a helicopter landing pad (Pad 33) by the Border Patrol. The Truck Trail passes approximately 20 meters to the north of the site. Surface artifacts consist of approximately 15 pieces of fine-grained metavolcanic chipping waste, a scraper, and a mano fragment, scattered over an area 20 by 30 meters. The two formal tools are a fine-grained metavolcanic scraper and a granite mano fragment.

***Newly Discovered Isolates.*** Two isolated finds, both fine-grained metavolcanic flakes, were found along the survey route. These items were not recorded but were noted on the Project maps. No additional artifacts or archaeological resources (prehistoric or historic) were found during the survey.

## **Section A-2A**

### ***Previously Recorded Sites***

*CA-SDI-9101.* This two-locus site is a bedrock milling complex with a scatter of flaked stone artifacts and a second locus with a scatter of flaked stone and one ground stone artifact. This site was recorded in 1981 by the BLM as part of the Mission Park application. The site is south of Tecate Mission Road (also known as South Grape View) for Section A-2A and outside of the impact corridor with a sufficient buffer.

*CA-SDI-9102.* This site is several thousand meters to the west of CA-SDI-9101 and is a small scatter of flaked stone artifacts. This site was recorded in 1981 by the BLM during the survey for the Mission Park application. The site is south of the access road for Section A-2A (i.e., Tecate Mission Road) and is outside the impact corridor with a sufficient buffer.

*CA-SDI-9968.* This site was recorded in 1984 and is known as the Heard Ranch site. The site occupies land on both sides of the international border and

surrounds an historic residence that is currently occupied. The site is at the southern end of the access road (i.e., Tecate Mission Road) for Section A-2A and is on private property. There are numerous bedrock milling features on the large granite boulders with a surface scatter of flaked and ground stone artifacts as well as pockets of dark soil which could indicate accumulated midden. Inspection of the site was limited during the current Project because of private property restrictions, though surface indications did not demonstrate that this site extends to the access road.

**Newly Recorded Sites.** The survey of the Section A-2A impact corridor resulted in the recording of one new cultural resource site. This site is referred to as GV-1 and was identified along Tecate Mission Road. The site is a bedrock milling station with a light surface scatter of debitage. Three slicks were recorded on a single, large granite boulder. The site is on the edge of the existing road with no evidence that it continues into the road ROW.

**Architectural Resources.** Review of maps and land records indicate that there are no buildings or structures present within the APE, or with viewsheds that will include the construction corridor for the Project. Accordingly, the Project will have no impact on architectural resources.

**Resources of Traditional, Religious, and Cultural Significance to Native American Tribes and other groups.** A review of the NRHP provided information on one sacred site within the vicinity of the construction corridor for the Project. Kuchamaa/Tecate Peak is identified as an ACEC by the BLM. This area encompasses a sacred mountain (Tecate Peak) that is a spiritual center for Native American people of southern California and northern Baja California. Tecate Peak was placed on the NRHP in 1992 (#92001268). This resource is listed for religious or ceremonial reasons and it is identified as a ceremonial site.

In 1981, a proposal to build a campground on the lower slopes of Tecate Peak initiated the preparation of an Environmental Impact Report by BLM. As a result of research into ethnographic literature and Native American consultation, the BLM sought a nomination of Kuchamaa as a NRHP district. The Tecate Peak District encompasses 510 acres of both state and Federal lands. The district was determined to be eligible for the NRHP based upon its uniqueness as a site of extreme religious significance to the Kumeyaay and other Indians throughout southern California. It should be noted that portions of Kuchamaa are still privately owned. This creates a dilemma for the Kumeyaay, who feel that they risk personal harm by divulging information about their sacred mountain, and that, should portions of it be developed, the power of the site will be diminished (Hector and Garnsey 2006).

### 9.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

For assessing the impacts of the Project on archaeological resources, the APE is confined to the construction corridor for the Project, as well as the access roads

and staging areas. The APE for analysis of impacts on resources of traditional, religious, or cultural significance to Native American tribes and other community groups includes both those areas that will be impacted directly by ground disturbance as well as the viewshed and general setting of those resources.

Potential impacts on cultural resources associated with the Project are limited to ground-disturbing construction and future maintenance and patrolling activities and indirect impacts are perceived from increased access to this formerly remote area. Based on the results of a cultural resources survey of the impact corridor and data provided on the site records, archaeological monitoring is recommended at five specific locations (CA-SDI-18578, CA-SDI-18579, CA-SDI-16300, CA-SDI-16368, and CA-SDI-16371) during all ground-disturbing activities associated with the Project. All ground-disturbing activity within this portion of the study area will be monitored by a professional archaeologist because of the proximity of these sites to the project. The geological conditions and information on previously evaluated sites in this region strongly suggest that there is a low potential for buried archaeological materials associated with any of these sites.

Evaluations for eligibility to the National Register have not been conducted on newly recorded sites CA-SDI-18578 and CA-SDI-18579; or for CA-SDI-16300, -16368, or -16371 on Section A-1; or GV-1 on Section A-2A. Prior to construction of the fence or use of the Truck Trail and Tecate Mission Road in the vicinity of these site areas, the boundaries of the sites will be clearly marked with flagging or protective fencing to avoid inadvertent impacts on the resources. Construction of an access link from Alta Road to the Otay Mountain Truck Trail at the west end of the project will impact a portion of CA-SDI-8654. This is a National Register eligible archaeological site. The project corridor across this site should be surveyed for surface evidence of cultural resources and a subsurface testing program should be completed prior to ground disturbance to determine if significant archaeological deposits are present within the proposed area of disturbance. If significant resources are discovered a data recovery treatment plan should be developed and implemented prior to ground disturbing activities.

The Pack Trail (recorded as P37-015616) was recommended as not eligible for National Register considerations as the result of previously completed study. Impacts on this feature will not require a monitoring or mitigation program, though additional documentation of the trail might be appropriate.

Since no cemeteries, isolated Native American or other human remains have been documented within the study area, the potential for impacts on unrecorded Native American or other human remains during the Project appears to be relatively low. If Native American or other human remains are inadvertently discovered during the course of Project actions, there will be no further excavation or disturbance of the remains or the vicinity until the remains and the vicinity have been evaluated.



The impacts on Kuchamaa have not been defined and the development of protective measures has not been completed. Consultation with associated tribal groups was initiated and is ongoing; additional consultation will be necessary to develop appropriate Project protocols. CBP is committed to ongoing consultation on potential project impacts to concerned parties with respect to traditional cultural properties.

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## 10. SOCIOECONOMIC RESOURCES AND SAFETY

### 10.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts associated with socioeconomic resources.

**Socioeconomics.** Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Regional birth and death rates and immigration and emigration affect population levels. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services.

Data in three areas provide key insights into socioeconomic conditions that might be affected by a Project. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the “before” and “after” effects of any jobs created or lost as a result of a Project. Data on industrial or commercial growth or growth in other sectors provide baseline and trend line information about the economic health of a region.

Demographics identify the population levels and changes to population levels of a region. Demographics data might also be obtained to identify, as appropriate to the evaluation of a Project, a region's characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

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

**Environmental Justice.** There are no Federal regulations specifically addressing socioeconomic; however, there is one Executive Order (EO) that pertains to environmental justice issues. Although the Secretary's waiver means that CBP no longer has any specific obligation under EO 12898, the Secretary committed CBP to responsible environmental stewardship of our valuable natural

and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with EO 12898 as the basis for evaluating potential environmental impacts and developing appropriate mitigations for environmental justice, protection of children, and safety.

EO 12898 is included in the socioeconomic resources section because it relates to various socioeconomic groups and the health effects that could be imposed on them. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The purpose of the EO is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies.

Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a project. Databases were searched in an attempt to identify potential sources of environmental hazards near the Project. Such information aids in evaluating whether a project will render vulnerable any of the groups targeted for protection in the EO. EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, addresses the Federal policy of protection of children from exposure to disproportionate environmental health and safety risks. This EO established that each agency has a responsibility to ensure that its policies, programs, activities, and standards address risks to children that results from environmental health or safety.

## 10.2 AFFECTED ENVIRONMENT

**Socioeconomic Resources.** Sections A-1 and A-2A are within southern San Diego County. As of January 1, 2007, San Diego County had a population of 3,098,269, which is a 10.1 percent increase over the 2000 Census population (SANDAG 2007b). Sections A-1 and A-2A will be located in relatively sparsely populated areas of San Diego County; however, the Mexican cities of Tijuana and Tecate, which have a combined population of more than 2 million people, are along the U.S./Mexico international border to the southwest and southeast, respectively, of the Project. Section A-1 is adjacent to the OMW and near the community of Otay Mesa, California. Section A-2A is just west of the community of Tecate, California, and within the Zip Code 91980. Otay Mesa and Tecate, California, were chosen as the Regions of Influence (ROIs) for the Project because they best represent the socioeconomic and demographic characteristics

of the area. ROI 1 (community of Otay Mesa) is defined by the City of San Diego Otay Mesa Community Planning Area, while ROI 2 (community of Tecate) is defined by Zip Code 91980.

Otay Mesa is a community within the City of San Diego that has undergone considerable commercial and industrial development in recent years. As of January 1, 2007, Otay Mesa had a population of 13,892, which is a 698 percent increase from the 2000 U.S. Census population of 1,740 (SANDAG 2007c). Otay Mesa has become the largest commercial land border port and one of the busiest commercial land border crossings in the United States (Otay Mesa undated).

Tecate, California, is an unincorporated community in San Diego County that is directly adjacent to the Mexican City of Tecate, Baja California. The community of Tecate, California, is a relatively sparse area that had a population of 177 during the 2000 Census, but as of January 1, 2007, the population had decreased by approximately 22 percent to 139 (see **Table 10-1**) (SANDAG 2007d).

**Table 10-1. State, County, and ROI Population Trends Comparison**

Year	State of California	San Diego County	ROI 1 (Community of Otay Mesa)	ROI 2 (Community of Tecate)
2000	33,871,648	2,813,833	1,740	177*
2007	37,662,518	3,098,269	13,892	139
Change 2000 to 2007	11.2%	10.1%	698.4%	-21.5%

Source: U.S. Census Bureau 2000, State of California 2006, SANDAG 2007b, SANDAG 2007c, SANDAG 2007d.

Note: \* Minor adjustments were made to the 2000 U.S. Census total population data for Zip Code 91980 after its initial release in order to more accurately reflect the region's true population and housing distribution. Therefore, the total population for Zip Code 91980 (Community of Tecate) in Table 3.14-1, which used data from 2007, is different from that used in Table 3.14-2, which used 2000 data.

Based on 2000 U.S. Census data, employment types in the affected ROIs vary (see **Table 10-2**). The largest employment type in ROIs 1 and 2, San Diego County, and California is educational, health, and social services (21.1, 25.5, 19.4, and 18.5 percent, respectively) (SANDAG 2003a, SANDAG 2003b, SANDAG 2003c, U.S. Census Bureau 2000). In 2006, the unemployment rate in San Diego County was 4 percent (Fedstats 2007).

**Environmental Justice, Protection of Children, and Safety.** As of January 2007, approximately 44 percent of the 13,892 people living in Otay Mesa were Hispanic. Of the non-Hispanic residents, approximately 45 percent were White, 41 percent were Black or African American, 12 percent were Asian and Pacific

**Table 10-2. Employment Type of Residents in State, County, and ROIs**

<b>Economic and Social Indicators</b>	<b>State of California</b>	<b>San Diego County</b>	<b>ROI 1 (Community of Otay Mesa)</b>	<b>ROI 2 (Community of Tecate)</b>
Employed Persons in Armed Forces (Percent of Employed Total Population, Age 16 and over)	0.9	6.5	3.8	0.0
<b>Employed Persons By Industry (Percent of Employed Civilian Population, Age 16 and over)</b>				
Agriculture, forestry, fishing and hunting, and mining	1.9	0.7	0.0	5.5
Construction	6.2	6.6	3.8	14.5
Manufacturing	13.1	11.0	12.6	3.6
Wholesale trade	4.1	3.2	3.3	5.5
Retail trade	11.2	11.3	11.8	7.3
Transportation and warehousing, and utilities	4.7	3.8	7.1	1.8
Information	3.9	3.5	4.5	1.8
Finance, insurance, real estate, and rental and leasing	6.9	7.1	5.6	0.0
Professional, scientific, management, administrative, and waste management services	11.6	13.3	6.9	5.5
Educational, health and social services	18.5	19.4	21.1	25.5
Arts, entertainment, recreation, accommodation and food services	8.2	9.6	7.9	14.5
Other services (except public administration)	5.2	5.2	4.6	7.3
Public administration	4.5	5.4	11.0	7.3

Source: U.S. Census Bureau 2000, SANDAG 2003a, SANDAG 2003b, SANDAG 2003c

Islander, 2 percent were of some other race, and 0.6 percent were American Indian. As of 2007 the median household income was \$97,694 (current dollars) and the approximate median age was 38.3. The approximate percentage of the population under the age of 5 years old in Otay Mesa was 3.2 percent in 2007 (SANDAG 2007c). As of January 2007, the Zip Code 91980, containing Tecate, was 37.4 percent Hispanic, and of the non-Hispanic population, 78.2 percent were White, 8.0 were Black or African American, 5.7 percent were American

Indian, 2.3 percent were Asian or Pacific Islander, 5.7 percent were some other race. The 2007 median household income in Zip Code 91980 was \$38,776 (current dollars) and the approximate median age was 35 years old (SANDAG 2007d).

Demographics in Otay Mesa and Tecate, California, are similar to those in San Diego County. As of 2007, approximately 29.3 percent of the population in San Diego County was Hispanic, and of the non-Hispanic population, 72.9 percent were White, 13.9 percent were Asian or Pacific Islander, 7.6 percent were Black or African American, 4.8 percent were some other race, and 0.7 percent was American Indian. San Diego County's 29.3 percent Hispanic population is lower than Otay Mesa and Tecate, however the 2007 median household income (in current dollars) in San Diego County and Tecate, California (\$68,388 and \$97,694 respectively) were lower than the median household income of Otay Mesa (\$97,694) (see **Table 10-3**) (SANDAG 2007b). This trend is also reflected in the poverty status. Based upon 2000 U.S. Census data, 13 percent of the population in San Diego County and 8 percent in Tecate, California, lived below the poverty line, while 4 percent lived below the poverty line in Otay Mesa (see **Table 10-3**) (SANDAG 2003a, SANDAG 2003b).

**Table 10-3. 2007 Demographic and Economic Characteristics of ROIs and San Diego County**

	San Diego County	ROI 1 (Community of Otay Mesa)	ROI 2 (Community of Tecate)
2007 Total Population	3,098,269	13,892	139
Percent Hispanic	29.3	43.9	37.4
Percent Non-Hispanic	70.7	56.1	62.6
Percent White	72.9	44.8	78.2
Percent Black or African American	7.6	41.2	8.0
Percent American Indian	0.7	0.6	5.7
Percent Asian or Pacific Islander	13.9	11.5	2.3
Percent "Some other race"	4.8	1.9	5.7
Median Household Income	\$68,388	\$97,694	\$38,776

Source: SANDAG 2007b, SANDAG 2007c, SANDAG 2007d

### 10.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Construction of tactical infrastructure will have short-term, minor, direct and indirect, beneficial impacts on socioeconomics through increased employment and the purchase of goods and services. Project impacts related to employment,

temporary housing, public services, and material supplies will be minor, temporary, and easily absorbed within the existing USBP San Diego Sector regional resource and socioeconomics infrastructure. Construction will occur in 2008/2009 with a construction workforce peaking at about 200 workers.

As stated in **Chapter 1.2**, if approved, design/build contracts will be issued to construct the fence.

Short-term moderate increases to populations are expected in construction areas. Construction workers are expected to be drawn primarily from the regional workforce. Due to the temporary nature of the Project, there will be no change in population size or distribution and a relatively small increase in employment and contribution to the local economy. Therefore, demand for new housing units and other social services are not expected.

No permanent or long-term effects on employment, population, personal income, or poverty levels; or other demographic or employment indicators are expected from construction and operation of the tactical infrastructure. Since the Project will not measurably affect the local economy or workforce, no social effects are expected. There will be a net short-term increase in income to the region, as the funding for the Project will come from outside the area, and, as a Federal project, construction workers will be paid the “prevailing wage” under the Davis-Bacon Act, which might be higher than the average wage in the construction industry locally.

No effects are expected on environmental justice populations or children. The construction area is localized and does not have the potential to disproportionately affect low-income, minority populations, or children. Although Otay Mesa and the zip code containing Tecate (91980) have a higher Hispanic population than San Diego County, potential impacts on low-income or minority populations will not be disproportionate. The impact corridor of Section A-1 is in the unpopulated OMW and Section A-2A is along a remote area; therefore, there is little potential to affect environmental justice populations.

The tactical infrastructure will have short- to long-term, indirect, beneficial effects on children and safety in the ROIs and surrounding areas. The USBP San Diego Sector features no natural barriers to entry, therefore cross-border violators and smugglers are largely undeterred in this area (CRS 2006). The addition of tactical infrastructure is expected to increase the safety of USBP agents in the USBP San Diego Sector by allowing them to work more efficiently in the pursuit of cross-border violators and will help to secure the OMW for visitors. The Project will help to deter cross-border violators from entering the surrounding area. Previous fencing sections built in 1994 under Operation Gatekeeper have resulted in increased property values and new commercial growth in the USBP San Diego Sector due to the deterrence provided by tactical infrastructure combined with effective enforcement.



## 11. HAZARDOUS MATERIALS AND WASTES

### 11.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), and the Superfund Amendments and Reauthorization Act (SARA) Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with CERCLA, RCRA, TSCA, and SARA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for hazardous materials and wastes.

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

**Hazardous Wastes.** Hazardous materials are defined by 49 CFR 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR.

Hazardous substances are defined by CERCLA at 42 U.S.C. §9601(14), as amended by SARA, and TSCA. The definition of hazardous substance includes (1) any substance designated pursuant to 33 U.S.C. §1321 (b)(2)(A); (2) any element, compound, mixture, solution, or substance designated pursuant to 42 U.S.C. §9602; (3) any hazardous waste; (4) any toxic pollutant listed under 33 U.S.C. §1317(a); (5) any hazardous air pollutant listed under Section 112 of the CAA (42 U.S.C. §7412); and (6) any imminently hazardous chemical substance or mixture with respect to which the Administrator of USEPA has taken action pursuant to 15 U.S.C. §2606. The term hazardous substance does not include petroleum products and natural gas.

Hazardous wastes are defined by RCRA at 42 U.S.C. §6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or substantially contribute

to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR 273. Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps.

Toxic substances are regulated under TSCA (15 U.S.C. §2601 et seq.), which was enacted by Congress to give USEPA the ability to track the approximately 75,000 industrial chemicals currently produced or imported into the United States. USEPA screens these chemicals and can require reporting or testing of those that might pose an environmental or human-health hazard. USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk. Asbestos and polychlorinated biphenyls (PCBs) are among the chemicals regulated by TSCA.

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

Evaluation of hazardous materials and wastes focuses on underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, handling, and use of pesticides, herbicides, fuels, solvents, and petroleum, oil, and lubricants (POL). Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of release of hazardous materials or wastes, the extent of contamination varies based on the type of soil, topography, and water resources.

## 11.2 AFFECTED ENVIRONMENT

**Solid Wastes.** The California Integrated Waste Management Board (CIWMB) is responsible for regulating solid waste in California. The CIWMB promotes waste reduction and management of materials for the highest and best use (CIWMB 2007a). Solid wastes in San Diego County, California, are managed by the San Diego County Department of Public Works, Solid Waste Planning and Recycling. The Department administers and operates seven landfills in compliance with all applicable Federal, state, and local regulations. Each landfill has a separate permit which is subject to review every 5 years. Five of the seven landfills accept

municipal waste and two accept only military waste. The total solid waste disposal rate in San Diego County, California, for 2008 is estimated at 9.2 million tons per year with a 50 percent diversion rate (CSD 2005).

**Hazardous Wastes.** The Cal/EPA, California Department of Toxic Substance Control (DTSC) regulates the treatment, storage, transport, and disposal of hazardous waste. DTSC also administers some site clean-up programs. DTSC is authorized by the USEPA to regulate and enforce the provisions of RCRA. There are no known hazardous waste clean-up sites within the construction corridor (CDTSC undated). Phase I Environmental Site Assessments are also being prepared to identify the presence of hazardous materials and wastes within the project corridor.

### 11.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

**Solid Waste.** Short-term minor adverse effects on solid waste management in San Diego County, California, will be expected as a result of the Project. Solid waste generated from the construction activities will consist of building materials such as concrete and metals (conduit and piping). The contractor will recycle construction materials to the greatest extent possible. Solid waste generated as a result of the Project is expected to be minor compared to the solid waste currently generated in San Diego County. The contractor will dispose of nonrecyclable construction debris at one or more of the permitted San Diego County landfills, which have not yet been identified. The construction debris associated with the Project will not result in exceeding the capacity of any landfill or the violation of any permit for any landfill.

**Hazardous Wastes.** Long-term minor adverse effects will be expected as a result of the Project. Products containing hazardous materials (such as fuels, oils, lubricants, pesticides, and herbicides) will be procured and used during construction. It is anticipated that the quantity of products containing hazardous materials used will be minimal and their use will be of short duration. It is anticipated that the quantity of hazardous and petroleum wastes generated from construction will be negligible. Accidental spills could occur as a result of the construction. A spill could potentially result in adverse effects on wildlife, soils, water, and vegetation. However, the amount of hazardous materials at the construction site will be limited and the equipment necessary to quickly contain any spill will be present when refueling. Contractors will be responsible for the management of hazardous materials and wastes.

There are no known USTs, ASTs, or hazardous waste clean-up sites within the project corridor.

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## 12. RELATED PROJECTS AND POTENTIAL EFFECTS

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

### 12.1 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

**Cumulative Fencing, Southern Border.** There are currently 62 miles of landing mat fence at various locations along the U.S./Mexico international border (CRS 2006); 14 miles of single, double, and triple fence in San Diego, California; 70 miles of new pedestrian fence constructed at various locations along the U.S./Mexico international border; and fences at POE facilities throughout the southern border. In addition, 225 miles of fence are planned (including the approximately 4.4 miles presented in this ESP). New fence sections are also being studied for specified areas in Texas, New Mexico, Arizona, and California.

**Past Actions.** Past actions are those actions that have occurred prior to the development of this ESP. Past actions have shaped the current environmental conditions; therefore, the impacts of these past actions are generally included in the affected environment described in the individual resource chapters.

**Present Actions.** Present actions include current or funded construction projects, USBP or other agency operations in close proximity to the tactical infrastructure, and current resource management programs and land use activities within the affected areas. The following ongoing actions are considered in the cumulative effects analysis, including extensive construction activities in the East Otay Mesa area.

- **Construction of Tactical Infrastructure.** USBP is currently constructing a border tactical infrastructure system along the U.S./Mexico international border within San Diego County. The tactical infrastructure system project spans 14 miles and includes secondary and tertiary fences, patrol and maintenance roads, lights, and integrated surveillance and intelligence system resources. Approximately 9 miles of the 14-mile project have been completed or are currently under construction. These projects

approved for this infrastructure initiative were addressed under several individual ESPs as pilot projects for the tactical infrastructure system. When completed, the tactical infrastructure system will impact approximately 297 acres, consisting of disturbed/developed lands, coastal sage scrub, maritime succulent scrub, and grasslands.

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

- Secure Border Initiative (SBI). The SBI is a comprehensive multi-year plan established by the DHS to secure America's borders and reduce illegal immigration. DHS's comprehensive plan to gain effective control of our Nation's borders includes substantial investments in technology, infrastructure, and enforcement personnel. SBI supports CBP frontline agents and officers by deploying an optimal, integrated solution that develops, installs, and integrates technology and tactical infrastructure solutions. Examples of planned tactical infrastructure could consist of, but not limited to, roads, pedestrian and vehicle fence, and lights.
- East Otay Mesa Specific Plan. San Diego County has developed the East Otay Mesa Specific Plan to promote development of the area into a comprehensive industrial and business district. The plan calls for the area to be divided into the following land use categories: heavy industrial (289 acres), light industrial (410 acres), a Technology Business Park (937 acres), conservation/limited use (241 acres), and regional circulation corridors (130 acres) (City of San Diego 2007).
- South Coast Resource Management Plan Amendment for the San Diego County Border Mountains. The BLM is proposing to prepare a revision to the South Coast Resource Management Plan (RMP-1994). The plan revision proposes to establish management guidelines for lands acquired since 1994 and designate a travel network within the Otay Mountain region.
- San Diego Gas & Electric (SDG&E) Transmission Line. SDG&E has proposed to construct a new 150-mile transmission line between the cities of El Centro and San Diego. The stated purpose of the project is to bring renewable energy sources into San Diego from Imperial County, reduce energy costs, and improve reliability of electrical service in the San Diego area. SDG&E has filed an application with the California Public Utilities Commission (CPUC) to construct the Sunrise Powerlink Project (SRPL). A joint EIS/Environmental Impact Report (EIR) is being prepared (BLM 2007).

Seven road and tactical infrastructure projects are planned that include construction, repair, maintenance, and upgrade of existing roads and infrastructure within the Brown Field Station Area of Operations (AO).

In addition, ongoing maintenance of approximately 104 miles of patrol roads throughout the Brown Field, El Cajon, and Campo Stations AOs is planned. The roads adjacent to or nearest the impact corridor are the Marron Valley Road (6.6 miles) and Barrett Truck Trail (9.6 miles) (CBP 2007).

The FY 2007 DHS Appropriations Act provided \$1.2 billion for the installation of fencing, infrastructure, and technology along the border (CRS 2006). USBP is planning to construct up to 225 miles of primary fence in the Rio Grande Valley, Marfa, Del Rio, and El Paso, Texas; Tucson and Yuma, Arizona; and El Centro and San Diego, California, sectors. Section A-2A, which is evaluated in this ESP, will connect to existing fence west of Tecate, California.

**Table 12-1** presents the potential cumulative effects that might occur from implementation of the Project.

## 12.2 AIR QUALITY

Emissions from construction, operation, and maintenance activities are not expected to substantially affect local or regional air quality. Project construction and USBP patrolling along the new fence Section A-1 will combine with past actions (current severe nonattainment for PM<sub>10</sub> and moderate nonattainment for 8-hour O<sub>3</sub>), and ongoing or future construction activities in the East Otay Mesa area to produce both temporary and long-term adverse cumulative impacts on regional air quality. USBP operational activities along the patrol road will produce minor adverse impacts on air quality due to increased vehicle emissions and PM<sub>10</sub> emissions due to driving on the dirt patrol road.

## 12.3 NOISE

Negligible cumulative effects on ambient noise are expected. The Project will result in noise from construction, operation, and maintenance of tactical infrastructure. The Project will combine with existing noise sources to produce negligible cumulative effects along Section A-2A.

## 12.4 LAND USE

Long-term, adverse impacts when combined with past, current, and reasonably foreseeable future development will result from lands classified as “undeveloped” or “natural” being acquired or converted into easements to accommodate tactical infrastructure.

**Table 12-1. Summary of Potential Cumulative Effects**

<b>Resource</b>	<b>Past Projects</b>	<b>Current Background Activities</b>	<b>Project</b>	<b>Known Future Projects</b>	<b>Cumulative Effects</b>
<b>Air Quality</b>	State nonattainment for 8-hour O <sub>3</sub> ; Federal moderate maintenance for CO; state nonattainment for PM <sub>10</sub> and PM <sub>2.5</sub> .	Existing emissions sources continue to adversely affect regional air quality.	Construction activities will temporarily contribute to PM <sub>10</sub> , PM <sub>2.5</sub> , and combustion emissions.	Proposed new construction and business development in East Otay Mesa area might contribute to emissions and adverse regional air quality.	Construction activities will temporarily contribute to CO, PM <sub>10</sub> , and PM <sub>2.5</sub> emissions. Continued attainment.
<b>Noise</b>	Commercial and residential development, vehicles dominate ambient noise.	Commercial and residential development, vehicles dominate ambient noise near urban areas. Remote areas temporarily impacted by ATV recreational activities.	Short-term noise impacts from construction.	None.	Current activities will be the dominant noise source. Negligible cumulative impacts.
<b>Land Use</b>	Establishment of OMW. Commercial and residential development, infrastructure improvements on natural areas.	Development of natural area.	USBP purchase of land or easements to construct tactical infrastructure. Natural areas developed for tactical infrastructure. Development inconsistent with Wilderness Act.	Residential and commercial development permanently alters natural areas.	Moderate adverse impacts on natural areas.



<b>Resource</b>	<b>Past Projects</b>	<b>Current Background Activities</b>	<b>Project</b>	<b>Known Future Projects</b>	<b>Cumulative Effects</b>
<b>Geology and Soils</b>	Intrusions by cross-border violators have modified soils.	Continued illegal border crossings adversely affect soils.	Grading, excavating, and recontouring will substantially disturb soils.	Possible illegal border crossings adversely affect soils.	Grading, excavating, and recontouring will substantially disturb geology.
<b>Water Use and Quality</b>					
<b>Hydrology and Groundwater</b>	Degradation of aquifers due to pollution; changes in hydrology due to increased impervious areas.	Continued degradation of aquifers from pollution; changes in hydrology due to increased impervious areas.	Short-term minor adverse effects from groundwater use for dust suppression during construction.	Minor to moderate short- and long-term impacts from development and increased impervious areas.	Minor short-term impact from groundwater use during construction.
<b>Surface Waters, Wetlands, and Other Waters of the United States</b>	Degradation of water resources due to pollution.	Surface water quality adversely impacted by development.	Soil disturbance, erosion during construction, impacts on wetlands.	Construction erosion and sediment runoff, potential oil spills and leaks.	Nonpoint discharges, construction erosion and sediment runoff, potential oil spills and leaks.
<b>Floodplains</b>	Increase in impervious surfaces near Section A-2A increase runoff flood hazards.	Increase in impervious surfaces near Section A-2A increase runoff and flood hazards.	None.	Increase in impervious surfaces near Section A-2A increases runoff and flood hazards.	None.
<b>Biological Resources</b>					
<b>Vegetation</b>	Degraded historic habitat of sensitive and common wildlife species.	Continued urbanization results in loss of native species.	Habitat fragmentation. Minor to moderate loss of native species and habitat.	Continued urbanization results in loss of native species and habitat.	Moderate to major adverse impacts on vegetation and habitats.

<b>Resource</b>	<b>Past Projects</b>	<b>Current Background Activities</b>	<b>Project</b>	<b>Known Future Projects</b>	<b>Cumulative Effects</b>
<b>Wildlife and Aquatic Resources</b>	Loss of native habitat due to development; loss of wildlife corridors; impacted habitat and food sources.	Development continues to impact biological resources and wildlife habitat.	Minor to moderate loss of habitat and wildlife corridors, and habitat fragmentation.	Minor to moderate loss of habitat and wildlife corridors.	Minor to moderate loss of habitat and wildlife corridors.
<b>Special Status Species</b>	Habitat loss and degraded water quality impacted sensitive species.	Development continues to adversely impact and reduce potential habitat.	Moderate to major loss of habitat due to construction disturbance and fragmentation.	Development continues to adversely impact, reduce, and fragment potential habitat.	Fragmentation of suitable habitat might substantially reduce available habitat for certain sensitive species.
<b>Cultural Resources</b>	Possible destruction of unknown artifacts.	Identification and recording of historic and cultural resources.	Minor adverse impacts on archaeological resources. Possible impacts to a significant area of CA-SDI-8654, a National Register eligible archaeological site.	Proposed new construction and expansion into eastern San Diego County might adversely affect cultural resources.	Long-term adverse impacts from increased access to the project areas by the general public and a change in the overall undeveloped condition of the project areas.
<b>Visual Resources</b>	Degradation of visual appeal due to illegal foot traffic, causing extensive littering and other blemishes to the landscape.	Development of natural areas for community and industry infrastructure.	Constant static visual interruption at fixed points. Loss of recreational area.	Continued moderate to severe impacts on Class I and Class III Visual Resources.	Major long-term impacts from tactical infrastructure.

<b>Resource</b>	<b>Past Projects</b>	<b>Current Background Activities</b>	<b>Project</b>	<b>Known Future Projects</b>	<b>Cumulative Effects</b>
<b>Socioeconomic Resources and Safety</b>	Urban development throughout county.	Strong local economy and high land values.	Minor, temporary contribution to local construction	Continued strong local economy, high land values, and expansion into eastern county.	Minor stimulation of local economies from construction activities.
<b>Hazardous Materials and Wastes</b>	Use of hazardous substances in vehicles.	Use of hazardous substances in vehicles.	Minor use of hazardous materials during construction.	Minor use of hazardous materials during construction.	None.

## **12.5 VISUAL RESOURCES**

Moderate to severe impacts on visual resources are possible from the additive effects of current or ongoing actions, the Project, and other reasonably foreseeable future actions. The presence of construction equipment will produce a short-term adverse impact on visual resources. Once installed, the tactical infrastructure will create a permanent and fixed visual interruption in the viewscape. Adverse cumulative effects could include adverse impacts from the fence and patrol road combined with paths created by illegal cross-border activities. Over time, the visual contrast of the Project might diminish through re-establishment of vegetation and the softening of the edges of the area impacted by construction. Closing the maze of footpaths and trails created by prior and current illegal cross-border activities will allow the vegetation to return from non-use. The encroachment of overall development of the area will degrade vistas from various vantage points.

## **12.6 GEOLOGY AND SOILS**

Moderate localized impacts on geology and soils will be from the additive effects of current or ongoing actions, the Project, and other reasonably foreseeable future actions. Additive effects include some minor changes in topography, disturbance to surface bedrock, and increases in erosion. Potential impacts of the Project will include minor changes in topography and surface bedrock due to grading, contouring, blasting, and trenching; minor soil disturbance; and a minor increase in erosion. However, the impacts associated with the Project will be negligible in comparison to the impacts of current and future actions. Closing the maze of footpaths and trails created by prior and current illegal cross-border activities will allow for soil stabilization from non-use.

## **12.7 HYDROLOGY AND GROUNDWATER**

Moderate impacts on hydrology and groundwater will be expected from the cumulative effects of current or ongoing actions, the Project, and other reasonably foreseeable future actions. Cumulative impacts will include changes in hydrology from increases in impervious surfaces and reductions in the quantity and quality of groundwater in local aquifers. The Project will result in minor adverse impacts in hydrology from changes on topography and minor use of groundwater.

## **12.8 SURFACE WATERS, WETLANDS, AND OTHER WATERS OF THE UNITED STATES**

Moderate impacts on surface water and waters of the United States will be expected from the cumulative effects of current or ongoing actions, the Project, and other reasonably foreseeable future actions. Cumulative impacts will occur from soil disturbance reducing water quality resulting in indirect adverse impacts

on wetlands. The Project will result in minor to moderate impacts on riparian areas and wetlands. An estimated 3.9 acres of wetlands will be permanently impacted by construction of the tactical infrastructure. Cumulative impacts on wetlands will be long-term and adverse.

## **12.9 FLOODPLAINS**

Moderate impacts on floodplains are expected from the additive effects of current or ongoing actions, the Project, and other reasonably foreseeable future actions. Additive effects will include an increase in the quantity and velocity of storm water runoff caused by an increase in impervious surface, which in turn causes an increase in flood hazards. Potential impacts of the Project will include an increase in impervious surface in the floodplain by placing a portion of a fence across an intermittent wash in Section A-1. This wash could potentially be a floodplain. If it is determined that this area is a floodplain, impacts will be avoided and minimized to the maximum extent practicable. However, the impacts associated with the Project will be negligible in comparison to the impact of current and future actions.

## **12.10 VEGETATION**

Conversion of land for development is reducing the areal extent of native chamise chaparral and riparian communities in this portion of San Diego County. These habitats and their component species become rarer with each acre lost to development. Clearing for fence construction and long-term USBP operational activities might combine with these activities to produce a long-term adverse cumulative effect. Cross-border violators have created a large number of footpaths through the chaparral shrublands on the OMW. The fencing is expected to provide protection for vegetation in the areas north of the tactical infrastructure from foot traffic impacts by cross-border violators. However, changes to cross-border violator traffic patterns result from a variety of factors in addition to USBP operations; and therefore, are considered unpredictable and beyond the scope of this ESP. Closing the maze of footpaths in the interior of the OMW will allow some land recovery outside of areas associated with permanent maintenance roads and patrol roads. Cumulative impacts will be long-term and adverse.

## **12.11 WILDLIFE AND AQUATIC RESOURCES**

Minor to moderate impacts on wildlife and species are expected from the additive effects of the past, present, and reasonably foreseeable future USBP actions. Cumulative impacts will mainly result from fragmentation of degraded habitat, further disturbance and degradation of native vegetation, and construction traffic on existing access roads.

## 12.12 SPECIAL STATUS SPECIES

The effects of fence construction, operation, and maintenance on special status species associated with the Project will be analyzed in the BRP (see **Appendix E**). Special status species are commonly protected because their historic range and habitat has been reduced and will only support a small number of individuals. Past, present, and future activities which have impacted or have the potential to impact special status species in the vicinity of the Project include illegal livestock grazing, cross-border violator traffic, and residential and commercial development. If continued as currently occurring, these activities are anticipated to have major adverse cumulative impacts on special status species in the area of the Project through further reduction of habitat quantity and quality. The Project will reduce or halt both illegal livestock grazing and cross-border violator traffic in the analyzed impact area and beyond. This will represent major long-term beneficial impacts. However, implementation of the Project will also have major adverse impacts from habitat alteration and loss. The past, present, and reasonably foreseeable future activities described above in combination with the impacts of the Project will result in major adverse and major beneficial cumulative impacts. The Project will provide a relatively small proportion of the adverse impacts and all of the beneficial impacts.

## 12.13 CULTURAL RESOURCES

Cumulative impacts on known historic and cultural resources are anticipated to occur from increased access to the project areas with the presence of new roads. The overall development of the project area will change the remote quality of these areas, in particular the Pack Truck Trail. Increased human presence allows for the possible degradation of the archaeological sites and possible removal of surface artifacts. Planning and consultation with BLM and the California SHPO will limit the possibility of future impacts on unknown historical and cultural resources.

## 12.14 SOCIOECONOMIC RESOURCES AND SAFETY

Fence and road construction has the potential for minor beneficial effects from temporary increase in construction jobs and purchase of goods and services. Construction activities are negligible compared to substantial construction activities in East Otay Mesa area. The Project will have short- to long-term indirect beneficial effects on children and safety by reducing the number of cross-border violators. However, changes to cross-border violator traffic patterns result from a variety of factors in addition to USBP operations; and therefore, are considered unpredictable and beyond the scope of this ESP.

## 12.15 HAZARDOUS MATERIALS AND WASTES

Construction, operation, and maintenance of tactical infrastructure will require minimal quantities of hazardous materials and generate small quantities of hazardous wastes. However, when combined with other reasonable foreseeable and other ongoing actions no cumulative impacts are expected.

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### 13. ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit	CDCR	California Department of Corrections and Rehabilitation
µg/m <sup>3</sup>	microgram per cubic meter	CDFG	California Department of Fish and Game
ACEC	Area of Critical Environmental Concern	CDPR	California Department of Parks and Recreation
ADNL	A-weighted day-night average sound level	CEQA	California Environmental Quality Act
AO	Area of Operations	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
APE	Area of Potential Effect	CESA	California Endangered Species Act
AQCR	air quality control region	CFR	Code of Federal Regulations
ARMM	Archaeological Resource Mitigation and Monitoring	CIWMB	California Integrated Waste Management Board
ARPA	Archeological Resources Protection Act	CM&R	Construction Mitigation and Restoration
AST	Aboveground Storage Tank	CNDDDB	California Natural Diversity Database
ATV	all-terrain vehicle	CO	carbon monoxide
BLM	Bureau of Land Management	CO <sub>2</sub>	carbon dioxide
BMP	Best Management Practice	COC	constituent of concern
BRP	Biological Resources Plan	CPUC	California Public Utilities Commission
CAA	Clean Air Act	CWA	Clean Water Act
CAGN	Coastal California gnatcatcher	cy	cubic yards
Cal/EPA	California Environmental Protection Agency	dba	A-weighted decibels
CARB	California Air Resources Board	dbc	C-weighted decibels
CBP	Customs and Border Protection	DHS	U.S. Department of Homeland Security
CCA	Corrections Corporation of America		

DOI	Department of the Interior	MSL	mean sea level
DTSC	Department of Toxic Substances Control	NAAQS	National Ambient Air Quality Standards
EA	Environmental Assessment	NAGPRA	Native American Graves Protection and Repatriation Act
EIR	Environmental Impact Report	NCCP	Natural Communities Conservation Plan
EIS	Environmental Impact Statement	NEPA	National Environmental Policy Act
EO	Executive Order	NHPA	National Historic Preservation Act
EPP	Environmental Protection Plan	NO <sub>2</sub>	nitrogen dioxide
ESA	Endangered Species Act	NO <sub>x</sub>	nitrogen oxide
ESP	Environmental Stewardship Plan	NRCS	Natural Resources Conservation Service
FEMA	Federal Emergency Management Agency	NRHP	National Register of Historic Places
FIRM	Flood Insurance Rate Map	O <sub>3</sub>	ozone
FPPA	Farmland Protection Policy Act	OHM	ordinary high water mark
FR	Federal Register	OMW	Otay Mountain Wilderness
FY	Fiscal Year	P.L.	Public Law
HCP	Habitat Conservation Plan	Pb	lead
IBWC	International Boundary and Water Commission	PCB	Polychlorinated Biphenyls
ICE	Immigrations and Customs Enforcement	PM <sub>10</sub>	particles equal to or less than 10 microns in diameter
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act	PM <sub>2.5</sub>	particles equal to or less than 2.5 microns in diameter
LBV	least Bell's vireo	POE	Port of Entry
mg/m <sup>3</sup>	milligram per cubic meter	POL	Petroleum, Oil, and Lubricants
MMTCE	million metric tons of carbon equivalent	ppm	parts per million
MSCP	Multiple Species Conservation Program	RCRA	Resource Conservation and Recovery Act

ROI	Region of Influence	USEPA	U.S. Environmental Protection Agency
ROW	right-of-way		
SAAQS	State Ambient Air Quality Standards	USFWS	U.S. Fish and Wildlife Service
SANDAG	San Diego Association of Governments	USGS	U.S. Geological Survey
SARA	Superfund Amendments and Reauthorization Act	USIBWC	United States Section, International Boundary and Water Commission
SBI	Secure Border Initiative	UST	Underground Storage Tank
SC	species of special concern	UTM	Universal Transverse Mercator
SDFS	San Diego fairy shrimp		
SDG&E	San Diego Gas & Electric	VOC	volatile organic compound
SDIAQCR	San Diego Interstate Air Quality Control Region	VRM	Visual Resources Management
SDWA	Safe Drinking Water Act		
SHPO	State Historic Preservation Office		
SO <sub>2</sub>	sulfur dioxide		
SPCC	Spill Prevention Control and Countermeasure		
SR	State Route		
SRMA	Special Recreation Management Area		
SRPL	Sunrise Powerlink Project		
SWF	southwestern willow flycatcher		
SWPPP	Storm Water Pollution Prevention Plan		
TSCA	Toxic Substance Control Act		
TSS	total suspended solids		
U.S.C.	United States Code		
USACE	U.S. Army Corps of Engineers		
USBP	U.S. Border Patrol		

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## **APPENDIX A**

Secretary of Homeland Security,  
Determination Pursuant to Section 102 of  
IIRIRA of 1996, as Amended





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**DEPARTMENT OF HOMELAND SECURITY**
**Office of the Secretary****Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as Amended**

**AGENCY:** Office of the Secretary, Department of Homeland Security.

**ACTION:** Notice of determination.

**SUMMARY:** The Secretary of Homeland Security has determined, pursuant to law, that it is necessary to waive certain laws, regulations and other legal requirements in order to ensure the expeditious construction of barriers and roads in the vicinity of the international land border of the United States.

**DATES:** This Notice is effective on April 3, 2008.

*Determination and Waiver:* I have a mandate to achieve and maintain operational control of the borders of the United States. Public Law 109-367, § 2, 120 Stat. 2638, 8 U.S.C. 1701 note. Congress has provided me with a number of authorities necessary to accomplish this mandate. One of these authorities is found at section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 ("IIRIRA"). Public Law 104-208, Div. C, 110 Stat. 3009-546, 3009-554 (Sept. 30, 1996) (8 U.S.C. 1103 note), as amended by the REAL ID Act of 2005, Public Law 109-13, Div. B, 119 Stat. 231, 302, 306 (May 11, 2005) (8 U.S.C. 1103 note), as amended by the Secure Fence Act of 2006, Public Law 109-367, § 3, 120 Stat. 2638 (Oct. 26, 2006) (8 U.S.C. 1103 note), as amended by the Department of Homeland Security Appropriations Act, 2008, Public Law 110-161, Div. E, Title V, Section 564, 121 Stat. 2090 (Dec. 26, 2007). In Section 102(a) of IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high

illegal entry into the United States. In Section 102(b) of IIRIRA, Congress has called for the installation of fencing, barriers, roads, lighting, cameras, and sensors on not less than 700 miles of the southwest border, including priority miles of fencing that must be completed by December 2008. Finally, in section 102(c) of the IIRIRA, Congress granted to me the authority to waive all legal requirements that I, in my sole discretion, determine necessary to ensure the expeditious construction of barriers and roads authorized by section 102 of IIRIRA.

I determine that the areas in the vicinity of the United States border described on the attached document, which is incorporated and made a part hereof, are areas of high illegal entry (collectively "Project Areas"). These Project Areas are located in the States of California, Arizona, New Mexico, and Texas. In order to deter illegal crossings in the Project Areas, there is presently a need to construct fixed and mobile barriers (such as fencing, vehicle barriers, towers, sensors, cameras, and other surveillance, communication, and detection equipment) and roads in the vicinity of the border of the United States. In order to ensure the expeditious construction of the barriers and roads that Congress prescribed in the IIRIRA in the Project Areas, which are areas of high illegal entry into the United States, I have determined that it is necessary that I exercise the authority that is vested in me by section 102(c) of the IIRIRA as amended.

Accordingly, I hereby waive in their entirety, with respect to the construction of roads and fixed and mobile barriers (including, but not limited to, accessing the project area, creating and using staging areas, the conduct of earthwork, excavation, fill, and site preparation, and installation and upkeep of fences, roads, supporting elements, drainage, erosion controls, safety features, surveillance, communication, and detection equipment of all types, radar and radio towers, and lighting) in the Project Areas, all federal, state, or other laws, regulations and legal requirements of, deriving from, or related to the subject of, the following laws, as amended: The National Environmental Policy Act (Pub. L. 91-190, 83 Stat. 852 (Jan. 1, 1970) (42 U.S.C. 4321 *et seq.*)), the Endangered Species Act (Pub. L. 93-205, 87 Stat. 884 (Dec. 28, 1973) (16 U.S.C. 1531 *et seq.*)), the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) (33 U.S.C. 1251 *et seq.*)), the National Historic Preservation Act (Pub. L. 89-665, 80 Stat. 915 (Oct. 15, 1966) (16

U.S.C. 470 *et seq.*)), the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*)), the Clean Air Act (42 U.S.C. 7401 *et seq.*)), the Archeological Resources Protection Act (Pub. L. 96-95, 16 U.S.C. 470aa *et seq.*)), the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*)), the Noise Control Act (42 U.S.C. 4901 *et seq.*)), the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*)), the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 *et seq.*)), the Archaeological and Historic Preservation Act (Pub. L. 86-523, 16 U.S.C. 469 *et seq.*)), the Antiquities Act (16 U.S.C. 431 *et seq.*)), the Historic Sites, Buildings, and Antiquities Act (16 U.S.C. 461 *et seq.*)), the Wild and Scenic Rivers Act (Pub. L. 90-542, 16 U.S.C. 1281 *et seq.*)), the Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*)), the Coastal Zone Management Act (Pub. L. 92-583, 16 U.S.C. 1451 *et seq.*)), the Wilderness Act (Pub. L. 88-577, 16 U.S.C. 1131 *et seq.*)), the Federal Land Policy and Management Act (Pub. L. 94-579, 43 U.S.C. 1701 *et seq.*)), the National Wildlife Refuge System Administration Act (Pub. L. 89-669, 16 U.S.C. 668dd-668ee), the Fish and Wildlife Act of 1956 (Pub. L. 84-1024, 16 U.S.C. 742a, *et seq.*)), the Fish and Wildlife Coordination Act (Pub. L. 73-121, 16 U.S.C. 661 *et seq.*)), the Administrative Procedure Act (5 U.S.C. 551 *et seq.*)), the Otay Mountain Wilderness Act of 1999 (Pub. L. 106-145), Sections 102(29) and 103 of Title I of the California Desert Protection Act (Pub. L. 103-433), 50 Stat. 1827, the National Park Service Organic Act (Pub. L. 64-235, 16 U.S.C. 1, 2-4), the National Park Service General Authorities Act (Pub. L. 91-383, 16 U.S.C. 1a-1 *et seq.*)), Sections 401(7), 403, and 404 of the National Parks and Recreation Act of 1978 (Pub. L. 95-625), Sections 301(a)-(f) of the Arizona Desert Wilderness Act (Pub. L. 101-628), the Rivers and Harbors Act of 1899 (33 U.S.C. 403), the Eagle Protection Act (16 U.S.C. 668 *et seq.*)), the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.*)), the American Indian Religious Freedom Act (42 U.S.C. 1996), the Religious Freedom Restoration Act (42 U.S.C. 2000bb), the National Forest Management Act of 1976 (16 U.S.C. 1600 *et seq.*)), and the Multiple Use and Sustained Yield Act of 1960 (16 U.S.C. 528-531).

This waiver does not supersede, supplement, or in any way modify the previous waivers published in the **Federal Register** on September 22, 2005 (70 FR 55622), January 19, 2007 (72 FR

2535), and October 26, 2007 (72 FR 60870).

I reserve the authority to make further waivers from time to time as I may determine to be necessary to accomplish the provisions of section 102 of the IIRIRA, as amended.

Dated: April 1, 2008.

**Michael Chertoff,**

*Secretary.*

[FR Doc. 08-1095 Filed 4-1-08; 2:03 pm]

**BILLING CODE 4410-10-P**

## DEPARTMENT OF HOMELAND SECURITY

### Office of the Secretary

#### Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as Amended

**AGENCY:** Office of the Secretary, Department of Homeland Security.

**ACTION:** Notice of determination.

**SUMMARY:** The Secretary of Homeland Security has determined, pursuant to law, that it is necessary to waive certain laws, regulations and other legal requirements in order to ensure the expeditious construction of barriers and roads in the vicinity of the international land border of the United States.

**DATES:** This Notice is effective on April 3, 2008.

*Determination and Waiver:* The Department of Homeland Security has a mandate to achieve and maintain operational control of the borders of the United States. Public Law 109-367, Section 2, 120 Stat. 2638, 8 U.S.C. 1701 note. Congress has provided the Secretary of Homeland Security with a number of authorities necessary to accomplish this mandate. One of these authorities is found at section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 ("IIRIRA"). Public Law 104-208, Div. C, 110 Stat. 3009-546, 3009-554 (Sept. 30, 1996) (8 U.S.C. 1103 note), as amended by the REAL ID Act of 2005, Public Law 109-13, Div. B, 119 Stat. 231, 302, 306 (May 11, 2005) (8 U.S.C. 1103 note), as amended by the Secure Fence Act of 2006, Public Law 109-367, Section 3, 120 Stat. 2638 (Oct. 26, 2006) (8 U.S.C. 1103 note), as amended by the Department of Homeland Security Appropriations Act, 2008, Public Law 110-161, Div. E, Title V, Section 564, 121 Stat. 2090 (Dec. 26, 2007). In Section 102(a) of the IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install

additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United States. In Section 102(b) of the IIRIRA, Congress has called for the installation of fencing, barriers, roads, lighting, cameras, and sensors on not less than 700 miles of the southwest border, including priority miles of fencing that must be completed by December of 2008. Finally, in section 102(c) of the IIRIRA, Congress granted to me the authority to waive all legal requirements that I, in my sole discretion, determine necessary to ensure the expeditious construction of barriers and roads authorized by section 102 of the IIRIRA.

I determine that the area in the vicinity of the United States border as described in the attached document, hereinafter the Project Area, which is incorporated and made a part hereof, is an area of high illegal entry. In order to deter illegal crossings in the Project Area, there is presently a need to construct fixed and mobile barriers and roads in conjunction with improvements to an existing levee system in the vicinity of the border of the United States as a joint effort with Hidalgo County, Texas. In order to ensure the expeditious construction of the barriers and roads that Congress prescribed in the IIRIRA in the Project Area, which is an area of high illegal entry into the United States, I have determined that it is necessary that I exercise the authority that is vested in me by section 102(c) of the IIRIRA as amended. Accordingly, I hereby waive in their entirety, with respect to the construction of roads and fixed and mobile barriers (including, but not limited to, accessing the project area, creating and using staging areas, the conduct of earthwork, excavation, fill, and site preparation, and installation and upkeep of fences, roads, supporting elements, drainage, erosion controls, safety features, surveillance, communication, and detection equipment of all types, radar and radio towers, and lighting) in the Project Area, all federal, state, or other laws, regulations and legal requirements of, deriving from, or related to the subject of, the following laws, as amended: The National Environmental Policy Act (Pub. L. 91-190, 83 Stat. 852 (Jan. 1, 1970) (42 U.S.C. 4321 *et seq.*)), the Endangered Species Act (Pub. L. 93-205, 87 Stat. 884) (Dec. 28, 1973) (16 U.S.C. 1531 *et seq.*)), the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) (33

U.S.C. 1251 *et seq.*), the National Historic Preservation Act (Pub. L. 89-665, 80 Stat. 915 (Oct. 15, 1966) (16 U.S.C. 470 *et seq.*)), the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*), the Clean Air Act (42 U.S.C. 7401 *et seq.*), the Archeological Resources Protection Act (Pub. L. 96-95, 16 U.S.C. 470aa *et seq.*), the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*), the Noise Control Act (42 U.S.C. 4901 *et seq.*), the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*), the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 *et seq.*), the Archaeological and Historic Preservation Act (Pub. L. 86-523, 16 U.S.C. 469 *et seq.*), the Antiquities Act (16 U.S.C. 431 *et seq.*), the Historic Sites, Buildings, and Antiquities Act (16 U.S.C. 461 *et seq.*), the Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*), the Coastal Zone Management Act (Pub. L. 92-583, 16 U.S.C. 1451 *et seq.*), the Federal Land Policy and Management Act (Pub. L. 94-579, 43 U.S.C. 1701 *et seq.*), the National Wildlife Refuge System Administration Act (Pub. L. 89-669, 16 U.S.C. 668dd-668ee), the Fish and Wildlife Act of 1956 (Pub. L. 84-1024, 16 U.S.C. 742a, *et seq.*), the Fish and Wildlife Coordination Act (Pub. L. 73-121, 16 U.S.C. 661 *et seq.*), the Administrative Procedure Act (5 U.S.C. 551 *et seq.*), the Rivers and Harbors Act of 1899 (33 U.S.C. 403), the Eagle Protection Act (16 U.S.C. 668 *et seq.*), the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.*), the American Indian Religious Freedom Act (42 U.S.C. 1996), the Religious Freedom Restoration Act (42 U.S.C. 2000bb), and the Federal Grant and Cooperative Agreement Act of 1977 (31 U.S.C. 6303-05).

I reserve the authority to make further waivers from time to time as I may determine to be necessary to accomplish the provisions of section 102 of the IIRIRA, as amended.

Dated: April 1, 2008.

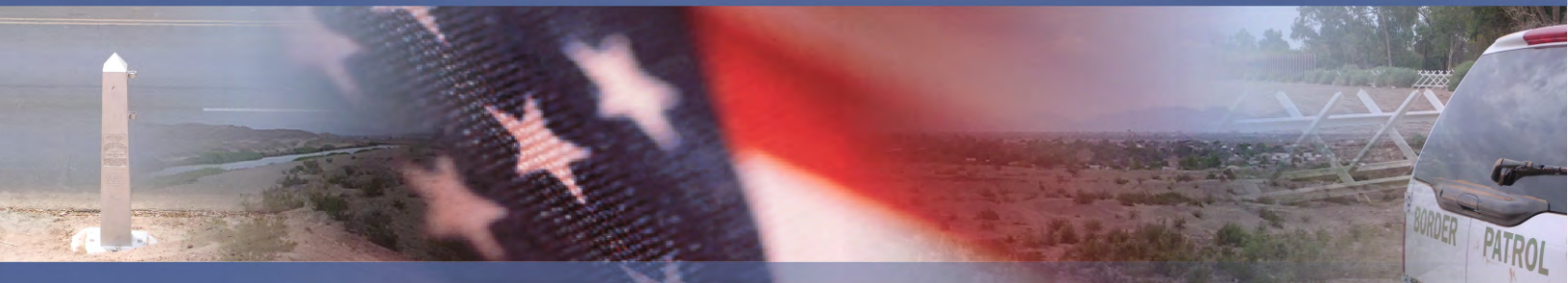
**Michael Chertoff,**

*Secretary.*

[FR Doc. 08-1096 Filed 4-1-08; 2:03 pm]

**BILLING CODE 4410-10-P**





## **APPENDIX B**

### Standard Design for Tactical Infrastructure





## APPENDIX B

### STANDARD DESIGN FOR TACTICAL INFRASTRUCTURE

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

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

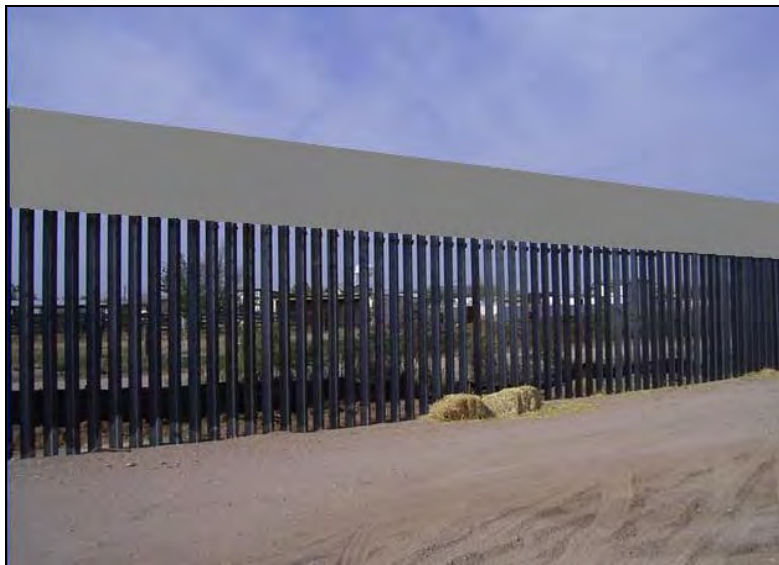
Since effective border enforcement requires adequate scope, depth, and variety in enforcement activity, any single border enforcement function that significantly depletes USBP's ability to satisfactorily address any other enforcement action creates exploitable opportunities for criminal elements. For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

#### **Fencing**

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

Three applications for fencing have been developed in an effort to control illegal cross-border traffic: 1) vehicle fences, 2) primary pedestrian fences that are built on the border, and 3) secondary fences that are constructed parallel to the primary pedestrian fences. These fences present a formidable physical barrier which impede cross-border violators and increases the window of time USBP

agents have to respond (INS 2002). Both Sections A-1 and A-2A will require the installation of Personnel-Vehicle Fence Type 1 (PV-1). The PV-1 fence is an anchored, 18-foot (aboveground) grout-filled steel bollard-style fence with 4-inch gaps between each bollard. An approximate 3-foot-tall mesh panel will be attached horizontally to the top of the bollards (see **Figure B-1**). The PV-1 style fence is designed to prevent passage by both people and vehicles. Panels of PV-1 fence will be welded together offsite and transported to the site by small trucks with lowboy trailers. Using a crane, fence panels will be set in concrete-filled trenches or holes. Blasting will be necessary in some areas along the Section A-1 alignment to access the fence alignment and create a building pad for the fence and associated construction access road. Otherwise a trench to anchor the fence will be dug by a trencher or similar equipment. Blasting could also occur in Section A-2A. An alternative in rocky terrain is to drill individual holes into the rock for each bollard. Construction of new fence will be completed using standard construction equipment, including a trencher, driller, cement mixer, and crane. It is not anticipated pile driving will be required for construction of PV-1 fence. Wherever possible, existing roads will be used to access the area.



**Figure B-1. Personnel-Vehicle Fence Type-1 (PV-1)**

### **Patrol Roads**

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

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## **APPENDIX C**

### Air Quality Information





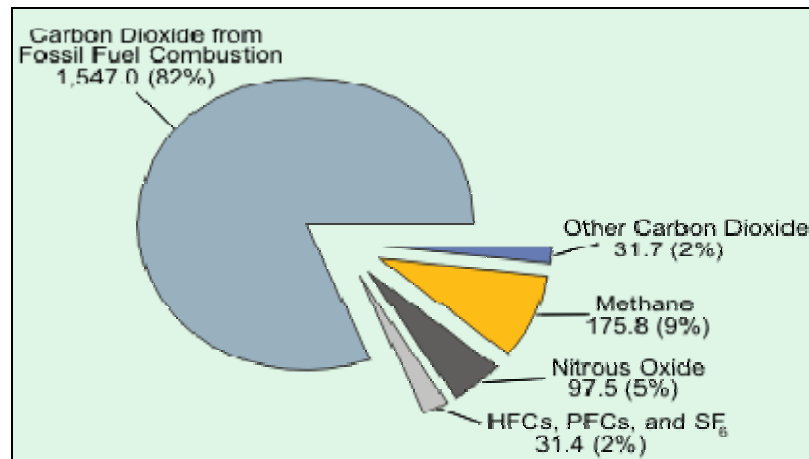


## Greenhouse Gases

In April 2007, the U.S. Supreme Court declared that carbon dioxide (CO<sub>2</sub>) and other greenhouse gases are air pollutants under the Clean Air Act (CAA). The Court declared that the U.S. Environmental Protection Agency (USEPA) has the authority to regulate emissions from new cars and trucks under the landmark environment law.

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

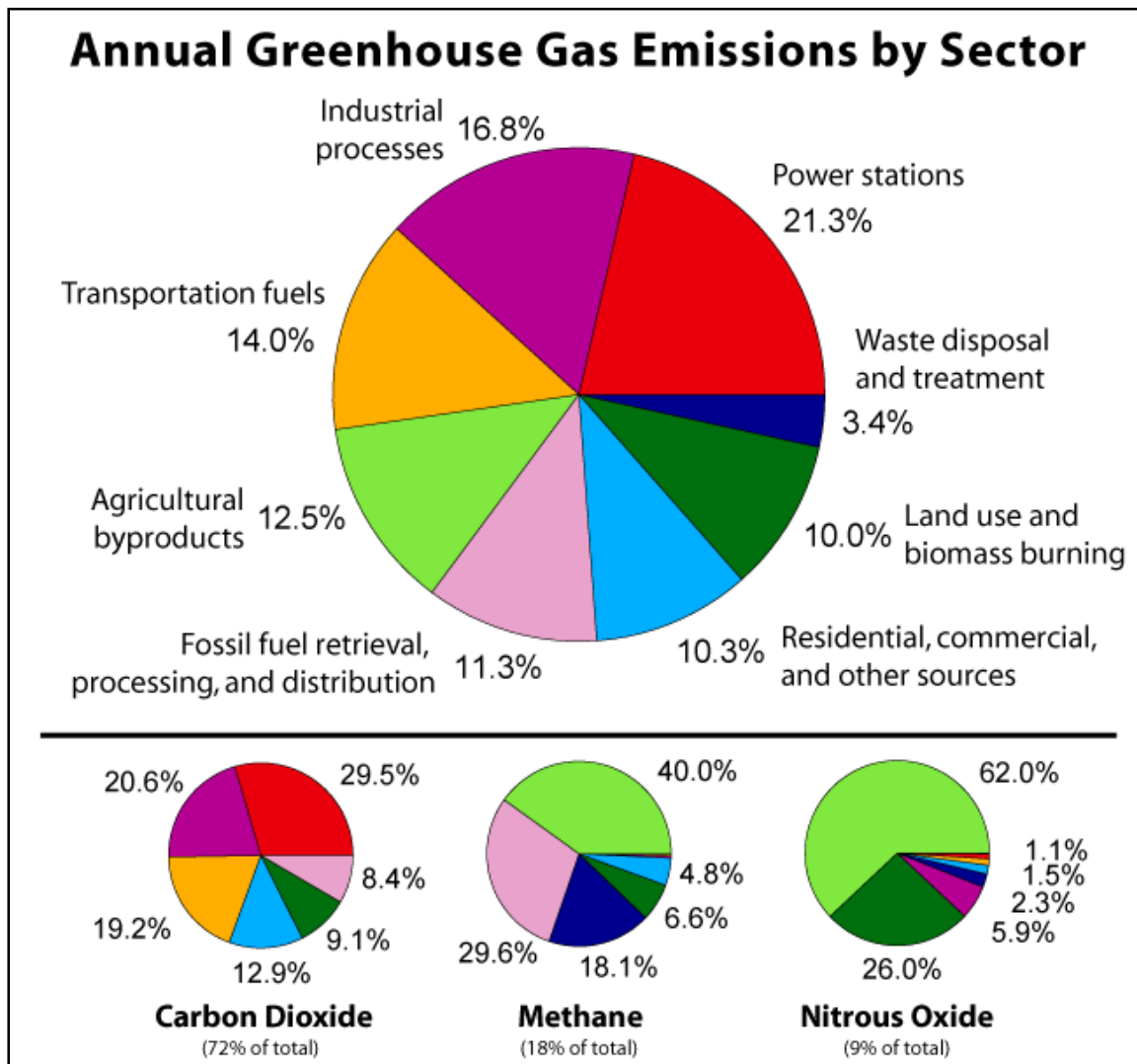
Many gases exhibit these "greenhouse" properties. The sources of the majority of greenhouse gases come mostly from natural sources but are also contributed to by human activity and are shown in **Figure C-1**. It is not possible to state that a specific gas causes a certain percentage of the greenhouse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



Source: Energy Information Administration 2003

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

**Figure C-2** displays the annual greenhouse gas emissions by sector in the United States. Most government agencies and military installations are just beginning to establish a baseline for their operations and their impact on the greenhouse effect. Since the USEPA has not promulgated an ambient standard or *de minimis* level for CO<sub>2</sub> emissions for Federal actions, there is no standard value to compare an action against in terms of meeting or violating the standard.



Source: Rosmarino 2006

**Figure C-2. Annual Greenhouse Gas Emissions by Sector**

### References

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

Tanyalynnette Rosmarino, Director of Field Engineering, Northeast, BigFix, Inc. 2006. "A Self-Funding Enterprise Solution to Reduce Power Consumption and Carbon Emissions." Slide presentation for the NYS Forum's May Executive Committee Meeting Building an Energy Smart IT Environment. 2006. Available online:

*<[http://www.nysforum.org/documents/html/2007/execommittee/may/enterpriseconsumptionreduction\\_files/800x600/slide1.html](http://www.nysforum.org/documents/html/2007/execommittee/may/enterpriseconsumptionreduction_files/800x600/slide1.html)>. Accessed November 4, 2007.*

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

**Air Quality Emissions from the Project**

<b>Total Project Emissions</b>	<b>NO<sub>x</sub></b> <b>(ton)</b>	<b>VOC</b> <b>(ton)</b>	<b>CO</b> <b>(ton)</b>	<b>SO<sub>2</sub></b> <b>(ton)</b>	<b>PM<sub>10</sub></b> <b>(ton)</b>	<b>CO<sub>2</sub></b> <b>(ton)</b>
Construction Combustion	97.058	14.468	113.389	1.941	3.256	64.935
Construction Fugitive Dust	0.000	0.000	0.000	0.000	69.416	-
Haul Trucks	1.716	0.528	2.877	0.135	2.041	80.992
Generator Emissions	19.882	1.623	4.283	1.307	1.398	274.312
<b>TOTAL Total Project Emission</b>	<b>118.655</b>	<b>16.619</b>	<b>120.549</b>	<b>3.384</b>	<b>76.110</b>	<b>420.239</b>

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

**San Diego Intrastrate AQCR**

Year	Point and Area Sources Combined			
	NO <sub>x</sub> (tpy)	VOC (tpy)	CO (tpy)	PM <sub>10</sub> (tpy)
2001	76,343	95,371	605,178	2,007

Source: USEPA-AirData NET Tier Report (<http://www.epa.gov/air/data/geosel.html>). Site visited on 17 October 2007.

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

Minimum - 2001 Project Emissions Project %	Point and Area Sources Combined			
	NO <sub>x</sub> (tpy)	VOC (tpy)	CO (tpy)	PM <sub>10</sub> (tpy)
	76,343	95,371	605,178	2,007
	118,655	16,619	120,549	3,384
	<b>0.155%</b>	<b>0.017%</b>	<b>0.020%</b>	<b>0.106%</b>

**Construction Combustion Emissions**

Combustion Emissions of VOC, NO<sub>x</sub>, SO<sub>2</sub>, CO and PM<sub>10</sub> Due to Construction

Includes:

100% of Construct Pedestrian Fence A-1	869,893 ft <sup>2</sup>	19.97	acres
100% of Construct Pedestrian Fence A-2	246,985 ft <sup>2</sup>	5.67	acres
100% of Excavate Cut/Fill Limits	2,611,422 ft <sup>2</sup>	59.95	acres
100% of Pave Access Road	31,799 ft <sup>2</sup>	0.73	acres
100% of Grade Access Road	30,492 ft <sup>2</sup>	0.70	acres
100% of Grade Staging Areas	1,061,122 ft <sup>2</sup>	24.36	acres
Construction area planned per month	307,534 ft <sup>2</sup>	7.06	acres

Assumptions:

Total ground disturbance for pedestrian fence A-1 would be 19.97 acres.  
 Total ground disturbance for pedestrian fence A-2 would be 5.67 acres.  
 Total ground disturbance for excavation areas for cut and fill operations would be 59.95 acres.  
 Total ground disturbance for staging areas would be 24.36 acres.  
 New access road would be graded and lined with gravel for 0.24 miles and paved for 0.25 miles. Access road is 24 feet wide.  
 Construction would occur in Calendar Year 2008/09 for a total of 333 working days (Assumes working 7 days/week).

Total Building Construction Area:	0 ft <sup>2</sup>
Total Demolished Area:	0 ft <sup>2</sup>
Total Paved Area:	31,799 ft <sup>2</sup>
Total Disturbed Area:	4,851,713 ft <sup>2</sup>
Construction Duration:	1.0 year(s)
Annual Construction Activity:	333 days/yr

## Emission Factors Used for Construction Equipment

Reference: Guide to Air Quality Assessment, SMAQMD, 2004

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

### Grading

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NO <sub>x</sub> (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup>	PM <sub>10</sub> (lb/day)
Bulldozer	1	29.40	3.66	25.09	0.59	1.17
Motor Grader	1	10.22	1.76	14.98	0.20	0.28
Water Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	3	60.51	9.02	70.69	1.21	2.03

### Paving

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NO <sub>x</sub> (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup>	PM <sub>10</sub> (lb/day)
Paver	1	7.93	1.37	11.62	0.16	0.22
Roller	1	5.01	0.86	7.34	0.10	0.14
Total per 10 acres of activity	2	12.94	2.23	18.96	0.26	0.36

### Demolition

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NO <sub>x</sub> (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup>	PM <sub>10</sub> (lb/day)
Loader	1	7.86	1.35	11.52	0.16	0.22
Haul Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	2	28.75	4.95	42.14	0.58	0.80

### Building Construction

Equipment <sup>d</sup>	No. Req'd. <sup>a</sup> per 10 acres	NO <sub>x</sub> (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup>	PM <sub>10</sub> (lb/day)
<b>Stationary</b>						
Generator Set	1	11.83	1.47	10.09	0.24	0.47
Industrial Saw	1	17.02	2.12	14.52	0.34	0.68
Welder	1	4.48	0.56	3.83	0.09	0.18
<b>Mobile (non-road)</b>						
Truck	1	20.89	3.60	30.62	0.84	0.58
Forklift	1	4.57	0.79	6.70	0.18	0.13
Crane	1	8.37	1.44	12.27	0.33	0.23
Total per 10 acres of activity	6	67.16	9.98	78.03	2.02	2.27

Note: Footnotes for tables are on following page



**Architectural Coatings**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NO <sub>x</sub> (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup>	PM <sub>10</sub> (lb/day)
Air Compressor	1	6.83	0.85	5.82	0.14	0.27
Total per 10 acres of activity	1	6.83	0.85	5.82	0.14	0.27

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC.
- c) The SMAQMD 2004 reference does not provide SO<sub>2</sub> emission factors. For this worksheet, SO<sub>2</sub> emissions have been estimated based on approximate fuel use rate for diesel equipment and the assumption of 500 ppm sulfur diesel fuel. For the average of the equipment fleet, the resulting SO<sub>2</sub> factor was found to be approximately 0.04 times the NO<sub>x</sub> emission factor for the mobile equipment (based upon 2002 USAF IERA "Air Emissions Inventory Guidance") and 0.02 times the NO<sub>x</sub> emission factor for all other equipment (based on AP-42, Table 3.4-1)
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

**PROJECT-SPECIFIC EMISSION FACTOR SUMMARY**

Source	Equipment Multiplier*	SMAQMD Emission Factors (lb/day)				
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>
Grading Equipment	12	8087.525	1205.577	9448.143	161.750	271.322
Paving Equipment	1	0.945	0.163	1.384	0.019	0.026
Demolition Equipment	1	0.000	0.000	0.000	0.000	0.000
Building Construction	1	0.000	0.000	0.000	0.000	0.000
Air Compressor for Architectural Coating	1	0.000	0.000	0.000	0.000	0.000
Architectural Coating**			0.000			

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project  
 \*\*Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994  
 Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 ac\*/(total disturbed area/43560)/10)\*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading:	4,851,713	111.38	6
Paving:	31,799	0.73	4
Demolition:	0	0.00	0
Building Construction:	0	0.00	0
Architectural Coating	0	0.00	0

(from "CY2008 Grading" worksheet)

(per the SMAQMD "Air Quality of Thresholds of Significance", 1994)

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

**Project Emissions per Month (lbs)**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>
Grading Equipment	48,525.15	7,233.46	56,688.86	970.50	1,627.93
Paving	3.78	0.65	5.54	0.08	0.11
Demolition	-	-	-	-	-
Building Construction	-	-	-	-	-
Architectural Coatings	-	-	-	-	-
<b>Total Emissions (lbs):</b>	<b>48,528.93</b>	<b>7,234.11</b>	<b>56,694.39</b>	<b>970.58</b>	<b>1,628.04</b>

**Results: Total Project Annual Emissions (4 months of activity)**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>
Total Project Emissions (lbs)	194,115.70	28,936.46	226,777.57	3,882.31	6,512.14
Total Project Emissions (tons)	97.06	14.47	113.39	1.94	3.26

**CO<sub>2</sub> Emissions**

It is assumed that 20 vehicles consisting of bulldozer, grader, forklift, cranes, rollers, and light duty trucks would be used for this project.

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

It is assumed that the average vehicle will produce 19.5 pounds of CO<sub>2</sub> per gallon of gas used. ([www.eia.doe.gov/oiat/1605/coefficients](http://www.eia.doe.gov/oiat/1605/coefficients))

<b>Total CO<sub>2</sub> Emissions for Project</b>	<b>64,935 tpy</b>
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## Construction Fugitive Dust Emissions

Calculation of PM<sub>10</sub> Emissions Due to Site Preparation (Uncontrolled).

### User Input Parameters / Assumptions

Acres graded per year:	109.90 acres/yr	(From "CY2008 Combustion" worksheet)
Grading days/yr:	5.59 days/yr	(From "CY2008 Grading worksheet)
Exposed days/yr:	45 assumed days/yr	graded area is exposed
Grading Hours/day:	8 hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)
Soil percent silt, s:	8.5 %	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	50 %	( <a href="http://www.cpc.noaa.gov/products/soilmst/w.shtml">http://www.cpc.noaa.gov/products/soilmst/w.shtml</a> )
Annual rainfall days, p:	30 days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	23 %	Ave. of wind speed at San Diego, CA ( <a href="http://www.epa.gov/ttn/naaqs/ozone/areas/windr/23188.gif">http://www.epa.gov/ttn/naaqs/ozone/areas/windr/23188.gif</a> )
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99
Mean vehicle speed, S:	5 mi/hr	(On-site)
Dozer path width:	8 ft	
Qty construction vehicles:	32.97 vehicles	(From "CY2008 Grading worksheet)
On-site VMT/vehicle/day:	5 mi/veh/day	(Excluding bulldozer VMT during grading)
PM <sub>10</sub> Adjustment Factor k	1.5 lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM <sub>10</sub> for unpaved roads)
PM <sub>10</sub> Adjustment Factor a	0.9 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM <sub>10</sub> for unpaved roads)
PM <sub>10</sub> Adjustment Factor b	0.45 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM <sub>10</sub> for unpaved roads)
Mean Vehicle Weight W	40 tons	assumed for aggregate trucks

TSP - Total Suspended Particulate

VMT - Vehicle Miles Traveled

**Emissions Due to Soil Disturbance Activities**

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	0.4 hr/acre	
Bulldozer mileage per acre	1 VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	165 VMT/day	
Construction VMT per acre	8.4 VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

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

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

Calculation of PM<sub>10</sub> Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.08 lbs/hr	0.4 hr/acre	0.00 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.80 lbs/acre
Vehicle Traffic (unpaved roads)	3.24 lbs/VMT	8.4 VMT/acre	27.20 lbs/acre

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

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

Soil Piles EF =  $1.7(s/1.5)[(365 - p)/235]^{(1/15)}(J) = (s)(365 - p)(I)(J)/(3110.2941)$ , p. A9-99.

Soil Piles EF = 10.5 lbs/day/acre covered by soil piles

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

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)  
 Soil Piles EF = 1.05 lbs/day/acres graded

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

**Calculation of Annual PM<sub>10</sub> Emissions**

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.00 lbs/acre	109.90	NA	0	0.000
Grading	0.80 lbs/acre	109.90	NA	88	0.044
Vehicle Traffic	27.20 lbs/acre	109.90	NA	2,989	1.495
Erosion of Soil Piles	1.05 lbs/acre/day	109.90	45	5,193	2.596
Erosion of Graded Surface	26.40 lbs/acre/day	109.90	45	130,561	65.281
<b>TOTAL</b>				<b>138,831</b>	<b>69.42</b>

Soil Disturbance EF: 28.00 lbs/acre  
 Wind Erosion EF: 27.45 lbs/acre/day

Back calculate to get EF: 226.17 lbs/acre/grading day

**Construction (Grading) Schedule**

Estimate of time required to grade a specified area.

Input Parameters  
 Construction area: 109.90 acres/yr (from " Combustion Emissions" Worksheet)  
 Qty Equipment: 32.97 (calculated based on 3 pieces of equipment for every 10 acres)

**Grading Emissions**

Assumptions.

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

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

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

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	109.90	13.74
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	109.90	53.73
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	54.95	55.41
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	54.95	22.73
2315 310 5020	Compaction	Vibrating roller, 6" lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	109.90	38.54
<b>TOTAL</b>								<b>184.15</b>

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

(Equip)(day)/yr: 184.15  
 Qty Equipment: 32.97  
 Grading days/yr: 5.59

**Emissions from Haul Trucks During Cut and Fill Operations**

The following table presents preliminary earthwork quantities for the proposed Pack Trail Access Road and Monument 250 Road Upgrades. It is assumed that construction staging areas will require minimal grading so are not included in the earthwork. For the cost estimate it was assumed that 70% of the cut volume will be rock, requiring pneumatic rock hammers and blasting.

Location	Cut Volume (CY)	Fill Volume (CY)	Virgin Volume (CY)	Waste Volume (CY)
Route A-1	253,622	268,764	60,000	60,000
Route A-2	37,500	37,500		
<b>Total</b>	<b>291,122</b>	<b>306,264</b>		

Total Haul Truck Loads for Cut and Fill Volumes			
	Total Miles	Daily Mileage	Average Daily Mileage
Total Truck Loads for Cut Materials	29,112	58,224	242.60
Total Truck Loads for Fill Materials	30,627	61,254	255.23
Total Truck Loads for Virgin Fill Materials	6,000	60,000	250.00
Total Truck Loads for Waste Materials	6,000	60,000	250.00
<b>Total Truck Loads for Cut/Fill Materials</b>	<b>71,739</b>	<b>239,478</b>	<b>249.46</b>

Assumptions:  
 Each haul truck can carry approximately 10 cubic yards of materials.  
 Each haul truck would travel an average of 2 miles round trip for onsite cut and fill materials.  
 Each haul truck would travel an average of 10 miles round trip for offsite virgin and waste materials.

**Emission Factors**

Emission factors are taken from the USEPA MOBILE5 emissions model, as compiled and published in "Air Emissions Inventory Guidance Document for Mobile Sources and Air Force Installations" Air Force Institute for Environmental Safety and Occupational Health Risk Analysis (AFIERA), July 2001.

All vehicle emissions are calculated assuming that the average commute vehicle is five years old. That is calendar year 2008 emissions estimates assume that the average vehicle in each vehicle class is a 2003 model.

Note that PM<sub>10</sub> emission factors include both exhaust and "fugitive" emissions (paved road, brake & tire dust, etc.).

**Emission Factors in g/mi from MOBILE5 Tables for 2003 Model Year Vehicles in CY2008.**

HDDV Low Altitude g/mi - 2008			
HDDV	NO <sub>x</sub>	VOC	PM <sub>10</sub>
	6.5	2.0	7.73
		CO	SO <sub>2</sub>
		10.9	0.512

Reference: Tables 4-2 through 4-53, (AF IERA, July 2001)

Notes: HDDV emission factors shown above were taken from AF IERA HDDV (>8,500 lbs) emission factors

**Haul Truck Emissions**

HDDV Emissions by Vehicle Class- 2003 (tons)					
HDDV	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>
	1.72	0.53	2.88	0.14	2.04

**CO<sub>2</sub> Emissions**

It is assumed that the average vehicle will produce 19.5 pounds of CO<sub>2</sub> per gallon of gas used. ([www.eia.doe.gov/oiaf/1605/coefficients](http://www.eia.doe.gov/oiaf/1605/coefficients))

Total CO <sub>2</sub> Emissions for the Project	80.992 tpy
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Example: (83.15 ave miles/day) x (240 days working) x (1 gal/10 miles) x (19.5 lb CO<sub>2</sub>/gal x ton/2000lb) = 19.458 tons CO<sub>2</sub>



### Emissions from Diesel Powered Generators for Construction Equipment

The Project would require six diesel powered generators to power construction equipment. These generators would operate approximately 8 hours per day for 333 working days.

Number of Generators	6
Maximum Hours of Operation	8 hrs/day
Number of Construction Days	333
Total Generator Capacity	75 hp
Hourly Rate	0.5262 MMBtu/hr
Annual Use	8,410 MMBtu/yr

Example:  $1\text{hp}=0.002546966\text{ MMBtu/Hr}$   
 $\text{Hourly Rate (MMBtu)} = (75\text{ Hp}/0.363) * (0.002546966\text{ MMBtu/hr}) = 0.5262\text{ MMBtu/hr}$   
 $\text{Annual Use (MMBtu)} = (\text{Number of Generator} * \text{Hours Operation/Day} * \text{Number of Construction Days}) = (6 * 8 * 120 * 0.5262) = 3,030.9\text{ MMBtu/yr}$

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

#### Generator Emission Factors (Diesel)

NO <sub>x</sub>	4.41 lb/MMBtu
VOC	0.36 lb/MMBtu
CO	0.95 lb/MMBtu
SO <sub>x</sub>	0.29 lb/MMBtu
PM <sub>10</sub>	0.31 lb/MMBtu

#### Emissions (Diesel)

NO <sub>x</sub>	18.545 tpy
VOC	1.514 tpy
CO	3.995 tpy
SO <sub>x</sub>	1.220 tpy
PM <sub>10</sub>	1.304 tpy

Example: Total NO<sub>x</sub> Emissions = (Annual MMBtu/year\*(EF)/2000 = (3,030.9\*4.41)/2000 = 6.68 tpy

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

**Emissions from Diesel Powered Generators for Portable Lights**

The Project would require 10 portable light units to meet USBP operational requirements. These portable lights are powered by a 6-kilowatt self-contained diesel generators. Portable lights would generally operate continuously every night (approximately 12 hours) 365 days per year.

Number of Generators	10
Maximum Hours of Operation	12 hrs/day
Number of Operational Days	365
Total Generator Capacity	6 hp
Hourly Rate	0.0421 MMBtu/hr
Annual Use	606 MMBtu/yr

Example:  $1\text{hp}=0.002546966\text{ MMBtu/Hr}$   
 $\text{Hourly Rate (MMBtu)} = (6\text{ Hp}/0.363) * (0.002546699\text{ MMBtu/hr}) = 0.0421\text{ MMBtu/hr}$   
 $\text{Annual Use (MMBtu)} = (\text{Number of Generator} * \text{Hours Operation/Day} * \text{Number of Construction Days}) = (10 * 12 * 120 * 0.0421) = 606.2\text{ MMBtu/yr}$

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

Generator Emission Factors (Diesel)	
NO <sub>x</sub>	4.41 lb/MMBtu
VOC	0.36 lb/MMBtu
CO	0.95 lb/MMBtu
SO <sub>x</sub>	0.29 lb/MMBtu
PM <sub>10</sub>	0.31 lb/MMBtu

Emissions (Diesel)	
NO <sub>x</sub>	1.337 tpy
VOC	0.109 tpy
CO	0.288 tpy
SO <sub>x</sub>	0.088 tpy
PM <sub>10</sub>	0.094 tpy

Example: Total NO<sub>x</sub> Emissions = (Annual MMBtu/year\*(EF)/2000 = (606\*4.41)/2000 = 1.337 tpy

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

CO<sub>2</sub> Emissions  
 0.140 MMBTU/gallons of diesel fuel used  
 3,606 MMBTU/Year\*gallons/0.140 = 25,757 gallons  
 25,757 gallons\*21.3 pounds CO<sub>2</sub>/gallon = 548,624 pounds

274.312 CO <sub>2</sub> Emissions (tons)
--

**San Diego Intrastate Air Quality Control Region**

Row #	State	County	Area Source Emissions						Point Source Emissions					
			CO	NOx	PM10	PM2.5	SO2	VOC	CO	NOx	PM10	PM2.5	SO2	VOC
1	CA	San Diego Co	600,798	73,048	69,821	17,914	1,748	91,102	4,380	3,295	2,190	1,402	259	4,269
Grand Total			600,798	73,048	69,821	17,914	1,748	91,102	4,380	3,295	2,190	1,402	259	4,269

**SOURCE:**

<http://www.epa.gov/air/data/geosel.html>

USEPA - AirData NET Tier Report

\*Net Air pollution sources (area and point) in tons per year (2001)  
Site visited on 17 October 2007.

San Diego Intrastate AQCR (40 CFR 81.164): San Diego County, California

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# APPENDIX D

## Biological Survey Report





# **BIOLOGICAL SURVEY REPORT**

**FOR**

## **CONSTRUCTION, MAINTENANCE, AND OPERATION OF TACTICAL INFRASTRUCTURE SAN DIEGO SECTOR, CALIFORNIA**



**U.S. DEPARTMENT OF HOMELAND SECURITY  
CUSTOMS AND BORDER PROTECTION  
U.S. BORDER PATROL  
EL CENTRO SECTOR, CALIFORNIA**

**Prepared by**



**JULY 2008**

## ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CBP	U.S. Customs and Border Protection
CDFG	California Department of Fish and Game
CNDDDB	California Department of Fish and Game's California Natural Diversity Database
CWA	Clean Water Act
DHS	U.S. Department of Homeland Security
e <sup>2</sup> M	engineering-environmental Management, Inc.
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FE	Federally Endangered
FT	Federally Threatened
HCP	habitat conservation plan
MBTA	Migratory Bird Treaty Act
MHPA	Multiple Habitat Planning Area
MSCP	Multiple Species Conservation Program
NEPA	National Environmental Policy Act
NWI	National Wetlands Inventory
OMW	Otay Mountain Wilderness
POE	Port of Entry
SE	State Endangered
ST	State Threatened
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey



**BIOLOGICAL SURVEY REPORT  
FOR  
CONSTRUCTION AND OPERATION OF TACTICAL INFRASTRUCTURE  
USBP SAN DIEGO SECTOR**

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## **1. Introduction**

The Biological Survey Report (BSR) synthesizes information collected from a variety of literature sources and field surveys to describe the biological resources within the impact corridor, provides support information from the Project region, allows evaluation of the potential impacts of the Project on those biological resources within the impact corridor by the Environmental Stewardship Plan (ESP), and provides the basis of recommendations for avoidance or reduction of those impacts using mitigation including best management practices (BMP). Information was gathered from publicly available literature, data provided by relevant land management agencies, review of aerial photography and U.S. Geological Survey (USGS) topographic maps, data from the California Department of Fish and Game's California Natural Diversity Database (CNDDDB), Bureau of Land Management (BLM), NatureServe, and field surveys conducted in October 2007 through February 2008.

The BSR analyzes the potential impacts to biological resources resulting from the construction, operation, and maintenance of the Project. The BSR was prepared as an independent document that is an attachment to the ESP developed for this Project.

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## 2. Project Description

U.S. Customs and Border Protection (CBP) plans to construct, maintain, and operate tactical infrastructure consisting of pedestrian, aesthetic, or hybrid fence; associated access roads; patrol roads; and other tools along the U.S./Mexico international border in the U.S. Border Patrol (USBP), San Diego Sector, California. The locations of tactical infrastructure are based on a USBP San Diego Sector assessment of local operational requirements where it will assist USBP agents in reducing illegal cross-border activities. Tactical infrastructure will be constructed in two discrete sections along the international border in San Diego County, California.

The planned tactical infrastructure would be constructed in two sections, Section A-1 and A-2A, along the border within the USBP San Diego Sector, in San Diego County, California (see **Table 2-1**). Section A-1 will not connect to any existing fence. Approximately 65 percent of the 5.8 miles of access and patrol road and 17 percent (2,300 feet) of fence will be on the Otay Mountain Wilderness (OMW). The OMW is on public lands administered by the Bureau of Land Management (BLM). The second section designated as A-2A, approximately 0.8 miles in length, will connect with an existing border fence west of Tecate, California. This fence section is an extension of existing fence near Tecate Peak and will pass through a riparian area. Some portions of the fence sections will be on privately owned land parcels. Lights will not be constructed as part of the Project.

In areas where the construction access road is not adjacent to the fence, trails suitable for light-tracked vehicles would be constructed for the purposes of fence installation and maintenance. These trails would require clearing of brush and boulders and minor grading. Rock outcrops might require leveling for safe travel and fence construction.

**Table 2-1. Tactical Infrastructure Sections, San Diego Sector**

<b>Fence Section</b>	<b>Border Patrol Station</b>	<b>General Location</b>	<b>Approx. Mileage (mi)</b>
A-1	Brown Field/Chula Vista	Pack Trail, south side of Otay Mountain	3.6
A-2A	Brown Field	West of Tecate Port of Entry	0.8
<b>Total</b>			<b>4.4</b>

The wilderness boundary is at least 100 feet from the U.S./Mexico international border. The corridor between the OMW and the U.S./Mexico international border is public land administered by the BLM. The fence alignment was designed to stay to the maximum extent practical outside the OMW and near the border, but steep terrain, cliffs, unstable soils, and large canyons make necessary constructing the fence and construction access road corridors away from the border in areas and enter the OMW for long stretches of the route.

In addition to the construction of the construction access road and fence, improvements will be made along three existing roads for access to the Section A-1. Two roads for access from the west side of Otay Mountain include a portion the Otay Truck Trail and the entire length of an unnamed spur to the Otay Truck Trail that goes to Wild Bill Draw (Puebla Tree). One road will be improved for access from the eastern side of Otay Mountain the entire length of Marron Valley road from Monument 250 to Highway 94. Improvements will be along all the access roads. The maximum impact area for these access roads is a 60' wide impact corridor centered on the existing roads. While it is unlikely that the entire corridor will be impacted, the analysis for this report considers that the maximum allowable impact.

Nine staging areas are planned for temporary impacts during the construction of the fence and associated roads. The staging areas are situated on the flatter portions of the Construction Access Road, Fence Alignment and Access Roads.

Section A-2A would be approximately 0.8 miles in length and would connect with an existing border fence west of Tecate. This fence section would extend towards Tecate Peak to an elevation of approximately 2,500 feet and would pass through a riparian area. This fence section would encroach on a mix of privately owned land parcels and public land administered by the BLM. The construction access road would follow this fence within the fence construction corridor.

Construction of this fence section would include an upgrade to an access road west of Tecate. The planned access road is an unnamed dirt road that goes from Tecate west north of the existing fence and connects to an existing dirt road on the east side of Tecate peak. The access road with improvements will end just to the west of the west end of the new fence construction. The impact area for this access road is a 60' wide impact corridor centered on the existing roads. While it is unlikely that the entire corridor will be impacted, the analysis for this report considers the maximum allowable impact.

A single staging area is planned for the Section A-2A east of the fence construction corridor.

### **3. Survey Methods and Limitations**

To provide flexibility in placing tactical infrastructure within the impact corridor, and to ensure consideration of impacts due to construction and use, the biological resources surveys were conducted in an area extending 300 feet on the north side of the originally planned individual tactical infrastructure sections. When it was realized that the project required a different design the majority of the revised design was within the original survey corridor. There were four general areas where the revised fence and patrol road extended beyond the original survey corridor. These new areas were visited in June 2006. The areas defined and revised are referred to hereafter as the “survey corridor.” Additionally the surveyors surveyed an area 60 feet wide centered on the planned access roads defined as the “access road impact corridor.”

Intuitive controlled investigations of the survey corridor and access road impact corridor were conducted by Rod Dossey of Dossey & Associates (Rare Plant Specialist, Biologist), Michael Klein of Klein-Edwards Professional Services (U.S. Fish and Wildlife Service [USFWS] permitted biologist for Quino checkerspot butterfly), Kevin Clark of Clark Biological Services (USFWS permitted biologist for California gnatcatcher, least Bell’s Vireo, and Southwestern willow flycatcher), Brent Eastty of e<sup>2</sup>M (Ecologist), Karen Stackpole of e<sup>2</sup>M (Senior Ecologist), and Dustin Janeke of e<sup>2</sup>M (Biologist). The surveys were conducted during the fall of a drought year. The conditions were taken into account by the biologists in assessing habitats, but the conditions were not ideal for surveying.

The initial surveys were done intermittently from October 2007-February 2008 with the revised corridor being visited in June 2008. The surveys covered the fence alignment and access roads for Sections A-1 and A-2A. Surveyors walked the impact corridor as described above for each tactical infrastructure section, and examined areas containing species compositions or habitat that might be conducive to sensitive species. Plot data (i.e., GPS coordinates, photographs, and plant community composition) were recorded at regular intervals along the corridor and where plant communities presented substantial shifts in species composition. The data was used to generate vegetation classifications and maps to support delineation of habitat types, analysis of potential sensitive species occurrences, and analysis of project impacts on biological resources. Although the surveyors have permits to perform protocol surveys for or monitor many of the listed species in San Diego, no protocol surveys were conducted. Surveyors did specifically look for evidence indicating the presence of state, federal listed species (see **Table 3-1**), and habitats that might support them. Descriptions of the federal listed species are provided in **Appendix A**.

**Table 3-1. Federal Threatened and Endangered Species with Potential to Occur in the Impact Corridor**

Scientific Name	Common Name	Federal Status	State Status
<b>Invertebrates</b>			
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	E	
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	E	
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	E	
<b>Reptiles</b>			
<i>Bufo californicus</i>	Arroyo toad	E	
<b>Birds</b>			
<i>Poliophtila californica californica</i>	Coastal California gnatcatcher	T	
<i>Vireo bellii pusillus</i>	Least Bell's vireo	E	E
<i>Empidonax trailii extimus</i>	Southwestern willow flycatcher	E	E
<b>Plants</b>			
<i>Acanthomintha ilicifolia</i>	San Diego thorn-mint	T	
<i>Ambrosia pumila</i>	San Diego ambrosia	E	
<i>Baccharis vanessae</i>	Encinitas baccharis	T	E
<i>Deinandra conjugens</i>	Otay tarplant	T	E
<i>Eryngium aristulatum var. parishii</i>	San Diego button-celery	E	E
<i>Fremontodendron mexicanum</i>	Mexican flannelbush	E	
<i>Monardella stoneana</i>	Jennifer's monardella	T	
<i>Navarretia fossalis</i>	Spreading navarretia	T	
<i>Orcuttia californica</i>	California Orcutt grass	E	E
<i>Pogogyne nudiuscula</i>	Otay Mesa mint	E	E

Source: USFS 2007

Notes: E = endangered; T = Threatened



## **4. Environmental Setting**

The San Diego area is generally characterized as having a Mediterranean climate. Summers are typically warm and dry, with daytime temperatures sometimes exceeding 90 degrees Fahrenheit (°F); winters are mild and wet, with nighttime temperatures usually above freezing. In the mountainous region where the project sites are located, temperatures range from 25 °F to 90 °F. Average annual precipitation ranges from 10 to 25 inches, and dry periods of 7 to 8 months are common. Eighty-five percent of the rainfall in the region occurs from November to March, but wide variations take place in monthly and seasonal totals (NOAA 2007).

The impact corridor and associated access roads are on or near Otay Mountain (Section A-1) and the south and east sides of Tecate Peak (Section A-2A). Both of these mountains are widely considered by botanists to be islands for endemic plants (plants with very restricted ranges). The large numbers of locally endemic species combined with more common species creates both unique vegetation assemblages and an unusually high diversity of plant species.

Four kinds of Chaparral, coastal sage scrub, grasslands and a variety of riparian vegetation communities are found in the impact corridor (described in the vegetation portion). A southern interior closed cone coniferous forest is found along the Otay Mountain Truck Trail.

The project ranges from about 500 to 1350 feet above mean sea level (AMSL) along Section A-1 and from 1850 to 2500 feet AMSL along Section A-2A. There are nine soil types (Bowman 1973) identified in the impact corridors.

Section A-1 is located in a core preservation area for the Multiple Species Conservation Program. A western portion of the Marron Valley Access Road is located in a mitigation bank used by the City of San Diego for implementing the MSCP. The San Diego region has a greater number of threatened and endangered species than anywhere else in the continental United States. Over 200 plant and animal species occur in the county that are federally and/or state listed as endangered, threatened, or rare; proposed or candidate for listing; or otherwise considered sensitive. The MSCP was developed to provide natural resource guidance for where future development should and should not occur, and to streamline and coordinate procedures for review and for permitting impacts to biological resources (MSCP 1998).

The MSCP is a comprehensive habitat conservation planning program (HCP) in San Diego that provides for a regional process to authorize incidental take of protected species for urban development and for conserving multiple species and their habitat within a 582,243-acre planning area in southwestern San Diego County. The MSCP planning area includes 12 local jurisdictions in southern coastal San Diego County. These jurisdictions implement their respective portions of the MSCP Plan through subarea plans describing specific

implementing mechanisms for the MSCP Plan. The impact corridor is within the subarea plans for the City of San Diego and County of San Diego subareas. Both the county and city have finalized their respective subarea plans and have received take authorizations under the MSCP.

The MSCP Plan, and each subarea plan prepared pursuant to it, is intended to serve as a multiple species HCP pursuant to Section 10(a)(2)(A) of the ESA. An HCP is required for issuance of a permit for incidental take of listed species pursuant to Section 10(a)(1)(B) of the Act. An HCP may also serve as a Natural Communities Conservation Plan (NCCP) pursuant to the State of California's NCCP Act of 1991, provided findings are made that the plan is consistent with the NCCP Act.

The MSCP Plan proposes conservation measures that in turn will allow the incidental take of 85 species, including 20 listed animal and plant species, 8 species currently proposed for federal listing as endangered or threatened, and 1 candidate for federal listing. Take is authorized for these listed and unlisted species as long as the full implementation of the MSCP Plan (MSCP 1998) is realized. **Table 4-1** includes the species that are target MSCP species that potentially occur in the impact corridor.

The planned Section A-1 and access roads are located partially within BLM lands. Some portions cross into the OMW. **Table 4-1** also lists species that are BLM-designated sensitive species and Multiple Species Conservation Program (MSCP) target species that could occur in the impact corridor for Sections A-1 and A-2A, or within the access road impact corridor.

**Table 4-1. Sensitive Species Assessed During Biological Surveys**

Scientific Name	Common Name	USFWS	CDFG	BLM	MSCP
<b>Invertebrates</b>					
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	E			X
<i>Callophrys thorneii</i>	Thorne's hairstreak butterfly		SC	S	X
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	E			
<i>Euphyes vestris harbisoni</i>	Harbison dun skipper		SC		X
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	E			X
<b>Amphibians</b>					
<i>Bufo californicus</i>	Arroyo southwestern toad	E	SC		X
<i>Spea hammondi</i>	Western spadefoot toad		SC	S	
<b>Reptiles</b>					
<i>Aspidoscelis hyperythra beldingi</i>	Belding's orange-throated whiptail		SC	S	X
<i>Phrynosoma coronatum</i> ssp. <i>blainvillei</i>	Coast horned lizard		SC	S	X

Scientific Name	Common Name	USFWS	CDFG	BLM	MSCP
<b>Reptiles (continued)</b>					
<i>Thamnophis hammondi</i>	Two-striped garter snake			S	
<b>Birds</b>					
<i>Accipiter cooperii</i>	Cooper's Hawk		SC		X
<i>Agelaius tricolor</i>	Tricolored blackbird			S	X
<i>Aimophila ruficeps</i> ssp. <i>canescens</i>	Rufous-crowned sparrow		SC		X
<i>Aquila chrysaetos</i>	Golden eagle	BGEPA	SC		X
<i>Circus cyaneus</i>	Northern harrier		SC		X
<i>Empidonax trailii extimus</i>	Southwestern willow flycatcher	E	E		X
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	T			X
<i>Speotyto cunicularia</i>	Burrowing owl		SC	S	X
<i>Vireo bellii pusillus</i>	Least Bell's vireo	E	E		X
<b>Mammals</b>					
<i>Eumops perotis californicus</i>	Western mastiff bat		SC	S	X
<i>Felis concolor</i>	mountain lion				X
<i>Lepus californicus bennettii</i>	San Diego black-tailed jackrabbit		SC		
<i>Odocoileus hemionus fuliginata</i>	southern mule deer				X
<i>Plecotus townsendii</i>	Townsend's western big-eared bat		SC	S	X
<b>Plants</b>					
<i>Acanthomintha ilicifolia</i>	San Diego thorn-mint	T	E		X
<i>Ambrosia pumila</i>	San Diego ambrosia	E		S	X
<i>Arctostaphylos glandulosa</i> var. <i>crassifolia</i>	Del Mar Manzanita	E			X
<i>Arctostaphylos otayensis</i>	Otay Manzanita			S	X
<i>Astragalus deanei</i>	Dean's milk-vetch			S	
<i>Astragalus oocarpus</i>	San Diego rattleweed			S	
<i>Baccharis vanessae</i>	Encinitas baccharis	T	E		X
<i>Brodiaea orcuttii</i>	Orcutt's brodiaea			S	X
<i>Calamagrostis koelerioides</i>	fire reedgrass				X
<i>Calochortus dunnii</i>	Dunn's mariposa lily		R		X
<i>Ceanothus cyaneus</i>	Lakeside ceanothus			S	X
<i>Ceanothus verrucosus</i>	barranca brush				X
<i>Cordylanthus orcuttianus</i>	Orcutt's bird's-beak				X

Scientific Name	Common Name	USFWS	CDFG	BLM	MSCP
<b>Plants (continued)</b>					
<i>Cupressus forbesii</i>	Tecate cypress			S	X
<i>Deinandra conjugens</i>	Otay tarplant	T	E		
<i>Deinandra floribunda</i>	Tecate tarweed				X
<i>Dudleya variegata</i>	variegated dudleya			S	X
<i>Ericameria palmeri</i> var. <i>palmeri</i>	Palmer's rabbitbrush				X
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button-celery	E	E		X
<i>Ferocactus viredescens</i>	San Diego barrelcactus				X
<i>Fremontodendron mexicanum</i>	Mexican flannelbush	E			
<i>Githopsis diffusa</i> spp. <i>filicaulis</i>	Mission Canyon bluecup				X
<i>Hazardia orcuttia</i>	Orcutt's Hazardia		T	S	
<i>Hymenoclea monogyra</i>	singlewhorl burrobrush				
<i>Lepechinia ganderi</i>	Gander's pitcher sage			S	X
<i>Monardella hypoleuca</i> ssp. <i>lanata</i>	feltleaf monardella				X
<i>Monardella stoneana</i>	Jennifer's monardella	E	E		X
<i>Muilla clevelandii</i>	San Diego goldenstar			S	X
<i>Myosurus minimus</i>	tiny mousetail				X
<i>Navarretia fossalis</i>	spreading navarretia	T			X
<i>Nolina interrata</i>	Dehesia nolina		E		X
<i>Orcuttia californica</i>	California Orcutt grass	E	E		X
<i>Ornithostaphylos oppositifolia</i>	Baja California birdbush		E		
<i>Packera ganderi</i>	Gander's ragwort		R		
<i>Pogogyne nudiuscula</i>	Otay Mesa mint	E	E		X
<i>Ribes canthariforme</i>	San Diego currant			S	
<i>Rosa minutifolia</i>	small-leaved rose		E		X
<i>Salvia munzii</i>	Munz's sage				
<i>Solanum tenuilobatum</i>	San Diego nightshade				X
<i>Tetracoccus dioicus</i>	Parry's tetrococcus			S	X

Notes: E=Endangered; T= Threatened; SC:= Species of Concern; S=Sensitive; R= Rare; X=Target species for the MSCP

## 5. Biological Resources

## 5.1 Vegetation Classification

The vegetation of Southern California has generally been classified under the Humid Temperate Domain, Mediterranean Division of Bailey (1995). The impact corridor is predominantly classified as the California Coastal Range Open Woodland–Shrub–Coniferous Forest–Meadow Province (Bailey 1995). The Jepson Manual (Hickman 1996) describes California vegetation using combined features of the natural landscape including vegetation types, plant communities, geology, topography, and climatic variation. The Jepson Manual places the impact corridors in the California Floristic Province, Southwestern California Region and the Peninsular Ranges Subdivision. A Flora of San Diego County (Beauchamp 1986) describes plants occurring in the impact corridors as belonging to the Otay Mountain Floral district. This assemblage consists of very restricted plants occurring on peaks of cretaceous metavolcanic rock in an island-like fashion, with intervening areas covered by grasslands, sage scrub, and chamise chaparral.

NatureServe (2007) defines ecological systems as representing recurring groups of biological communities that are found in similar physical environments and are influenced by similar ecological processes such as fire or flooding. Ecological systems represent classification units that are readily identifiable by conservation and resource managers in the field. “Natural Communities Descriptions” (Holland 1986) incorporated a combination of abiotic factors, species composition, and geographic ranges to describe natural communities. The Holland descriptions are the most commonly used descriptions in San Diego County and the basis for vegetation analyses in all of the regional habitat management plans. A Manual of California Vegetation (Sawyer and Keeler-Wolf 1995) defines a quantitative approach to the vegetation classification in California. These quantitative descriptions are more commonly used in other parts of the State of California, outside of San Diego County.

The following vegetation associations found in the impact corridors were prepared with the intent of bridging all three classification systems. **Table 5-1** provides translation between the differing systems, and a framework for the vegetation discussed in this section. The Holland system will be used for the vegetation discussions within this report.

**Table 5-1. Vegetation Communities Observed During Biological Surveys (Equivalencies Between Systems)**

NatureServe	Holland	Sawyer & Keeler-Wolf
Southern California Dry Mesic Chaparral CES206.930	Southern Mixed Chaparral 37120	Chamise-Mission Manzanita-Woollyleaf Ceanothus Series

NatureServe	Holland	Sawyer & Keeler-Wolf
Southern California Dry Mesic Chaparral CES206.930	Southern Mixed Chaparral 37120	Scrub Oak Series
Southern California Dry Mesic Chaparral CES206.930	Mafic southern mixed chaparral 37122	Chamise-Mission Manzanita-Woollyleaf Ceanothus Series
Southern California Coastal Scrub CES206.933	Diegan Coastal Sage Scrub 32500	California Encelia Series
Southern California Coastal Scrub CES206.933	Diegan Coastal Sage Scrub 32500	California Sagebrush-California Buckwheat Series
Southern California Coastal Scrub CES206.933	Diegan Coastal Sage Scrub 32500	California Buckwheat-White Sage Series
<i>Baccharis salicifolia</i> riparian shrubland CEGL003549	Mulefat scrub 63310	Mulefat Series
<i>Quercus agrifolia/Toxicodendron diversilobum</i> woodland CEGL002866	Southern Coast Live Oak Riparian forest 61310	Coast Live Oak Series
California maritime chaparral CES206.929	Whitethorn chaparral 37532	Chaparral Whitethorn Series
<i>Bromus herbaceus</i> alliance A.1813	Non-Native grassland 42200	California Annual Grassland Series
<i>Adenostema fasciculatum</i> shrubland CEGL002924	Chamise Chaparral 37200	Chamise Series
No equivalent	Southern Interior Cypress Forest 83330	Tecate Cypress Stand
No equivalent	Disturbed 11300	No equivalent
No equivalent	Landscaped 12000	No equivalent
No equivalent	Developed 12000	No equivalent
California Central Valley and Southern Grassland CES206.942	Valley Needle Grassland 42110	Foothill Needlegrass Series

NatureServe	Holland	Sawyer & Keeler-Wolf
Burned Riparian Scrub N/A	Burned Riparian Scrub N/A	Burned Riparian Scrub

The vegetation associations found in the impact corridors were prepared with the intent of bridging all three classification systems. Classification of existing vegetation within this corridor was achieved by accessing nearly the entire corridor as planned, sampling observation points, and relating them to the Holland classification system. Habitats observed, sampled, and photographed within the impact corridor include chaparral, riparian, coastal sage scrub, oak woodlands, and disturbed areas. A brief description of each plant community observed within the planned sections is provided below. To the extent possible, each community is illustrated and supported by representative ground photographs (**Figures 5-1** through **5-13**). Some vegetation patches and stands are introduced nonnative species; they are discussed at the end of this section.

**Southern mixed chaparral** is defined as a tall chaparral without any single species dominating the habitat (see **Figure 5-1**). The southern mixed chaparral found near Sections A-1 and A-2A is typically dominated by some combination of the following shrubs: chamise (*Adenostoma fasciculatum*), lilac (*Ceanothus sp.*), laurel leafed sumac (*Malosma laurina*), mission manzanita (*Xylococcus bicolor*), chaparral pea (*Pickeringia montana*) or scrub oak (*Quercus sp.*). The under story usually consists of common rock rose (*Helianthemum scoparium*) and deerweed (*Lotus scoparius*). Southern mixed chaparral is the second most abundant habitat within Section A-1 and the most abundant in Section A-2A. In Section A-2A it is primarily found along the access roads. In Section A-1 the southern mixed chaparral is found throughout the impact corridor and access roads. A total of approximately 66.0 acres of southern mixed chaparral is found in the combined areas of the impact corridors, with 52.7 acres in the Section A-1 impact corridor and 13.3 acres in the Section A-2A impact corridor. **Table 5-2** shows the quantity of acres of habitat for each fence section, patrol road, staging area, and access road for Section A-1 and A-2A.

**Table 5-2. Acreages of Habitat within the Project Corridor**

Habitat	Section A-1				Section A-2			Total
	Fence Section	Patrol Road	Staging Areas (Temporary Impacts)	Access Roads	Fence Section	Staging Areas (Temporary Impacts)	Tecate Access Road	
Southern Mixed Chaparral 37120	13.0	25.6	6.0	8.1	0.0	0.0	13.3	66.0

Habitat	Section A-1				Section A-2			Total
	Fence Section	Patrol Road	Staging Areas (Temporary Impacts)	Access Roads	Fence Section	Staging Areas (Temporary Impacts)	Tecate Access Road	
Mafic southern mixed chaparral 37122	*	14.8	9.3	8.7	0.0	0.0	0.0	32.8
Diegan Coastal Sage Scrub 32500	6.4	18.0	1.3	48.5	4.1	0.0	8.5	86.8
Mulefat scrub 63310	0.2	0.2	0.5	0.0	0.0	0.0	0.0	0.9
Southern Coast Live Oak Riparian forest 61310	0.4	1.4	0.4	5.7	0.4	0.0	0.3	8.6
Whitethorn chaparral 37532	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
Non-Native grassland 42200	0.0	0.0	5.0	13.0	0.9	2.0	7.9	28.8
Chamise Chaparral 37200	0.0	0.0	0.0	6.8	0.0	0.0	1.9	8.7
Southern Interior Cypress Forest 83330	0.0	0.0	0.0	7.5	0.0	0.0	0.0	7.5
Valley Needle Grassland 42110	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Burned Riparian Scrub N/A	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.4
Developed 12000	0.0	0.0	0.0	0.8	0.0	0.0	2.4	3.2
Landscaped 12000	0.0	0.0	0.0	3.5	0.0	0.0	0.2	3.7
Disturbed 11300	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.6

Notes: \* Less than 0.05 acres





**Figure 5-1. Representative Photographs of Southern Mixed Chaparral**

**Mafic southern mixed chaparral** is similar to southern mixed chaparral, but a significant component of the chaparral consists of species with restricted ranges or soils (see **Figure 5-2**). The dominant species in the mafic chaparral areas near Section A-1 are southern mountain misery (*Chamaebatia australis*), chaparral pea (*Pickeringia montana*), Otay lilac (*Ceanothus otoyensis*), Ramona lilac (*Ceanothus tomentosus*), and yerba santa (*Eriodictyon trichocalyx*). Additionally Otay manzanita (*Arctostaphylos otoyensis*), Cleveland's sage (*Salvia clevelandii*), Cedros island scrub oak (*Quercus cedrosensis*), and woolly blue curls (*Trichostema lanatum*) often are found in abundance within the habitat. Mafic southern mixed chaparral was not observed near Section A-2A. This habitat occurs along the Otay Mountain Truck Trail access road, fence alignment, in the staging areas and patrol road in Section A-1. This habitat is one of the vegetation types associated with the rare and unusual vegetation for which the OMW is known. A total of 32.8 acres is estimated to be impacted by Section A-1 (see **Table 5-2**).



**Figure 5-2. Representative Photographs of Mafic Southern Mixed Chaparral**

**Diegan coastal sage scrub** was observed throughout the impact corridors. This was the most common habitat observed near Sections A-1 and A-2A. A total of 86.8 acres are estimated to be impacted, of that 74.2 acres are in Section A-1 (see **Table 5-2**). It is most common at the lower elevations and in areas of past disturbance. Coastal sage scrub is a low-growing chaparral-type habitat that rarely exceeds 4 feet in height (see **Figure 5-3**). The coastal sage scrub species dominant in the impact corridors are San Diego sunflower (*Viguiera laciniata*), flat-topped buckwheat (*Eriogonum fasciculatum*), deerweed (*Lotus scaprius*), and coastal sage (*Artemisia californica*). In Section A-1 large areas of coastal sage scrub occur at the low elevations along Otay Mountain Truck Trail and Marron Valley Access Road. Coastal sage scrub also occurs along Section A-2A. Coastal sage scrub is less abundant in Section A-2A and along the eastern areas of the Section A-2A access road.



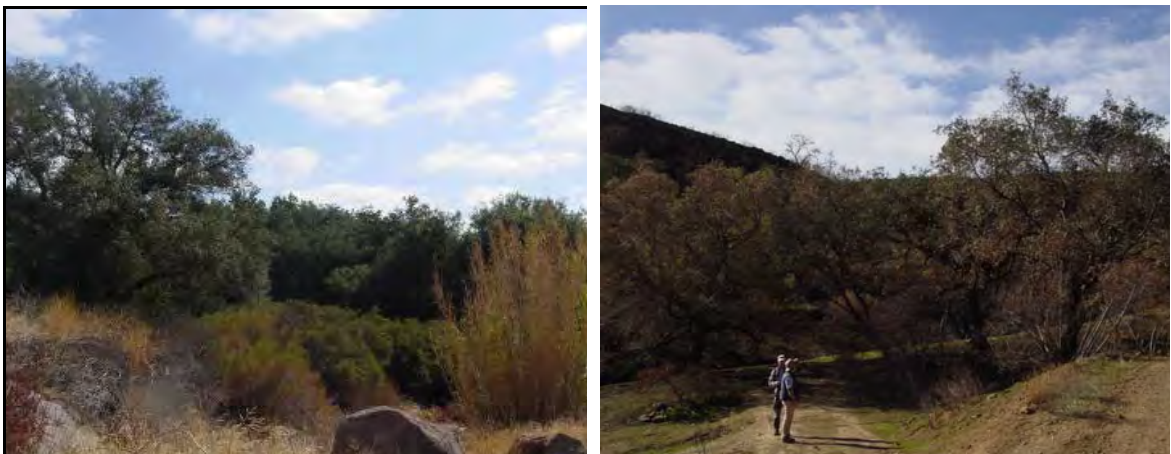
**Figure 5-3. Representative Photographs of Diegan Coastal Sage Scrub**

**Mulefat scrub** is found in the bottom of the Wild Bill Draw drainage. The approximately 0.9 acres of mulefat scrub found within the impact corridor (see **Table 5-2**) is dominated by a combination of mulefat (*Baccharis salicifolia*) and San Diego marsh elder (*Iva hayesiana*). There are few willows in these areas. Mulefat scrub also likely occurred in the drainage along Marron Valley Road prior to the recent wildfires and is one of the habitats included in the burned riparian scrub designation (see **Figure 5-4**).



**Figure 5-4. Representative Photograph of Mulefat Scrub**

**Southern coast live oak riparian forest** is found along the larger drainages in the impact corridors and access roads (see **Figure 5-5**). Southern coast live oak woodlands were observed patchily along every portion of the impact corridor and access roads except for the Otay Mountain Truck Trail access road. An estimated total of 8.6 acres will be impacted by the Project (see **Table 5-2**). The canopy of this habitat can be either open or closed coast live oaks (*Quercus agrifolia*) intermixed with a diverse riparian understory. Willows, mulefat, and other more mesic plant species are found among the oak trees. The bottoms of Copper, Buttewig, and Mine canyons all supported this habitat. Southern coast live oak riparian forest is common along Marron Valley Access Road where the road parallels tributaries of Dulzura and Cottonwood creeks. Section A-1 will impact an estimated 7.9 acres. A small unnamed drainage on the eastern edge of Section A-1 supports disturbed southern coast live oak woodlands. The Section A-1 access road may also impact an area or southern coast live oak woodlands. Upstream, the same drainage later intersects the impact area of the northern access road with an undisturbed patch of this habitat. Section A-2A will impact an estimated 0.7 acres of this habitat (see **Table 5-2**).



**Figure 5-5. Representative Photographs of Southern Coast Live Oak Riparian Forest**

**Whitethorn chaparral** is dominated by the whitethorn lilac (*Ceanothus leucodermis*) (see **Figure 5-6**). This habitat was observed in the rock outcrops near the west end of Section A-2A. This occurrence had burned in 2005 and was recovering before burning again in 2007. Wild oats had invaded the area after the 2005 fire and were a co-dominant species. The Matillija poppy (*Romneya coulteri* var. unk.) is abundant in this habitat. A total of 0.3 acres is estimated to be impacted by the Project (see **Table 5-2**).



**Figure 5-6. Representative Photograph of Whitethorn Chaparral**

**Nonnative grassland** is a nonnative naturalized habitat that sometimes requires mitigation when impacted. Nonnative grasslands differ from disturbed areas do to being predominantly vegetated with exotic forbs or grasses (see **Figure 5-7**). Areas of non-native grassland can differ significantly in their appearance and species composition. The nonnative grassland areas within the area are dominated by wild oats (*Avena* sp.) and bromes. A large area of nonnative grassland occurs near the west end of fence section for Section A-2A (approximately 0.9 acres). The Section A-2A access road and staging areas will impact 9.9 acres of this habitat. There are also areas of nonnative grasslands along Marron Valley Access Road and at Kuebler Ranch along the western end of Otay Mountain Truck Trail totaling approximately 18.0 acres (see **Table 5-2**).

**Chamise chaparral** found in the impact corridors is similar to southern mixed chaparral, but dominated by the shrub species, chamise (*Adenostoma fasciculatum*) (see **Figure 5-8**). Chamise chaparral typically is less diverse than similar chaparral-type habitat. Common Rock rose (*Helianthemum scoparium*) and ashy spike moss (*Selaginella cinerescens*) are typical understory plants in chamise chaparral. An estimated 6.8 acres of this habitat was observed in Section A-1 impact corridor. None of the chamise chaparral occurred near Section A-2A impact corridor, but the access road to Section A-2A may impact up to 1.9 acres of chamise chaparral (see **Table 5-2**).



**Figure 5-7. Representative Photographs of Nonnative Grassland**



**Figure 5-8. Representative Photographs of Chamise Chaparral**

***Southern interior cypress forest*** was found in the western portions of Section A-1 (see **Figure 5-9**). This is a nearly endemic habitat to San Diego County, and the largest Tecate cypress (*Cupressus forbesii*) stands in the county occur on Otay Mountain. The habitat is dominated by Tecate cypress, which when fully mature can reach approximately 30 feet in height. The series of recent wildfires (i.e., 1996, 2003, 2005, and 2007) have left only about 80 acres of mature stands of Tecate cypress in San Diego County. A handful of mature trees occur immediately along the Otay Mountain Truck Trail. The understory of Tecate cypress stands are usually very depauperate of species, but what few species occur there are often rare, including the Otay lotus and Gander's pitcher sage. The largest area of cypress forests are found along the Otay Mountain Truck Trail impact corridor (approximately 7.5 acres) (see **Table 5-2**). Small stands of Tecate cypress (not mapped as cypress forest) can be found in the drainages along Section A-1.



**Figure 5-9. Representative Photographs of Southern Interior Cypress Forest**

**Valley Needle Grasslands** are usually found in clay soils and often are associated with rare species of plants (see **Figure 5-10**). There are typically coastal sage scrub species scattered throughout most healthy valley needle grasslands. Very few pure stands of native grasslands remain, and most are at least partially dominated by exotic grasses and forbs. The Valley Needle Grasslands found in this impact corridor are partially disturbed. Approximately 0.2 acres of this habitat is found along the Marron Valley access road impact area for Section A-1(see **Table 5-2**).



**Figure 5-10. Representative Photograph of Valley Needle Grassland**

**Burned Riparian Scrub** is a description used for this specific project and not found in the habitat classification manuals. This habitat defines areas that are clearly riparian in nature, but were burned so severely that when surveyed there was not enough vegetation to identify the habitat type. Generally these are riparian habitats without trees (see **Figure 5-11**). Mulefat scrub, southern willow scrub, fresh water marsh as well as other riparian habitats are the likely pre-fire

conditions and post fire it is uncertain what habitats will appear in these areas. Approximately 4.4 acres of burned riparian scrub is found in drainages along the Marron Valley Access Road impact corridor for Section A-1 (see **Table 5-2**).



**Figure 5-11. Representative Photographs of Burned Riparian Scrub**

***Developed/Landscaped*** land is comprised of areas of intensive use with much of the land covered by structures (see **Figure 5-12**). Included in this category are urban and residential areas, transportation, power, and communications facilities, and areas such as those occupied by shopping centers, industrial, landscaping, and commercial complexes. No attempt has been made in the biological survey to distinguish between the various forms of developed land, because the focus is on native biodiversity.



**Figure 5-12. Representative Photograph of Developed Area**

***Disturbed*** is used to describe areas of severe impacts to natural communities to the extent where it is no longer sustaining or functioning naturally (see **Figure 5-13**). Graded areas and areas of heavy vehicle use fall under this description. An estimated 0.6 acres were identified along the Marron Valley Access Road (see **Table 5-2**).



Figure 5-13. Representative Photographs of Disturbed Areas

## 5.2 Plant Species Identified

A complete list of all plant species identified during the field surveys, including the tactical infrastructure section in which each species was identified, is provided in **Table 5-3**. A total of 226 taxa were identified in the surveys conducted between October 2007 and February 2008 and the expanded survey in June 2008. The majority of these species (205) were found along Section A-1 and its associated access roads. Another 89 species were observed along Section A-2A, 21 of which were not observed in Section A-1.

Table 5-3. Complete List of all Plant Species Identified

Scientific Name	Common Name	Family	A-1	A-2A
<i>Achnatherum coronatum</i>	giant ricegrass	Poaceae	X	X
<i>Acourtia microcephala</i>	sacapellote	Asteraceae		X
<i>Adenostoma fasciculatum</i>	chamise	Rosaceae	X	X
<i>Ageratina adenophora</i>	sticky snakeroot	Asteraceae	X	
<i>Ambrosia psilostachya</i>	Cuman ragweed	Asteraceae	X	X
<i>Arctostaphylos glauca</i>	bigberry manzanita	Ericaceae	X	
<i>Arctostaphylos otayensis</i>	Otay manzanita	Ericaceae	X	
<i>Artemisia californica</i>	coastal sagebrush	Asteraceae	X	X
<i>Arundo donax</i>	giant reed	Poaceae	X	X
<i>Asclepias fascicularis</i>	Mexican whorled milkweed	Asclepiadaceae	X	
<i>Atriplex semibaccata</i>	Australian saltbush	Chenopodiaceae	X	
<i>Avena sp.</i>	oat	Poaceae	X	X
<i>Baccharis salicifolia</i>	mule-fat	Asteraceae	X	
<i>Baccharis sarothroides</i>	desertbroom	Asteraceae	X	X
<i>Bassia scoparia</i>	burningbush	Chenopodiaceae	X	



Scientific Name	Common Name	Family	A-1	A-2A
<i>Bebbia juncea</i>	sweetbush	Asteraceae	X	
<i>Bloomeria crocea</i>	common goldenstar	Liliaceae	X	
<i>Bothriochloa barbinodis</i>	cane bluestem	Poaceae	X	
<i>Brassica nigra</i>	black mustard	Brassicaceae	X	
<i>Brickellia californica</i>	California brickellbush	Asteraceae	X	X
<i>Brodiaea sp.</i>	brodiaea	Liliaceae	X	
<i>Bromus diandrus</i>	ripgut brome	Poaceae	X	X
<i>Bromus hordeaceus ssp. hordeaceus</i>	soft brome	Poaceae	X	
<i>Bromus madritensis</i>	compact brome	Poaceae	X	X
<i>Bromus rubens</i>	red brome	Poaceae		X
<i>Bromus sp.</i>	brome	Poaceae	X	
<i>Calandrinia ciliata</i>	fringed redmaids	Portulacaceae	X	
<i>Calochortus sp.</i>	mariposa lily	Liliaceae	X	
<i>Calochortus weedii</i>	Mariposa lily	Liliaceae	X	
<i>Calystegia macrostegia</i>	island false bindweed	Convolvulaceae	X	X
<i>Camissonia sp.</i>	suncup	Onagraceae	X	
<i>Carex spissa</i>	San Diego sedge	Cyperaceae	X	X
<i>Castilleja sp.</i>	Indian paintbrush	Scrophulariaceae	X	X
<i>Caulanthus sp.</i>	wild cabbage	Brassicaceae	X	
<i>Ceanothus leucodermis</i>	Chaparral whitethorn	Rhamnaceae		X
<i>Ceanothus tomentosus</i>	woollyleaf ceanothus	Rhamnaceae	X	
<i>Ceanothus<sup>x</sup> otayensis</i>	Otay Mountain ceanothus	Rhamnaceae	X	
<i>Centaurea melitensis</i>	Maltese star-thistle	Asteraceae	X	X
<i>Ceratonia sp.</i>	caratonia	Fabaceae	X	
<i>Cercocarpus montanus var. minutiflorus</i>	smooth mountain mahogany	Rosaceae	X	
<i>Chamaebatia australis</i>	southern mountain misery	Rosaceae	X	
<i>Chamaesyce sp.</i>	sandmat	Euphorbiaceae	X	
<i>Cheilanthes sp.</i>	lipfern	Pteridaceae	X	
<i>Chenopodium sp.</i>	goosefoot	Chenopodiaceae	X	
<i>Chlorogalum sp.</i>	soaplant	Liliaceae	X	
<i>Chrysanthemum sp.</i>	daisy	Asteraceae	X	
<i>Cirsium occidentale</i>	cobwebby thistle	Asteraceae	X	X
<i>Cirsium vulgare</i>	bull thistle	Asteraceae	X	
<i>Clematis pauciflora</i>	ropevine clematis	Ranunculaceae	X	X
<i>Cleome isomeris</i>	bladderpod spiderflower	Capparaceae	X	
<i>Cneoridium dumosum</i>	bush rue	Rutaceae		X
<i>Comarostaphylis diversifolia</i>	summer holly	Ericaceae	X	

Scientific Name	Common Name	Family	A-1	A-2A
<i>Conyza</i> sp.	horseweed	Asteraceae	X	
<i>Cordylanthus rigidus</i>	stiffbranch bird's beak	Scrophulariaceae	X	X
<i>Corethrogyne filaginifolia</i> var. <i>filaginifolia</i>	common sandaster	Asteraceae	X	
<i>Crassula connate</i>	sand pygmyweed	Crassulaceae	X	
<i>Croton setigerus</i>	dove weed	Euphorbiaceae	X	X
<i>Cryptantha</i> sp.	cryptantha	Boraginaceae	X	X
<i>Cupressus forbesii</i>	tecate cyptess	Cupressaceae	X	X
<i>Cuscuta</i> sp.	dodder	Cuscutaceae	X	
<i>Cylindropuntia prolifera</i>	coastal cholla	Cactaceae	X	
<i>Cynara cardunculus</i>	cardoos	Asteraceae	X	
<i>Daucus pusillus</i>	American wild carrot	Apiaceae	X	X
<i>Deinandra</i> sp.	tarweed	Asteraceae	X	
<i>Delphinium</i> sp.	larkspur	Ranunculaceae		X
<i>Delphinium cardinalis</i>	scarlet larkspur	Ranunculaceae	X	X
<i>Dendromecon rigida</i>	tree poppy	Papaveraceae	X	
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	bluedicks	Liliaceae	X	
<i>Dichondra occidentalis</i>	Western dichondra	Convolvulaceae	X	
<i>Diplacus aurantiacus</i> ssp. <i>aurantiacus</i>	orange bush monkeyflower	Scrophulariaceae	X	X
<i>Distichlis spicata</i>	saltgrass	Poaceae	X	
<i>Dodecatheon clevelandii</i>	padre's shootingstar	Primulaceae	X	
<i>Dudleya edulis</i>	fingertips	Crassulaceae	X	
<i>Dudleya pulverulenta</i>	chalk dudleya	Crassulaceae	X	X
<i>Ehrendorferia chrysantha</i>	golden eardrops	Fumariaceae	X	X
<i>Ephedra californica</i>	California jointfir	Ephedraceae	X	X
<i>Epilobium canum</i>	hummingbird trumpet	Onagraceae	X	
<i>Erigeron foliosus</i>	leafy fleabane	Asteraceae		X
<i>Eriodictyon trichocalyx</i>	hairy yerba santa	Hydrophyllaceae	X	X
<i>Eriogonum fasciculatum</i> var. <i>fasciculatum</i>	Flat-topped buckwheat	Polygonaceae	X	
<i>Eriogonum fasciculatum</i> var. <i>foliosum</i>	Flat-topped buckwheat	Polygonaceae	X	
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	Flat-topped buckwheat	Polygonaceae	X	
<i>Eriogonum fasciculatum</i> var. <i>unknown</i>	Flat-topped buckwheat	Polygonaceae		X
<i>Eriogonum gracile</i>	slender woolly buckwheat	Polygonaceae	X	
<i>Eriophyllum confertiflorum</i>	golden-yarrow	Asteraceae	X	X

Scientific Name	Common Name	Family	A-1	A-2A
<i>Erodium botrys</i>	longbeak stork's bill	Geraniaceae	X	X
<i>Erodium cicutarium</i>	redstem stork's bill	Geraniaceae	X	
<i>Erodium moschatum</i>	musky stork's bill	Geraniaceae	X	
<i>Erodium sp.</i>	stork's bill	Geraniaceae	X	
<i>Eschscholzia californica</i>	California poppy	Papaveraceae	X	
<i>Eucalyptus sp.</i>	gum	Myrtaceae	X	X
<i>Euthamia occidentalis</i>	western goldentop	Asteraceae	X	X
<i>Ferocactus viridescens</i>	San diego barrel cactus	Cactaceae	X	
<i>Filago sp.</i>	cottonrose	Asteraceae	X	X
<i>Foeniculum vulgare</i>	seet fennel	Apiaceae	X	
<i>Galium aparine</i>	stickywilly	Rubiaceae	X	
<i>Galium sp.</i>	bedstraw	Rubiaceae	X	
<i>Gastridium phleoides</i>	nitgrass	Poaceae	X	
<i>Gutierrezia californica</i>	San Joaquin snakeweed	Asteraceae	X	
<i>Gutierrezia sarothrae</i>	broom snakeweed	Asteraceae	X	
<i>Gutierrezia sp.</i>	snakeweed	Asteraceae	X	
<i>Hazardia squarrosa</i>	sawtooth goldenbush	Asteraceae	X	X
<i>Hedypnois cretica</i>	Cretanweed	Asteraceae	X	
<i>Helianthemum scoparium</i>	Bisbee Peak rushrose	Critaceae	X	
<i>Helianthus sp.</i>	sunflower	Asteraceae	X	X
<i>Hemizonia fasciculata</i>	Fasicled tarplant	Asteraceae	X	
<i>Hesperoyucca whipplei</i>	chaparral yucca	Agavaceae	X	
<i>Heteromeles arbutifolia</i>	toyon	Rosaceae	X	
<i>Hirschfeldia incana</i>	shortpod mustard	Brassicaceae	X	X
<i>Hymenoclea monogyra</i>	singlewhorl burrobush	Asteraceae	X	
<i>Hypochaeris glabra</i>	smooth cat's ear	Asteraceae	X	
<i>Hypochaeris sp.</i>	cat's ear	Asteraceae		X
<i>Isocoma menziesii</i>	Menzies' goldenbush	Asteraceae	X	
<i>Iva hayesiana</i>	San Diego povertyweed	Asteraceae	X	
<i>Jepsonia parryi</i>	Parry's jepsonia	Saxifragaceae	X	
<i>Juncus acutus</i>	spiny rush	Juncaceae	X	
<i>Juncus sp.</i>	rush	Juncaceae	X	
<i>Juncus sp. 2</i>	rush	Juncaceae	X	
<i>Keckiella antirrhinoides</i>	snapdragon penstemon	Scrophulariaceae	X	X
<i>Keckiella cordifolia</i>	heartleaf keckiella	Scrophulariaceae	X	
<i>Keckiella ternata</i>	scarlet keckiella	Scrophulariaceae	X	
<i>Lamarckia aurea</i>	goldentop grass	Poaceae	X	
<i>Lathyrus sp.</i>	pea	Fabaceae	X	
<i>Lepechinia ganderi</i>	Gander's pitcher sage	Lamiaceae	X	
<i>Lepidium sp.</i>	pepperweed	Brassicaceae	X	X

Scientific Name	Common Name	Family	A-1	A-2A
<i>Lomatium sp.</i>	desertparsley	Apiaceae	X	
<i>Lonicera subspicata</i>	southern honeysuckle	Caprifoliaceae	X	X
<i>Lotus argophyllus</i>	silver bird's-foot trefoil	Fabaceae		X
<i>Lotus scoparius</i>	common deerweed	Fabaceae	X	X
<i>Lupinus concinnus</i>	bajada lupine	Fabaceae	X	
<i>Lupinus hirsutissimus</i>	stinging annual lupine	Fabaceae	X	
<i>Lythrum californicum</i>	California loosestrife	Lythraceae	X	
<i>Malocothamnus fasciculatus</i>	Mendocino bushmallow	Malvaceae	X	X
<i>Malocothamnus sp.</i>	bushmallow	Malvaceae	X	
<i>Malosma laurina</i>	laurel sumac	Anacardiaceae	X	X
<i>Malva sp.</i>	mallow	Malvaceae	X	
<i>Marah macrocarpus</i>	Cucamonga manroot	Cucurbitaceae	X	X
<i>Marrubium vulgare</i>	horehound	Lamiaceae	X	X
<i>Melica frutescens</i>	woody melicgrass	Poaceae	X	
<i>Melica imperfecta</i>	smallflower melicgrass	Poaceae	X	X
<i>Melilotus sp.</i>	sweetclover	Fabaceae		X
<i>Mentzelia mircrantha</i>	San Luis Stick Plant	Loasaceae	X	
<i>Mimulus brevipes</i>	widethroat yellow monkeyflower	Scrophulariaceae	X	X
<i>Mimulus guttatus</i>	seep monkeyflower	Scrophulariaceae		X
<i>Mirabilis laevis var. laevis</i>	desert wishbone-bush	Nyctaginaceae	X	
<i>Nassella sp.</i>	needlegrass	Poaceae	X	X
<i>Navartetia sp.</i>	pincusionplant	Polemoniaceae	X	
<i>Nicotiana glauca</i>	tree tobacco	Solanaceae	X	X
<i>Olea europaea</i>	olive	Oleaceae	X	
<i>Opuntia littoralis</i>	coastal pricklypear	Cactaceae	X	
<i>Osmadenia tenella</i>	false rosinweed	Asteraceae	X	
<i>Oxalis albicans</i>	radishroot woodsorrel	Oxalidaceae	X	
<i>Oxalis pes-caprae</i>	Bermusa buttercup	Oxalidaceae	X	
<i>Paeonia californica</i>	California peony	Paeoniaceae	X	X
<i>Pectocarya sp.</i>	combseed	Boraginaceae	X	
<i>Pellaea sp.</i>	cliffbrake	Pteridaceae	X	X
<i>Penstemon sp.</i>	beardtongue	Scrophulariaceae	X	X
<i>Penstemon spectabilis</i>	showy penstemon	Scrophulariaceae	X	
<i>Phacelia cicutaria</i>	caterpillar phacelia	Hydrophyllaceae		X
<i>Phacelia sp.</i>	phacelia	Hydrophyllaceae	X	
<i>Pholistoma racemosum</i>	racemed fiestaflower	Hydrophyllaceae	X	
<i>Pickeringia montana</i>	chaparral pea	Fabaceae	X	
<i>Pinus sp.</i>	pine	Pinaceae	X	X
<i>Pityrogramma sp.</i>	goldback fern	Pteridaceae	X	X

Scientific Name	Common Name	Family	A-1	A-2A
<i>Plantago erecta</i>	dotseed plantain	Plantaginaceae	X	X
<i>Plantago lanceolata</i>	narrowleaf plantain	Plantaginaceae	X	
<i>Platanus racemosa</i>	California sycamore	Platanaceae	X	
<i>Polypogon monspeliensis</i>	annual rabbitsfoot grass	Poaceae	X	
<i>Populus fremontii</i>	Fremont cottonwood	Salicaceae		X
<i>Porophyllum gracile</i>	slender poreleaf	Asteraceae	X	
<i>Prunus ilicifolia</i>	hollyleaf cherry	Rosaceae	X	X
<i>Pseudognaphalium biolettii</i>	two-color rabbit-tobacco	Asteraceae	X	X
<i>Pseudognaphalium californicum</i>	ladies' tobacco	Asteraceae	X	
<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed	Asteraceae	X	
<i>Pseudognaphalium stramineum</i>	cottonbatting plant	Asteraceae	X	X
<i>Pterostegia drymarioides</i>	Granny's hair net	Polygonaceae	X	
<i>Quercus agrifolia</i>	California live oak	Fagaceae	X	
<i>Quercus berberidifolia</i>	scrub oak	Fagaceae		X
<i>Quercus cedrosensis</i>	Cedros Island oak	Fagaceae	X	
<i>Quercus engelmannii</i>	Engelmann oak	Fagaceae	X	
<i>Quercus sp.</i>	oak	Fagaceae	X	
<i>Raphanus sativus</i>	cultivated radish	Brassicaceae	X	
<i>Rhamnus crocea</i>	redberry buckthorn	Rhamnaceae	X	
<i>Rhamnus ilicifolia</i>	hollyleaf redberry	Rhamnaceae	X	
<i>Rhus integrifolia</i>	lemonade sumac	Anacardiaceae	X	
<i>Rhus ovata</i>	sugar sumac	Anacardiaceae	X	X
<i>Ribes sp.</i>	currant	Grossulariaceae	X	
<i>Romneya coulteri</i> var. Unk.	Coulter's Matilija poppy	Papaveraceae	X	X
<i>Rosa sp.</i>	rose	Rosaceae	X	
<i>Rumex crispus</i>	curly dock	Polygonaceae	X	
<i>Rumex sp.</i>	dock	Polygonaceae	X	
<i>Sairocarpus nuttallianus</i>	violet snapdragon	Scrophulariaceae		X
<i>Salix gooddingii</i>	Goodding's willow	Salicaceae	X	X
<i>Salix lasiolepis</i>	arroyo willow	Salicaceae	X	X
<i>Salsola tragus</i>	prickly Russian thistle	Chenopodiaceae	X	
<i>Salvia apiana</i>	white sage	Lamiaceae	X	X
<i>Salvia clevelandii</i>	fragrant sage	Lamiaceae	X	
<i>Salvia columbariae</i>	chia	Lamiaceae		X
<i>Salvia mellifera</i>	black sage	Lamiaceae	X	
<i>Salvia munzii</i>	Minz's sage	Lamiaceae	X	
<i>Sambucus nigra</i> ssp.	American black	Caprifoliaceae	X	

Scientific Name	Common Name	Family	A-1	A-2A
<i>canadensis</i>	elderberry			
<i>Schinus molle</i>	Peruvian peppertree	Anacardiaceae	X	X
<i>Schismus barbatus</i>	common Mediterranean grass	Poaceae		X
<i>Scirpus sp.</i>	bulrush	Cyperaceae		X
<i>Scrophularia californica</i>	California figwort	Scrophulariaceae	X	X
<i>Selaginella bigelovii</i>	bushy spikemoss	Selaginellaceae	X	X
<i>Selaginella cinerascens</i>	mesa spikemoss	Selaginellaceae	X	
<i>Sidalcea malviflora</i>	dwarf checkerbloom	Malvaceae	X	
<i>Silene gallica</i>	common catchfly	Caryophyllaceae	X	
<i>Silene laciniata</i>	Fringed Indian Pink	Caryophyllaceae	X	
<i>Simmondsia chinensis</i>	jojoba	Simmondsiaceae	X	
<i>Solanum sp.</i>	nightshade	Solanaceae	X	
<i>Sonchus sp.</i>	sowthistle	Asteraceae	X	
<i>Stachys rigida</i>	rough hedgenettle	Lamiaceae	X	
<i>Stephanomeria virgata</i>	rod wirelettuce	Asteraceae	X	
<i>Stylocline gnaphalioides</i>	mountain neststraw	Asteraceae	X	X
<i>Tamarix ramosissima</i>	saltcedar	Tamaricaceae	X	
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	Fendler's meadowrue	Ranunculaceae	X	
<i>Thysanocarpus sp.</i>	fringe-pod	Brassicaceae		X
<i>Toxicodendron diversilobum</i>	Pacific poison oak	Anacardiaceae	X	X
<i>Trichostema lanatum</i>	wooly blue curls	Lamiaceae	X	
<i>Typha sp.</i>	cattail	Typhaceae		X
<i>Urtica dioica</i>	stinging nettle	Urticaceae	X	
<i>Vicia sp.</i>	vetch	Fabaceae	X	
<i>Viguiera laciniata</i>	torhleaf goldeneye	Asteraceae	X	X
<i>Vinca major</i>	bigleaf periwinkle	Apocynaceae		X
<i>Xanthium sp.</i>	cocklebur	Asteraceae		X
<i>Xylococcus bicolor</i>	mission manzanita	Ericaceae	X	X
<i>Yucca schidigera</i>	Mojave yucca	Agavaceae	X	X
<b>Total Species Richness</b>			<b>207</b>	<b>90</b>

### 5.3 Planned Fence Section Characteristics and Description of Habitat Quality

A general description of the habitat quality and the characteristics of each section are provided below.

**Section A-1**

<b>Potential Listed Plant Occurrence</b>	San Diego ambrosia ( <i>Ambrosia pumila</i> ) (FE) San Diego button-celery ( <i>Eryngium aristulatum</i> var. <i>parishii</i> ) (FE, SE) Otay tarplant ( <i>Deinandra conjugens</i> ) (FT, SE) Otay Mesa mint ( <i>Pogogyne nudiuscula</i> ) (FE, SE) Spreading navarretia ( <i>Navarretia fossalis</i> ) (FT) Mexican flannelbush ( <i>Fremontodendron mexicanum</i> ) (FE) California Orcutt grass ( <i>Orcuttia californica</i> ) (FE, SE) Encinitas baccharis ( <i>Baccharis vanessae</i> ) (FT, FE)
<b>Listed Plants Observed</b>	None
<b>Suitable Listed Plant Habitat Present</b>	Yes
<b>If So, Habitat Quality</b>	Large variations of poor to good-quality habitat.

FE = federally endangered; FT = federally threatened; SE = state endangered

**Section Habitat Description:** This section occurs along approximately 5.8 miles of BLM managed lands. It roughly follows the Pack Trail, a footpath on the south side of Otay Mountain. The section starts at the Puebla Tree in Wild Bill Draw, a well-known border patrol landmark, and ends at boundary marker 250. Topographically, the terrain is steep along most of the trail. The trail skirts the mid-span of the mountain, so that steep upslopes lead out of canyons, and steep downslopes lead into another canyon. The trail crosses Copper and Buttewig Canyons. In addition, a drainage known as Wild Bill’s Draw is located at the beginning of the Pack Trail, near the Puebla Tree.

Much of Section A-1 currently is grazed illegally by cows, and several cows were observed during natural resource surveys. Numerous north-south trending footpaths from cows and aliens can be seen over much of the mountain. Portions of the mountain burned during the 2003 Cedar fire and show signs of recovering. Much of the area where coastal sage scrub communities are dominant (a large area of the Pack Trail) is considered disturbed and of poor quality. Areas of chaparral are of moderate quality, and riparian areas dominated by Coast live oak in the canyon bottoms are considered high-quality habitat.

Existing access roads on the west and east ends of the Pack Trail make up a total of over 13 miles of access roads that require a range of improvements. On the west side of the Pack Trail, the existing access road will begin off Alta Road and end at the Wild Bill Draw. This access road is approximately 5.6 miles in length. Much of the BLM road which generally leads down the west side of Otay Mountain will require improvements to allow truck and heavy equipment ingress/egress.

On the east side of the Pack Trail, from the point where Boundary Marker 250 is located to Interstate 94 is approximately 7.81 miles. Several areas of these unpaved existing access roads will require improvements, such as wider turnouts, reinforcements, and culverts.

Several Tecate cypress were found within each of the three drainages (Mine, Copper, and Buttewig Canyons), in Wild Bill's Draw at the beginning of the Project fence alignment, and along the BLM access road from the Puebla Tree to the northwest.

Sensitive Wildlife species observed during the surveys along Section A-1 include several sightings of rufous-crowned sparrow, coast patch-nosed snake, orange-throated whiptail lizard, Cooper's hawk, northern harrier, and San Diego black tailed jackrabbit. In addition, Harbison dun skipper larvae and golden eagle were observed while surveying the access roads (existing BLM Roads) leading to the Puebla Tree.

**SECTION A-2A**

<b>Potential Listed Plant Occurrence</b>	San Diego ambrosia ( <i>Ambrosia pumila</i> ) (FE) San Diego button-celery ( <i>Eryngium aristulatum</i> var. <i>parishii</i> ) (FE, SE) Otay tarplant ( <i>Deinandra conjugens</i> ) (FT, SE) Otay Mesa mint ( <i>Pogogyne nudiuscula</i> ) (FE, SE) Spreading navarretia ( <i>Navarretia fossalis</i> ) (FT) Mexican flannelbush ( <i>Fremontodendron mexicanum</i> ) (FE) California Orcutt grass ( <i>Orcuttia californica</i> ) (FE, SE) Encinitas baccharis ( <i>Baccharis vanessae</i> ) (FT, FE)
<b>Listed Plants Observed</b>	None
<b>Suitable Listed Plant Habitat Present</b>	Yes
<b>If So, Habitat Quality</b>	Poor to high-quality habitat.

**Section Habitat Description:** Section A-2A, approximately 0.7 mile in length, begins at the point where the existing fence that extends from the east side of the Tecate port of entry (POE) ends, and continues up the flanks of Tecate Peak. The alignment in this section follows the international border. Over 2 miles of access roads are planned for this section, and one staging area along the access road that parallels the existing fence.

High-quality CSS habitat exists in some areas of the section that are dominated by *Artemisia californica* and *Malosma laurina*. An occupied house with a fenced yard is within the section where the area is dominated by Coast live oak riparian habitat. The understory of this habitat is mainly non-native species. Much of the



section is nonnative grassland, with dominant species being *Bromus* sp. and *Avena* sp.

No federally listed plant or sensitive wildlife species were observed during the surveys in Section A-2A. In late October 2007, most of the alignment and associated access roads were burned in the Harris fire. **Figure 5-14** shows an overview of the burned area looking east at the start of Section A-2A, and **Figure 5-15** depicts the burn area within the survey corridor.



**Figure 5-14. Burn Area Looking East (Photographed November 14, 2007)**  
(Note that the stand of coast live oaks [extending from the left side of the photo] within the survey corridor did not burn.)



**Figure 5-15. Section A-2A Post-fire (Photographed November 14, 2007)**

## **5.4 Wetlands and Waters of the United States**

Wetlands and waters of the United States can be confusing terms and are defined here for the convenience of document users. The U.S. Corps of Engineers (USACE) has jurisdiction to protect wetlands under Section 404 of the Clean Water Act using the following definition:

*. . . areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 Code of Federal Regulations [CFR] 328.3[b]). Wetlands generally include swamps, marshes, bogs, and similar areas.*

Wetlands have three diagnostic characteristics that include: (1) over 50 percent of the dominant species present must be classified as obligate, facultative wetland, or facultative, (2) the soils must be classified as hydric, and (3) the area is either permanently or seasonally inundated (Environmental Laboratory 1987). waters of the United States are defined under 33 *United States Code* (USC) 1344, as follows:

- a. The term "waters of the United States" means
1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
  2. All interstate waters including interstate wetlands;
  3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    - i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    - ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
  4. All impoundments of waters otherwise defined as waters of the United States under the definition;
  5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
  6. The territorial seas;
  7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (CWA) (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.
  8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA.
- b. The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
- c. The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands."

- d. The term "high tide line" means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.
- e. The term "ordinary high water mark" means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line 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.

The term "tidal waters" means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

Determination of the occurrence and extent of jurisdictional wetlands and other waters of the United States was based on the application of procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, Technical Report ERDC/EL TR-06-16 (USACE 2006). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Determination of the extent of jurisdictional washes and other waters of the United States in the impact corridors was based on characterization of the landward extent of the ordinary high water mark (OHM). Indicators used to determine the occurrence and extent of jurisdictional washes included: the presence of developed channels, typically two feet or greater in width; the occurrence of an OHM; the absence of fine sediments along flow paths; distinct changes in the vegetative assemblage or larger or more dense vegetation than surrounding areas; the presence of cut banks; the presence of litter, debris or rack lines; occurrence of desiccation cracks or other indicators of hydrology; and other indicators of the occurrence of intermittent water flow regimes.

### **5.4.1 Field Evaluation Summary**

Field surveys were conducted in Sections A-1 and A-2A on January 14 through 16, 2008, to delineate jurisdictional wetlands and other waters of the United States within the impact corridors associated with the fence alignments. Delineations were also conducted along access roads and in staging areas associated with the fence alignments. Formal delineations were conducted within a 150-foot corridor associated with the fence alignments, 60 feet to either side of the center line of access roads, and within staging areas. Due to revisions of planned access roads in Marron Valley (Section A-1) and near the town of Tecate (Section A-2A), an additional survey was conducted on July 8, 2008. Section A-2 includes wetlands and other waters of the United States delineated within the project corridor associated with the access road alignment near the town of Tecate. WL29 and WL30 in Section A-1 and WL34 through WL41 in Section A-2A are no longer within the project assessment corridors as a result of revision to the access road locations and alignments (see **Table 5-3**).

Determination of the occurrence and extent of jurisdictional wetlands and other waters of the United States was based on the application of procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, Technical Report ERDC/EL TR-06-16 (USACE 2006). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Determination of the extent of jurisdictional washes and other waters of the United States in the impact corridors was based on characterization of the landward extent of the ordinary high water mark (OHM). Indicators used to determine the occurrence and extent of jurisdictional washes included the presence of developed channels, typically 2 feet or greater in width; the occurrence of an OHM; the absence of fine sediments along flow paths; distinct changes in the vegetative assemblage or larger or more dense vegetation than surrounding areas; the presence of cut banks; the presence of litter, debris, or wrack lines; occurrence of desiccation cracks or other indicators of hydrology; and other indicators of the occurrence of intermittent water flow regimes.

All wetlands and other waters of the United States within the impact corridors were delineated.

**Table 5-3** provides the section locations, wetland or other waters of the United States types, delineated acreages, and potential impact acreages in Sections A-1, A-2 and A-2A. The following text provides general descriptions of wetlands and other waters of the United States identified within the impact corridors in Sections A-1, A-2 and A-2A.

**Table 5-3. Delineated Acreages and Potential Acreage of Impacts on Wetlands and Other Waters of the United States**

WL ID	Wetland or Other Waters of the United States Type	Delineated Area (acres)	Potential Impacts (acres)
<b>Section A-1</b>			
WL1	Wash	0.07	0.07
WL2	Wash	0.28	0.24
WL3	Wash	0.25	0.06
WL4	Wash	0.07	0.07
WL5	Wash	0.01	0.01
WL6	Wash	0.22	0.10
WL7	Wash	0.22	0.05
WL8	Wash	0.08	0.05
WL9	Riverine wetland (Copper Canyon)	0.42	0.24
WL10	Riverine wetland (Buttewig Creek)	5.61	0.74
WL11	Wash	0.01	0.01
WL12	Wash	0.01	0.01
WL13	Wash	0.01	0.01
WL14	Wash	0.02	0.02
WL15	Wash	0.19	0.08
WL16	Wash	0.06	0.05
WL17	Wash	0.02	0.02
WL18	Wash	0.01	0.01
WL19	Wash	0.01	0.00
WL20	Wash	0.10	0.08
WL21	Wash	0.44	0.22
WL22	Wash	0.13	0.13
WL23	Emergent seep and stream	0.32	0.02
WL24	Stream	0.72	0.56
WL24A	Stream	0.12	0.01
WL25	Stream	0.47	0.27
WL26	Wash	0.09	0.03
WL27	Wash	0.18	0.15
*WL29	Pond	**0.05	0.00

WL ID	Wetland or Other Waters of the United States Type	Delineated Area (acres)	Potential Impacts (acres)
*WL30	Concrete channel	**0.03	0.00
WL41	Wash	0.10	0.05
WL42	Wash	0.36	0.06
WL43	Wash	0.13	0.04
WL44	Wash	0.44	0.08
WL45	Wash	0.19	0.07
WL46	Wash	0.13	0.05
WL47	Wash	0.09	0.04
WL48	Wash	0.11	0.04
WL49	Wash	0.05	0.03
WL50	Wash	0.05	0.05
WL51	Wash	0.07	0.03
WL52	Wash	0.08	0.08
WL53	Wash	0.08	0.04
WL54	Stream (Dulzera Creek)	0.07	0.05
<b>Section A-2</b>			
WL31	Wash	0.04	0.03
WL32	Wash	0.10	0.08
WL33	Riverine wetland	0.65	0.38
WL55	Riverine wetland	0.09	0.07
WL56	Wash	0.04	0.04
WL57	Wash	0.04	0.02
WL58	Wash	0.04	0.04
<b>Section A-2A</b>			
*WL34	Wash	**0.06	0.00
*WL35	Wash	**0.10	0.00
*WL36	Wash	**0.02	0.00
*WL37	Wash	**0.02	0.00
*WL38	Wash	**0.06	0.00
*WL39	Wash	**0.02	0.00
*WL40	Wash	**0.48	0.00
<b>Totals</b>		<b>15.86</b>	<b>4.68</b>

\* Delineated wetlands or other waters of the United States no longer in the project area.

\*\*Delineated area not added to the total delineated acres.

Based on the field surveys, 35 ephemeral wash channels, 4 non-vegetated intermittent streams, and 3 vegetated wetlands cross, or occur within the fence or access road alignments in Section A-1. The three vegetated wetlands occur in association with streams. Wetlands and other waters of the United States delineated in Section A-1 were designated as WL1 through WL27; WL29 and WL30, which are no longer in the project alignment; and WL41 through WL54.

WL1 is characterized by two ephemeral wash channels that cross under the existing access road (Puebla Tree Road) on the western side of Section A-1. The channels cross under the existing road via culverts and join to form one channel approximately 70 feet downstream of the road.

WL2 through WL8 are ephemeral washes that drain from north to south on steep slopes into the Tijuana River along the fence alignment in Section A-1.

WL9 is a riverine wetland associated with an intermittent stream that flows south across the fence alignment in Copper Canyon. The stream flows into the Tijuana River. Vegetation associated with the wetland is characterized by *Populus fremontii*, *Tamarix ramosissima*, *Salix lasiolepis*, and *Baccharus salicifolia*. WL26 is an ephemeral wash that directs flows from west to east down steep slopes into WL9 within the project area. Vegetation occurring on the banks of the wash within the project area is characterized by *Quercus agrifolia* and *Baccharis salicifolia*.

WL10 is a riverine wetland associated with Buttewig Creek, an intermittent stream that flows south across the fence alignment in Buttewig Canyon. The stream flows into the Tijuana River.

WL11 through WL20 are ephemeral washes that cross the access road (Monument 250 Road) that adjoins the Section A-1 fence alignment on its eastern end. The washes drain from north to south on steep slopes into the Tijuana River.

WL21 and WL22 are ephemeral wash channels within Mine Canyon Wash. The west channel (WL21) is approximately 40 feet wide at the access road crossing and is characterized by a cobble/boulder substrate. Vegetation occurring in the west wash channel is characterized by *Artemisia californica*, *Quercus agrifolia*, *Cupressus forbesii*, and *Baccharis salicifolia*. The east channel (WL22) at the access road crossing is approximately 25 feet wide and is characterized by a sand/gravel/cobble substrate. Vegetation occurring in the east wash channel is characterized by *Malosma laurina* and *Baccharis salicifolia*.

WL23 is characterized by an overbank emergent wetland associated with a narrow unnamed intermittent stream. The emergent component of WL23 occurs at the headwater end of the stream in association with Donahoe Spring. The spring was developed as a water supply in the past, but is in disrepair. Vegetation in the emergent wetland is characterized by *Juncus mexicanus*. The



emergent wetland component pinches out downstream where WL23 is characterized by a narrow intermittent stream. The stream flows north and east, outside of the impact corridor, then under Marron Valley Road where it flows into an unnamed intermittent stream (WL24) that flows south and into Cottonwood Creek. Cottonwood Creek then flows to the southwest and into the Tijuana River.

WL24 is an intermittent stream that drains into Marron Valley. It flows from north to south into Cottonwood Creek, which then flows to the southwest and into the Tijuana River. Marron Valley Road crosses WL24 seven times and is adjacent to it for much of its length. The drainage varies from a relatively shallow cobble or gravelly wash at the north end of its association with Marron Valley Road, to a steep-walled bedrock-lined ravine at the south end. The drainage supports a variety of vegetation communities along its length, including oak woodland, sycamore woodland, and willow scrub, as well as patches of *Typha* sp. and *Juncus mexicanus*. Notable species observed in the drainage include *Tamarix* sp. and *Iva hayesiana*.

WL24a is an ephemeral wash that directs flows from west to east into WL24 just upstream of the confluence of WL23 with WL24.

WL25 is an intermittent stream that flows north to south along Marron Valley Road and into WL 24 just east of the intersection of Marron Valley Road and Otay Mountain Truck Trail. WL25 is crossed by Marron Valley Road three times in the project area. Vegetation occurring in association with WL25 is similar to vegetation occurring in association with WL24.

WL27 is an ephemeral wash that directs flows from west to east into WL25. Vegetation occurring on the banks of the wash within the project area is characterized by *Malosma laurina*, *Eriogonum* sp., and *Selaginella bigelovii*.

WL41 through WL47 are ephemeral washes that drain from west to east on steep slopes, then under Marron Valley Road into WL24.

WL48, WL49 and WL50 are ephemeral washes that drain in a general northeast to southwest direction, under Marron Valley Road, and into WL24 west of Marron Valley Road.

WL51, WL52, and WL53 are shallow ephemeral washes that drain in a general west to east direction, under Marron Valley Road into WL54.

WL54 is Dulzura Creek. Dulzura Creek is an intermittent stream that drains from south to north under Marron Valley Road and along Highway 94. The creek then flows in a general east to west direction and into Jamul Creek, which then flows east into the Lower Otay Reservoir. Within the project area, WL54 occurs in association with woodland characterized by *Quercus agrifolia*, *Platanus racemosa*, *Toxicodendron diversilobum*, *Bromus diandrus*, *Bromus rubus*, and *Avena* sp. Some *Fraxinus velutina* and *Salix* sp. also occurs in association with

the intermittent stream. The channel is approximately 10 feet across at base and is characterized by a sand/gravel/cobble substrate.

Wetlands and other waters of the United States identified in Section A-2 include 5 ephemeral washes and 2 riverine wetlands associated with intermittent streams. Wetlands and other waters of the United States delineated in Section A-2 were designated as WL31 through WL33 and WL55 through WL58.

WL31 and WL32 are ephemeral washes that cross under the west branch of the access road to the western end of the Section A-2 fence. WL31 drains west to east and WL32 drains northwest to southeast down steep side slopes associated with Tecate Peak. The two washes join down slope and to the east of the access road, then continue to direct flows to the southeast and into WL33 just south of the border in Mexico.

WL33 is characterized by a riverine wetland associated with an intermittent stream and tributary ephemeral wash that drain to the south into Mexico. WL33 crosses under the access road and the A-2 fence alignment near its eastern end. The intermittent stream associated with WL33 flows over a rock ledge then levels out just prior to flowing into Mexico. Vegetation associated with the riverine wetland component of WL33 is characterized by *Arundo donax*, *Salix goodingii*, *Ambrosia psilostachya*, and *Vinca major*.

WL55 is characterized by a riverine wetland associated with an intermittent stream that drains north to south under Tecate Mission Road, and dissipates near the US/Mexico border. Vegetation associated with the riverine wetland component of WL55 is characterized by *Salix lasiolepis*, *Salix goodingii*, and *Baccharis salicifolia*. Other species characterizing the banks of the intermittent stream include *Quercus agrifolia*, *Toxicodendron diversilobum*, *Datura stramonium*, *Hirschfeldia incana*, and *Baccharis sarothroides*. There is a bridge structure that crosses WL55 on the existing road alignment.

WL56 is an ephemeral wash that directs flows from a culvert, south across the proposed access road, and then appears to end at the existing US/Mexico border fence at the town of Tecate. North of the culvert the drainage is characterized as a broad sandy wash approximately 25 feet wide. Vegetation characterizing the banks of the wash includes some *Tamarix* sp. and *Baccharis sarothroides*. South of the culvert and north of the access road the drainage narrows to 3 feet wide and vegetation on the banks is characterized by *Salix goodingii*.

WL57 is an ephemeral wash that directs flows south across the access road. The wash channel widens then becomes indistinct before crossing the access road. The wash directs flows to the south into Mexico.

WL58 is an ephemeral wash that directs flows south across the access road and into Mexico. There is a concrete pad across the unpaved access road at the wash crossing to prevent erosion.

## 5.5 Noxious Weeds and Invasive Nonnative Species

In California, biologists of the California Department of Food and Agriculture recommend plants for listing as noxious weeds, after consultation with outside experts and the Agricultural Commissioners of California's counties (CACs). If a plant is found to probably be "troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate," the Department will designate the plant as a noxious weed.

At the time that CDFA lists a species, it also receives a rating that reflects CDFA's view of the statewide importance of the pest, the likelihood that eradication or control efforts would be successful, and the present distribution of the pest within the state. The ratings are not laws, but are policy guidelines that indicate the most appropriate action to take against a pest under general circumstances. Local conditions may dictate more stringent actions at the discretion of the CAC, and the rating may change as circumstances change. Within the impact corridor, two species that are considered noxious by the CDFA have been identified; *Cynara cardunculus* (cardoon or artichoke thistle) and *Salsola tragus* (Russian thistle). *Cynara cardunculus* has a CDFA noxious weed rating of B, "an organism of known economic importance subject to: eradication, containment, control or other holding action at the discretion of the individual county agricultural commissioner; Or, an organism of known economic importance subject to state endorsed holding action and eradication only when found in a nursery." *Salsola tragus* has a CDFA noxious weed rating of C, "an organism subject to no state enforced action outside of nurseries except to retard spread, at the discretion of the commissioner; Or, an organism subject to no state enforced action except to provide for pest cleanliness in nurseries." The term "commissioners" refers to the County Agricultural Commissioners.

In general, nonnative noxious and invasive plant species represent a serious management concern, and their inventory, monitoring, and control is expensive for land managers. The California Native Plant Link Exchange, a collection of links to websites with information about California plants, lists 761 non-native plants in San Diego County (CNPLX 2008). Within the impact corridor, approximately 39 species of nonnative plants have been identified and are listed in **Table 5-5**. Nonnative species usually lower the value of wildlife habitat and compete with agricultural crops resulting in lower forage value and production. The California Invasive Plant Council (Cal-IPC) maintains an Invasive Plant Inventory which rates non-native invasive plants that threaten the state's wildlands. Categorization is based on an assessment of the ecological impacts of each plant. The overall ratings are high, moderate and limited, and are described below. The Inventory represents the best available knowledge of invasive plant experts in the state; however, it has no regulatory authority.

- **High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to

high rates of dispersal and establishment. Most are widely distributed ecologically.

- **Moderate** – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- **Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Once inventoried, methods commonly used to control nonnative species include biological, mechanical, and chemical. Controls must be ongoing to be effective in reducing nonnative plant species.

**Table 5-5. Nonnative Plant List for the Impact Corridor**

Scientific Name	Common Name	Fence Sections Observed	Cal-IPC Rating
<sup>2</sup> <i>Ageratina adenophora</i>	sticky snakeroot	A-1	Moderate
<sup>2</sup> <i>Arundo donax</i>	giant reed	A-1, A-2A	High
<sup>2</sup> <i>Atriplex semibaccata</i>	Australian saltbush	A-1	Moderate
<i>Avena sp.</i>	oat	A-1, A-2A	
<sup>2</sup> <i>Bassia scoparia</i>	burningbush	A-1	Moderate
<sup>2</sup> <i>Brassica nigra</i>	black mustard	A-1	Moderate
<sup>2</sup> <i>Bromus diandrus</i>	ripgut brome	A-1, A-2A	Moderate
<sup>2</sup> <i>Bromus hordeaceus ssp. hordeaceus</i>	soft brome	A-1	Limited
<sup>2</sup> <i>Bromus madritensis</i>	compact brome	A-1, A-2A	High
<sup>2</sup> <i>Bromus rubens</i>	red brome	A-2A	High
<sup>2</sup> <i>Centaurea melitensis</i>	Maltese star-thistle	A-1, A-2A	Moderate
<i>Ceratonia sp.</i>	caratonia	A-1	
<i>Chrysanthemum sp.</i>	daisy	A-1	

Scientific Name	Common Name	Fence Sections Observed	Cal-IPC Rating
<sup>2</sup> <i>Cirsium vulgare</i>	bull thistle	A-1	Moderate
<sup>1,2</sup> <i>Cynara cardunculus</i>	cardoos	A-1	Moderate
<i>Erodium botrys</i>	longbeak stork's bill	A-1, A-2A	
<sup>2</sup> <i>Erodium cicutarium</i>	redstem stork's bill	A-1	Limited
<i>Erodium moschatum</i>	musky stork's bill	A-1	
<i>Eucalyptus sp.</i>	gum	A-1, A-2A	
<sup>2</sup> <i>Foeniculum vulgare</i>	seet fennel	A-1	High
<i>Hedypnois cretica</i>	Cretanweed	A-1	
<sup>2</sup> <i>Hirschfeldia incana</i>	shortpod mustard	A-1, A-2A	Moderate
<sup>2</sup> <i>Hypochaeris glabra</i>	smooth cat's ear	A-1	Limited
<i>Lamarckia aurea</i>	goldentop grass	A-1	
<sup>2</sup> <i>Marrubium vulgare</i>	horehound	A-1, A-2A	High
<sup>2</sup> <i>Nicotiana glauca</i>	tree tobacco	A-1, A-2A	High
<sup>2</sup> <i>Olea europaea</i>	olive	A-1	High
<sup>2</sup> <i>Oxalis pes-caprae</i>	Bermuda buttercup	A-1	Moderate
<sup>2</sup> <i>Plantago lanceolata</i>	narrowleaf plantain	A-1	Limited
<sup>2</sup> <i>Polypogon monspeliensis</i>	annual rabbitsfoot grass	A-1	Limited
<sup>2</sup> <i>Raphanus sativus</i>	cultivated radish	A-1	High
<sup>2</sup> <i>Rumex crispus</i>	curly dock	A-1	High
<sup>1,2</sup> <i>Salsola tragus</i>	prickly Russian thistle	A-1	High
<sup>2</sup> <i>Schinus molle</i>	Peruvian peppertree	A-1, A-2A	High
<sup>2</sup> <i>Schismus barbatus</i>	common Mediterranean grass	A-1	High
<i>Silene gallica</i>	common catchfly	A-1	
<i>Sonchus sp.</i>	sowthistle	A-1	
<sup>2</sup> <i>Tamarix ramosissima</i>	saltcedar	A-1	High
<sup>2</sup> <i>Vinca major</i>	bigleaf periwinkle	A-2A	High

Source: CAL-IPC 2008, CNPLX 2008, CDFA 2008

Notes: 1= Noxious, 2=Cal-IPC Invasive

## 5.6 Wildlife and Wildlife Habitat

Forty-one species of vertebrates were recorded during the October 2007 through January 2008 surveys; including 3 reptiles, 1 amphibian, 42 birds, and 9 mammals (see **Table 5-6**). An additional 4 bird species were observed in the June extension of the survey areas. A total of 57 arthropods were observed and identified during the surveys. The County of San Diego has a greater number of threatened and endangered species than anywhere in the continental United States. More than 200 plant and animal species occur in the county that are federally or state-listed as endangered, threatened, or rare; or otherwise considered sensitive. The large number of rare and sensitive species in the county led to development of one of the first regional habitat management plan in the United States. The Multiple Species Conservation Plan was developed to provide natural resources guidance for where future development should and should not occur, to streamline and coordinate procedures for review and permitting, and to better assess impacts on biological resources (MSCP 1998). The MSCP includes the impact corridor.

In general, wildlife flourishes in a wide variety of species and large numbers of individuals benefitting from a diverse habitat mosaic and warm year round temperatures. Within the impact corridor some portions suffer from illegal cattle grazing on steep hillsides. Water is available seasonally in the washes and arroyos in the impact corridor and perennial water is available in Cottonwood Creek and the Tijuana River south of the border.

**Table 5-6. Wildlife Observed During Biological Surveys**

Common Name/ <i>Scientific Name</i>	A-1	A-2A
<b>Invertebrates</b>		
Anise Swallowtail/ <i>Papilio zelicaon</i>	X	
Ant Lion/Family: Myrmeleontoidea		X
Bee Fly/Family: Bombyliidae	X	X
Behr's Metalmark/ <i>Apodemia virgulti</i>	X	X
Blister Beetle/Family: Meloidae	X	
Blue Mud Wasp/ <i>Chalybion californicum</i>	X	
Buckeye/ <i>Junonia coenia</i>	X	
Cabbage Looper Moth/ <i>Trichoplusia ni</i>	X	
Cactus Fly/Family: Neriidae	X	
California Dancer/ <i>Argia agrioides</i>	X	
California Harvester Ant/ <i>Pogonomyrmex californicus</i>	X	X
California Tortoiseshell/ <i>Nymphalis californica</i>	X	
Cardinal Meadowhawk/ <i>Sympetrum illotum</i>	X	
Clear-wing Grasshopper/ <i>Camnula pellucid</i>	X	X
Drone Fly/ <i>Eristalis tenax</i>	X	

Common Name/Scientific Name	A-1	A-2A
Field Cricket/ <i>Gryllus</i> sp.	X	
Fiery Skipper/ <i>Hylephila phyleus</i>	X	
Flesh Fly/Family: Sarcophagidae	X	X
Forktail Damselfly <i>Ischnura barberi</i>	X	
Funnel Web Spider/ <i>Agelenopsis</i> sp.	X	
Gall Midge/Family: Cecidomyiidae	X	
Geometrid Moth/Family: Geometridae	X	
Gnat/Suborder: Nematocera	X	
Green Lacewing/ <i>Chrysoperla rufilabris</i>	X	
Green Stinkbug/ <i>Nezara viridula</i>	X	
Harbison dun skipper (larva)/ <i>Euphyes vestris harbisoni</i>	X	
Harlequin Bug/ <i>Murgantia histrionic</i>	X	
Honey Bee/ <i>Apis mellifera</i>	X	X
Horse Fly/Family: Tabanidae	X	
Lancifer Bee Fly/ <i>Bombylius lancifer</i>	X	
Monarch/ <i>Danaus plexippus</i>	X	X
Muscid Fly/Family: Muscidae	X	
Orange Sulphur/ <i>Colias eurytheme</i>	X	
Painted Lady/ <i>Vanessa cardui</i>	X	X
Red Admiral/ <i>Vanessa atalanta</i>	X	
Sara Orangetip/ <i>Anthocharis sara</i>	X	
Seven Spotted Ladybird Beetle/ <i>Coccinella septempunctata</i>	X	
Spittle Bug/ <i>Aphrophora</i> sp.	X	
<b>Invertebrates (continued)</b>		
Stink Beetle/ <i>Eleodes</i> sp.	X	X
Sweet Bee/Family: Halictidae	X	
Syrphid Fly/Family: Diptera	X	
Thorne's Hairstreak/ <i>Callophrys gryneus thornei</i>	X	
Thread-Waisted Wasp/ <i>Ammophila</i> sp.	X	X
Tiger Moth/ <i>Cisthene</i> sp.	X	
Variiegated Meadowhawk/ <i>Sympetrum corruptum</i>	X	
Velvet Ant/ <i>Dasymutilla</i> sp.	X	X
Vivid Dancer/ <i>Argia vivida</i>	X	
Wasp/ <i>Pepsis</i> sp.	X	
Wasp/ <i>Polistes</i> sp.	X	
West Coast Lady/ <i>Vanessa annabella</i>	X	
Yucca Beetle/ <i>Carpophilus</i> sp.	X	
<b>Amphibians</b>		
Pacific Tree Frog/ <i>Pseudacris regilla</i>	X	
<b>Reptiles</b>		

Common Name/Scientific Name	A-1	A-2A
Coast Horned Lizard/ <i>Phrynosoma coronatum</i> ssp. <i>blainvillei</i>	X	
Coast Patch-Nosed Snake/ <i>Salvadora hexalepis virgultea</i>	X	X
Orange-Throated Whiptail Lizard/ <i>Aspidoscelis hyperythra beldingi</i>	X	X
Western Fence Lizard/ <i>Sceloporus occidentalis longipes</i>	X	
<b>Birds</b>		
Acorn Woodpecker/ <i>Melanerpes formicivorus</i>		X
American Crow/ <i>Corvus brachyrhynchos</i>	X	
American Kestrel/ <i>Falco sparverius</i>	X	
Anna's Hummingbird/ <i>Calypte anna</i>	X	
Ash-throated Flycatcher/ <i>Myiarchus cinerascens</i>	X	
Black-Headed Grosbeak/ <i>Pheucticus melanocephalus</i>	X	
Black Phoebe/ <i>Sayornis nigricans</i>	X	
Bewick's Wren/ <i>Thryomanes bewickii</i>	X	
Blue Grey Gnatcatcher/ <i>Polioptila caerulea</i>	X	
Bushtit/ <i>Psaltriparus minimus</i>	X	
California Quail/ <i>Callipepla californica</i>	X	
California Thrasher/ <i>Toxostoma redivivum</i>	X	
California Towhee/ <i>Pipilo crissalis</i>	X	
Cassin's Kingbird/ <i>Tyrannus vociferans</i>	X	
Cliff Swallow/ <i>Petrochelidon pyrrhonota</i>	X	
Common Raven/ <i>Corvus corax</i>	X	X
<b>Birds (continued)</b>		
Cooper's Hawk/ <i>Accipiter cooperii</i>	X	
Dark-Eyed Junco/ <i>Junco hyemalis</i>	X	
European Starling/ <i>Sturnus vulgaris</i>	X	
Fox Sparrow/ <i>Passerella iliaca</i>		X
Hermit Thrush/ <i>Catharus guttatus</i>	X	
Horned Lark/ <i>Eremophila alpestris</i>	X	
House Finch/ <i>Carpodacus mexicanus</i>		X
Golden Eagle/ <i>Aquila chrysaetos</i>	X	
Great Horned Owl/ <i>Bubo virginianus</i>	X	
Lark Sparrow/ <i>Chondestes grammacus</i>	X	
Lawrences Goldfinch/ <i>Carduelis lawrencei</i>		
Lesser Goldfinch/ <i>Carduelis psaltria</i>		X
Mourning Dove/ <i>Zenaida macroura</i>	X	
Northern Harrier/ <i>Circus cyaneus</i>	X	
Northern Flicker/ <i>Colaptes auratus</i>	X	X
Nuttall's Woodpecker/ <i>Picoides nuttallii</i>	X	
Pacific-Slope Flycatcher/ <i>Empidonax difficilis</i>		X



Common Name/Scientific Name	A-1	A-2A
Phainopepla/ <i>Phainopepla nitens</i>	X	
Plain Titmouse/ <i>Baeolophus inornatus</i>		X
Red-shouldered Hawk/ <i>Buteo lineatus</i>	X	
Red-tailed Hawk/ <i>Buteo jamaicensis</i>	X	X
Rock Wren/ <i>Salpinctes obsoletus</i>	X	X
Ruby-Crowned Kinglet/ <i>Regulus calendula</i>	X	
Rufous-Crowned Sparrow/ <i>Aimophila ruficeps</i>	X	X
Savannah Sparrow/ <i>Passerculus sandwichensis</i>	X	
Say's Phoebe/ <i>Sayornis saya</i>	X	
Scrub Jay/ <i>Aphelocoma californica</i>	X	X
Spotted Towhee/ <i>Pipilo maculatus</i>	X	X
Turkey Vulture/ <i>Cathartes aura</i>	X	
Western Bluebird/ <i>Sialia mexicana</i>		X
Western Meadowlark/ <i>Sturnella neglecta</i>	X	
White-Crowned Sparrow/ <i>Zonotrichia leucophrys</i>	X	X
Wrentit/ <i>Chamaea fasciata</i>		X
Yellow-Rumped Warbler/ <i>Dendroica coronata</i>	X	
<b>Mammals</b>		
Coyote/ <i>Canis latrans</i>	X	X
California Ground Squirrel/ <i>Otospermophilus beecheyi</i>	X	
Desert Cottontail/ <i>Sylvilagus auduboni</i>	X	
Desert Woodrat/ <i>Neotoma lepida</i>		X
<b>Mammals (continued)</b>		
Gray Fox/ <i>Urocyon cinereoargenteus</i>		X
Mule Deer/ <i>Odocoileus hemionus</i>	X	
Pocket Gopher/ <i>Thomomys bottae</i>	X	
San Diego Black-Tailed Jackrabbit/ <i>Lepus californicus bennettii</i>	X	
Striped Skunk/ <i>Mephitis mephitis</i>		X
<b>Total # Species Per Section</b>	<b>98</b>	<b>34</b>

### 5.6.1 Wildlife and Habitat Overview

#### Invertebrates

San Diego's biodiversity is also visible in the wide range of invertebrate species found in the county. The butterflies are particularly diverse, with at least 147 species known to live in the county. During winter surveys of the impact corridor, 51 species of arthropods (primarily insects and spiders) were observed, 17 of which were butterfly species. Three butterfly species known from the impact corridor are worth noting, the Quino checkerspot butterfly, Thorne's hairstreak butterfly, and Harbison's dun skipper.

Due to the season in which surveys were conducted, no Quino checkerspot butterflies or larvae were observed, however, most of the impact corridor and access roads contains habitat suitable for this species including the primary host plant, *Plantago erecta*, adult nectar sources, and a sufficiently open chaparral habitat. In addition, previous USFWS records indicate that Quino checkerspot butterflies are present in several areas within the impact corridor and associated access roads.

Thorne's hairstreak butterfly was also not observed during winter surveys. However, Tecate cypress, Thorne's only host plant, is found along access roads to the impact corridor and USFWS records indicate that this species is present in the Tecate cypress along these access roads. A biologist monitoring butterfly populations in the impact corridor recently reported a 2008 observation of a Thorne's hairstreak larvae on Tecate cypress along the Otay Truck Trail access road (Mike Klein, pers comm).

There were no observations of Harbison's dun skipper adults during winter surveys, however, several overwintering larvae were found in host plants (San Diego sedge) along drainages next to access roads within the impact corridor. San Diego sedge also occurred in other drainages along the impact corridor, so it is possible that Harbison's dun skipper is present in several locations.

## **Amphibians and Reptiles**

The varied topography and habitat types of San Diego County, combined with a warm Mediterranean climate, supports an array of different reptiles and amphibians. There are 82 species of native amphibians and reptiles in the San Diego area, while another six introduced species have become established. Several other exotic species have been found living in San Diego, many of which are abandoned pets, but have not yet established naturalized populations.

Winter surveys within the impact corridor observed only three reptile species and one amphibian. A notable observation was the presence of the Belding's orange-throated whiptail. Also present was the Coastal patch-nosed snake and the western fence lizard. The limited number of amphibians and reptiles observed during the project surveys may be due to the season. It is certain that more species make use of the habitats. The coast horned lizard, chorus frogs, rattlesnakes and other species use the impact corridor and could be observed during other seasons.

## **Birds**

The diversity of bird species in San Diego County is a result of varied topography, climate, soils, and the county's location along the Pacific Flyway, a major north-south bird migration route. Approximately 800 bird species spend all or part of their lives in the U.S. (USFWS 2002), and more than half of these birds, over 490 species, have been recorded in San Diego County. More species of

birds have been recorded in San Diego County than any other county in the U.S. The greatest diversity of birds in San Diego occurs in the winter months when migrants from the north and interior arrive for the warm, moist coastal weather.

Bird distributions in San Diego County varies by region, from the open waters of the Pacific Ocean, coastal strand, estuaries and mud flats, inland lowland region composed of mesas and canyons, to the lower and upper elevations of the Peninsular Range and down into the Colorado Desert. The proposed impact corridor is situated in the inland region near Otay Mountain and Tecate Peak. Vegetation in the impact corridor varies from some agricultural land, to coastal sage, chaparral, Tecate cypress woodland, and riparian woodland along washes.

Winter surveys along the impact corridors resulted in the observation of 46 bird species. Seven birds of prey species were noted, including the common red-tailed hawk and American kestrel, as well as the Cooper's Hawk, Northern Harrier, and Golden Eagle. Burrowing owls were not observed, however a pair is known to occur south of the west end of the Otay Truck Trail access road. Notable observations among the smaller bird species observed include the Rufus crowned sparrow (subspecies *canescens*) and the federal threatened Coastal California Gnatcatcher. The gnatcatcher was observed calling in an area of chaparral on the western slopes of Otay Mountain, along the Otay Truck Trail. The west Otay Mountain area is considered one of the "core" population areas for this species, and is believed to support more than 30 pairs (Unitt 2004).

The habitats in the impact corridor range from being heavily grazed and trampled to undisturbed. Any bird species whose geographic range and habitat requirements occur in the impact corridor would reasonably be expected to occur there.

## **Mammals**

The undeveloped chaparral and coastal sage scrub along the impact corridor provides habitat that supports a variety of mammal species. Mammal observations during the surveys were limited as many of the species expected to be present in the area are nocturnal, reclusive or both. Direct observation of mammal species was augmented with observation of signs such as tracks, scat, road killed individuals, and characteristic structures like burrows. A total of nine mammal species were either observed or their sign was observed within the impact corridor. Among the predators observed were coyote, whose tracks and scat suggest it to be relatively common. The common gray fox was observed from tracks left in stream sediments. Given the habitat characteristics present within the impact corridor, it is likely that additional species could be present, including the bobcat and cougar. The large home range of the cougar and the reclusive nature of felines make direct observation of these species unlikely.

The only large herbivore observed, outside of domestic cattle, was the mule deer, but a great variety of small mammals were noted. The striped skunk,

pocket gopher, California ground squirrel, desert woodrat, desert cottontail and San Diego jackrabbit were all observed within the impact corridor.

Due to the remoteness of the area and the only habitat disturbance is from extensive grazing and foot traffic of the illegal immigrants, most typical coastal sage scrub and riparian mammals native to the area would be expected to occur in the impact corridor.

## **5.7 Sensitive Species**

Sensitive species were assessed during biological surveys. Surveyors specifically looked for evidence indicating the presence of federal and state listed species, as well as BLM-designated sensitive species and MSCP target species that could occur (see **Table 3-2**). Potential habitats that might support these species were assessed as well. The results of these assessments are summarized below.

### **5.7.1 Plants**

***Baja California birdbush*** (*Ornithostaphylos oppositifolia*). This perennial species was not observed during surveys.

***Wart Stemmed Lilac*** (*Ceanothus verrucosus*). This perennial species was not observed during surveys.

***California Orcutt grass*** (*Orcuttia californica*). No appropriate habitat was observed in the impact corridor.

***Dean's milk-vetch*** (*Astragalus deanei*). No appropriate habitat was observed in the impact corridor.

***Dehesia nolina*** (*Nolina interrata*). Potential habitat for this species occurs in all the burned upland areas within the impact corridor.

***Del Mar Manzanita*** (*Arctostaphylos glandulosa* var. *crassifolia*). No appropriate habitat was observed in the impact corridor. The area is outside the normal range for this species.

***Dunn's mariposa lily*** (*Calochortus dunnii*). Potential habitat for this species occurs in all upland areas along the impact corridor.

***Encinitas baccharis*** (*Baccharis vanessae*). This is a perennial species that was not observed during the surveys. Potential habitat for this species occurs in all upland burned areas along the impact corridor.

***Feltleaf monardella*** (*Monardella hypoleuca* ssp. *lanata*). Potential habitat for this species exists in chaparral within the Otay Mountain portions of the A-1 impact corridor.

**Fire reedgrass** (*Calamagrostis koelerioides*). Potential upland habitat for this species was mostly in poor condition due to grazing or recently burned.

**Gander's pitcher sage** (*Lepechina gander*). Potential habitat for this species exists within the Otay Truck Trail access corridor and the Marron Valley access corridor. Three occurrences were observed during the June expanded surveys. All three occurred in Southern Mafic Chaparral. Two were along the patrol road alignment. A third occurrence was observed along the Otay Truck Trail Access road.

**Gander's ragwort** (*Packera gander*). No appropriate habitat was observed in the impact corridor.

**Jennifer's monardella** (*Monardella stoneana*). Potential habitat for this species occurs in all the drainages in the impact corridor, but none was observed during surveys.

**Lakeside ceanothus** (*Ceanothus cyaneus*). Potential habitat for this species occurs in all burned areas in the impact corridor.

**Mexican flannelbush** (*Fremontodendron mexicanum*). This perennial species was not observed during surveys.

**Mission Canyon bluecups** (*Githopsis diffusa* spp. *filicaulis*). Little is known about this very rare species, but specimens and reports typically have occurrences in sandy upland soils. Those habitat conditions were not observed in the impact corridor.

**Munz's sage** (*Salvia munzii*) was observed during biological surveys. There are occurrences of Munz's sage within the Otay Truck Trail access road corridor. Occurrences were also observed in the chaparral within the Otay Mountain portion of the A-1 impact corridor.

**Orcutt's brodiaea** (*Brodiaea orcuttii*) prefers grasslands with clay soils near drainages or vernal pools. Potential habitat for this species exists in upland areas of the A-1 impact corridor. The clay soils and mima mound topography in Marron Valley along the access road has a very high potential for this species.

**Orcutt's Hazardia** (*Hazardia orcuttia*) is known from only one site in San Diego County (Encinitas), although it is more common to Mexico. Potential habitat for this species exists in Diegan Coastal Sage Scrub within the A-1 impact corridor.

**Orcutt's bird's-beak** (*Cordylanthus orcuttianus*). Potential habitat for this species occurs in Coastal Sage Scrub along the Otay Truck Trail access road corridor.

**Otay Manzanita** (*Arctostaphylos otayensis*) was observed during biological surveys throughout the Otay Truck Trail Access road and along the A-1 alignments.

**Otay Mesa mint** (*Pogogyne nudiuscula*). No appropriate habitat was observed in the impact corridor.

**Otay tarplant** (*Deinandra conjugens*). Potential habitat for this species occurs in all upland areas of the A-1 impact corridor. This plant is partial to disturbed habitat, which is extensive throughout the survey area.

**Palmer's rabbitbrush** (*Ericameria palmeri* var. *palmeri*). Potential habitat for this species exists in burned riparian areas within the impact corridor. Pre-fire CNDDDB records report it from near the Tecate Access Road.

**Parry's tetrococcus** (*Tetrococcus dioicus*). This is a perennial species that was not observed during the surveys. Potential habitat for this species occurs in all upland burned areas along the impact corridor.

**San Diego ambrosia** (*Ambrosia pumila*). No appropriate habitat was observed in the impact corridor.

**San Diego barrelcactus** (*Ferocactus viredescens*). This species was observed and mapped during biological surveys. Potential habitat for this species occurs in upland areas of the A-1 impact corridor.

**San Diego button-celery** (*Eryngium aristulatum* var. *parishii*). No appropriate habitat was observed in the impact corridor.

**San Diego currant** (*Ribes canthariforme*). Potential habitat for this species occurs in the impact corridor.

**San Diego goldenstar** (*Muilla clevelandii*). Potential habitat for this species occurs in upland areas of the A-1 impact corridor. It is most often found in perennial native grasslands or areas of mima mound topography.

**San Diego nightshade** (*Solanum tenuilobatum*). This is no longer a recognized taxa (lumped with *S. xantii*), but still appears in the City of San Diego MSCP list. This former species is found frequently on Otay mountain in the types of habitats observed during the surveys.

**San Diego rattleweed** (*Astragalus oocarpus*). The CNNDDB reports this species from the general vicinity of the Tecate Access road. The non-specific map information means this species may or may not be within the impact corridor.

**San Diego thorn-mint** (*Acanthomintha ilicifolia*). Potential habitat for this species occurs in all upland areas of the A-1 impact corridor; however, the specific microhabitat where it typically occurs was not observed.

**Singlewhorl burrobrush** (*Hymenoclea monogyra*) was observed during biological surveys in Mine Canyon. It likely occurred within the Marron Valley and Tecate access corridors but was burned out in the 2007 fire.

**Small-leaved rose** (*Rosa minutifolia*). Potential habitat for this species occurs in riparian areas within the impact corridor.

**Spreading navarretia** (*Navarretia fossalis*). No appropriate habitat was observed in the impact corridor.

**Tecate cypress** (*Cupressus forbesii*) was observed and mapped during biological surveys. It occurs extensively along the Otay Truck Trail and several drainages. Potential habitat for this species occurs in Closed Cone Coniferous Forest and Southern Mixed Chaparral in moist canyons and drainages within the impact corridor.

**Tecate tarweed** (*Deinandra floribunda*). Potential habitat for this species exists in riparian areas within the impact corridor. It is partial to washes and arroyos.

**Tiny mousetail** (*Myosurus minimus*). No appropriate habitat was observed in the impact corridor.

**Variigated dudleya** (*Dudleya variegata*). Potential habitat for this species exists in all upland areas of the A-1 impact corridor. There was a previous observation of this species along the Monument 250 road (Klein, pers comm).

## 5.7.2 Wildlife and Aquatic Species

### Invertebrates

**San Diego fairy shrimp** (*Branchinecta sandiegonensis*). No appropriate habitat was observed in the impact corridor.

**Thorne's hairstreak butterfly** (*Callophrys thornei*) has been previously documented within the access road impact corridor along the Otay Mountain Truck Trail, and in April, 2008 Michael Klein observed larvae were in the area along the truck trail. Thorne's hairstreak requires mature Tecate cypress (*Cubressus fornesii*) habitat, which exists within the impact corridor. Potential habitat for this species has been mapped within the impact corridor.

**Quino checkerspot butterfly** (*Euphydryas editha quino*). Appropriate Habitat for this species is found throughout the impact corridor along both A-1 and A-2A.

**Harbison dun skipper** (*Euphyes vestris harbisoni*). Host plants for this species were observed in all the drainages in the impact corridor which supported riparian type habitats (mulefat scrub, coast live oak riparian forest, cottonwood willow riparian forest, burned riparian scrub). Overwintering larvae were observed in Wild Bill's Draw just outside the impact corridor.

**Riverside fairy shrimp** (*Streptocephalus woottoni*). No appropriate habitat was observed in the impact corridor.

## Amphibians

**Arroyo toad** (*Bufo californicus*). No appropriate habitat was observed in the impact corridor. There is known occupied habitat to the south and east of Marron Valley Access Road.

**Western spadefoot toad** (*Spea hammondi*). Potential habitat for this species occurs along Marron Valley Road between Mine Canyon and Mine Road.

## Reptiles

**Belding's orange-throated whiptail** (*Aspidoscelis hyperythra beldingi*) was observed during biological surveys. Potential habitat exists in all upland areas of the impact corridor.

**Coast horned lizard** (*Phrynosoma coronatum* ssp. *blainvillei*). Potential habitat for this species exists throughout the impact corridor. A single individual was observed near the Monument 250 along the Pack Truck Trail.

**Two-striped garter snake** (*Thamnophis hammondi*). This species potentially could occur in the drainages of the impact corridor. Wild Bill's Draw and Marron Valley Creek both had suitable habitat. Marginal habitat occurred in Copper Canyon, Mine Canyon and Buttewig Canyons. Also marginal habitat occurred along the eastern portion of the Tecate access road.

## Birds

**Cooper's hawk** (*Accipiter cooperii*). Potential habitat for this species exists in all riparian areas with mature trees within the impact corridor. An individual was observed along Marron Valley Access Road.

**Tricolored blackbird** (*Agelaius tricolor*). The only potential habitat for this species was South of the impact corridor in the Tijuana River valley.

**Rufous-crowned sparrow** (*Aimophila ruficeps* ssp. *canescens*) was observed during biological surveys. Potential habitat for this species exists in Coastal Sage Scrub within the impact corridor.

**Golden eagle** (*Aquila chrysaetos*) was observed during biological surveys of the Otay Mountain Truck Trail. Potential foraging habitat for this species exists throughout the impact corridor.

**Burrowing owl** (*Speotyto cunicularia*). Occupied habitat for this species was identified in non-native grasslands to the south outside of the access corridor near Alta Road. Potential habitat also occurs in all the agricultural areas along



Marron Valley Road, but there is no record of burrowing owls ever having occurred in the Marron Valley Road area.

**Northern harrier** (*Circus cyaneus*) was observed during biological surveys on the south side of Otay Mountain. Potential nesting and foraging habitat for this species occurs in the impact corridor.

**Southwestern willow flycatcher** (*Empidonax traillii extimus*) was determined unlikely to occur within the impact corridor; however, riparian areas around the Tijuana River and its tributary south of the impact corridor could be used as stopover foraging habitat for migrant willow flycatchers. With continued regrowth, the habitat has the potential to support willow flycatchers once it matures.

**Coastal California gnatcatcher** (*Polioptila californica californica*) was observed during biological surveys along the Otay Truck Trail. Potential habitat for this species occurs in Coastal Sage Scrub within the A-1 impact corridor.

**Least Bell's vireo** (*Vireo bellii pusillus*). Potential habitat for this species exists along the riparian areas of the Tijuana River Valley.

## **Mammals**

**Western mastiff bat** (*Eumops perotis californicus*). Marginal habitat occurs in and near the impact corridor. These bats typically roost in larger rock crevasses. The large rock areas on Otay mountain is not the granitic rock found at other locations in San Diego.

**San Diego black-tailed jackrabbit** (*Lepus californicus bennettii*) was observed during biological surveys. Potential habitat for this species exists throughout the impact corridor.

**Townsend's western big-eared bat** (*Plecotus townsendii*). Typically these bats roost in abandoned caves, mines or buildings. There weren't any potential roosting sites in the impact corridor, but the old mines outside the impact corridor on Otay Mountain may support populations and they may forage in the impact corridor.

**Southern Mule Deer** (*Odocoileus hemionus fuliginata*) was observed in the impact corridor during the surveys. Potential habitat is throughout the entire impact corridor.

**Mountain Lion** (*Felis concolor*). Potential habitat for this species occurs throughout the impact corridor.

## **6. Avoidance and Minimization Measures**

The Secretary's waiver means that CBP no longer has any specific legal obligations under any environmental regulations, for Sections A-1 and A2A addressed in this ESP; however the Secretary committed the Department to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the environmental regulations as the basis for evaluating potential environmental impacts and appropriate mitigations.

As part of the coordination between USBP and USFWS, best management practices are under development for building, operating, and maintaining the planned tactical infrastructure. The best management practices are designed to avoid and minimize impacts to biotic resources, specifically threatened and endangered resources. These measures will be presented in the final Biological Resources Plan (BRP).

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**BIOLOGICAL SURVEY  
APPENDIX A**

**DESCRIPTION OF FEDERALLY LISTED SPECIES**

### **Arroyo toad (*Bufo californicus*)**

The arroyo toad was listed as endangered on December 16, 1994.

**Distribution:** The arroyo toad once ranged from San Luis Obispo County, CA, south to northwestern Baja California, Mexico. Now extirpated in San Luis Obispo County, they are currently found in headwater areas of streams in Santa Barbara, Ventura, Los Angeles, Riverside, and San Diego Counties. Scattered individuals have been reported from Orange, San Bernardino and southern Imperial counties. Found along the Santa Margarita, Guejito, Sweetwater, Vallecito, San Luis Rey, Santa Ysabel, Witch, Cottonwood, Temescal, Agua Caliente, Santa Maria, Lusardi, Pine Valley, Nobel, Kitchen, Long Potrero, Upper San Diego, San Vicente, and Morena drainages in San Diego County.

#### **Natural History:**

*Habitat:* The arroyo toad makes use of washes, streams and arroyos and adjacent uplands, as well as sandy banks in riparian woodlands. Also found along rivers with shallow gravel-bottom pools with adjacent sandy terraces. Adults will burrow in sandy soil for shelter.

*Breeding:* The arroyo toad breeds from March to early June, independent of rainfall. Eggs are found at the bottom of shallow quiet streams or ponds among gravel, leaves, and sticks, or on mud or clean sand in areas with little to no emergent vegetation. Metamorphosis occurs in June to July.

*Diet:* Insects

**Threats:** The arroyo toad is threatened by habitat degradation caused by urbanization, dam construction, ill-timed water releases, agriculture, road construction, off-road vehicle use, overgrazing, mining activities, road construction, drought and wildfires. They are also impacted by recreational use of habitat, predation by introduced fish and bullfrogs, and small population size.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: November 30, 2007).



### **California orcutt grass (*Orcuttia californica*)**

California orcutt grass was listed as threatened on August 3, 1993.

**Distribution:** California orcutt grass is found in San Diego County in two vernal pools located near the city of Carlsbad and in four pool complexes on Otay Mesa. The grass also has been observed in Baja California, Mexico.

#### **Natural History:**

*Morphology:* California orcutt grass is a small annual grass that reaches about 10 centimeters in height with bright green blades that secrete sticky droplets. The inflorescences, borne from May through July, consist of seven spikelets, with the upper spikelets overlapping.

*Habitat:* California orcutt grass is an endemic species of vernal pools in Southern California and northern Mexico. Vernal pools are seasonal depressional wetlands where the proliferation of flora and fauna may be related to the Mediterranean climate that prevails throughout their range.

**Threats:** Urban and agricultural development and invasion of weedy, non-native species.

U.S. Fish and Wildlife Service. 1998. *Vernal Pools of Southern California Recovery Plan*. U.S. Fish and Wildlife Service, Portland, Oregon. 113+ pp.

### **Coastal California gnatcatcher (*Polioptila californica californica*)**

The coastal California gnatcatcher was listed as threatened on March 30, 1993.

**Distribution:** The coastal California gnatcatcher is a resident bird species found from Los Angeles County southward to northwestern Baja California, Mexico, extending south to the vicinity of El Rosario, Mexico, and eastward to the eastern base of the Sierra San Pedro Martir. This species has been extirpated from Ventura County.

#### **Natural History:**

*Habitat:* The coastal California gnatcatcher makes use of several distinctive subassociations of the coastal sage scrub plant community, particularly communities dominated by California sagebrush (*Artemisia californica*). It generally avoids crossing areas of unsuitable habitat.

*Breeding:* This species breeds from February to mid July, with an average clutch size of 3.8 and 3 to 4 clutches laid per year. Incubation is carried out by both sexes and lasts about 14 days, with a 16-day nestling period. Nest is an open cup style.

*Diet:* The coastal California gnatcatcher is a ground and shrub-foraging insectivore.

**Threats:** The remaining populations of coastal California gnatcatchers are highly fragmented by urban development and expanding transportation corridors. They are also threatened by Brown-headed cowbird parasitism as a result of habitat fragmentation. Wildfires may also have a significant impact.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: November 30, 2007).

**Encinitas baccharis (*Baccharis vanessae*)**

The Encinitas baccharis was listed as threatened on October 7, 1996.

**Distribution:** The Encinitas baccharis is endemic to San Diego County, California, and known populations are found near Encinitas in central San Diego County and extend toward Mount Woodson and Poway. One population is found in the Santa Margarita Mountains of northern San Diego County.

**Natural History:**

*Morphology:* Encinitas baccharis is a dioecious broom-like shrub that grows from 0.5 to 1.3 meters tall. It has filiform leaves and delicate phyllaries that are reflexed.

*Habitat:* The Encinitas baccharis is restricted to the southern maritime chaparral, which is a low, fairly open chaparral community. Common species include *Ceanothus verrucosus*, *Xylococcus bicolor*, *Adenostoma fasciculatum* var. *obtusifolium*, *Quercus dumosa*, *Cneoridium dumosum*, *Rhamnus crocea*, *Yucca schidigera*, and occasionally *Dendromecon rigida*.

**Threats:** Urban and agricultural development.

U.S. Fish and Wildlife Service. 1993. "Endangered and threatened wildlife and plants; proposed rule for six southern maritime chaparral plant taxa from coastal Southern California and northwestern Baja California, Mexico." *Federal Register* 58: 51302–51311.

### **Least Bell's vireo (*Vireo bellii pusillus*)**

The least Bell's vireo was listed as endangered on May 2, 1986.

**Distribution:** Breeding range was once widespread throughout the Central Valley of California to the Sierra Nevada foothills and Coast Ranges. The breeding range extended into northwestern Baja California, Mexico, and included populations in Death Valley and the Mojave Desert. By 1990, 80 percent of the U.S. population was found along only five drainages: Santa Margarita River, Sweetwater River, San Luis Rey River, San Diego River, and Santa Ana River. Winter range extends to the Cape region of Baja California, with some individuals remaining in Southern California.

#### **Natural History:**

*Habitat:* The least Bell's vireo uses dense brush, mesquite, willow-cottonwood forest, streamside thickets, and scrub oak habitats in arid regions, but frequently near water. Moist woodland, bottomlands, woodland edge, scattered cover and hedgerows are used in cultivated areas, and willow-dominated woodlands are used in riparian areas. Open woodland and brush are used in winter.

*Breeding:* Migration into the breeding range occurs near the end of March. Nests are constructed in shrubs or low trees about 1 meter above the ground in a horizontal or downsloping twig fork, often near the edge of a thicket. Nesting vegetation in California is frequently willow (*Salix* sp) or rose (*Rosa* sp.). Three to five eggs are laid in a clutch, and incubation lasts 14 days. Both adults tend the young, which fledge at 10 to 12 days. Some pairs may raise multiple broods annually in some areas. Migration out of breeding areas takes place in July to late September, but some individuals will overwinter in the United States.

*Diet:* Primarily insects, but will also take spiders, snails, and fruits. This species forages in dense brush and sometimes in treetops. They glean prey from leaves and bark but will also hover-hunt and hawk prey.

**Threats:** Least Bell's vireo has a limited range in Southern California and Baja California and is threatened by habitat loss and nest parasitism by cowbirds.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: November 30, 2007).

### **Mexican flannelbush (*Fremontodendron mexicanum*)**

Mexican flannelbush was listed as endangered on October 12, 1998.

**Distribution:** The Mexican flannelbush is endemic to southern San Diego County and northern Baja California, Mexico, between 300 and 1,000 meters in elevation. The only known Californian population, located near Otay Mountain, has less than 100 individuals.

#### **Natural History:**

*Morphology:* The Mexican flannelbush, a member of the cacao family, is a small shrub with evergreen, palmately lobed leaves. The flowers are 2.4 inches wide and lack petals, but have showy orange sepals that distinguish the shrub from *Fremontodendron californicum*.

*Habitat:* The flannelbush occurs primarily in closed-canopy coniferous forests dominated by Tecate cypress (*Cupressus forbesii*) and southern mixed chaparral, often on meta-volcanic soils. The chaparral that the flannelbush occupies has dense shrub cover of moderate height characterized by *Adenostoma fasciculatum*, *Ceanothus* sp., *Rhamnus ilicifolia*, *Arctostaphylos* sp., *Quercus berberidifolia*, *Rhus ovata*, *Malosma laurina*, *Heteromeles arbutifolia*, *Eriogonum fasciculatum*, and *Salvia mellifera*.

**Threats:** Urban and agricultural development.

U.S. Fish and Wildlife Service. 1995. "Endangered and threatened wildlife and plants; proposed endangered and threatened status for four chaparral plants from southwestern California and northwestern Baja California, Mexico." *Federal Register* 60: 51443–51452.

### **Otay Mesa mint (*Pogogyne nudiuscula*)**

Otay Mesa mint was listed as endangered on August 3, 1993.

**Distribution:** Currently, the Otay Mesa mint is known to occur only in seven vernal pool complexes on Otay Mesa located on the Mexican border in San Diego County, California.

#### **Natural History:**

*Morphology:* The Otay Mesa mint is an annual herb of the mint family that reaches 30 centimeters or more in height and blooms from May through early June. The vegetative and floral portions give off a strong, turpentine mint odor. The flowers are purple with a white throat, with six flowers per stem node.

*Habitat:* The Otay Mesa mint is an endemic species of vernal pools of Otay Mesa in Southern California. Vernal pools are seasonal depressional wetlands where the proliferation of flora and fauna may be related to the Mediterranean climate that prevails throughout their range.

**Threats:** Urban and agricultural development, livestock grazing, off-road vehicle use, trampling, and invasions of non-native plants.

U.S. Fish and Wildlife Service. 1998. *Vernal Pools of Southern California Recovery Plan*. U.S. Fish and Wildlife Service, Portland, Oregon. 113+ pp.

### **Otay tarplant (*Deinandra conjugens*)**

The Otay tarplant was listed as threatened on October 13, 1998.

**Distribution:** The Otay tarplant is an endemic species of southwestern California with one population near the U.S. border in Baja California, Mexico. Within California, all known populations exist in San Diego County near Otay Mesa. Five populations contain 98 percent of all recorded plants: Rancho San Miguel, Rice Canyon, Dennery Canyon, Poggi Canyon, and Proctor Valley.

#### **Natural History:**

*Morphology:* The Otay tarplant is a glandular, aromatic annual plant of the aster family. It has a branching stem that ranges from 5 to 25 centimeters in height, with deep green or gray-green leaves covered in hairs. The flowers are yellow and composed of 8–10 ray flowers and 13–21 disk flowers. The Otay tarplant is self-incompatible and must be pollinated by a different plant.

*Habitat:* The Otay tarplant is restricted to clay soils, subsoils, or lenses. Historically, the Otay tarplant occupied areas vegetated with native grassland, open coastal sage scrub, and maritime succulent scrub. Currently, it occupies those communities, but is also found on the margins of disturbed sites and cultivated fields. Species commonly found with the tarplant include *Nassella* spp., *Bloomeria crocea*, *Dichelostemma pulchella*, *Chlorogalum* spp., *Bromus* spp., *Avena* spp., *Deinandra fasciculata*, *Lasthenia californica*, *Artemisia californica*, *Eriogonum fasciculatum*, *Lotus scoparius*, *Salvia* spp., *Mimulus aurantiacus*, *Malacothamnus fasciculatum*, *Malosma laurina*, *Rhus ovata*, *R. integrifolia*, *Lycium* spp., *Euphorbia misera*, *Simmondsia chinensis*, *Opuntia* spp., *Ferocactus viridescens*, *Ambrosia chenopodiifolia*, and *Dudleya* spp.

**Threats:** Urban and agricultural development and invasion of non-native species.

U.S. Fish and Wildlife Service. 2004. *Recovery plan for Deinandra conjugens (Otay tarplant)*. Portland, Oregon. vii + 65 pp.

### Quino checkerspot butterfly (*Euphydryas editha quino*)

The Quino checkerspot butterfly was listed as endangered on January 16, 1997.

**Distribution:** The historic distribution of the Quino checkerspot butterfly included coastal California south of Ventura County and inland valleys south of the Tehachapi Mountains. However, approximately 75 percent of the Quino checkerspot butterfly's historic range has been lost, and it is currently only found in western Riverside County, southern San Diego County, and northern Baja California, Mexico.

#### Natural History:

*Habitat:* The Quino Checkerspot butterfly is found in several plant communities, from scrub on coastal bluffs, coastal sage, chaparral, and oak woodlands to desert pinyon-juniper woodlands. However, it is only found in openings within these plant communities having a sufficient cover of larval food plants and annual forbs that provide nectar for adults.

*Breeding:* Adults are flying from late February to April. Females lay egg masses consisting of 120–180 eggs that hatch in 7–10 days. Total egg production ranges from 400 to 800 eggs per female. Prediapause larvae undergo two or three molts before entering diapauses as a third or fourth instar larvae. Prediapause larvae are communal, while postdiapause larvae are solitary. Diapause breaks after sufficient rain falls to establish food plants. The postdiapause larvae progress through three to seven more instars before they pupate among low plants or under rocks. Adults emerge in about 10 days.

*Diet:* Larvae feed on dwarf plantain (*Plantago erecta*) and purple owl's clover (*Castilleja exserta*), White snapdragon (*Antirrhinum coulterianum*), woolly plantain (*Plantago patagonica*), and bird's beak (*Cordylanthus rigidus*).

**Threats:** This species is threatened by agricultural and urban development and other land use changes, habitat fragmentation, invasive non-native plant species, and disrupted fire regimes.

Mattoni, R., G.F. Pratt, T.R. Longcore, J.F. Emmel, and J.N. George. 1997. "The endangered quino checkerspot butterfly, *Euphydryas editha quino* (Lepidoptera: Nymphalidae)." *Journal of Research on Lepidoptera*. 34:99–118.



### **Riverside fairy shrimp (*Streptocephalus woottoni*)**

The Riverside fairy shrimp was listed as endangered on August 3, 1993.

**Distribution:** Originally thought to be restricted to five vernal pools in a 13-by-7-kilometer area of Western Riverside County. Additional locations now include vernal pools in Los Angeles, Orange, Ventura, and San Diego counties. Total range for this species is now considered to extend from coastal Southern California, south to northwestern Baja California, Mexico.

#### **Natural History:**

*Habitat:* The Riverside fairy shrimp is found in seasonal pools filled by spring and winter rains. These vernal pools are generally located in earth slump basins or tectonic swales in grasslands and agricultural areas interspersed with coastal sage scrub. Minimum habitat size was 750 square meters at the original five sites, with a minimum water depth of 30 centimeters at maximum pool filling. The Riverside fairy shrimp can be found in turbid or clear water, in partially vegetated pools, and has been found to co-occur with the Versatile fairy shrimp (*Branchinecta lindahli*). The Riverside fairy shrimp is found in deeper water around loose emergent vegetation. This species appears late in the season and is considered a warm-water species.

*Breeding:* The Riverside fairy shrimp has a seasonal cycle that varies with the water level and water temperature. Mature individuals were not found until late March in type localities. Hatching of cysts has been observed from January to March, and early or late season rains may expand the hatching period. Riverside fairy shrimp mature in 48 to 56 days, depending on a variety of environmental factors. Cysts can survive extreme temperatures and extended dry periods. Not all eggs hatch during pool-filling events, creating an age structure in the egg bank that is key to species persistence.

*Diet:* Adults feed on detritus and small invertebrates.

**Threats:** Agricultural and urban development.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: November 30, 2007).

### **San Diego ambrosia (*Ambrosia pumila*)**

The San Diego ambrosia was listed as endangered on August 3, 1993.

**Distribution:** The San Diego ambrosia is an endemic species of San Diego and Riverside Counties, California. 12 of the 15 known populations reside in San Diego County. The populations are found in the watersheds of the San Diego, San Luis Rey, Sweetwater, and San Dieguito Rivers. Populations have also been observed in Baja California, Mexico.

#### **Natural History:**

*Morphology:* The San Diego ambrosia is a herbaceous perennial plant that spreads vegetatively by means of slender, underground rhizome-like roots from which aerial stems arise. The stems are 5–30 centimeters in height and are densely covered with short hairs. The leaves are two to four times pinnately divided and are covered with gray-white, appressed hairs. The ambrosia flowers from May through October.

*Habitat:* San Diego ambrosia primarily occupies the upper terraces of rivers and drainages, as well as open grasslands, openings in coastal sage scrub, and occasionally in the areas adjacent to vernal pools. Species found near the San Diego ambrosia include *Distichlis spicata*, *Baccharis salicifolia*, *Baccharis sarathroides*, *Eriogonum fasciculatum*, and *Eremocarpus setigerus*.

**Threats:** Urban and agricultural development.

U.S. Fish and Wildlife Service. 2002. "Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Ambrosia Pumila* (San Diego Ambrosia) From Southern California." *Federal Register* 67: 44372–44382.

**San Diego button-celery (*Eryngium aristulatum* var. *parishii*)**

San Diego button-celery was listed as endangered on August 3, 1993.

**Distribution:** The San Diego button-celery's range extends from Santa Rosa Plateau in Riverside County, California, to the mesas north of Ensenada, Mesa de Colonet, and San Quintin in Baja California, Mexico. In San Diego County, it is found on Otay Mesa, near lower Otay Reservoir, and in Proctor Valley.

**Natural History:**

*Morphology:* The San Diego button-celery is a perennial herb with a persistent tap root that is a member of the carrot family. It has a spreading to erect habit and reaches heights of 41 centimeters or more. The stems and toothed leaves are gray-green with spinose lobes. The flowers form on short peduncles with few to many heads.

*Habitat:* The San Diego button-celery is an endemic species of vernal pools of Southern California and northern Mexico. Vernal pools are seasonal depressional wetlands where the proliferation of flora and fauna may be related to the Mediterranean climate that prevails throughout their range.

**Threats:** Urban and agricultural development.

U.S. Fish and Wildlife Service. 1998. *Vernal Pools of Southern California Recovery Plan*. U.S. Fish and Wildlife Service, Portland, Oregon. 113+ pp.

### **San Diego fairy shrimp (*Branchinecta sandiegonensis*)**

The San Diego fairy shrimp was listed as endangered on February 3, 1997.

**Distribution:** San Diego fairy shrimp are found in vernal pools from San Marcos and Ramona south to Otay Mesa and northwestern Baja California. Also found recently in shallow vernal pools in Orange County.

#### **Natural History:**

*Habitat:* The San Diego fairy shrimp is a vernal pool habitat specialist. It prefers smaller, shallower vernal pools and ephemeral basins, generally less than 30 centimeters deep and often on chaparral-covered mesas.

*Breeding:* Adult San Diego fairy shrimp are observed from January to March, but the hatching period may vary with the winter rains. They hatch and mature in 7 to 14 days, depending on water temperature. Eggs may be dropped to the pool bottom or retained in the female's brood sack until she dies and settles. The eggs or "cysts" can survive extended dry periods and high temperatures as they wait for the vernal pool to fill again. Not all eggs hatch during a pool filling event, resulting in an egg bank consisting of eggs from several breeding seasons. This age structuring within the egg bank is important for population persistence in unpredictably favorable or unfavorable environmental conditions.

*Diet:* The San Diego fairy shrimp is believed to feed on protozoa, rotifers, bacteria, and organic matter.

**Threats:** This species is threatened by habitat loss through urbanization and the conversion of habitat to agriculture.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: November 30, 2007).

### **Southwestern willow flycatcher (*Empidonax trailii extimus*)**

The southwestern willow flycatcher was listed as endangered on February 27, 1995.

**Distribution:** Breeding range extends from Southern California north to Independence, AZ, southwestern New Mexico, and southern Utah, and formerly southern Nevada. Migrates to winter ranges in central Mexico to northwestern Colombia. Migration occurs through the desert regions in Southern California and sometimes along the coast and onto the Channel Islands.

#### **Natural History:**

*Habitat:* Present in California from late April to September and can be found in thickets, scrubby and brushy areas, open secondary growth, swamps, and open woodlands. They are also known to nest in tamarisk (*Tamarix* sp.) thickets.

*Breeding:* Nesting occurs in June through late July, with nests constructed in a fork or horizontal limb of a small tree, vine, or shrub, 2 to 3 meters high in dense vegetation. Three to 4 eggs are laid per clutch and hatch after 12 to 15 days. Incubation is conducted by the female, and chicks are tended by both parents. Fledging occurs after 12 to 15 days, generally in early to mid July. A pair will typically raise one brood per year.

*Diet:* Eats primarily insects caught on the wing, but will glean prey from foliage. They occasionally will also consume berries. In the breeding range, they forage within and sometimes above dense riparian vegetation.

**Threats:** This species is threatened by the loss and degradation of cottonwood-willow and structurally similar riparian habitats. Increased irrigated agriculture and livestock grazing have aided Brown-headed cowbird populations that in turn impact the southwestern willow flycatcher. The current population exists in small, fragmented populations, which increases the risk of local extirpation.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: November 30, 2007).

### **Spreading navarretia (*Navarretia fossalis*)**

Spreading navarretia was listed as threatened on December 15, 1994.

**Distribution:** Spreading navarretia is distributed from western Riverside County through coastal San Diego County, California, to northwestern Baja California, Mexico. The majority of species in the United States occur on Otay Mesa in San Diego County and along the San Jacinto River and near Hemet in Riverside County.

#### **Natural History:**

*Morphology:* Spreading navarretia is a low, mostly spreading or ascending annual herb that is 10–15 centimeters tall. The leaves are soft and finely divided, and become spine-tipped when dry. The flowers are white to lavender and are arranged in flat-topped, compact, leafy heads.

*Habitat:* Spreading navarretia is an endemic species of vernal pools in Southern California. It occasionally occupies ditches and depressions that are the result of degraded vernal pool habitat.

**Threats:** Urban and agricultural development.

U.S. Fish and Wildlife Service. 1994. Endangered and threatened wildlife and plants; proposed rule to list four southwestern California plants as endangered or threatened. *Federal Register* 59: 64812–624823.

### **San Diego thorn-mint (*Acanthomintha ilicifolia*)**

San Diego thorn-mint was listed as threatened on October 13, 1998. A Designation of Critical Habitat for the species was proposed on March 14, 2007.

**Distribution:** San Diego thorn-mint occurs in San Diego County, California, and northwestern Baja California. Populations in the US range from San Marcos east to Alpine and south to Otay Mesa in San Diego County. This species occupies an estimated 156 hectares. About 60 percent of the reported individuals are concentrated in four populations (Sycamore Canyon, Slaughterhouse Canyon, and two populations on Viejas Mountain). At least nine sites are known to have recently supported *A. ilicifolia* in Baja California, Mexico.

**Natural History:** The San Diego thorn-mint is an annual aromatic herb of the mint family. It has paired leaves and several sharply spined bracts below whorled flowers. *A. ilicifolia* can be distinguished by its flower, which has hairless anthers and style. The tubular two-lipped corollas are white with rose markings on the lower lip.

The plant usually occurs on heavy clay soils in opening within coastal sage scrub, chaparral and native grassland of coastal San Diego County and in isolated populations south to San Telmo in northern Baja California. It is frequently associated with gabbro soils which are derived from igneous rock and also occurs in calcareous marine sediments.

**Threats:** Urban and agricultural development, competition from nonnative plant species, off-road vehicle use, mining, grazing, and trampling by hikers.

U.S. Fish and Wildlife Service. 1998. "Endangered and threatened wildlife and plants; determination of endangered or threatened status for four plants from southwestern California and Baja California, Mexico." *Federal Register* 63(197): 54938-54956.

### **Jennifer's monardella (*Monardella stoneana*)**

Recent taxonomic work by Andy Sanders and Mark Elvin supports the reclassification of *Monardella linoides* ssp. *viminea* (willowy monardella) to its own species (*Monardella viminea*) with a new species *Monardella stoneana* (Jennifer's monardella) being described from near the US-Mexican border (described in *Novon* 13(4):426 (2003)). The USFWS service does not yet recognize this taxonomic shift and treats both new species as Willowy Monardella (*Monardella linoides* ssp. *viminea*)

Willowy monardella was listed as threatened on October 13, 1998. A Designation of Critical Habitat for the species was proposed on November 8, 2006.

**Distribution:** *Monardella stoneana* is a narrow endemic from northern Baja California, Mexico and southern San Diego County, California. It is known in California from only five occurrences in the San Ysidro Mountains. Three occurrences have been reported in Wild Bill's Draw, near the impact corridor. One on the US side of the border and two on the Mexican side of the border.

**Natural History:** *Monardella stoneana* is a low growing compact perennial. It grows in intermittent streams that carry water for several weeks to months during and after the winter rainy season. It most often grows among boulders, stones, and in cracks of the bedrock of these intermittent streams in rocky gorges in mountains just east of San Diego and into northern Baja California, Mexico. *Monardella stoneana* stems are rather stout compared to other species in the genus. It is sparsely pubescent to almost glabrous and less glandular than both *M. odoratissima* and *M. viminea*. Its leaves are lanceolate to lance-ovate with a length to width ratio of between 3 and 5:1. The inflorescence bracts are noticeably rather small, of more or less same length as the calyces. *Monardella stoneana* has a strong and pungent, minty scent.

**Threats:** Urban development, sand and gravel mining, ORVs, fire, trampling, trash dumping, and erosion.

Elvin, Mark. 2005. "A brief explanation of the *Monardella Linoides* and *M. Odoratissima* allies in southern California." *Fremontia* 33(1).

Elvin, Mark A., and Andrew C. Sanders. 2003. "A new species of monardella (Lamiaceae) from Baja California, Mexico, and Southern California, United States." *Novon* 13(4).

U.S. Fish and Wildlife Service. 1998. "Endangered and threatened wildlife and plants; determination of endangered or threatened status for four plants from southwestern California and Baja California, Mexico." *Federal Register* 63(197): 54938-54956.





## **APPENDIX E**

### Biological Resources Plan





# **BIOLOGICAL RESOURCES PLAN**

**FOR**

**CONSTRUCTION, OPERATION, AND MAINTENANCE  
OF TACTICAL INFRASTRUCTURE**

**FOR**

**SAN DIEGO SECTOR, CALIFORNIA**

**BROWN FIELD STATION  
CHULA VISTA STATION**



**U.S. DEPARTMENT OF HOMELAND SECURITY  
U.S. CUSTOMS AND BORDER PROTECTION  
U.S. BORDER PATROL SAN DIEGO SECTOR**

**Prepared by**



**AUGUST 2008**

## ABBREVIATIONS AND ACRONYMS

BLM	Bureau of Land Management
BMP	Best Management Practice
BRP	Biological Resources Plan
CBP	U.S. Customs and Border Protection
cy	Cubic yards
DAPTF	Declining Amphibians Population Task Force
DHS	U.S. Department of Homeland Security
ESA	Endangered Species Act
GIS	Geographic Information System
GPS	Global Positioning System
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
mph	Miles per hour
OMW	Otay Mountain Wilderness
PCE	Primary constituent element
PV-1	Personnel-Vehicle Fence Type 1
SWPPP	Storm Water Pollution Prevention Plan
USBP	U.S. Border Patrol
USFWS	U.S. Fish and Wildlife Service

## EXECUTIVE SUMMARY

The U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP), U.S. Border Patrol (USBP) plans to construct, operate, and maintain approximately 4.4 miles of tactical infrastructure in two discrete sections (designated as Sections A-1 and A-2A) in the USBP San Diego Sector. Tactical infrastructure consists of primary pedestrian fence and associated access roads in two sections along the U.S./Mexico international border in San Diego County, California.

**Table ES-1** outlines federally listed species and federally designated critical habitats known to occur or to potentially occur within or adjacent to the Project area and the determination of affects resulting from the Project.

Of the species and critical habitat listed in **Table ES-1**, the Project is likely to adversely affect Quino checkerspot butterfly (*Euphydryas editha quino*) and its critical habitat, least Bell's vireo (*Vireo bellii pusillus*), coastal California gnatcatcher (*Polioptila californica californica*) and its critical habitat, and arroyo toad (*Bufo californicus*). The Project could affect, but is not likely to adversely affect southwestern willow flycatcher (*Empidonax traillii extimus*), willow/Jennifer's monardella (*Monardella linoides* ssp. *viminea*/*Monardella stoneana*), San Diego thornmint (*Acanthomintha ilicifolia*), and Otay tarplant (*Deinandra conjugens*). It has been determined that implementation of the Project would have no effect on San Diego fairy shrimp (*Branchinecta sandiegonensis*), San Diego fairy shrimp critical habitat, Riverside fairy shrimp (*Streptocephalus woottoni*), San Diego ambrosia (*Ambrosia pumila*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), Otay Mesa mint (*Pogogyne nudiuscula*), spreading navarretia (*Navarretia fossalis*), Mexican flannelbush (*Fremontodendron mexicanum*), California Orcutt grass (*Orcuttia californica*), and Encinitas baccharis (*Baccharis vanessae*). Therefore, these species will not be discussed in detail in this biological resources plan (BRP).

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 the Department 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 and their critical habitat associated with construction of tactical infrastructure in the USBP's San Diego Sector. The BRP also discusses CBP's plans for mitigating potential impacts on threatened and endangered species. The BRP will help to guide CBP's efforts going forward.

**Table ES-1. Federally Listed Species and Critical Habitats Within the Project Area and the Determination of Effects Resulting from the Project**

Species	Listing/Critical Habitat Designated	Determination of Effect
San Diego fairy shrimp, <i>Branchinecta sandiegonensis</i>	Endangered	No effect
San Diego fairy shrimp, <i>Branchinecta sandiegonensis</i> , Critical Habitat	Designated (2007)	No effect
Riverside fairy shrimp, <i>Streptocephalus woottoni</i>	Endangered	No effect
Quino checkerspot butterfly, <i>Euphydryas editha quino</i>	Endangered	Likely to adversely affect
Quino checkerspot butterfly, <i>Euphydryas editha quino</i> Critical Habitat	Designated (2002)	Likely to adversely affect
Quino checkerspot butterfly, <i>Euphydryas editha quino</i> Critical Habitat	Proposed (2008) *	Likely to adversely affect
Coastal California gnatcatcher, <i>Polioptila californica californica</i>	Threatened	Likely to adversely affect
Coastal California gnatcatcher, <i>Polioptila californica californica</i> Critical Habitat	Revised (2007)	Likely to adversely affect
Southwestern willow flycatcher, <i>Empidonax traillii extimus</i>	Endangered	Not likely to adversely affect
Least Bell's vireo, <i>Vireo bellii pusillus</i>	Endangered	Likely to adversely affect
Arroyo toad, <i>Bufo californicus</i>	Endangered	Likely to adversely affect
San Diego ambrosia, <i>Ambrosia pumila</i>	Endangered	No effect
San Diego button-celery, <i>Eryngium aristulatum</i> var. <i>parishii</i>	Endangered	No effect
Otay tarplant, <i>Deinandra conjugens</i>	Threatened	Not likely to adversely affect
Otay Mesa mint, <i>Pogogyne nudiuscula</i>	Endangered	No effect
Spreading navarretia, <i>Navarretia fossalis</i>	Threatened	No effect
Mexican flannelbush, <i>Fremontodendron mexicanum</i>	Endangered	No effect
California Orcutt grass, <i>Orcuttia californica</i>	Endangered	No effect
Encinitas baccharis, <i>Baccharis vanessae</i>	Threatened	No effect
Willow/Jennifer's monardella, <i>Monardella linoides</i> ssp. <i>viminea</i> / <i>Monardella stoneana</i>	Endangered	Not likely to adversely affect
San Diego thornmint, <i>Acanthomintha ilicifolia</i>	Threatened	Not like to adversely affect

Note: \* The U.S. Fish and Wildlife Service anticipates the revised final critical habitat designation for Quino checkerspot butterfly will be published in the *Federal Register* in 2008.

**BIOLOGICAL RESOURCES PLAN  
SAN DIEGO SECTOR**

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# 1. PROJECT DESCRIPTION

The U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP) will construct, operate, and maintain 225 miles of pedestrian and vehicle fence (PF 225 Project) along the U.S./Mexico international border with construction completion expected by December 31, 2008.

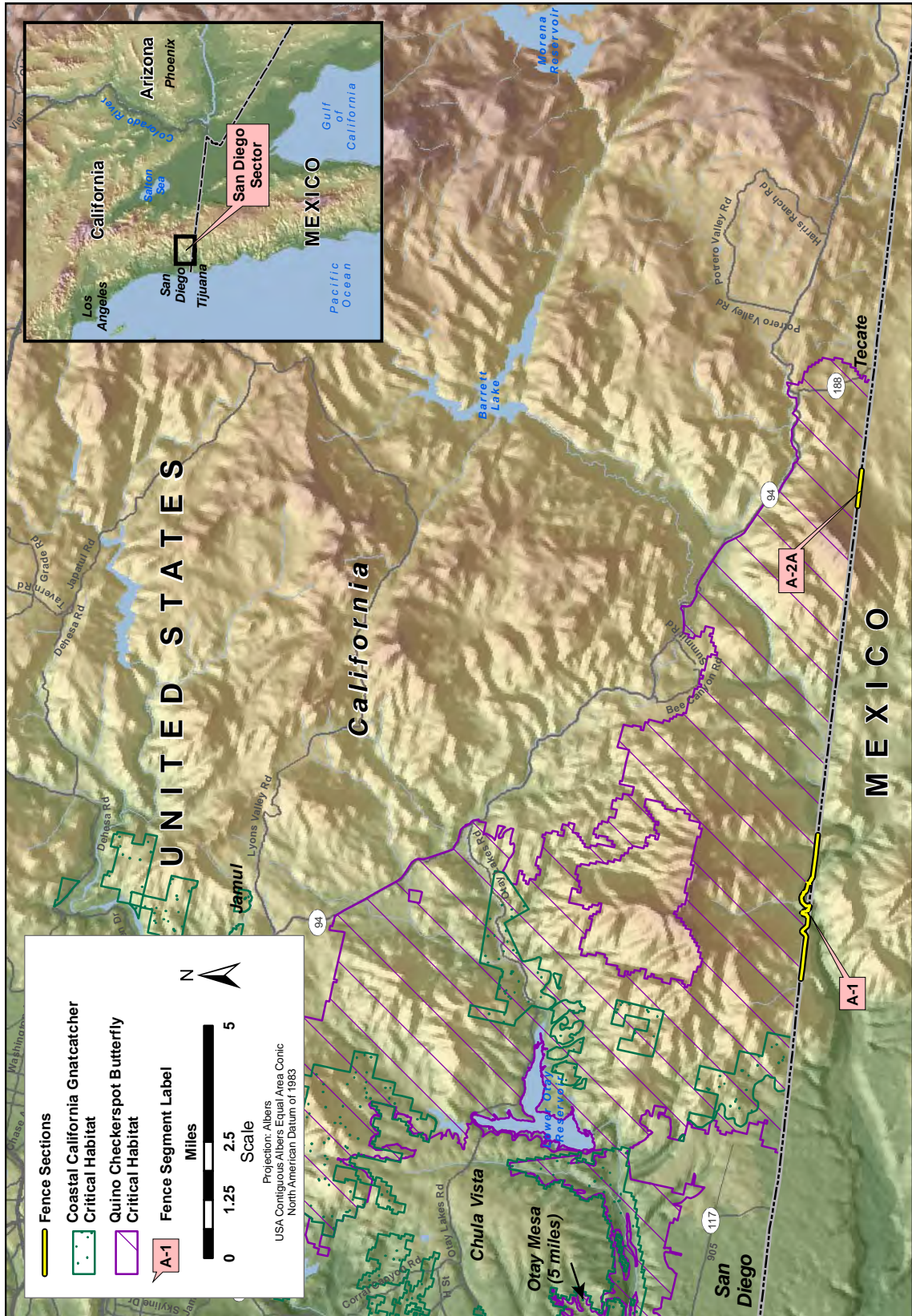
On April 1, 2008, the Secretary of the U.S. Department of Homeland Security (DHS), pursuant to his authority under Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), exercised his authority to waive certain environmental and other laws in order to ensure expeditious 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 the Department 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 and their critical habitat associated with construction of tactical infrastructure in the USBP's San Diego Sector. The Biological Resources Plan (BRP) also discusses CBP's plans for mitigating potential impacts on threatened and endangered species. The BRP will help to guide CBP's efforts going forward.

## 1.1 LOCATION

CBP plans to construct, operate, and maintain approximately 4.4 miles of tactical infrastructure in two discrete sections in the USBP San Diego Sector (see **Figure 1-1**). Tactical infrastructure consists of primary pedestrian fence, and associated access roads in two sections along the U.S./Mexico international border in San Diego County, California. These two sections of tactical infrastructure are designated as Sections A-1 and A-2A, and are 3.6 and 0.8 miles in length, respectively. **Table 1-1** presents general information for each section. USBP has identified these areas where a fence will contribute significantly to its priority homeland security mission.

**Table 1-1. Tactical Infrastructure for USBP San Diego Sector**

Section Number	Associated USBP Station	General Location	Length of Section (miles)
A-1	Brown Field/Chula Vista	Pack Trail	3.6
A-2A	Brown Field	West of Tecate	0.8
<b>Total</b>			<b>4.4</b>



Sources: Revised A-1 Alignment: Granite Construction Company, June 11, 2008, Critical Habitats: U.S. Fish and Wildlife Service 2002

Figure 1-1. Sections A-1 and A-2A and Critical Habitat in USBP San Diego Sector, California

**Section A-1.** The first section designated as Section A-1 consists of 3.6 miles of primary pedestrian fence, supported by fence construction access road that would be approximately 5.8 miles in length and will start at Puebla Tree and end at Boundary Monument 250 (see **Figure 1-2**). Section A-1 will be adjacent to the U.S./Mexico international border where topography allows. The fence will deviate from the border to follow a new construction access road where conditions warrant, such as descent to canyon bottoms. A total of six open span bridges ranging from 40 to 60 feet in length will be constructed to cross larger washes and ephemeral streams located in Copper and Buttewig canyons. Section A-1 will not connect to any existing fence. Portions of Section A-1 will be south of Otay Mountain Wilderness (OMW). Approximately 1.9 miles of the construction access road will occur on the Roosevelt Reservation and Bureau of Land Management (BLM) land between the U.S./Mexico international border and the OMW boundary. Due to steep topography and the need to avoid unstable geological conditions, approximately 3.9 miles of construction access road and 2,300 feet of primary pedestrian fence will be on the OMW. The OMW is on public lands administered by the BLM.

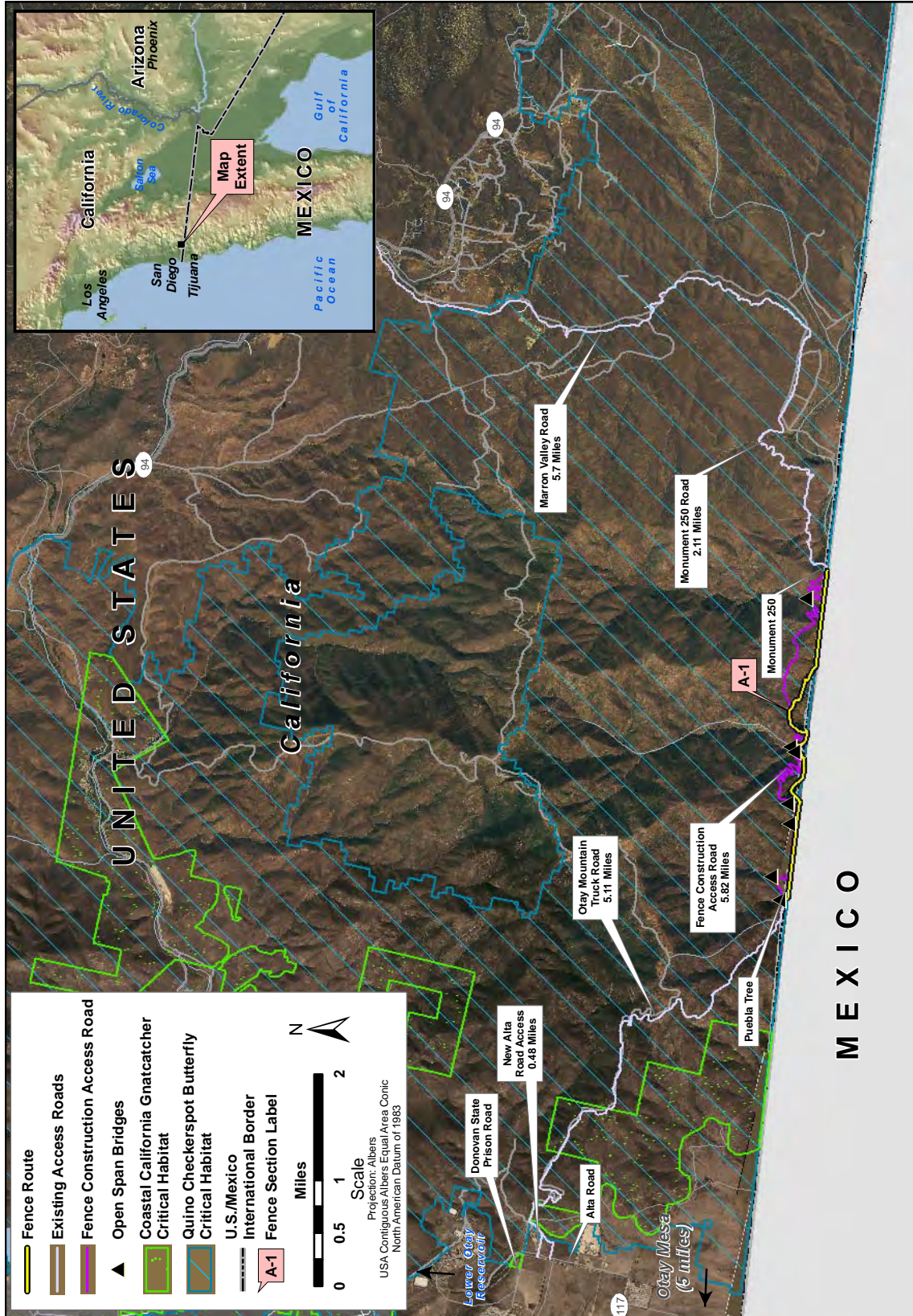
**Section A-2A.** The second section designated as Section A-2A is approximately 0.8 miles in length and will connect with an existing border fence west of Tecate, California (see **Figure 1-3**). This fence section is an extension of existing fence near Tecate Peak, will be constructed along the southeastern border of Tecate Peak, and will pass through a riparian area. This fence section will encroach on a mix of privately owned land parcels and public land administered by the BLM. Construction of this fence section will necessitate an upgrade to an access road west of Tecate.

## 1.2 CONSTRUCTION, OPERATION, AND MAINTENANCE

Implementation of the Project (Sections A-1 and A-2A) will permanently impact 252.5 acres and consist of the following Project components: (1) the installation, operation, and maintenance of new barrier fence combined with a parallel construction access road; (2) road improvements to existing roads to improve access for construction, maintenance, and patrols; (3) new road construction to access tactical infrastructure; and (4) the development of temporary construction staging areas (see **Table 1-2**).

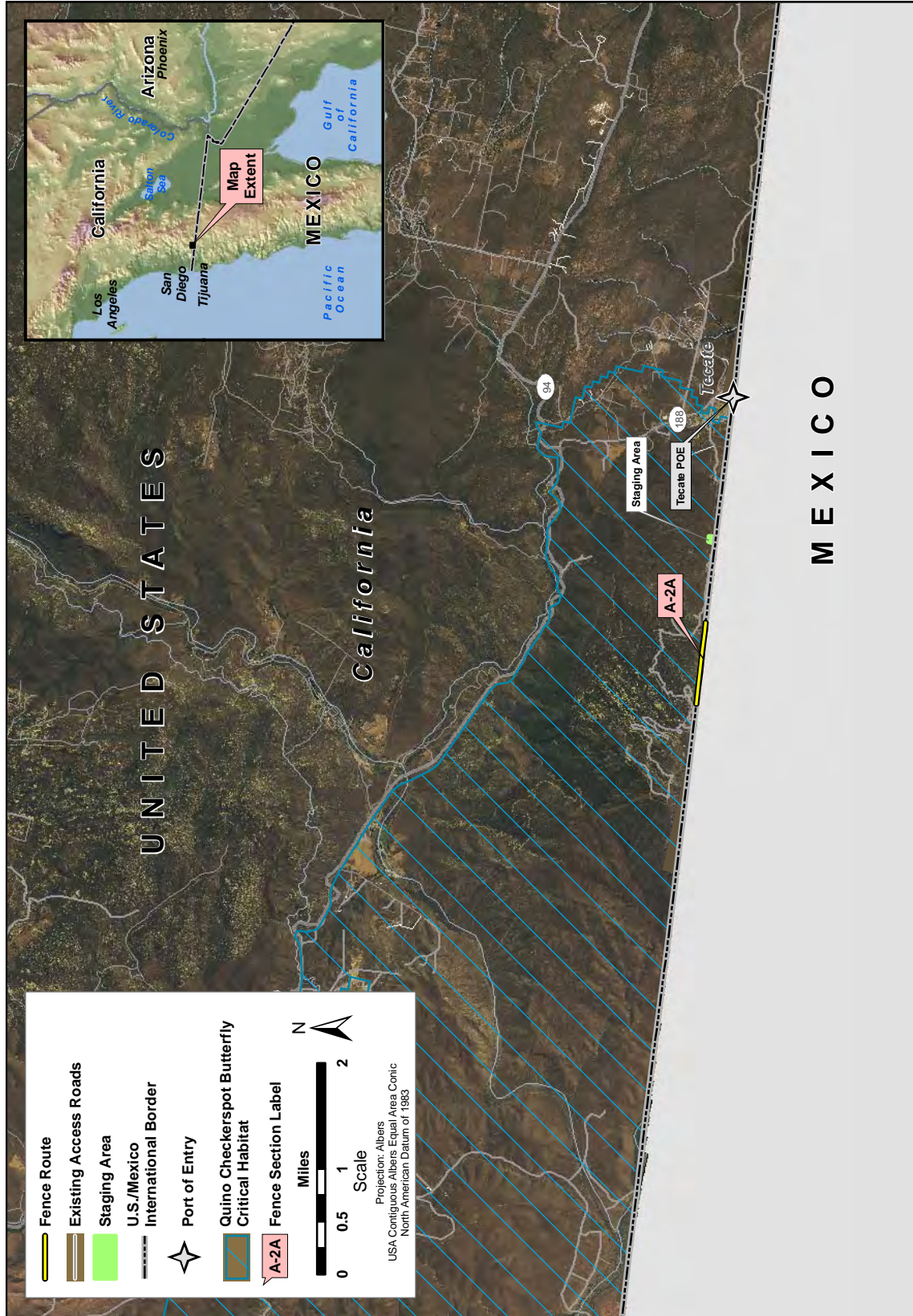
### 1.2.1 Fence Installation

Both Sections A-1 and A-2A will require the installation of Personnel-Vehicle Fence Type 1 (PV-1). The PV-1 fence is an anchored, 18-foot (aboveground) grout-filled steel bollard-style fence with 4-inch gaps between each bollard. An approximate 3-foot-tall mesh panel will be attached horizontally to the top of the bollards (see **Figure 1-4**). The PV-1 style fence is designed to prevent passage by both people and vehicles. Panels of PV-1 fence will be welded together offsite and transported to the site by small trucks with lowboy trailers. Using a



Sources: Revised A-1 Alignment: Granite Construction Company, June 11, 2008, Critical Habitats: U.S. Fish and Wildlife Service 2002

Figure 1-2. Section A-1 and Critical Habitat in USBP San Diego Sector, California



Source of Critical Habitats: U.S. Fish and Wildlife Service 2002

Figure 1-3. Section A-2A and Critical Habitat in USBP San Diego Sector, California

**Table 1-2. Project Impacts in Acres by Section, Action, and Habitat Type**

Habitat*	Section A-1				Section A-2A			Total
	Fence Section	Fence Construction Access Road	Staging Areas (temporary impacts)	Access Roads (Marron Valley Rd, Otay Mtn Truck Trail)	Fence Section	Tecate Access Road	Staging Area (temporary impacts)	
Southern Mixed Chaparral 37120	13.0	25.6	6.0	8.1	0.0	13.3	0.0	66.0
Mafic Southern Mixed Chaparral 37122	**	14.8	9.3	8.7	0.0	0.0	0.0	32.8
Diegan Coastal Sage Scrub 32500	6.4	18.0	1.3	48.5	4.1	8.5	0.0	86.8
Mulefat Scrub 63310	0.2	0.2	0.5	0.0	0.0	0.0	0.0	0.9
Southern Coast Live Oak Riparian Forest 61310	0.4	1.4	0.4	5.7	0.4	0.3	0.0	8.6
Whitethorn Chaparral 37532	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
Nonnative Grassland 42200	0.0	0.0	0.5	13.0	0.9	7.9	2.0	28.8
Chamise Chaparral 37200	0.0	0.0	0.0	6.8	0.0	1.9	0.0	8.7
Southern Interior Cypress Forest 83330	0.0	0.0	0.0	7.5	0.0	0.0	0.0	7.5
Burned Riparian Scrub N/A	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.4
Valley Needle Grassland 42110	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Disturbed 11300	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.6
Landscaped 12000	0.0	0.0	0.0	3.5	0.0	0.2	0.0	3.7
Developed 12000	0.0	0.0	0.0	0.8	0.0	2.4	0.0	3.2
<b>Total</b>	<b>20.0</b>	<b>60.0</b>	<b>22.5</b>	<b>107.8</b>	<b>5.7</b>	<b>34.5</b>	<b>2.0</b>	<b>252.5</b>

Notes:

\* Habitat classification is based on California natural community classification by Holland (1986)

\*\*Less than 0.05 acres



**Figure 1-4. Personnel-Vehicle Fence Type-1 (PV-1)**

crane, fence panels will be set in concrete-filled trenches or holes. Blasting will be necessary in some areas along the Section A-1 alignment to access the fence alignment and create a building pad for the fence and associated construction access road. Otherwise a trench to anchor the fence will be dug by a trencher or similar equipment. Blasting could also occur in Section A-2A. An alternative in rocky terrain is to drill individual holes into the rock for each bollard. Construction of new fence will be completed using standard construction equipment, including a trencher, driller, cement mixer, and crane. It is not anticipated pile driving will be required for construction of PV-1 fence. Wherever possible, existing roads will be used to access the area.

**Section A-1.** Section A-1 includes the construction of approximately 3.6 miles of new PV-1 fence. New fence construction will permanently impact approximately 20 acres. As shown in **Figure 1-2**, much of the fence alignment is along and within 3 feet of the international border. Where the alignment crosses Copper Canyon, a large bend of the Tijuana River, and Endemic Ridge (the large north-south ridge between Puebla Tree and Copper Canyon), it is moved northward approximately 1,400 feet. Section A-1 does not tie into existing fencing. In areas where the construction access road will not be adjacent to the fence, trails suitable for light-tracked vehicles will be constructed for the purposes of fence installation and maintenance. These trails will require clearing of brush and boulders and minor grading. Rocky outcrops might require leveling for safe travel and fence construction.

The highly dissected topography of the area and CBP's requirement to access, patrol, and maintain the fence alignment requires significant grading of the adjacent mountainside. To construct the fence along the chosen alignment, it is estimated that approximately 270,000 cubic yards (cy) of cut-and-fill disturbance will be required to construct Section A-1.

**Section A-2A.** Section A-2A includes the construction of 0.8 mile of new PV-1 fence along the international border. This section will permanently impact approximately 5.7 acres. To construct the fence along the chosen alignment, an estimated 30,000 cy of cut-and-fill disturbance will be required for Section A-2A. The west end of the fence will terminate at the base of Tecate Peak and not connect to other existing fence.

## 1.2.2 Roads

**Section A-1.** Approximately 167.8 acres would be permanently impacted by the fence construction access road and improvements to existing access roads. Few roads exist along the international border in Section A-1. Puebla Tree Spur Road provides access to the border, but not along the border. Monument 250 Road originates in Marron Valley and heads west paralleling the border to Buttewig Canyon. Puebla Tree Spur Road and Monument 250 Road do not meet, but are connected by the Pak Trail, a narrow, winding 6-mile foot trail. Note that the fence is shorter because it is built in a straight line, while the trail follows the topography (i.e., switchbacks).

These access roads will require some improvements in places to allow for the passage of commercial construction equipment. To the west of Section A-1, approximately 5.1 miles of an existing access road will be utilized. A new access road will also be constructed starting at the intersection of Alta and Donovan Prison Roads for a distance of approximately 0.5 miles.

To the east of Section A-1, approximately 7.8 miles of an existing road will be utilized. Part of this road is designated as the Monument 250 Road. It is estimated that an additional 75,000 cy of cut-and-fill disturbance will occur in association with access road upgrades and new road construction. To the west of Section A-1, certain points along Otay Mountain Truck Road and the spur to Puebla Tree construction access roads might require widening at various locations to allow for the safe travel of large construction vehicles. To the east of Section A-1, similar improvement might be required to Marron Valley Road.

A new construction access road will be constructed parallel to the fence. The construction access road will start at Puebla Tree Spur Road and terminate at Monument 250 Road. The length of the construction access road is approximately 5.8 miles. In the area between the fence and access road, an undetermined number of access/light tracked vehicle trails are planned. The trails would connect the access road to the fence. The acreage permanently impacted by these trails is undetermined. Seven turnarounds are planned along the length of the construction access road. The impacts of these turnarounds are included in the calculations for permanent impacts from access roads. Generally, the turnarounds are widening of the road to allow for two vehicles to pass, approximately 30 feet wide and 100 feet long.



Site access from the west will be from Otay Mountain Truck Trail to Puebla Tree Spur Road to the border. From the east, access will be from State Route 94 to Marron Valley Road to Monument 250 Road.

Primary construction access to the western end of Section A-1 will be from the narrow and sinuous Otay Mountain Truck Trail which originates near Kuebler Ranch at the base of Otay Mountain. To access Otay Mountain Truck Trail, a road built to county standards will be constructed through Kuebler Ranch.

Periodic widening of Otay Mountain Truck Trail to its intersection with Puebla Tree Spur Road is planned. Puebla Tree Spur Road will also be widened from its intersection with Otay Mountain Truck Trail to Wild Bill Canyon. The other road off of Puebla Tree Spur Road, along the high ridge to the south, will not be widened as part of this action.

To access Section A-1 from the east, Marron Valley Road (existing) will be improved in a similar manner as Otay Mountain Truck Trail. Marron Valley Road initiates from State Route 94 and travels generally south to the international border at Marron Valley. The road terminates at Mine Canyon on the west end of Marron Valley. From Mine Canyon, the Monument 250 Road heads west to border monument 250. Improvements to the Monument 250 Road were addressed under an Environmental Assessment separate from the PF 225 Project. Nonetheless, construction to improve this road will occur concurrent with activities associated with PF 225.

Included with the widening are increases in the turning radii of substandard turns. To accomplish both the general widening of the roads and increases to turning radii, cut-and-fill methods will be implemented. Widening will occur where needed; however, Project-specific details on the improvements are not available at this time (e.g., locations, culverts, retaining walls, miscellaneous infrastructure).

**Section A-2A.** Access to Section A-2A will be via Tecate Mission Road off of State Route 94. Road improvements similar to Otay Mountain Truck Trail are planned on Tecate Mission Road to allow access for construction equipment. Specific Project details on the road improvements are not available. Road-related improvements in Section A-2A will permanently impact 34.5 acres, not including the impacts associated with constructing the fence and its adjacent construction access road. This acreage is factored into the impacts associated with constructing the fence itself.

A low water crossing or similar drainage structure will be required at some stream crossings to ensure access, except during extreme flood conditions. The designs of the structures have not yet been determined, but will typically consist of a concrete swale or rock gabions. Rip rap will be placed on the upstream and downstream side of the crossing for energy dissipation. The footprint of the crossing will be expected to extend approximately 25 to 40 feet on either side of

the crossing to allow placement of the rip rap. Likewise, the design for other types of drainage structures (e.g., cross roadway nuisance flow culverts, culverts, ditches, bridges) have not yet been finalized, but would be expected to include reinforced concrete pipe with energy dissipation installed on either end of the pipe and earthen ditches along sides of roads. Clean, native material would be brought in from local sources for fill activities.

Conservation measures address specific design parameters to avoid, to the extent practicable, impacting species (see **Section 1.3**). Design parameters can include sufficient underpass sizing, erosion control, and avoidance of adjacent habitat.

### 1.2.3 Staging Areas

**Section A-1.** The Project includes the construction of eight staging areas in Section A-1 which will temporarily impact 22.5 acres. Staging areas are needed to accommodate construction equipment and stockpile materials. All vegetation within these staging areas will be cleared. Following completion of construction, staging areas will be restored to a vegetated state (see **Section 1.3**).

The eight staging areas for Section A-1 are spread out along the alignment. From west to east, Staging area A is at Puebla Tree. The area is at the confluence of Wild Bill Canyon and an unnamed canyon and adjacent to the border. The low-lying and undulating area will be leveled to create the staging area, as well as provide access to the border alignment. From there the fence alignment and construction access road diverge; the access road follows the bottom of Wild Bill Canyon and the fence stays on the border. The next two staging areas (B and C) are along the border where the access road returns to within 200 feet of the border. Staging area D is above a large bend of the Tijuana River. Staging area E is approximately 500 feet west of Buttewig Canyon. Staging area F was originally planned at the bottom of Buttewig Canyon in the middle of the waterway, but was subsequently moved from the bottom of the canyon to the immediate floodplain terrace on the west side/left terrace of the waterway. Staging area G is where the fence and Monument 250 Road meet. Staging area H is the easternmost staging area for Section A-1. It is east of Mine Canyon along Marron Valley Road.

**Section A-2A.** The Project includes the construction of one staging area in A-2A, and will temporarily impact 2.0 acres. The staging area is 0.5 miles east of the fence section. Staging areas are needed to accommodate construction equipment and stockpile materials. All vegetation within the staging area will be cleared. Following completion of construction, staging areas will be restored (see **Section 1.3**).

## 1.2.4 Operations and Maintenance

There will be no change in overall USBP Sector operations. The fences will be made from nonreflective steel. No painting will be required. Fence maintenance will include removing any accumulated debris on the fence after a rain event to avoid potential future flooding. Sand and brush that builds up against the fence will be removed as needed. Brush removal could include mowing, removal of small trees and application of herbicide, if needed. During normal patrols, Sector personnel will observe the condition of the fence. Any destruction or breaches of the fence will be repaired, as needed, by a contractor.

Access roads will be regularly maintained during construction by using water to compact soils and provide safe driving conditions. A tackifier will be applied to the roads post-construction and as necessary to attempt to increase the durability and longevity of the roads (e.g., Roadoil or Penzsuppress).

Operational activities (e.g., patrols and apprehensions) will utilize the construction access, but no significant change in the number of total patrols is expected. The USBP San Diego Sector operations routinely adapt to evolving operational requirements, and would continue to do so under the Project. The USBP San Diego Sector operations would retain its current flexibility to use the most effective methods to provide a law enforcement resolution to illegal cross-border activity.

## 1.3 BEST MANAGEMENT PRACTICES

Best management practices (BMPs) and conservation measures have been developed in coordination with the U.S. Fish and Wildlife Service (USFWS) to address the effects of the Project. The CBP assessment of effects assumes that these measures will be fully implemented.

### 1.3.1 Pre-Construction BMPs

Cultural, geotechnical, and biological surveys were necessary prior to new fence construction and have been reviewed by USFWS. Numerous measures were provided to CBP and their consultants to minimize and avoid adverse effects on federally listed species during geotechnical surveys. The following subset of those measures applicable to the habitats and species found in the Project area are Project objectives and will be implemented to the extent possible or may be mitigated:

#### Vegetation

1. Survey activities will avoid wetlands as practicable or will be mitigated.
2. Survey activities will avoid all federally threatened plant species to the extent practicable or will be mitigated.

## General

1. To the extent practicable, geotechnical surveys will be conducted outside of the bird breeding season (February 15 to August 31) when working within habitat occupied by these species or within 100 meters of habitat occupied by these species.
2. Survey activities will avoid destroying native trees and shrubs to the extent practicable. If native vegetation must be impacted, the vegetation should be crushed versus cut.
3. Areas outside the 60-foot construction corridor, designated access roads or staging areas where native vegetation was crushed by drill rigs or other machinery will be recorded with GPS and included in the Project report.
4. Areas impacted by drill rigs or other machinery during geotechnical activities that are outside of the PF 225 construction footprint will be assessed by the Project proponent. Adverse effects identified will be offset by BMPs (e.g., access trail restoration, barricades).
5. All pits and trenches related to geotechnical activities will be covered when idle and refilled with parent material when geotechnical activities are completed.
6. Construction of or improvement to access roads was not planned and therefore is not part of this discussion of pre-construction surveys.

## Quino checkerspot butterfly

1. Geotechnical surveys within occupied Quino habitat or designated critical habitat will be accomplished with the assistance of a qualified biologist. The biologist will direct geotechnical surveyors and their equipment to avoid impacting areas likely to contain Quino host plant species or diapausing habitat.

## Arroyo toad

1. To the extent practicable, pre-construction activities will avoid Cottonwood Creek, Tijuana River, and Bell Valley Creek. Specifically, and to the extent practicable, all geotechnical work will occur outside of the 100-year floodplain to avoid impacts on aestivating arroyo toads.

### 1.3.2 Construction BMPs

The following BMPs should be implemented to avoid or minimize impacts associated with the Project. These represent Project objectives for implementation to the extent possible and will be incorporated into construction and monitoring contracts.

## General BMPs

1. For each Project, CBP will either assume the presence of a federally listed species based on suitable habitat or known presence, and implement appropriate measures as part of Project design and planning, or will perform reconnaissance-level pre-construction surveys.
2. To the extent practicable and with the assistance of the USFWS, individual federally listed species found in the Project area will be relocated by a qualified biologist to a nearby safe location and in accordance with accepted species-handling protocols. The USFWS will assist CBP in finding suitable locations immediately outside the impact corridor.
3. Construction work areas will be delineated and marked clearly in the field prior to habitat clearing, and the marked boundaries maintained throughout the construction period. Construction work areas include the impact corridors for fence alignment, new construction access roads, staging, laydown, and temporary stockpiling area, and access and haul roads.
4. CBP will develop (in coordination with USFWS) a training plan regarding Trust Resources for construction personnel. At a minimum, the program will include the 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 environments by the species. 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 construction contractor will be responsible for ensuring that employees are aware of the listed species.
5. All construction projects in habitats of federally listed species will have a qualified designated biological monitor on site during the work. The biological monitor will document implementation of construction-related BMPs designed for the project to reduce the potential for adverse effects on the species or their habitats. Weekly reports from the biological monitor should be used for developing the Project Report.
6. Where, based on species location maps or results of surveys, individuals of a federally listed species could be present on or near the project site, a designated biological monitor will be present during construction activities to protect individuals of the species from harm. Duties of the biological monitor will include ensuring that activities stay within designated project areas, evaluating the response of individuals that come near the project site, and implementing the appropriate BMP. The designated biological

monitor will notify the construction manager of any activities that might harm or harass an individual of a federally listed species. Upon such notification, the construction manager may temporarily suspend all activities in question and notify the Contracting Officer, the Administrative Contracting Officer, and the Contracting Officer's Representative of the suspense so that the key U.S. Army Corps of Engineers (USACE) personnel can be notified and apprised of the situation and the potential situation can be resolved.

7. If an individual of a federally listed species is found in the designated Project area, work will cease in the area of the species until either a qualified biological monitor can safely remove the individual, or it moves away on its own, to the extent possible, construction schedule permitting.
8. To the extent practicable and as the schedule permits, the biological monitor will monitor construction activities within designated areas during critical times, such as breeding seasons, vegetation removal, the installation of BMPs and exclusion fencing, to ensure all avoidance and minimization measures are properly constructed and followed.
9. Construction speed limits will not exceed 35 miles per hour (mph) on major unpaved roads (i.e., graded with ditches on both sides) and 25 mph on all other unpaved roads.
10. Transmission of disease vectors and invasive nonnative aquatic species can occur if 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 infested waters, the disease or invasive species could be introduced to the new area. To prevent this, crossing of streams or marsh areas with flowing or standing water will be avoided, if possible, and, if not, the vehicle will be sprayed with a 10 percent bleach solution or allowed to dry completely to kill any organisms.
11. All equipment maintenance, staging, laydown, and dispensing of fuel, oil, or any other such construction 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 United States, including wetlands.
12. Typical erosion-control measures, BMPs, throughout the Project area will be employed in accordance with the Project Storm Water Pollution Prevention Plan (SWPPP).
13. No off-road vehicle activity by construction workers or Project contractors will occur outside of any section along the Project corridor or existing access roads identified for use in the Project description. This does not apply to CBP operations.
14. No pets owned or under the care of CBP personnel or any and all construction workers will be permitted inside the Project's construction

boundaries, adjacent native habitats, or other associated work areas. Use of CBP canines are excluded from this BMP.

15. Light poles and other pole-like structures will be designed to discourage roosting by birds, particularly ravens or raptors that might use the poles for hunting perches, by installing bird control products (e.g., those manufactured by Bird-B-Gone).
16. To prevent entrapment of wildlife species during the construction of the Project, all excavated, steep-walled holes or trenches will be covered with plywood at the close of each working day. Each morning before the start of construction and before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. Any animals so discovered will be allowed to escape voluntarily, without harassment, before construction activities resume, or will be removed from the trench or hole by the biological monitor or other qualified biologist and allowed to escape unimpeded.
17. Existing roads will be utilized for construction purposes to the extent practicable. If an existing road is available for Project purposes, even if improvement is necessary, the said road will be utilized.
18. Potential for erosion off the designated roadbed into federally listed species habitat will be avoided or minimized.
19. Potential for entrapment of surface flows within the roadbed due to incisement or edging berms created by grading will be avoided or minimized.
20. Widening of existing or created roadbed beyond the design parameters due to improper maintenance and use will be avoided or minimized.
21. To the extent practicable, stream crossings will not be located near or at bends or meanders but rather at straight stream reaches where channel stability is enhanced.
22. Excessive use of unimproved roads for construction purposes that results in their deterioration so that it affects the surrounding threatened and endangered species habitat areas will be monitored and corrective maintenance provided.
23. The minimal number of roads needed for the Project will be constructed and maintained to proper standards. Roads no longer needed, with Sector approval, will be closed and restored to natural surface and topography using appropriate techniques. The Global Positioning System (GPS) coordinates of roads that are thus closed will be recorded and integrated into the USBP Geographic Information System (GIS) database.
24. Roads will be designed to minimize road kill and fragmentation of federally listed populations to the extent practicable. Underpasses for wildlife might be appropriate to minimize road kill and population fragmentation.

Exclusion fencing might be appropriate where road kill is likely or to direct species to underpasses or other passageways.

25. Disturbed areas will be utilized to the extent practical for any construction-related activities including staging, laydown, and stockpiling.
26. All construction will follow CBP's management directive 5100 for waste management.
27. A CBP-approved spill protection plan will be developed and implemented at construction and maintenance sites to ensure that any toxic substances are properly handled and their escape into the environment is prevented. Agency standard protocols will be used. Drip pans underneath equipment, containment zones used when refueling vehicles or equipment, and other measures will be implemented, as appropriate.
28. Waste materials and other discarded materials will be removed from the site as quickly as possible.
29. Waste water is water used for Project purposes that is contaminated with construction materials or from cleaning equipment and thus carries oils or other toxic materials or other contaminants as defined in state regulations. Waste water will be stored in closed containers on site until removed for disposal. Concrete wash water will not be dumped on the ground, but is to be collected and moved offsite for disposal. This wash water is toxic to aquatic life.
30. Soil-binding agents will be applied during the late summer/early fall months to avoid impacts on federally listed species. Soil-binding agents will not be used in or near surface waters (e.g., wetlands, perennial streams, intermittent streams, washes).
31. Fill slopes associated with canyon fills will be restored using native species. If slope stabilization is necessary (e.g., gabions, rip rap), such material will be only be placed at the toe-of-slope and in a manner that will not preclude fauna from accessing the fill slopes, the culvert/underpass, and the habitat beyond the fill slopes.

### BMPs for Temporary Impacts

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

1. All generally native areas, as opposed to generally developed areas, temporarily impacted by construction activities (e.g., staging areas, temporary access roads) will be revegetated with native plant species using a standardized restoration plan. The restoration plan will describe revegetating all temporarily disturbed generally native areas associated with the Project. All native seed and plant stock will be from seed and propagules collected within a 5-mile radius of the work area to the extent practicable. All seeding will occur during the first winter or fall following completion of the work, prior to expected winter rains.



2. Impacted areas will be reseeded with plant species native to local habitat types, and will avoid the use of species listed as High or Moderate in the California Invasive Plant Council's Invasive Plant Inventory (Revision 2005) to the extent practicable. Areas hydroseeded for temporary erosion-control measures will use only native plant species appropriate to surrounding habitat types.
3. Temporary impact areas will be restored in-kind, except temporary impacts on disturbed habitat and nonnative grassland in generally native areas will be revegetated with the most appropriate native plant palette following completion of the work.

### Quino Checkerspot (Quino)

1. Prior to Project impacts (excluding geotechnical), all patches of dwarf plantain (*Plantago erecta*), and other known host plants (*Plantago* spp., plantain; *Castilleja exserta*, annual owl's clover; and *Cordylanthus rigidus*, thread-leaved birdsbeak) occurring within and immediately adjacent to the Project footprint, will be clearly delineated by a biologist with experience identifying Quino habitat and familiar with the areas of known Quino activity near the construction corridors. The host plant areas determined to be within the Project footprint will be delineated for future reference. The host plant areas determined to be immediately outside of the Project footprint will be delineated with orange snow fencing or equivalent during construction activities to avoid additional direct impacts.

### Arroyo Toad

1. If facilities will be within 0.3 miles of toad habitat, the facility will be placed as near the outer edge of the area with as little ground disturbance as possible, vegetation clearing will be limited, and erosion-control measures put in place to reduce sediment runoff.
2. All new roads will be designed to minimize the risk of erosion or adverse effects on aquatic habitats of the toad. Routes that cross seasonally or perennially flowing streams will be avoided if feasible. If not avoidable, crossings will be designed to minimize effects on streams through use of culverts or other design features that protect natural substrates and flows.
3. The biological monitor will monitor arroyo toad activity during Project construction to minimize impacts on toads. Monitoring will be accomplished during the breeding season as well as during precipitation events when toads will likely become active. The biological monitor will survey all Project areas utilized during construction (e.g., roads, staging, construction, laydown) that are in or adjacent to arroyo toad habitat. Detected toads will be counted and moved a safe distance outside of harm's way. Occurrences of such will be reported to the USFWS.

4. Arroyo toads found within the Project footprint will be captured and translocated by a qualified biologist to the closest area of suitable habitat. The biologist will coordinate with the appropriate property owners to allow for any arroyo toads to be placed there.
5. During the removal of toads, a qualified biologist will maintain a complete record of all arroyo toads encountered and moved. The date, time of capture, 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 arroyo toads, the qualified biologist will follow the most recent version of the Declining Amphibian Population Task Force (DAPTF) Code of Practice.
6. High-velocity releases from the Project activities (during and after construction) that could degrade habitat will be avoided, to the extent practicable.
7. To the extent practicable, any use or storage of chemicals or fuels at construction sites or staging areas will be kept 0.3 miles away from toad habitat.
8. To the extent practicable, use of herbicides will not occur within toad habitat.

#### **Willow/Jennifer's Monardella**

1. If facilities will be located within or adjacent to occupied habitat, surveys to document the numbers and distribution of individuals will be conducted, and the Project will be designed to avoid individuals to the extent practicable.
2. Individuals to be impacted by the Project will be translocated to a suitable site, using appropriate techniques. The USFWS will assist CBP in locating suitable sites immediately outside the impact corridor and identifying appropriate techniques.
3. The biological monitor will advise and monitor construction activities to avoid accidental damage to nearby individuals outside of the designated impact area.

#### **San Diego Thornmint and Otay Tarplant**

1. If facilities will be within or adjacent to occupied habitat, surveys to determine the extent of occupied habitat within the impact footprint will be conducted, and the Project will be designed to avoid individuals to the extent practicable.
2. The biological monitor will supervise construction activities to avoid accidental damage to nearby individuals outside of the designated impact area.

### 1.3.3 Mitigation

Using funds contributed to the mitigation pool by CBP, USFWS may offset permanent direct and indirect impacts on approximately 194.9 acres of Quino checkerspot butterfly and California gnatcatcher habitat (see **Table 1-3**). USFWS may use these monies to fund conservation actions benefitting these species. Land acquired will be conserved in perpetuity by an appropriate legal instrument.

Actual impacts to habitats will be documented during construction by the environmental monitors and included in the Project Report which will be made available to USFWS. Current estimates of impacts for each habitat type are presented in **Table 1-3**.

**Table 1-3. Summary of Impacts of the Project on Federally Listed Species Habitat**

<b>Species</b>	<b>Impact Acreage</b>	<b>Land Management</b>	<b>Notes</b>
Quino checkerspot butterfly	122* (85.1 acres in Section A-1 and 36.9 acres in Section A-2A)	Annual management (perpetual)	*Includes 21.4 acres of overlap with coastal California gnatcatcher habitat.
Coastal California gnatcatcher	72.9 (72.9 acres in Section A-1)	Annual management (perpetual)	*21.4 acres is included in Quino checkerspot butterfly habitat.
<b>Total</b>	<b>194.9*</b>	--	*Includes 21.4 acres of overlap with coastal California gnatcatcher habitat.

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## 2. DESCRIPTION OF SPECIES AND THEIR HABITAT

### 2.1 QUINO CHECKERSPOT BUTTERFLY

The Quino checkerspot butterfly was listed as endangered on January 16, 1997.

#### 2.1.1 Distribution

The historic distribution of the Quino checkerspot butterfly included coastal California south of Ventura County and inland valleys south of the Tehachapi Mountains. However, approximately 75 percent of the Quino checkerspot butterfly's historic range has been lost, and it is currently only found in western Riverside County, southern San Diego County, and northern Baja California, Mexico (Mattoni et al. 1997).

#### 2.1.2 Natural History

**Habitat.** The Quino checkerspot butterfly is found in several plant communities, from scrub on coastal bluffs, coastal sage, chaparral, and oak woodlands to desert pinyon-juniper woodlands. However, it is only found in openings within these plant communities having a sufficient cover of larval food plants and annual forbs that provide nectar for adults. The larval host plants are annuals that thrive in clay soils but can also occur in other soil types (Mattoni et al. 1997).

Adult Quino have been observed in numerous locations within and near the east and west ends of the Project corridor. The apparent absence of locations along the central portion of the alignment is undoubtedly due to the difficulty of accessing this area and not to true absence of the species in this area. Potential habitat (three of the host plant species) was observed along the 5-mile stretch planned for Section A-1 during the October and December 2007 surveys and the species is assumed to be present throughout (e<sup>2</sup>M 2008).

**Breeding.** Adults are flying from late February to April. Females lay egg masses consisting of 120–180 eggs that hatch in 7–10 days. Total egg production ranges from 400 to 800 eggs per female. Prediapause larvae undergo two or three molts before entering diapauses as a third or fourth instar larvae. Prediapause larvae are communal, while postdiapause larvae are solitary. Diapause breaks after sufficient rainfalls to establish food plants. The postdiapause larvae progress through three to seven more instars before they pupate among low plants or under rocks. Adults emerge in about 10 days (Mattoni et al. 1997).

**Diet.** Larvae feed on dwarf plantain (*Plantago erecta*) and purple owl's clover (*Castilleja exserta*), white snapdragon (*Antirrhinum coulterianum*), woolly plantain (*Plantago patagonica*), and bird's beak (*Cordylanthus rigidus*) (Mattoni et al. 1997).

### 2.1.3 Threats

This species is threatened by agricultural and urban development and other land use changes, habitat fragmentation, invasive nonnative plant species, and disrupted fire regimes (Mattoni et al. 1997).

## 2.2 COASTAL CALIFORNIA GNATCATCHER

The coastal California gnatcatcher was listed as threatened on March 30, 1993.

### 2.2.1 Distribution

The coastal California gnatcatcher is a resident bird species found from Los Angeles County southward to northwestern Baja California, Mexico, extending south to the vicinity of El Rosario, Mexico, and eastward to the eastern base of the Sierra San Pedro Martir. This species has been extirpated from Ventura County (NatureServe 2007).

### 2.2.2 Natural History

**Habitat.** The coastal California gnatcatcher makes use of several distinctive subassociations of the coastal sage scrub plant community, particularly communities dominated by California sagebrush (*Artemisia californica*). It generally avoids crossing areas of unsuitable habitat (NatureServe 2007).

**Breeding.** This species breeds from February to mid July, with an average clutch size of 3.8 and 3 to 4 clutches laid per year. Incubation is carried out by both sexes and lasts about 14 days, with a 16-day nestling period. Nest is an open cup style (NatureServe 2007).

**Diet.** The coastal California gnatcatcher is a ground- and shrub-foraging insectivore (NatureServe 2007).

### 2.2.3 Threats

The remaining populations of coastal California gnatcatchers are highly fragmented by urban development and expanding transportation corridors. They are also threatened by brown-headed cowbird parasitism as a result of habitat fragmentation. Wildfires can also have a significant impact (NatureServe 2007).

## 2.3 SOUTHWESTERN WILLOW FLYCATCHER

The southwestern willow flycatcher was listed as endangered on February 27, 1995.

### 2.3.1 Distribution

The southwestern willow flycatcher breeding range extends from Southern California north to Independence, Arizona; southwestern New Mexico; and southern Utah; and formerly southern Nevada. It migrates to winter ranges in central Mexico to northwestern Colombia. Migration occurs through the desert regions in Southern California and sometimes along the coast and onto the Channel Islands (NatureServe 2007).

### 2.3.2 Natural History

**Habitat.** Southwestern willow flycatcher are present in California from late April to September and can be found in thickets, scrubby and brushy areas, open secondary growth, swamps, and open woodlands. They are also known to nest in tamarisk (*Tamarix* sp.) thickets (NatureServe 2007).

**Breeding.** Nesting occurs in June through late July, with nests constructed in a fork or horizontal limb of a small tree, vine, or shrub, 2 to 3 meters high in dense vegetation. Three to four eggs are laid per clutch and hatch after 12 to 15 days. Incubation is conducted by the female, and chicks are tended by both parents. Fledging occurs after 12 to 15 days, generally in early to mid July. A pair will typically raise one brood per year (NatureServe 2007).

**Diet.** The diet of the southwestern willow flycatcher consists primarily of insects caught on the wing, but they will also glean prey from foliage. They occasionally will also consume berries. In the breeding range, they forage within and sometimes above dense riparian vegetation (NatureServe 2007).

### 2.3.3 Threats

This species is threatened by the loss and degradation of cottonwood-willow and structurally similar riparian habitats. Increased irrigated agriculture and livestock grazing have aided brown-headed cowbird populations that in turn impact the southwestern willow flycatcher. The current population exists in small, fragmented populations, which increases the risk of local extirpation (NatureServe 2007).

## 2.4 LEAST BELL'S VIREO

The least Bell's vireo was listed as endangered on May 2, 1986.

### 2.4.1 Distribution

Breeding range was once widespread throughout the Central Valley of California to the Sierra Nevada foothills and Coast Ranges. The breeding range extended into northwestern Baja California, Mexico, and included populations in Death Valley and the Mojave Desert. By 1990, 80 percent of the U.S. population was

found along only five drainages: Santa Margarita River, Sweetwater River, San Luis Rey River, San Diego River, and Santa Ana River. Winter range extends to the Cape region of Baja California, with some individuals remaining in Southern California (NatureServe 2007).

## 2.4.2 Natural History

**Habitat.** The least Bell's vireo uses dense brush, mesquite, willow-cottonwood forest, streamside thickets, and scrub oak habitats in arid regions, but frequently near water. Moist woodland, bottomlands, woodland edge, scattered cover and hedgerows are used in cultivated areas, and willow-dominated woodlands are used in riparian areas. Open woodland and brush are used in winter (NatureServe 2007).

**Breeding.** Migration into the breeding range occurs near the end of March. Nests are constructed in shrubs or low trees about 1 meter above the ground in a horizontal or downsloping twig fork, often near the edge of a thicket. Nesting vegetation in California is frequently willow (*Salix* sp) or rose (*Rosa* sp.). Three to five eggs are laid in a clutch, and incubation lasts 14 days. Both adults tend the young, which fledge at 10 to 12 days. Some pairs can raise multiple broods annually in some areas. Migration out of breeding areas takes place in July to late September, but some individuals will overwinter in the United States (NatureServe 2007).

**Diet.** The least Bell's vireo diet consists primarily of insects, but it will also eat spiders, snails, and fruits. This species forages in dense brush and sometimes in treetops. They glean prey from leaves and bark but will also hover-hunt and hawk prey (NatureServe 2007).

## 2.4.3 Threats

Least Bell's vireo has a limited range in Southern California and Baja California and is threatened by habitat loss and parasitism by cowbirds (NatureServe 2007).

## 2.5 ARROYO TOAD

The arroyo toad was listed as endangered on December 16, 1994.

### 2.5.1 Distribution

The arroyo toad once ranged from San Luis Obispo County, California, south to northwestern Baja California, Mexico. Now extirpated in San Luis Obispo County, they are currently found in headwater areas of streams in Santa Barbara, Ventura, Los Angeles, Riverside, and San Diego counties. Scattered individuals have been reported from Orange, San Bernardino, and southern Imperial counties. Found along the Santa Margarita, Guejito, Sweetwater,



Vallecito, San Luis Rey, Santa Ysabel, Witch, Cottonwood, Temescal, Agua Caliente, Santa Maria, Lusardi, Pine Valley, Nobel, Kitchen, Long Potrero, Upper San Diego, San Vicente, and Morena drainages in San Diego County (NatureServe 2007).

## 2.5.2 Natural History

**Habitat.** The arroyo toad makes use of washes, streams, and arroyos and adjacent uplands, as well as sandy banks in riparian woodlands. Also found along rivers with shallow gravel-bottom pools with adjacent sandy terraces. Adults will burrow in sandy soil for shelter (NatureServe 2007).

**Breeding.** The arroyo toad breeds from March to early June, independent of rainfall. Eggs are found at the bottom of shallow quiet streams or ponds among gravel, leaves, and sticks, or on mud or clean sand in areas with little to no emergent vegetation. Metamorphosis occurs in June to July (NatureServe 2007).

**Diet.** The diet of the arroyo toad consists primarily of insects (NatureServe 2007).

## 2.5.3 Threats

The arroyo toad is threatened by habitat degradation caused by urbanization, dam construction, ill-timed water releases, agriculture, road construction, off-road vehicle use, overgrazing, mining activities, road construction, drought, and wildfires. They are also impacted by recreational use of habitat, predation by introduced fish and bullfrogs, and small population size (NatureServe 2007).

## 2.6 OTAY TARPLANT

The Otay tarplant was listed as threatened on October 13, 1998.

### 2.6.1 Distribution

The Otay tarplant is an endemic species of southwestern California with one population near the United States border in Baja California, Mexico. Within California, all known populations exist in San Diego County near Otay Mesa. Five populations contain 98 percent of all recorded plants: Rancho San Miguel, Rice Canyon, Dennery Canyon, Poggi Canyon, and Proctor Valley (USFWS 2004).

### 2.6.2 Natural History

**Morphology.** The Otay tarplant is a glandular, aromatic annual plant of the aster family. It has a branching stem that ranges from 5 to 25 centimeters in height, with deep green or gray-green leaves covered in hairs. The flowers are yellow

and composed of 8–10 ray flowers and 13–21 disk flowers. The Otay tarplant is self-incompatible and must be pollinated by a different plant (USFWS 2004).

**Habitat.** The Otay tarplant is restricted to clay soils, subsoils, or lenses. Historically, the Otay tarplant occupied areas vegetated with native grassland, open coastal sage scrub, and maritime succulent scrub. Currently, it occupies those communities, but is also found on the margins of disturbed sites and cultivated fields. Species commonly found with the tarplant include *Nassella* spp., *Bloomeria crocea*, *Dichelostemma pulchella*, *Chlorogalum* spp., *Bromus* spp., *Avena* spp., *Deinandra fasciculata*, *Lasthenia californica*, *Artemisia californica*, *Eriogonum fasciculatum*, *Lotus scoparius*, *Salvia* spp., *Mimulus aurantiacus*, *Malacothamnus fasciculatum*, *Malosma laurina*, *Rhus ovata*, *R. integrifolia*, *Lycium* spp., *Euphorbia misera*, *Simmondsia chinensis*, *Opuntia* spp., *Ferocactus viridescens*, *Ambrosia chenopodiifolia*, and *Dudleya* spp (USFWS 2004).

### 2.6.3 Threats

The primary threats to this species are urban and agricultural development and invasion of nonnative species (USFWS 2004).

## 2.7 WILLOWY/JENNIFER'S MONARDELLA

Recent taxonomic work by Andy Sanders and Mark Elvin supports the reclassification of *Monardella linoides* ssp. *viminea* (willowy monardella) to its own species (*Monardella viminea*) with a new species *Monardella stoneana* (Jennifer's monardella) being described from near the U.S./Mexico international border (Elvin and Andrew 2003, Elvin 2005). The USFWS does not yet recognize this taxonomic shift and treats both new species as willowy Monardella (*Monardella linoides* ssp. *viminea*)

Willowy monardella was listed as threatened on October 13, 1998. A Designation of Critical Habitat for the species was proposed on November 8, 2006.

### 2.7.1 Distribution

*Monardella stoneana* is a narrow endemic from northern Baja California, Mexico, and southern San Diego County, California. It is known in California from only five occurrences in the San Ysidro Mountains. Three occurrences have been reported in Wild Bill's Draw, near the Project area; one on the United States side of the border and two on the Mexican side of the border (USFWS 1998).

### 2.7.2 Natural History

*Monardella stoneana* is a low-growing compact perennial. It grows in intermittent streams that carry water for several weeks to months during and after the winter

rainy season. It most often grows among boulders, stones, and in cracks of the bedrock of these intermittent streams in rocky gorges in mountains just east of San Diego and into northern Baja California, Mexico. *Monardella stoneana* stems are rather stout compared to other species in the genus. It is sparsely pubescent to almost glabrous and less glandular than both *M. odoratissima* and *M. viminea*. Its leaves are lanceolate to lance-ovate with a length-to-width ratio of between 3 and 5:1. The inflorescence bracts are noticeably rather small, of more or less same length as the calyces. *Monardella stoneana* has a strong and pungent, minty scent (USFWS 1998).

### 2.7.3 Threats

Primary threats to this species are urban development, sand and gravel mining, off-road vehicles, fire, trampling, trash dumping, and erosion (USFWS 1998).

## 2.8 SAN DIEGO THORNMINT

San Diego thornmint was listed as threatened on October 13, 1998. A Designation of Critical Habitat for the species was proposed on March 14, 2007.

### 2.8.1 Distribution

San Diego thornmint occurs in San Diego County, California, and northwestern Baja California. Populations in the United States range from San Marcos east to Alpine and south to Otay Mesa in San Diego County. This species occupies an estimated 156 hectares. About 60 percent of the reported individuals are concentrated in four populations (Sycamore Canyon, Slaughterhouse Canyon, and two populations on Viejas Mountain). At least nine sites are known to have recently supported *A. ilicifolia* in Baja California, Mexico (USFWS 1998).

### 2.8.2 Natural History

The San Diego thornmint is an annual aromatic herb of the mint family. It has paired leaves and several sharply spined bracts below whorled flowers. *A. ilicifolia* can be distinguished by its flower, which has hairless anthers and hairless style. The tubular two-lipped corollas are white with rose markings on the lower lip.

The plant usually occurs on heavy clay soils in openings within coastal sage scrub, chaparral and native grassland of coastal San Diego County, and in isolated populations south to San Telmo in northern Baja California. It is frequently associated with gabbro soils which are derived from igneous rock and also occurs in calcareous marine sediments (USFWS 1998).

### 2.8.3 Threats

The primary threats to this species are urban and agricultural development, competition from nonnative plant species, off-road vehicle use, mining, grazing, and trampling by hikers (USFWS 1998).

### 3. ACTION AREA

The action area is defined by a corridor that extends approximately 300 feet from construction access routes, staging areas, and construction sites. This is the area directly affected by the Project. The extension of 300 feet represents the approximate distance that Project-related noise is estimated to attenuate to ambient noise levels of 55 to 80 dBA. The action area includes primary pedestrian fence, construction access roads, improvements to existing access roads, and construction staging areas.

Maps depicting the location of vehicle fence, access roads, and staging areas in Sections A-1 and A-2A are provided in **Figures 1-1, 1-2, and 1-3**. The action area includes lands that will be directly and indirectly impacted by the Project and are known to be occupied or potentially occupied by the federally listed species.

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## 4. EFFECTS OF THE ACTION

### 4.1 QUINO CHECKERSPOT BUTTERFLY

Implementation of the Project is likely to adversely affect Quino checkerspot butterfly. The majority of adverse effects will occur through the direct loss of habitat. Quino checkerspot butterfly are expected to be in different larval developmental stages during the construction timeframe and could be killed or injured during construction activities. However, implementation of BMPs will help to reduce or avoid these impacts (see **Section 1.3**).

Although BMPs will be implemented to avoid and minimize effects on individuals during construction, there is a relatively high likelihood that some individuals of the species would be killed during construction. This butterfly's biology is somewhat unique for butterflies in general in that the 3rd or 4th larval growth (instar) will enter into its winter stasis (diapause) sometime in May. It remains this way until sufficient winter rains stimulate plant growth. If sufficient plant growth occurs, then the caterpillars come out of diapause and continue their feeding until they reach larval maturity, pupate, and then finally emerge as adults. If the winter rains are appropriate, caterpillars could emerge from diapause sometime in January. Pupation would occur sometime in February and adults would emerge in March. Once adults emerge, the cycle begins all over. Depending on the amount and timing of the rains, the timeline would shift either earlier or later. Diapause typically occurs in or near the host plant patch upon which the larvae were feeding prior to entering diapause. Adults will disperse to suitable habitat and are known to disperse anywhere from 1 to 3 kilometers a year. Sometimes dispersal could be further if wind assisted.

The best scenario to reduce effects on individual Quino checkerspot butterflies is for construction (i.e., clear or remove host plants from the 60-foot impact corridor) to start immediately after emergence of the adults in March. However, since individual variation in time of emergence occurs, some Quino checkerspot butterfly would likely still be in pupation and unable to disperse away from the impact area. Therefore, even under this best-timing scenario, some individuals would still likely be killed. Numbers of individuals lost to construction would increase from this minimum, depending upon the timing of land clearing for the construction effort. As such, direct effects of construction activities on this species would be short-term, major, and adverse, while long-term effects would be moderately adverse.

Indirect effects from construction and subsequent operation of the access roads include dust impacts on individuals and habitat that would extend beyond the boundaries of the Project corridor. Increased settling of dust on larval host species and on nectar-providing species for the adults could reduce palatability of larval host plants and reduce availability of nectar to adults. With the use of

BMPs to reduce dust emissions during construction, these effects are anticipated to be short- and long-term, minor to moderate, and adverse in the Project area.

A beneficial effect anticipated to result from implementation of the Project is the reduction of foot traffic and grazing impacts on habitat for and individuals of this species. Portions of the project area currently receive heavy foot traffic and illegal cattle grazing (e<sup>2</sup>M 2008). These activities undoubtedly result in adverse effects due to reduction of habitat quantity and quality, and to crushing of individuals. The potential cessation of these illegal activities in this area could result in short- and long-term, minor to major, beneficial effects on this species.

**Section A-1.** Based on the known locations and observed potential habitat for this species, implementation of the Project is anticipated to result in the permanent loss of approximately 85.1 acres of habitat directly impacted by the fence corridor, fence construction access road, and widening of existing access roads. Approximately 6.9 acres will temporarily be directly affected by the staging areas.

**Section A-2A.** Based on observed potential habitat for this species, implementation of the Project is anticipated to result in the permanent loss of approximately 36.9 acres of habitat directly impacted by the fence corridor, fence construction access road, and widening of existing access roads. Approximately 2.0 acres will be temporarily directly affected by the staging area.

## 4.2 QUINO CHECKERSPOT BUTTERFLY CRITICAL HABITAT

Implementation of the Project is likely to adversely affect Quino checkerspot butterfly critical habitat. Primary constituent elements (PCEs) for Quino checkerspot butterfly critical habitat exist in Sections A-1 and A-2A. PCEs include plant communities in their natural state or those that have been recently disturbed (e.g., by fire or grubbing) that provide populations of host plants—dwarf plantain (*Plantago erecta*) and wooly plantain (*Plantago patagonica*)—and nectar sources for the Quino checkerspot butterfly. Habitat suitability is determined by larval host plant density, topographic diversity, nectar resource availability, and climatic conditions. PCEs can exist in undeveloped areas that support various types of sage scrub, chaparral, grassland, and similar plant communities that provide habitat for host and nectar sources (USFWS 2002).

**Section A-1.** Approximately 14.7 acres of Quino checkerspot butterfly critical habitat would be permanently, directly affected by the fence corridor; approximately 59.0 acres would be impacted by the fence construction access road; approximately 95.0 acres would be permanently, directly affected by improvements to existing access roads; and approximately 21.6 acres would be temporarily, directly affected by the staging areas. Once revised critical habitat is designated in 2008, impacts on Quino checkerspot butterfly critical habitat will be smaller.



**Section A-2A.** Approximately 3.5 acres of Quino checkerspot butterfly would be permanently, directly affected by the fence corridor; approximately 18.1 acres would be permanently directly affected by the access roads; approximately 2.0 acres would be temporarily, directly affected by the staging areas. Once revised critical habitat is designated in 2008, Section A-2A will have no effect on Quino checkerspot butterfly critical habitat.

### 4.3 COASTAL CALIFORNIA GNATCATCHER

Implementation of the Project is likely to adversely affect coastal California gnatcatcher. The majority of adverse effects will occur through the direct loss of habitat in Section A-1. Additionally, gnatcatcher will be nesting and generally active throughout the construction timeframe potentially resulting in the loss or abandonment of nests. However, pre-construction migratory bird surveys will be conducted immediately prior to construction. Active nests found during these surveys will be relocated by qualified relocators. All nesting habitat will be removed from the construction corridor immediately following these surveys. Therefore, the likelihood of loss or abandonment of nests during construction will be virtually eliminated.

This species occurs almost exclusively in mature coastal sage scrub habitat with occasional populations in chaparral. Due to the wildfires of 2003 which burned through the Project corridor, suitable habitat does not currently occur within or near the Project corridor and no effects on individual birds are anticipated from construction. However the coastal sage scrub and chaparral vegetation that is in the Project corridor might become suitable habitat if it is allowed to mature. The implementation of the Project in Section A-1 is anticipated to result in the permanent loss of approximately 72.9 acres of habitat directly impacted by the fence corridor, fence construction access road, and widening of existing access roads. Approximately 1.3 acres would be temporarily directly affected by the staging areas.

Occupied habitat is near the western end of the Otay Truck Trail Access road. A single bird was observed in chaparral near the coastal sage scrub margin during the December surveys. Improvements to the access roads would represent a long-term negligible to moderate adverse effect on the occupied habitat area. The degree of impacts would depend on the extent of road work required in those areas. If the entire 60-foot access corridor was impacted then a moderate effect on California gnatcatcher would be expected.

A beneficial effect anticipated to result from implementation of the Project is the reduction of foot traffic and grazing impacts on habitat for and individuals of this species. Portions of the project area currently receive heavy foot traffic and illegal cattle grazing (e<sup>2</sup>M 2008). Cross-border violators sometimes set wildfires in this area. These activities undoubtedly result in adverse effects due to reduction of habitat quantity and quality, interference with breeding and nesting behaviors, and potentially, direct mortality of eggs or young in nests. Reduction

and potential cessation of these illegal activities in this area could result in short- and long-term, minor to major, beneficial effects on this species.

Adverse indirect effects to California gnatcatcher will occur because construction will occur during the reproductive season. Nest failure for the gnatcatcher could occur as a result of construction-related activities, such as noise, disturbance, and repetitive flushing in or near occupied habitat. However, most of the Project corridor does not contain current suitable habitat. Additionally, this species might also be indirectly affected by the invasion and spread of exotic plant species associated with the development of new and the widening of existing access roads. The invasion of exotic plant species can lead to the loss of native habitat through type conversion of the plant community. However, invasive species monitoring and removal is planned for the post-construction phase and would greatly reduce this threat (see **Section 1.3**).

#### 4.4 COASTAL CALIFORNIA GNATCATCHER CRITICAL HABITAT

**Section A-1.** Implementation of the Project in Section A-1 is likely to adversely affect coastal California gnatcatcher. PCEs for coastal California gnatcatcher habitat include the following (72 FR 72009 – 72213):

Dynamic and successional sage scrub habitats: Venturan coastal sage scrub, Diegan coastal sage scrub, Riversidean sage scrub, maritime succulent scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal, and foraging.

Non-sage scrub habitats such as chaparral, grassland, riparian areas, in proximity to sage scrub habitats as described for PCE 1 that provide space for dispersal, foraging, and nesting.

PCEs for coastal California gnatcatcher habitat exist in Section A-1. Approximately 6.7 acres of coastal California gnatcatcher critical habitat would be permanently and directly affected by widening of existing access roads.

**Section A-2A.** Implementation of the Project in Section A-2A will have no effect on coastal California gnatcatcher critical habitat, which does not occur in or near the fence corridor, access roads, or staging areas.

#### 4.5 SOUTHWESTERN WILLOW FLYCATCHER

Implementation of the Project could affect, but is not likely to adversely affect, southwestern willow flycatcher in Section A-1. No records of southwestern willow flycatcher are known from in or near the Project corridor. No suitable habitat for this species was observed in or near the Project corridor. However, the riparian

woodland habitat along the Tijuana River has the potential to provide suitable habitat in the future.

The strand of potential future habitat along the Tijuana River would receive no direct impacts from construction, maintenance, and operation activities associated with the Project. This species might be indirectly affected by the invasion and spread of exotic plant species associated with the development of new roads and the widening of existing access roads. The invasion of exotic plant species can lead to the loss of native habitat through type conversion of the plant community. However, invasive species monitoring and removal is planned for the post-construction phase and would greatly reduce this threat.

Beneficial effect could occur if the Project results in a reduction or even termination of the use of this riparian corridor as a staging area for cross-border violators, allowing the habitat to mature and future southwestern willow flycatcher to conduct normal behaviors in the mature habitat with reduced or no human disturbance.

Because there are no known records of southwestern willow flycatcher within the Project corridor and no suitable habitat currently exists, all effects are considered to be negligible and discountable.

#### 4.6 LEAST BELL'S VIREO

Implementation of the Project is likely to adversely affect least Bell's vireo in Section A-1. A narrow band of suitable riparian habitat occurs along the Tijuana River between the Project corridor to the north and the U.S./Mexico international border to the south. Therefore, this species is assumed to be present in that riparian habitat. The riparian woodlands will be directly impacted by increased noise levels during construction. No records of least Bell's vireo are known in or near the Project corridor. However, if breeding pairs of least Bell's vireo occur within this strand of habitat, the elevated noise level could interfere with communication and breeding behaviors. Noise from operation and maintenance activities are anticipated to return to ambient.

Indirect effects will occur because construction will occur during the reproductive season of least Bell's vireo. Nest failure could result from construction-related activities such as noise, disturbance, and repetitive flushing in or near habitat along the Tijuana River. Additionally, this species might also be indirectly affected by the invasion and spread of exotic plant species associated with the development of new and the widening of existing access roads. The invasion of exotic plant species can lead to the loss of native habitat through type conversion of the plant community.

Beneficial effects could occur if the Project results in a reduction or even termination of the use of this riparian corridor as a staging area for cross-border

violators, allowing the habitat to flourish and least Bell's vireo to conduct normal behaviors in this habitat without human disturbance.

#### 4.7 ARROYO TOAD

**Section A-1.** Implementation of the Project in Section A-1 is likely to adversely affect arroyo toad. No habitat for this species was observed within the alignment or access road corridors during the field surveys for this Project. NatureServe data indicate that an arroyo toad observation was recorded approximately 0.8 miles south of the Marron Valley Access Road. The existing access road traverses the northern boundary of the aestivation habitat associated with this record. The portion of the existing access road that intersects the aestivation habitat is straight, so upgrades, if any are required, would only require widening the road and work would not extend significantly beyond the widened area. As such, conversion of habitat and effects on individual arroyo toads as a result of implementing the Project are anticipated to be short-term, and negligible to moderately adverse.

Adverse indirect effects might occur because construction will occur during the reproductive season of the arroyo toad. If arroyo toads are present, they would be indirectly affected due to harassment from construction activities (e.g., ground vibration) and handling if relocation is necessary. This species might also be indirectly affected by the invasion and spread of exotic plant species associated with the development of new roads and the widening of existing access roads. The invasion of exotic plant species can lead to the loss of native habitat through type conversion of the plant community. However, invasive species monitoring and removal is planned for the post-construction phase and would greatly reduce this threat.

Implementation of BMPs will help to avoid or minimize these impacts (see **Section 1.3**).

**Section A-2A.** Implementation of the Project in Section A-2A will have no effect on arroyo toad, which does not occur in or near the fence corridor, access roads, or staging areas.

#### 4.8 OTAY TARPLANT

Implementation of the Project could affect, but is not likely to adversely affect, Otoy tarplant. Otoy tarplant is a summer flowering species that prefers disturbed habitat. There are no records of the species in the Project or access road corridors. The species is known to occur both to the east and west of the Section A-1. The most suitable habitat for this species are the areas near the sloped Mima Mound topography north of the Marron Valley Access Road from Mine Canyon to Mine Road. The Project has the potential to impact an unknown occurrence of this species. There are no known records of Otoy tarplant within the Project corridor, but because the survey did not occur during the most

appropriate time of year, it is assumed that the species might be present. Implementation of BMPs will help to reduce or avoid impacts (see **Section 1.3**). Therefore, the Project is not likely to adversely affect Otay tarplant.

#### 4.9 WILLOWY/JENNIFER'S MONARDELLA

Implementation of the Project could affect, but is not likely to adversely affect, Jennifer's monardella. Jennifer's monardella is a late spring flowering perennial that is known to occasionally die back to only its root structure during the fall. This species is typically found along drainages. There are records for this species near the Project area, but no individuals were observed during the fall and winter surveys. The Project has the potential to impact a small previously unknown occurrence of this species. However, any occurrences of more than a few individual plants in the Project area would have been detectable. Implementation of BMPs will help to further reduce or avoid impacts (see **Section 1.3**).

#### 4.10 SAN DIEGO THORNMINT

Implementation of the Project could affect, but is not likely to adversely affect, San Diego thornmint. San Diego thornmint is a spring annual. There are no records of this species near the Project; however there are appropriate soils throughout the Section A-1 fence and access road construction areas. Without spring surveys, it is not possible to exclude this species from having the potential to occur in the Project area; the Project has the potential to impact an unknown occurrence of this species. Implementation of BMPs will help to reduce or avoid impacts (see **Section 1.3**). Therefore, the Project is not likely to adversely affect San Diego thornmint.

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## 5. DETERMINATION OF EFFECT

**Table 5-1** summarizes the 17 federally listed taxa and three federally designated critical habitats that are known to occur or have the potential to occur within or adjacent to the Project area.

Of the species listed above, the Project is likely to adversely affect only the Quino checkerspot butterfly and its critical habitat, least Bell's vireo, coastal California gnatcatcher and its critical habitat, and arroyo toad. The Project might affect, but is not likely to adversely affect, southwestern willow flycatcher, Otay tarplant, willow/Jennifer's monardella, and San Diego thornmint.

It has been determined that implementation of the Project would have no effect on San Diego fairy shrimp, San Diego fairy shrimp critical habitat, Riverside fairy shrimp, San Diego ambrosia, San Diego button-celery, Otay Mesa mint, Spreading navarretia, Mexican flannelbush, California Orcutt grass, and Encinitas baccharis for the following reasons. Once Quino checkerspot butterfly habitat is revised, Section A-2A will have no effect on Quino checkerspot butterfly critical habitat.

**San Diego Fairy Shrimp.** NatureServe data indicate a record for San Diego fairy shrimp near the connection of the Otay Mountain Truck Trail to Alta Road. The record appears to have been from a road ditch or rut as the area indicated by the record is currently an existing and active road. The only other occurrence of San Diego fairy shrimp near the project corridor is approximately 0.8 miles south of Monument 250 Road. Surveys of the access roads found no evidence of vernal pools in the impact corridors, and no impacts on this species would be expected (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species.

**San Diego Fairy Shrimp Critical Habitat.** The Project does not occur within or near San Diego fairy shrimp critical habitat. Therefore, it was determined that the Project would have no effect on this critical habitat.

**Riverside Fairy Shrimp.** No records of Riverside fairy shrimp are known from in or near the project corridor and the nearest known habitat is about a mile southwest of the project area on Otay Mesa. Surveys of the access roads found no evidence of vernal pools in the impact corridors, and no impacts on this species would be expected (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species.

**San Diego Button-Celery.** No records of San Diego button-celery are known from in or near the project corridor. The closest known record for this species is over a mile west of the end of the Alta Road access to Otay Mountain Truck Trail; well beyond potential impacts resulting from the Project. Surveys of the project area and access roads found no evidence of vernal pools in the impact corridors, so this species would not be expected (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species.

**Table 5-1. Federally Listed Species and Critical Habitats Within the Project Area and the Determination of Effects Resulting from the Project**

Species	Listing/Critical Habitat Designated	Determination of Effect
San Diego fairy shrimp, <i>Branchinecta sandiegonensis</i>	Endangered	No effect
San Diego fairy shrimp, <i>Branchinecta sandiegonensis</i> , Critical Habitat	Designated (2007)	No effect
Riverside fairy shrimp, <i>Streptocephalus woottoni</i>	Endangered	No effect
Quino checkerspot butterfly, <i>Euphydryas editha quino</i>	Endangered	Likely to adversely affect
Quino checkerspot butterfly, <i>Euphydryas editha quino</i> Critical Habitat	Designated (2002)	Likely to adversely affect
Quino checkerspot butterfly, <i>Euphydryas editha quino</i> Critical Habitat	Proposed (2008) *	Likely to adversely affect
Coastal California gnatcatcher, <i>Polioptila californica californica</i>	Threatened	Likely to adversely affect
Coastal California gnatcatcher, <i>Polioptila californica californica</i> Critical Habitat	Revised (2007)	Likely to adversely affect
Southwestern willow flycatcher, <i>Empidonax traillii eximius</i>	Endangered	Not likely to adversely affect
Least Bell's vireo, <i>Vireo bellii pusillus</i>	Endangered	Likely to adversely affect
Arroyo toad, <i>Bufo californicus</i>	Endangered	Likely to adversely affect
San Diego ambrosia, <i>Ambrosia pumila</i>	Endangered	No effect
San Diego button-celery, <i>Eryngium aristulatum</i> var. <i>parishii</i>	Endangered	No effect
Otay tarplant, <i>Deinandra conjugens</i>	Threatened	Not likely to adversely affect
Otay Mesa mint, <i>Pogogyne nudiuscula</i>	Endangered	No effect
Spreading navarretia, <i>Navarretia fossalis</i>	Threatened	No effect
Mexican flannelbush, <i>Fremontodendron mexicanum</i>	Endangered	No effect
California Orcutt grass, <i>Orcuttia californica</i>	Endangered	No effect
Encinitas baccharis, <i>Baccharis vanessae</i>	Threatened	No effect
Willow/Jennifer's monardella, <i>Monardella linoides</i> ssp. <i>viminea</i> / <i>Monardella stoneana</i>	Endangered	Not likely to adversely affect
San Diego thornmint, <i>Acanthomintha ilicifolia</i>	Threatened	Not like to adversely affect

Note: \* The U.S. Fish and Wildlife Service anticipates the revised final critical habitat designation for Quino checkerspot butterfly will be published in the *Federal Register* in 2008.



**Otay Mesa Mint.** No records of Otay Mesa mint are known from in or near the project corridor. The closest known record for this species is over a mile west of the end of Otay Mountain Truck Trail; well beyond potential impacts resulting from the Project. Surveys of the project area and access roads found no evidence of vernal pools in the impact corridors, so this species would not be expected (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species. Implementation of BMPs will also help to avoid any impacts (see **Section 1.3**).

**Spreading Navarretia.** No records of spreading navarretia are known from in or near the project corridor. The closest known record for this species is more than 4 miles west of the end of Otay Mountain Truck Trail; well beyond potential impacts resulting from the Project. Surveys of the project area and access roads found no evidence of vernal pools in the impact corridors, so this species would not be expected (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species.

**California Orcutt Grass.** No records of this grass are known from in or near the project corridor. The closest known record for this species is more than 4 miles west of the end of the western access road, well beyond potential impacts resulting from the Project. Surveys of the project area and access roads found no evidence of vernal pools in the impact corridors, so this species would not be expected (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species. Implementation of BMPs will also help to avoid any impacts (see **Section 1.3**).

**San Diego Ambrosia.** No records of San Diego ambrosia are known from in or near the project corridor. The closest known record for this species is miles to the north, on the other side of Otay Mountain and the wilderness area. No individuals of this species or potential habitat were observed during the October 2007 through January 2008 surveys (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species. Implementation of BMPs will also help to avoid any impacts (see **Section 1.3**).

**Mexican Flannelbush.** No record of Mexican flannelbush is known from within or near the project corridor. The nearest record is more than 2 miles north, and several ridges away from the closest portion of the project corridor (e<sup>2</sup>M 2008). Therefore, it was determined that the Project would have no effect on this species. Implementation of BMPs will also help to avoid any impacts (see **Section 1.3**).

**Encinitas Baccharis.** No records of this species are known from in or near the project corridor. The closest known record is well over a mile north of, and up Copper Canyon from the project corridor. Therefore, it was determined that the Project would have no effect on this species. Implementation of BMPs will also help to avoid any impacts (see **Section 1.3**).

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## 6. REFERENCES

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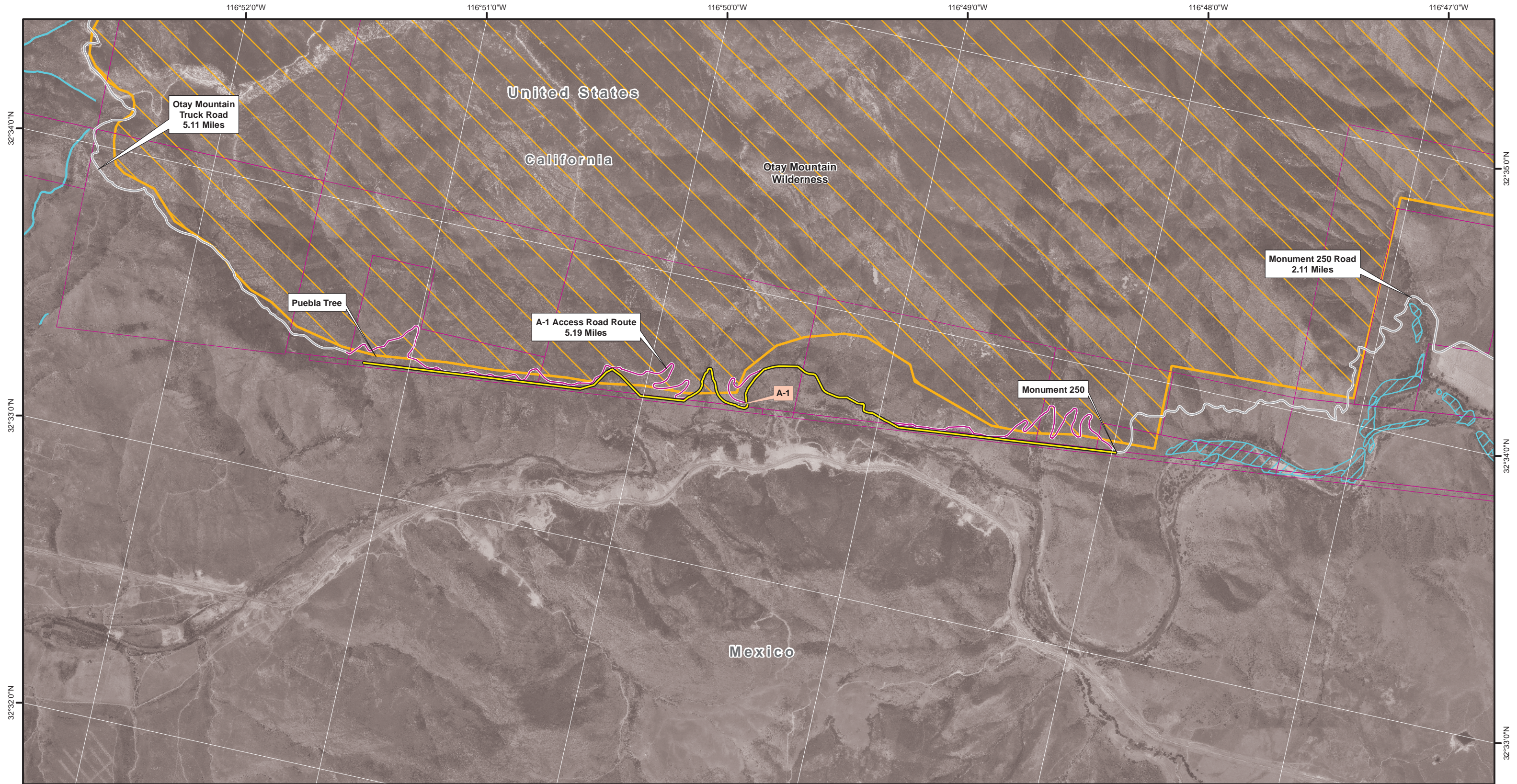








## **APPENDIX F**

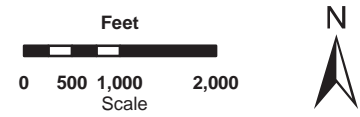
### Detailed Maps of the Planned Tactical Infrastructure Sections Showing Land Use and Water







-  Fence Sections
-  A-1 Access Road Route
-  Existing Access Roads
-  Land Parcels
-  National Wetlands Inventory
-  Otay Mountain Wilderness



	<b>Environmental Stewardship Plan for the Construction, Operation, and Maintenance of Tactical Infrastructure U.S. Border Patrol San Diego Sector, California</b>	
	Projection: Albers USA Contiguous Albers Equal Area Conic North American Datum of 1983	
May 2008	Scale 1" = 2000'	Map 1 of 2

116°41'0"W





116°40'0"W

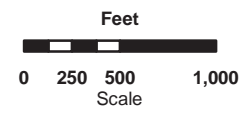
116°39'0"W

32°34'0"N

32°35'0"N



-  Fence Sections
-  Existing Access Roads
-  Staging Area
-  Land Parcels



**Environmental Stewardship Plan  
for the Construction, Operation,  
and Maintenance of  
Tactical Infrastructure  
U.S. Border Patrol  
San Diego Sector, California**

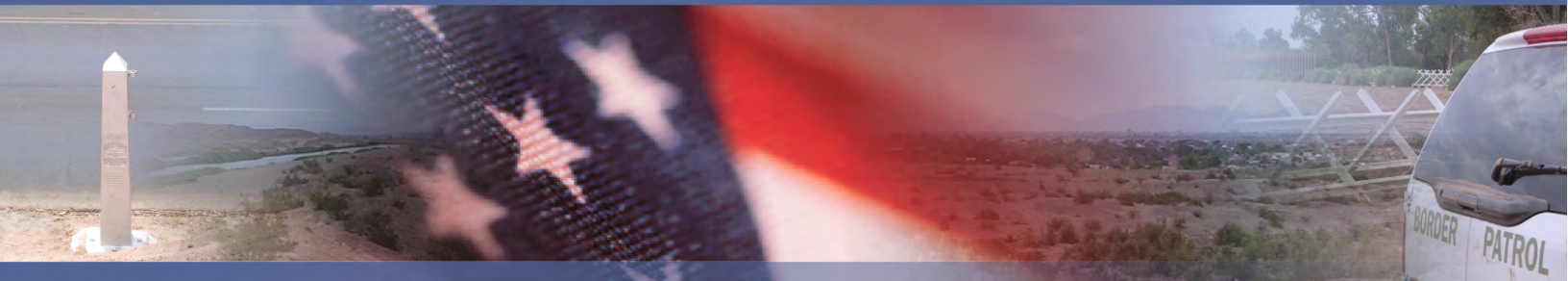
Projection: Albers  
USA Contiguous Albers Equal Area Conic  
North American Datum of 1983

May 2008

Scale 1" = 1000'

Map 2 of 2



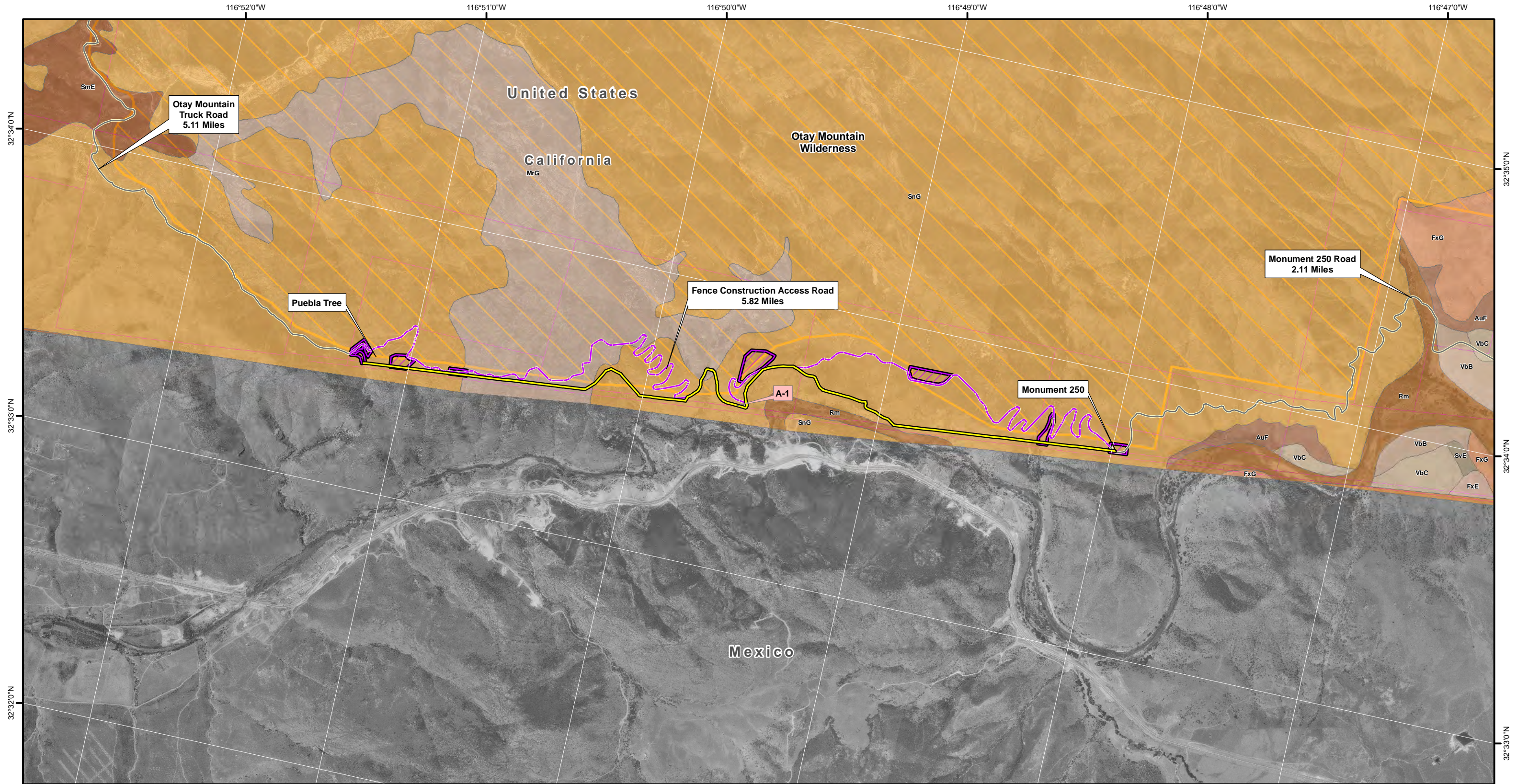


## **APPENDIX G**

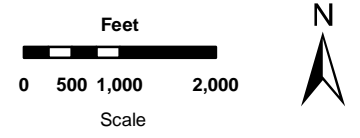
### Detailed Maps of the Planned Tactical Infrastructure Sections Showing Soils





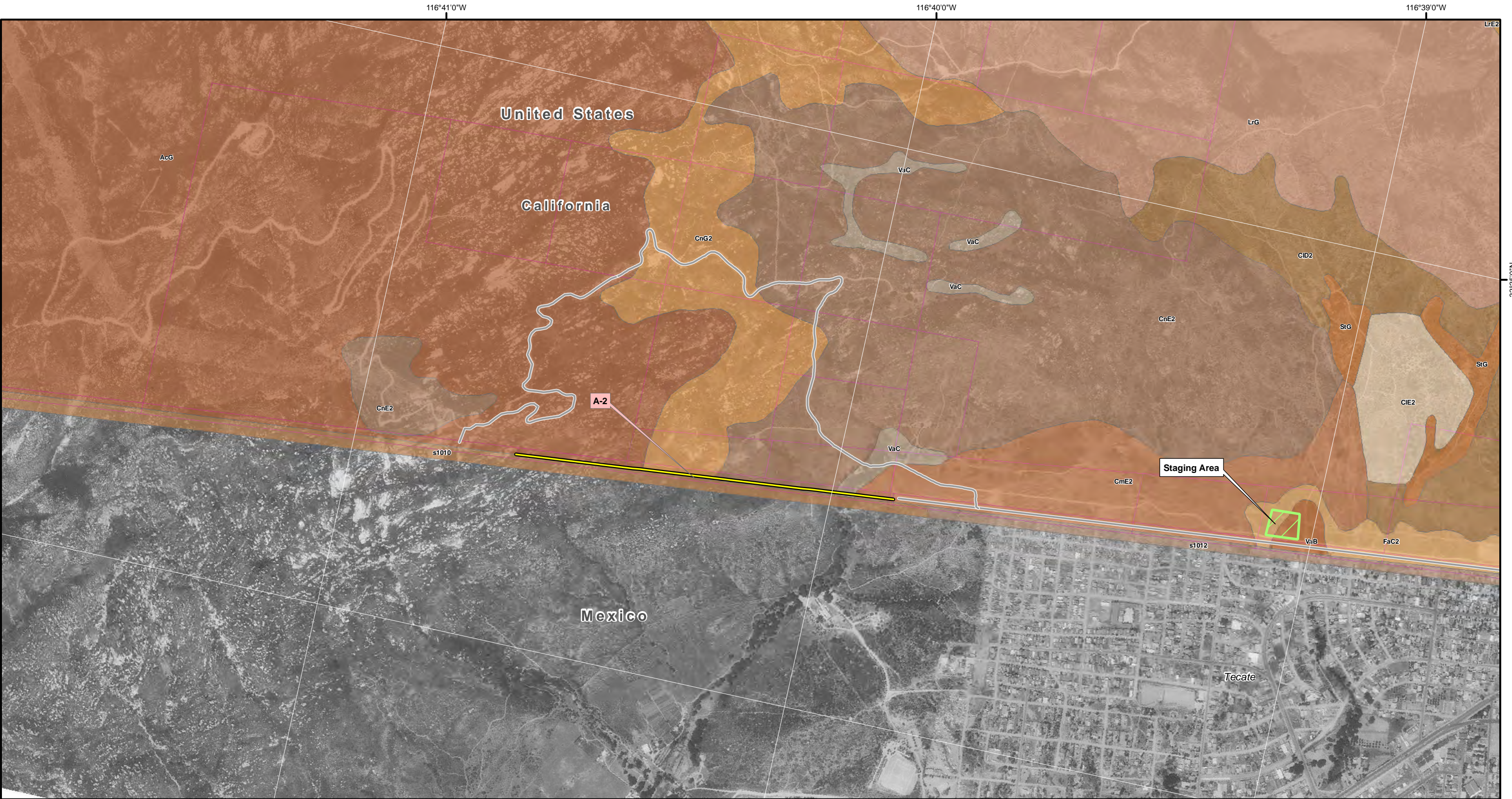


<ul style="list-style-type: none"> <li> Fence Sections</li> <li> Existing Access Roads</li> <li> Fence Construction Access Road</li> <li> Construction Staging Areas</li> <li> Land Parcels</li> <li> Otay Mountain Wilderness</li> </ul>	<p><b>Soil Types</b></p> <ul style="list-style-type: none"> <li> AuF, Anderson very gravelly sandy loam, 9 to 45 percent</li> <li> FxE, Friant rocky fine sandy loam, 9 to 30 percent slop</li> <li> FxG, Friant rocky fine sandy loam, 30 to 70 percent slo</li> <li> HrC, Huerhuero loam, 2 to 9 percent slopes</li> <li> MrG, Metamorphic rock land</li> <li> RkC, Reiff fine sandy loam, 5 to 9 percent slopes</li> <li> Rm, Riverwash</li> <li> SmE, San Miguel rocky silt loam, 9 to 30 percent slopes</li> <li> SnG, San Miguel-Exchequer rocky silt loams, 9 to 70 per</li> <li> SvE, Stony land</li> <li> VbB, Visalia gravelly sandy loam, 2 to 5 percent slopes</li> <li> VbC, Visalia gravelly sandy loam, 5 to 9 percent slopes</li> <li> s1001, Tujunga-Salinas-Elder (s1001)</li> <li> s1013, San Miguel-Friant-Exchequer (s1013)</li> </ul>
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	<p><b>Environmental Stewardship Plan for the Construction, Operation, and Maintenance of Tactical Infrastructure U.S. Border Patrol San Diego Sector, California Detailed Fence Section Maps Version 1</b></p>	
	<p>Projection: Albers USA Contiguous Albers Equal Area Conic North American Datum of 1983</p>	
<p>June 19, 2008</p>	<p>Scale 1" = 2000'</p>	<p>Map 1 of 2</p>

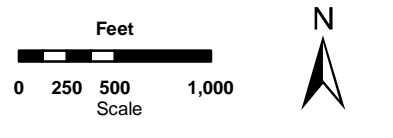
Source of Revised A-1 Alignment: Granite Construction Company, June 11, 2008



- Fence Section
  - Existing Access Roads
  - Staging Area
  - Land Parcels
- Soil Types**
- Label**
- AcG, Acid igneous rock land
  - CID2, Cieneba coarse sandy loam, 5 to 15 percent slopes,

- CIE2, Cieneba coarse sandy loam, 15 to 30 percent slopes
- CmE2, Cieneba rocky coarse sandy loam, 9 to 30 percent s
- CmrG, Cieneba very rocky coarse sandy loam, 30 to 75 per
- CnE2, Cieneba-Fallbrook rocky sandy loams, 9 to 30 perce
- CnG2, Cieneba-Fallbrook rocky sandy loams, 30 to 65 perc
- FaC2, Fallbrook sandy loam, 5 to 9 percent slopes, erode
- LrE2, Las Posas stony fine sandy loam, 9 to 30 percent s
- LrG, Las Posas stony fine sandy loam, 30 to 65 percent

- StG, Steep gullied land
- VaB, Visalia sandy loam, 2 to 5 percent slopes
- VaC, Visalia sandy loam, 5 to 9 percent slopes
- WmB, Wyman loam, 2 to 5 percent slopes
- WmC, Wyman loam, 5 to 9 percent slopes
- s1010, Sesame-Rock outcrop-Cieneba (s1010)
- s1012, Rock outcrop-Las Posas (s1012)





**Environmental Stewardship Plan**  
**for the Construction, Operation,**  
**and Maintenance of**  
**Tactical Infrastructure**  
**U.S. Border Patrol**  
**San Diego Sector, California**

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

**August 7, 2008**

**Scale 1" = 1000'**

**Map 2 of 2**