Final

ENVIRONMENTAL ASSESSMENT
for
CONSTRUCTION OF BARRIER SYSTEMS
along a 1.6-Mile Corridor of the
United States/Mexico International Boundary
(Spring Canyon)
in San Diego, California

Prepared by the:

Immigration and
Naturalization Service

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1.0 INTRODUCTION

This Environmental Assessment (EA) analyzes and presents the direct and indirect environmental impacts associated with an Immigration and Naturalization Service (INS) Proposed Action and series of Alternative Actions (including the No-Action Alternative). This EA tiers from the 1994 Programmatic Environmental Impact Statement (PEIS) for Joint Task Force Six (JTF-6) Activities along the U.S./Mexico Border that was prepared by the U.S. Army Corps of Engineers (USACE), Fort Worth District. The PEIS addressed continuation of the JTF-6 program in the same manner and at similar intensities, since its inception in 1989. The JTF-6 program involves providing operational, engineering, and general support to law enforcement agencies that have drug interdiction responsibilities within the southwestern border states. Various EAs have been tiered from this PEIS to address specific projects.

1.1 Project Location

The Proposed Action and Alternative Actions would take place in the Spring Canyon area of San Diego County, California, within the U.S. Border Patrol (USBP), San Diego Sector (Imperial Beach and Chula Vista stations). The Proposed Action and Alternative Actions would take place entirely within an area defined as the "project corridor." The project corridor encompasses approximately 120.0 acres and extends from the international boundary (generally, the existing primary fence) north to a "real estate take line." The "real estate take line" is the northernmost extent of land that the INS would acquire (purchase in fee-simple) to implement and construct barrier systems within the area. The real estate take line varies in width from 350 feet to 800 feet north of the international boundary. The project corridor is 1.6 miles in length, beginning just east of the San Ysidro Port of Entry (POE) and stretching east to Arnie's Point (Figure 1-1).

The project corridor also includes a separate 50- by 100-foot site. This site is 1.6 miles west of the San Ysidro POE, just east of the U.S. International Boundary and Water Commission (USIBWC) waste treatment facility (Stewart's Creek) (see Figure 1-1). Data collection and field surveys conducted as part of this EA covered the entire 120.0 acres and the 50- by 100-foot site.

1.2 Brief Description of the Proposed Action

The INS proposes to construct a patrol road, secondary fence (including pedestrian, overhead rolling, and vehicle swing gates and "agent safety zones"), maintenance road, light standards, and remote video surveillance (RVS) cameras along a portion of the international boundary. The Proposed Action also includes placement of a box culvert in Stewart's Creek. The patrol road, secondary fence, maintenance road, light standards, and RVS cameras associated with the Proposed Action would be constructed entirely within the

Figure 1-1. Project Location.

previously defined project corridor, in an area defined as the "affected area." The affected area encompass 44.5 acres of the 120.0-acre project corridor.

The box culvert would be placed in Stewart's Creek, 200 feet east-southeast of the USIBWC waste treatment facility. All construction activity associated with the box culvert would take place within a 50- by 100-foot area. A more detailed description of the Proposed Action can be found in Chapter 2.

1.3 Purpose and Need for the Action

Controlling and deterring the influx of illegal immigration and contraband into the United States in San Diego County, California, has been a major concern of the INS and USBP for many years. In 1995, over 1.3 million illegal immigrant apprehensions were made by the USBP, 40 percent of which occurred in the 66-mile San Diego Sector. Imperial Beach, the westernmost station in the San Diego Sector, has historically had the most illegal immigrant traffic. Until recently, 25 percent of all apprehensions along the entire international boundary from California to Texas (approximately 2,000 miles) occurred within the 5-mile Imperial Beach area. Factors that have contributed to the high rate of illegal immigration in the San Diego Sector include: the diverse terrain, which makes patrolling and immigration control difficult, and the large population centers located directly south of the border (more than two million people in Tijuana and Tecate). The San Diego Sector also receives an influx of immigrants from the interior of Mexico as well as other Central American countries.

The tools available to the INS and USBP to control the international boundary have been limited. During the 1990s, the INS, USBP, and Congress have significantly stepped up their efforts to regain control of the busiest land border crossing in the world. The trend of long distance travelers crossing the international boundary in the San Diego Sector has recently decreased due to numerous initiatives implemented by the INS and USBP (USACE 1998).

In March 1993, a primary border fence was completed along the international boundary. This fence was constructed to deter the illegal entry of vehicles and contraband. In addition, the fence was constructed to force illegal immigrants to use other routes where the odds of apprehension would be much higher. The existing primary border fence is constructed from surplus, Vietnam-era landing mat material (corrugated metal panels) welded together in a continuous fashion. Though sturdy and at an average height of 8 to 12 feet, this fence requires continual maintenance because illegal immigrants dig under the fence and because weather conditions erode soils under the fence, further weakening the structure. The primary border fence, although effective in its purpose of restricting vehicular access, is not as effective in deterring pedestrian traffic. The fence is easy to climb and does not deter or eliminate the number of illegal crossings.

In October 1994, Operation Gatekeeper was launched and included deployment of additional USBP agents, support staff, the Identification (IDENT) System, lighting, underground sensors, and Port Court, as well as additional USBP vehicles. Operation Gatekeeper had a dramatic and immediate effect on reducing the number of illegal crossings in the San Diego Sector, and subsequent enhancements and phases to the initial operation have been implemented since its 1994 inception.

In June 1995, Operation Gatekeeper Phase II was initiated in eastern San Diego County where much of the illegal traffic had moved due to the enforcement efforts taking place in western San Diego County. As USBP resistance to illegal crossings increased near the high population centers of Tijuana and Tecate, additional efforts (Phase II) were needed to stem crossings to the east.

Since the inception of Operation Gatekeeper, the idea of enhancing the primary border fence system to reduce the amount of direct pedestrian traffic into the United States has been a critical issue. As mentioned previously, the primary border fence was designed to primarily stop the movement of vehicles and contraband across the border. The primary border fence had beneficial impacts on pedestrian traffic as well, but it did not stop people from illegally entering the United States. Due to this fact, there is still a high demand for USBP agents to "patrol the fence". Since the primary border fence can be easily breached by pedestrians, either by digging under or simply climbing over it, a multiple fence system utilizing a Standard Design Profile (USACE 1998) has been utilized in several areas and is now being considered for use in the Spring Canyon area.

The multiple fence system concept would utilize a secondary fence (and possibly a tertiary fence), as well as other design elements that include improved road surfaces for better USBP accessibility, lighting to illuminate the border at night, and additional surveillance equipment to stop pedestrian traffic from moving north. The multiple fence system is one of the many tools that the USBP would use to combat the influx of illegal immigrant traffic along the international boundary. In 1996, the Illegal Immigration Reform and Immigrant Responsibility Act (Section 102, Improvement of Barriers at Border) authorized the INS to build a multiple fence system along a 14-mile section of the international boundary beginning at the Pacific Ocean in San Diego County, California. The Proposed Action analyzed in this EA is consistent with the authorization issued in the 1996 Act.

1.4 Relevant Environmental Issues

The Proposed Action and Alternatives analyzed in this EA could potentially impact several environmental components in the immediate project corridor. Environmental components that could be affected, as determined through scoping, include: Earth Resources (physiography, geology, soils); Water Resources (surface water, groundwater, and waters of the United States); Biological Resources (vegetation, fish and wildlife, and threatened and endangered species and habitats); Cultural Resources; Land Use; Socioeconomics; Hazardous Materials and Waste; Air Quality; and Noise. Chapter 3 presents descriptions and discussions on the

existing condition of these environmental components. Chapter 4 provides a complete and detailed analysis of the potential impacts (direct and indirect).

1.5 Regulatory Compliance

This EA has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) (Public Law [PL] 91-190, 42 United States Code [USC] 4321 et seq.) as amended in 1975 by PL 94-52 and PL 94-83. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal planning. This document has also been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 2100 et seq.), which is the State-level equivalent of NEPA, and the Guidelines for Implementation of the CEQA (Title 14, California Code of Regulations, Section 15000 et seq.). Additional guidance is provided by the INS Procedures Relating to the Implementation of NEPA (28 Code of Federal Regulations [CFR], Part 61, Appendix C) which implement Section 102 (2) of NEPA and the regulations established by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508).

1.6 Applicable Environmental Statutes and Regulations

Pertinent environmental statutes and regulations referenced in the development of this EA, including any permitting and licensing requirements (as applicable), are listed in Appendix A.

1.7 Relevant Documents

The Proposed Action and Alternatives analyzed in this EA would be a continuation of on-going measures that have been implemented along the international boundary since 1989 in order to minimize the influx of illegal immigration and contraband into the United States. As part of this effort (as well as others), the following documents were prepared. This EA often references these documents.

- This EA tiers from the 1994 PEIS for JTF-6 Activities along the U.S./Mexico Border. The PEIS was prepared by the USACE, Fort Worth District, in response to a request from the INS and JTF-6, with the INS serving as lead agency. The PEIS addressed continuation of the JTF-6 program in the same manner and at similar intensities, since its inception in 1989. The JTF-6 program involves: (1) Operational Support (observation posts, ground patrols, ground sensors, etc.); (2) Engineering Support (roads, helipads, communication towers, fencing, lighting, etc.); and (3) General Support (transportation, training, aerial photography, etc.). As specific measures have been developed for exact locations, various EAs have been prepared and tiered from this PEIS to address specific environmental constraints, including cumulative impacts of past, present, and future border projects.
- The February 1993 Final EA for the JTF-6 Border Fence Construction Project, San Diego, California, addressed the installation of fencing along the international boundary

west of the San Ysidro POE (approximately 4 miles west of the Proposed Action). Construction of this fencing has been completed.

- The Final EA for the JTF-6 San Diego Area Lighting System Project was prepared in August 1993 to address the installation of lighting along the international boundary, traversing the USBP Imperial Beach, Chula Vista, and Brown Field stations. Construction of the lighting system within the Imperial Beach Station has been completed and is currently in use; construction within the Chula Vista and Brown Field stations has not proceeded to date. The EA summarized the environmental analysis so that a comprehensive cumulative analysis could be provided.

- In January 1997, the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for Issuance of Take Authorizations for Threatened and Endangered Species Due to Urban Growth within the Multiple Species Conservation Program (MSCP) was finalized. The EIR/EIS evaluated and presented potential impacts associated with the MSCP plan to establish a program for the conservation and management of self-sustaining, viable populations of federally listed and key candidate species and their habitats. The biological goal for the program was a design which preserves core biological resource areas and links within the MSCP study area. The economic goal was a preserve which would be affordable and one in which costs are equitably shared by the state and federal governments, local jurisdictions, and private landowners/developers.

- The April 1997 Final EA for the INS Multi-Tiered Pilot Fencing Project (Phases IA and II) addressed the installation of fencing within portions of the Imperial Beach Station and the eastern portion of the Chula Vista Station. This EA summarized the environmental analysis presented in the Revised Draft EA so that a comprehensive cumulative analysis could be provided.

- In August 1997, the Final EA for Area Lighting, Fencing, and Roadways at International Border, San Diego, California, summarized the environmental impacts associated with implementing a combined lighting, fencing, and roadway system along the international boundary from Arnie's Point (approximately 7 miles east of the Pacific Ocean) to the San Ysidro Mountains.

- The Final INS Multiple Fence System Master Plan presents a plan for enhanced border control along the international boundary in the USBP San Diego Sector (Imperial Beach, Chula Vista, and Brown Field stations) using a combination of roads, lighting, and fences. The document is intended to aid in the total operational process that is being conducted by the INS and USBP to fight the influx of illegal immigrants and contraband traffic. By limiting and deterring physical access across the border using fences and USBP agents, the number of persons crossing can be significantly reduced.

The plan presents a master plan for all construction activities that would take place within a 14-mile segment (USBP San Diego Sector) of the entire 2,000-mile U.S./Mexico International Boundary and is intended to be used as a planning and programming document for current and future projects within the study area. An EA to evaluate the potential environmental impacts (direct, indirect, and cumulative) associated with implementation of the master plan (the entire 14-mile section) is slated to begin in 1998.

1.8 Document Organization

This document follows the format established in the CEQ regulations (40 CFR parts 1500-1508). The document consists of the following seven chapters.

Chapter 1 INTRODUCTION provides the project location, a brief description of the Proposed Action, the purpose and need for the action, relevant environmental issues, regulatory compliance and applicable environmental statutes and regulations, relevant documents, and document organization.

Chapter 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES provides a detailed description of the Proposed Action and lists the environmental commitments associated with the Proposed Action. Chapter 2 also lists the Alternatives (including the No-Action Alternative) carried forward for detailed analysis, as well as those alternatives which were not carried forward for detailed analysis.

Chapter 3 EXISTING ENVIRONMENT describes the existing conditions of the environmental components most likely to be affected by the Proposed Action and/or Alternatives. Each environmental component potentially affected is discussed in detail. These environmental components include: Earth Resources (physiography, geology, soils); Water Resources (surface water, groundwater, and waters of the United States); Biological Resources (vegetation, fish and wildlife, and threatened and endangered species and habitats); Cultural Resources; Land Use; Socioeconomics; Hazardous Materials and Waste; Air Quality; and Noise.

Chapter 4 ENVIRONMENTAL CONSEQUENCES provides the scientific and analytical basis for comparing the Proposed Action and Alternatives and provides the potential environmental consequences (direct and indirect impacts) associated with implementing the Proposed Action and/or Alternatives.

Chapter 5 PUBLIC INVOLVEMENT discusses all consultation and coordination that occurred during preparation of this EA. This includes agency coordination and Draft EA circulation and distribution, as well as public review and comments received.

Chapter 6 LIST OF PREPARERS provides a list of personnel including their discipline/expertise, experience, and role in preparation and/or review of the EA.

Chapter 7 REFERENCES lists all the references used in developing the EA.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The INS proposes to construct a patrol road, secondary fence (including pedestrian, overhead rolling, and vehicle swing gates and "agent safety zones"), maintenance road, light standards, and RVS cameras along a portion of the U.S./Mexico international boundary. The Proposed Action also includes placement of a box culvert in Stewart's Creek.

The patrol road, secondary fence, maintenance road, light standards, andRVS cameras associated with the Proposed Action would be constructed entirely within the USBP, San Diego Sector (Imperial Beach and Chula Vista stations), along a corridor that begins 11 miles from the Pacific Ocean, just east of the San Ysidro POE, and stretches 1.6 miles eastward to Arnie's Point. Construction of the patrol road, secondary fence, maintenance road, light standards, and RVS cameras would take place entirely within the project corridor in an area defined as the "affected area." The affected area encompasses 44.5 acres and ranges in width from 140 feet to as many as 475 feet north of the international boundary (Figure 2-1). The eastern edge of the affected area meets up or adjoins barrier systems currently under construction as part of a separate action (covered under previous NEPA documentation). The box culvert would be installed in Stewart's Creek, 1.6 miles west of the San Ysidro POE, 200 feet east-southeast of the USIBWC waste treatment facility. All construction activity associated with the box culvert would take place within a 50- by 100-foot area (Figure 2-2).

2.1.1 Standard Barrier Systems Design Profile

As part of past planning efforts, the INS has developed a Standard Design Profile for the construction and operation of barrier systems along the international boundary, in San Diego County, California (USACE 1998). The Standard Design Profile is based on a 150-foot real estate take line; however, as in this case, the real estate take line can deviate based on terrain, known environmental constraints, and/or USBP operational requirements. Road alignments and widths, as well as other associated infrastructure improvements, can also change and/or deviate based on the same constraints and requirements. The typical Standard Design Profile developed by the INS and USBP is depicted in Figure 2-3. Due to the varying terrain prevalent along the project corridor, two additional profiles have been developed for use in the Spring Canyon area. Both are based on the original Standard Design Profile. The first profile (Figure 2-4) would be implemented in areas that would require side hill grading cuts. The second profile (Figure 2-5) would be implemented in areas where soil would be filled by grading activities. The locations of where these

profiles would be implemented along the corridor have been depicted previously (see Figure 2-1).

2.1.2 Infrastructure Improvements Associated with the Proposed Action

Patrol Road

The patrol road that would be constructed as part of the Proposed Action would run primarily parallel to and north of the existing primary fence (see Figure 2-1). The patrol road would begin near Arnie's Point and would tie into a patrol road that will be constructed as part of a separate action. This separate action was covered under the Final EA for Area Lighting, Fencing, and Roadways at International Border, San Diego, California (USACE 1998). From Arnie's Point, the patrol road would run 1.51 miles to the west, ending just east of the San Ysidro POE. The patrol road would be constructed as an "all-weather" type road. This would consist of a compacted sub-base, 12 inches of Class II material saturated with Lignan Sulfate, Road Oyle, or equivalent product and 8 inches of "Geo-Mat" filled with Class II material saturated with Lignan Sulfate or equivalent product. The road would be 24 feet wide with 12-foot shoulders, for a total of 48 feet in width. A 5 percent cross slope would be maintained for adequate drainage. The patrol road would be a permanent fixture that would be utilized by the USBP 24 hours a day, 365 days a year.

Secondary Fence, Gates, and "Agent Safety Zones"

The secondary fence, gates, and "agent safety zones" associated with the Proposed Action would be constructed north of the existing primary fence, parallel and north of the patrol road, running its entire length. At the eastern edge of the corridor, the secondary fence would tie into another portion of secondary fence that is currently under construction. Construction of this fence was covered under the Final EA for Area Lighting, Fencing, and Roadways at International Border, San Diego, California. The secondary fence would then run 1.53 miles to the west and end just east of the San Ysidro POE (see Figure 2-1).

All of the proposed secondary fencing would consist of angled, metal barrier fencing, which can be described as a series of 10-foot by 10-foot modified secura mesh panels with a 6-foot standard secura mesh panel that is angled at 45 degrees and attached to the top of the panels (Figure 2-6). Additionally, as part of the secondary fence construction, 5-foot high sections of landing mat fencing would be buried along the entire length of the fencing. The landing mat material would be buried to a depth of approximately 5 feet and would be located 2 feet south of the secondary fence. The buried panels would tie into the secondary fence concrete footing in order to prevent digging under the fence. The secura mesh panels that make up the secondary fence are designed to be difficult to climb and,

Figure 2-1. Affected Area (Proposed Action).

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Figure 2-2. Affected Area (Proposed Action).

Figure 2-3. INS and USBP Standard Design Profile.

Figure 2-4. Typical Side Hill Soil Cut Profile (Proposed Action).

Figure 2-5. Typical Soil Fill Profile (Proposed Action).

Figure 2-6. Typical Angled Metal Secondary Fence Detail.

combined with the angled top portion, concrete footings, and buried landing mat fencing, provide a virtually impassable structure.

As part of the secondary fence construction, a series of gates would be provided within the fence. The gates would be utilized by USBP agents to enter and exit the corridor. The gates would be located along the entire length of the secondary fence and would consist of six 4.5-foot wide pedestrian gates, four 10-foot wide vehicle swing gates, and a total of 11 overhead rolling vehicle gates (seven 15-foot wide and four 22-foot wide) (see Figure 2-1). An additional safety feature that would be included as part of the secondary fence would be the use of "agent safety zones." "Agent safety zones" provide USBP agents a safe place to park their vehicles and conduct operational observations. An "agent safety zone" is constructed in the same manner as the secondary fencing using the same materials. The typical "agent safety zone" is 30 feet wide and 100 feet long with one sliding gate and one swing gate. A total of four "agent safety zones" would be constructed along the secondary fence (see Figure 2-1). Power to the gates would be provided via underground cables from a transformer located near Cactus Road (eastern segment) and near the San Ysidro POE (western segment). The secondary fence and gates would be permanent fixtures that would be patrolled and utilized by the USBP 24 hours a day, 365 days a year. The "agent safety zones" would also be permanent fixtures utilized 24 hours a day, 365 days a year.

Maintenance Road

A maintenance road would be constructed parallel to the secondary fence. The maintenance road would be immediately north of the secondary fence and would run the entire length of the fence. The maintenance road would be constructed by blading the surface of the soil (20 to 25 feet wide), thereby creating a clear, somewhat smooth, level surface on which to drive maintenance vehicles (see Figure 2-1). The maintenance road would be utilized only on an as-needed basis.

Light Standards and RVS Cameras

The light standards would be erected primarily parallel with the proposed patrol road. Twenty light standards would be constructed along the patrol road, starting 555 feet from the easternmost edge of the corridor (Arnie's Point). The light standards would be 40 feet in height with concrete poles, spaced 400 feet apart (see Figure 2-1). Illumination would be provided by two 1,000-watt (W) and two 400-W high pressure sodium floodlights on each pole. Up to four RVS cameras would be erected within the affected area. At this time, the exact locations for the RVS cameras have not been determined. The cameras would be mounted on concrete poles at an estimated height of 70 feet. Power to the light standards and RVS cameras would be provided via underground cables from a transformer located near Cactus Road (eastern segment) and near the San Ysidro POE (western

segment). The light standards would be operated from dusk to dawn, 365 days a year, and the RVS cameras would be operated on a 24-hour a day basis, 365 days a year.

Box Culvert

The box culvert would be installed in a tributary to the Tijuana River (Stewart's Creek), 1.6 miles west of the San Ysidro POE, 200 feet east-southeast of the USIBWC waste treatment facility (see Figure 2-2). Currently, a bollard style secondary fence is in place around the USIBWC waste treatment facility (west of the tributary). The bollard style fence picks up again east of the tributary, leaving a gap in the fencing. By installing a box culvert in this area, continual USBP access would be provided across the culvert and the gap in the existing bollard style fence would be closed. The box culvert would be utilized by the USBP to bridge the tributary during patrolling operations that would take place on a 24-hour a day basis, 365 days a year.

Stewart's Creek is within the California Coastal Zone, therefore compliance with the Coastal Zone Management Act (CZMA) of 1972 and the California Coastal Act of 1976 would be required. However, placement of a box culvert in Stewart's Creek was covered in the April 1997 Final Revised EA for the INS Multi-Tiered Pilot Fence Project (Phases IA and II), in San Diego County, California. As part of developing the EA, the USACE determined the project's consistency with the CZMA and submitted a Negative Determination (ND) to the California Coastal Commission for review. Concurrence was granted on January 29, 1997. A copy of the ND is included in the 1997 Final Revised EA.

2.1.3 Construction Activities

Project Duration

The construction associated with the Proposed Action would begin in mid-April 1998 and continue through mid-December (an eight-month period). This schedule could vary depending on prevailing weather conditions (i.e., El Niño) and the availability of personnel, construction equipment, and/or materials.

Soil Disturbance (Grading)

As part of standard construction practices, and prior to commencing construction activities associated with the Proposed Action, the affected area (including all access routes) would be delineated with stakes or markers. Areas of particular concern (e.g., nearby vernal pools, etc.) would also be staked prior to commencing construction activities. All construction personnel would be educated on the sensitivity of area resources.

Grading activities associated with the Proposed Action would require that over one million cubic yards of soil be disturbed (shown as the affected area on Figures 2-1 and 2-2). The amount of cut and fill would balance; therefore, no soil would be removed from the site, and no additional soil would be brought to the site. In order to maintain existing drainage and drainage patterns, a series of reinforced concrete culverts would be installed throughout the 1.6-mile corridor.

A total of 10 culverts (three 36-inch, six 48-inch, and one 60-inch) would be installed along the length of the improvements. All culverts would be engineered to assure proper conveyance capacity, slope, and dimensions necessary to prevent flooding. Peak flow computation worksheets prepared for the project are contained in the project file. Culvert sizes are presented in the following table; locations have been previously depicted on Figures 2-1 and 2-2.

Table 2-1. Culvert Specifications.

Figure No.	Figure ID	Culvert Diameter (inches)	Culvert Length (feet)
2-1	CUL-1	36	145
“	CUL-2	36	150
“	CUL-3	36	180
“	CUL-4	48	490
“	CUL-5	48	490
“	CUL-6	48	490
“	CUL-7	48	490
“	CUL-8	48	310
“	CUL-9	60	630
2-2	CUL-10	48	100

Personnel

The infrastructure construction would be performed by a variety of military personnel as part of their annual training. Military personnel utilized at the beginning of construction would include personnel from North Carolina (Headquarters [HQ]/030), South Carolina (122 Combat Support Engineers [CSE]), and the New England area (Alpha [A]/505 and Bravo [B]/505). Additionally, personnel from the California National Guard and JTF-6 would be utilized if, and when, rotational units are not available. California National Guard and JTF-6 personnel would perform specific unit/mission-related construction tasks. Additional units would be included in the schedule as the project progresses (a detailed schedule of units is not currently available). Assistance would also be provided by local private contractors on an as-needed basis.

The military personnel would begin arriving in the area in mid-April 1998. Approximately 100 to 140 personnel from HQ/030 would spend 15 days on the ground, with only 10 days of actual construction-related work. The remaining five days would be used for mobilization, one day of leave, and performance of the required administrative duties associated with annual training. At the end of the 15-day period, the visiting unit would leave the area, and an additional unit (approximately the same number of personnel) would arrive to continue construction activities. This schedule would be typical throughout the duration of the construction activities.

The visiting units would bivouac at a 5-acre site just east of the R.J. Donovan Correctional Facility located on Alta Road (Figure 2-7). A Memorandum of Understanding exists between the INS and the County of San Diego for the temporary use of this 5-acre site.

Equipment

Buses would transport military personnel on a daily basis from the bivouac site to an equipment yard (seven acres in size) behind the USBP Brown Field Station on Britannia Court (see Figure 2-7). The bivouac site and equipment yard were addressed under the 1997 Final EA for Area Lighting, Fencing, and Roadways at International Border, San Diego, California (USACE 1998). A list of typical heavy equipment that would be stored at the equipment yard and made available to the visiting units is presented in Table 2-2. Additional light duty equipment (not listed in Table 2-2) would also be made available. This equipment would be provided by the California National Guard, USBP maintenance department, JTF-6, and local contractors. Equipment maintenance (routine maintenance) would be provided by the visiting units and by the contractor. The contractor would provide on-site personnel throughout the duration of the construction activities to perform major service tasks. No equipment washing would be performed at the equipment yard or on the project site. Spill kits would be provided at the equipment yard and transported with heavy equipment.

Once the equipment is inspected and requisitioned each morning, personnel would then transport the equipment to the immediate construction area via existing dirt roads. No construction equipment would travel outside of the existing road right-of-way except in areas of immediate construction. Construction activities would occur during daytime hours, with construction expected to begin around 7:00 a.m. and end by 7:00 p.m. At the end of the work day, personnel would return the equipment to the equipment yard where buses would transport personnel back to the bivouac site.

Figure 2-7. Temporary Bivouac Site and Equipment Yard.

Table 2-2. List of Typical Heavy Equipment Available for Construction Activities.

Off-Road Construction Equipment				
Equipment Type and Horsepower	**Number of Units**	**Days Used**	**Hours per Day Used**	**Total Hours**
Water truck (150 horsepower [hp])	3	170	8	4080
Fuel truck (170 hp)	1	170	8	1360
Floodlight Set (10 kilowatt [KW] gen. 15 hp)	2	170	8	2720
Auger w/backhoe (84 hp)	1	32	8	0
Grader (135 hp)	6	170	8	8160
Flatbed truck (150 hp)	1	170	4	0
Hydraulic crane (165 hp)	1	76	8	0
Loader, MW24C w/attach (155 hp)	2	170	8	2720
Lube/service unit	2	170	8	2720
Pickup truck, V-8 diesel (150 hp)	3	170	8	4080
Semi-Tractor, 8 x 6	1	21	8	168
Utility truck 5/4 ton HMMVV, V-8 diesel	4	170	8	5440
Passenger van, 7 person (150 hp)	2	170	8	2720
Scraper (450 hp)	10	70	8	5600
Excavator (135 hp)	1	170	8	1360
Excavator (325 hp)	1	170	8	0
Tractor (410 hp)	6	70	8	3360
Welder shop, 50 amp (<35 hp)	2	170	8	2720
Bus, 44 passenger, Bluebird	1	170	4	680
Dump truck, 5 ton 6x6 (340 hp)	10	170	8	13600

Note: Only heavy equipment has been listed. Additional light duty equipment would be stored at the equipment yard, made available to construction personnel, and utilized on-site.

Materials

All construction materials and supplies needed to implement the Proposed Action would be obtained from local suppliers. Construction materials would be delivered to and stored at the equipment yard next to the USBP Brown Field Station.

2.1.4 Operational Activities

USBP operations along the international boundary, within the area of the Proposed Action, would remain consistent with current operations. The number of USBP agents used to patrol the area would remain at a maximum of seven agents (as few as three may be utilized during daytime hours). The number of USBP patrol vehicles used in the area would remain consistent with current operations (typically one agent per vehicle), and the frequency of patrols would also remain unchanged. Implementation of the Proposed

Action would, however, allow the USBP to more effectively combat the influx of illegal immigrants and contraband in the San Diego Sector.

2.1.5 Environmental Commitments

As part of implementing the Proposed Action, the following environmental commitments would be satisfied. Environmental commitments are listed and organized by resource, following the same order as that of Chapters 3 and 4.

Earth Resources

To prevent excess erosion and soil sloughing, all exposed soils would be hydromulched consistent with the recommendations provided in the MSCP Subarea Preserve Plan. Hydromulch is a combination of seed, thatch, fertilizer, and water which is sprayed onto the surface of the soil. Hydromulching would occur as construction/grading activities in each area are completed. Hydromulching near vernal pools would be conducted in coordination and compliance with USACE and U.S. Fish and Wildlife Service (USFWS) recommendations. Erosion potential would be further reduced through sound engineering design practices, by implementing best management practices throughout the duration of construction activities, and by preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

Water Resources

To eliminate and/or reduce any potential impacts to surface water quality as a result of implementing the Proposed Action, a SWPPP and Notice of Intent (NOI) would be prepared in accordance with the National Pollutant Discharge Elimination System (NPDES) and San Diego Regional Water Quality Control Board regulations. The NOI would be filed by the INS with the Environmental Protection Agency (EPA) regional office and the San Diego Regional Water Quality Control Board at least 48 hours prior to the start of construction activities. The SWPPP would be maintained on-site and would provide measures to eliminate or reduce any potential impacts to surface water quality in the project area.

As part of implementing the Proposed Action, a Section 401 water quality certification would be obtained from the California Regional Water Quality Control Board. The proposed project would be authorized under a Nationwide Permit 26 for discharges of dredged or fill material into headwaters and isolated waters for a single and complete project which causes a loss of between 1/3 and 3 acres of waters of the United States and does not cause the loss of waters of the United States for a distance greater than 500 linear feet of the streambed. The USFWS has identified several nationwide permit terms and conditions,

which, along with the wetland mitigation plan developed as part of the project, can be found in Appendix B.

Biological Resources

To minimize potential impacts to implementation of the MSCP Subarea Preserve Plan, the USBP would adhere to the policies and guidelines provided in the plan (to the extent practical and consistent with mission and operational requirements).

Cultural Resources

Prior to investigations, the exact location and extent of archeological site CA-SDI-10,808 in relation to the affected area was not known. A testing program (conducted in coordination with the California State Historic Preservation Office [SHPO]) identified an 8- by-18-meter (m) area of the southern portion of the site as being within the affected area associated with the Proposed Action and would consequently be buried. The testing program resulted in the recommendation that this portion of site CA-SDI-10,808 be determined ineligible for inclusion in the National Register of Historic Places (NRHP). Provided construction is confined within the affected area, no further work is needed at site CA-SDI-10,808.

Site CA-SDI-10,809 is within the affected area associated with the Proposed Action. As part of implementing the Proposed Action, site CA-SDI-10,809 would be buried. The testing program conducted at site CA-SDI-10,809 recommended the site as eligible for inclusion in the NRHP. Subsequently, a plan for data recovery was coordinated with the California SHPO, and a representative sample of the site contents was recovered in order to lessen the adverse effect of burying the site. This data recovery plan has sufficiently sampled the site and has mitigated the expected adverse effects associated with implementing the Proposed Action. Further work at site CA-SDI-10,809 is unnecessary.

Indirect impacts to historic properties within the project corridor could result from vehicle and pedestrian traffic if that traffic takes place outside the affected area associated with the Proposed Action. In order to avoid these indirect impacts that contribute to erosion processes, the USBP would confine all construction activities to the affected area.

Land Use

Operation of the light standards (from dusk to dawn) could have potential indirect impacts on adjacent land use (residential, single family) south of the international boundary. As a result of this, the USBP would attempt to reduce illumination of adjacent residential land

uses (to the extent practical and consistent with mission and operational requirements) by not directing the lights skyward or in a horizontal plane.

In order to prevent potential indirect impacts to planned land use (implementation of the MSCP Subarea Preserve Plan), the USBP would adhere to the policies and guidelines

provided in the plan (to the extent practical and consistent with mission and operational requirements).

Hazardous Materials and Waste

All construction debris would be disposed of at an off-site, approved landfill, in accordance with all federal, state, and local regulations.

In order to prevent impacts from raw sewage that drains into Deadman's Creek and Spring Canyon Creek, the areas would be avoided (to the extent possible) by construction personnel, and standard health precautions (e.g., medical shots, safety briefings, etc.) would be implemented prior to construction activities commencing.

In order to prevent any petroleum-related leaks or spillage, no equipment maintenance activities would occur on-site. All routine maintenance and inspection of construction equipment would be performed at the equipment yard and would be performed by personnel from the visiting units and by the contractor; major maintenance tasks would be performed by contractor-provided on-site maintenance personnel who would be present throughout the duration of construction activities. Spill kits would be provided at the equipment yard and transported with all heavy equipment.

Air Quality

Dust generated from grading and associated construction activities in the immediate construction area (including access roads utilized) would be minimized by watering exposed soil daily. A 12,000-gallon water tank would be stationed near Arnie's Point to fill water trucks that would be used throughout the duration of construction activities. Water to fill the tank would be provided by the City of San Diego. Soils in the immediate project area (and access roads utilized) would be watered early in the morning, prior to commencing construction activities, and again after construction activities have ceased for the day. The watering efforts conducted in the evening would typically be heavier than in the morning. Additional efforts to minimize dust generation would include suspending all major dust-generating activities (i.e., grading) when wind speeds exceed 25 miles per hour (mph) and by maintaining at least two feet of freeboard on all trucks hauling dirt, sand, soil, or other loose material. As project construction progresses and grading activities are completed for certain sections of the corridor, exposed soils would be hydromulched to further prevent dust generation and/or potential soil loss.
In order to prevent air quality impacts from construction-related equipment, proper exhaust systems would be utilized, equipment "idle times" would be kept to a minimum, and equipment maintenance would be performed on a routine basis.

Noise

In order to prevent noise impacts from construction-related equipment, proper exhaust systems would be utilized, equipment "idle times" would be kept to a minimum, and

equipment maintenance would be performed on a routine basis. Additionally, construction activities would occur only during daytime hours, with construction expected to begin around 7:00 a.m. and end by 7:00 p.m.

2.2 Alternatives to the Proposed Action

This section presents the alternatives that have been carried forward for detailed analysis (Section 2.2.1) and those alternatives that were eliminated from detailed analysis (Section 2.2.2). For the alternatives eliminated from detailed analysis, the reasoning behind elimination is presented. The alternatives presented in Section 2.2.2 are not discussed further in this EA.

2.2.1 Alternatives Carried Forward for Detailed Analysis

No-Action Alternative (Alternative 1)

Under the No-Action Alternative, the Proposed Action would not be implemented, and the construction of barrier systems and associated infrastructure improvements (patrol road, secondary fence, maintenance road, light standards, RVS cameras, and box culvert) would not occur. Implementation of this alternative would not allow the INS and USBP to fulfill mission and operational requirements. However, because the No-Action Alternative is always a feasible alternative (40 CFR 1502.14), it has been carried forward for detailed analysis.

2.2.2 Alternatives Eliminated from Detailed Analysis

Standard Design Profile with Bollard Type Fencing (Alternative 2)

Implementation of this alternative would be the same as that described in the Proposed Action. The only difference would be that a concrete bollard type fence would be constructed instead of the angled metal fencing described in the Proposed Action. Concrete bollard fencing was designed by the USACE, Los Angeles District, and is currently in place around the USIBWC waste treatment facility and throughout the Tijuana River basin area. The fencing can be described as 12-inch diameter concrete bollards

placed on a concrete slab foundation, staggered at 5-inch intervals with a 4-foot wire mesh outrigger angled at 30 degrees (toward the international boundary) attached to the top of the bollards. Construction costs associated with this alternative would increase by over $1,000,000.00 for the same 1.53-mile segment of angled metal fence construction. Implementation of this alternative would not be cost effective, therefore, this alternative was not carried forward for detailed analysis.

Improvements to the Existing Patrol Road (Alternative 3)

Implementation of this alternative would require no real estate acquisitions and minimal construction and construction-related costs. This alternative would differ from the Proposed

Action in that no new infrastructure (i.e., new patrol road, light standards, secondary fence, maintenance road, RVS cameras, and box culvert) would be constructed, and the existing patrol road and access roads would be upgraded utilizing the existing road alignments and corridors. The existing patrol road is approximately 20 to 25 feet wide and runs the entire length of the corridor. The patrol road deviates from its parallel run with the existing primary fence in areas of extreme terrain, making the patrol road somewhat longer than the 1.6-mile corridor. With this alternative, the existing patrol road would be upgraded to the same "all-weather" type road described in the Proposed Action. This would consist of a compacted sub-base, 12 inches of Class II material saturated with Lignan Sulfate (or equivalent material), and 8 inches of "Geo-Mat" filled with Class II material saturated with Lignan Sulfate (or equivalent material). Roads would be upgraded to 24 feet wide with 12-foot shoulders, for a total of 48 feet of width. A 5 percent cross slope would be maintained for adequate drainage. Construction of the proposed "all-weather" patrol road would be the same as that described in the Proposed Action.

The INS has expressed operational concerns with this alternative. An improved patrol road would lead to more efficient and effective patrols and at the same time increase the safety of both USBP agents and insurgents; however, the overall need to better control and deter the influx of illegal immigration and contraband into the United States in San Diego County would not be achieved. Additionally, implementation of this alternative would not provide an adequate, safe apprehension area, and it would not allow for effective USBP nighttime operations. Thus, this alternative was not carried forward for detailed analysis.

Standard Design Profile with No All-Weather Patrol Road (Alternative 4)

Under this alternative, all infrastructure construction and operational activities included as part of the Proposed Action would be implemented; however, the patrol road would not be upgraded to an "all-weather" surface. The patrol road would follow the same alignment as that described in the Proposed Action, but the surface would be bladed and compacted, not upgraded to the "all-weather" surface. As previously discussed, the 1.6-mile Spring Canyon area is a difficult area for USBP operations to control on a year-round basis.

Without the proposed improvements to the patrol road, this area cannot be patrolled during the wet periods of the year. Due to the operational safety constraints that are created when traveling on unimproved roads in confined spaces, the USBP would not patrol between the primary and proposed secondary fencing without all-weather roads; therefore, this alternative was not carried forward for detailed analysis.

Increased Use of Portable Lighting (Alternative 5)

With implementation of this alternative, no infrastructure improvements would occur (i.e., construction and operation of the patrol road, secondary fence, maintenance road, light standards, RVS cameras, and box culvert); portable, diesel-powered lights would be used throughout the 1.6-mile corridor to enhance USBP operations. Currently, sixteen 30-foot

light poles connected to portable generators are positioned along the 1.6-mile stretch of the international boundary to illuminate areas that are most frequently used for illegal entry into the United States. Implementation of this alternative would continue the USBP trend of using portable lights throughout the corridor, increasing the number of portable lights from 16 to 24. These lights would be placed just north of the existing dirt patrol road, with exact placement being dictated by the prevailing terrain.

The USBP has expressed concerns with this alternative, citing the fact that the use of portable lights has been, and currently is, ineffective as an operational tool. Implementation of this alternative would not sufficiently minimize infrastructure maintenance requirements, defeat vandalism, or be cost effective to implement, operate, and maintain. Thus, this alternative was not carried forward for detailed analysis.

Construct a New Angled, Metal Primary Fence (Alternative 6)

Implementation of this alternative would consist of removing the existing primary fence and replacing it with a new primary fence. None of the infrastructure improvements associated with the Proposed Action would occur. Under this alternative, the existing Vietnam-era landing mat (corrugated metal panels welded together in a continuous fashion) primary fence would be disassembled and disposed of at an off-site approved landfill, in accordance with all federal, state, and local regulations. The new primary fence would be the same type as the secondary fence described in the Proposed Action. Implementation of this alternative would not minimize infrastructure maintenance requirements, defeat vandalism, allow for a safe patrol and apprehension area, or allow effective USBP nighttime operations; therefore, this alternative was not carried forward for detailed analysis.

Standard Design Profile with Northern Alignment (Alternative 7)

Implementation of this alternative would be the same as the Proposed Action, but the Standard Design Profile (patrol road, secondary fence, maintenance road, light standards, and RVS cameras) alignment would be different. Construction of the box culvert in Stewart's Creek would remain the same as described in the Proposed Action. With this alternative, the Standard Design Profile alignment would extend outside and around the far northern reaches of the Spring Canyon area. Implementation of this alternative would require substantial additional funding for real estate acquisitions and additional infrastructure construction. In addition to not being cost effective to implement, operate, and maintain, this alternative would not provide an adequate, safe patrol and apprehension area and would not allow the USBP to effectively perform nighttime operations. Thus, this alternative was not carried forward for detailed analysis.

3.0 EXISTING ENVIRONMENT

This chapter presents the existing conditions within, and in some instances, adjacent to the project corridor. As discussed in Chapter 2, the project corridor is somewhat larger (longer and wider) than the Proposed Action affected area. Field surveys and data collection presented in this chapter were conducted on the larger project corridor to assure complete coverage of resources in and adjacent to the affected area.

3.1 Earth Resources

The project corridor is located in the Peninsular Ranges Province which is distinguished by deformed, intruded strata over elevated and depressed fault blocks. This physiographic province is further characterized by parallel mountain ranges oriented northwest and southeast which are bounded by block faulting (Norris and Webb 1990).

Specifically, Spring Canyon is a rugged canyon oriented northeast to southwest. Spring Canyon is formed from several smaller canyons (i.e., Wruck Canyon, Dillon Canyon, and Finger Canyon) which bear intermittent streams. The rim of Spring Canyon lies at an elevation of 450 to 500 feet above sea level and varies in depth from 150 to 200 feet. To the west of Spring Canyon, the terrain gradually flattens as the elevation drops and eventually meets the Pacific Ocean. To the east of Spring Canyon, the terrain is rocky and mountainous (Figure 3-1).

3.1.1 Geology

The Peninsular Ranges Province was formed by the Southern California Batholith, a composite of several bodies of igneous rock formed in the subsurface. These bodies of igneous rock, having varying chemical composition, shifted from gabbro to granodiorite. In the Cretaceous period, the Nevadan Oregeny caused major upward thrusting in southern California (Sharp 1976). The Spring Canyon area is characterized by Mesozoic-Paleozoic metamorphic and granitic rocks.

Landslides are common in southern California and can result in costly damage to infrastructure. The project corridor lies predominantly within the San Ysidro landslide province (Figure 3-2). Landslides in this province tend to be large in scope and magnitude. A major factor in landslides in the San Ysidro province is the presence of 1- to 2-foot thick beds of bentonite clay in the Otay formation. In San Diego County, landslides must be considered when designing engineered structures such as roads (Hart 1973).

Figure 3-1. Existing Topography.

Figure 3-2. Existing Geology.

3.1.2 Soils

Soils in the project corridor include Olivenhain cobbly loam, 9 to 30 percent slopes; Olivenhain cobbly loam, 30 to 50 percent slopes; Diablo clay, 30 to 50 percent slopes; Stockpen gravelly clay loam, 0 to 2 percent slopes; Stockpen gravelly clay loam, 2 to 5 percent slopes; and Linne clay loam, 30 to 50 percent slopes (U.S. Department of Agriculture [USDA] 1973).

The Olivenhain cobbly loams occupy a significant portion of Spring Canyon. These soils are quite steep and have a moderate to high erosion hazard. Olivenhain soils are classified as fair to poor for roadfill and severe for road location. The other soils in the project corridor, Diablo clays, Linne clay loams, and Stockpen gravelly clay loams, are also classified as poor for roadfill and severe for road location (USDA 1973).

The soils in the project corridor are compacted and disturbed, including several unimproved roads, where disturbance is the greatest. During site visits, erosion was observed in relation to several of the existing patrol roads (Figure 3-3).

3.2 Water Resources

Although no perennial creeks or streams flow through the project corridor, several drainages traverse the area, as indicated by the topography and the vegetation communities. These surface drainages appear to remain dry during the year except following storm events that generate significant surface flow. No permanent water resources occur within the project corridor. The principal drainages in the area originate south of the international boundary, flow to the northwest across the international boundary for approximately 3,000 feet, and then flow to the southwest back into Mexico, draining into the Tijuana River approximately one mile to the west. Sources of contamination in this area include scattered refuse (glass, aluminum, plastic containers, metal, concrete, clothes, tires, and gasoline canisters) and primitive sewage disposal in the residential areas immediately south of the international boundary.

3.2.1 Watershed Description

The project corridor is within the Tijuana River watershed. The Tijuana River is an ephemeral stream draining an area of 1,731 square miles. Approximately 470 square miles (30 percent) are in the United States, and approximately 1,261 square miles (70 percent) are in Mexico. The fan-shaped drainage area is approximately 75 miles long and 50 miles wide (Figure 3-4). The Tijuana River is formed by the confluence of Cottonwood Creek (Rio El Alamar) and the Rio de Las Palmas located 11 miles southeast of the City of Tijuana. The river flows northward through a 6.6-mile concrete flood-control channel in Tijuana and crosses the international boundary into California. The USACE has constructed 0.5 miles of concrete channel, 2.0 miles of levees, and an

Figure 3-3. Existing Soils.

Figure 3-4. Tijuana River Watershed.

energy dissipater immediately downstream of the international boundary. After the river crosses into the United States, it continues westward 5.3 miles and empties into the Pacific Ocean 1.5 miles north of the international boundary.

The Tijuana River can be characterized as a braided alluvial stream that shifts widely across the valley floor during flood stage. An alluvial floodplain forms the floor of the Tijuana River valley. North-trending ephemeral drainages from Mexico enter the valley at Canyon del Sol, Smugglers Gulch, and Goat Canyon (see Figure 3-4).

The Tijuana River basin is classified as a Mediterranean, dry summer, subtropical climate. The average annual rainfall across the watershed ranges from about 11 inches near the coast to 25 inches at higher inland elevations, resulting in aquifer recharge of up to 4,500 acre-feet of water in the 5,000-acre alluvial aquifer.

3.2.2 Surface Water

Hydraulics of the Tijuana River

The Tijuana River is an ephemeral stream characterized by low or no flow for many months each year. Intermittent flood flows are highly variable and are dependent upon rainfall quantity and intensity across the watershed. Brief periods of very high flows, primarily during the rainy season (November through April), are often followed by low or no summer flows. During periods of groundwater overdraft, surface waters provide recharge to the aquifer in direct proportion to the available storage. When the aquifer is full or overflowing, however, groundwater seepage into the lower Tijuana River creates “gaining” stream conditions. These conditions are apparent when ponds and stream flows in the valley are maintained in the absence of surface water input from Mexico.

According to the U.S. Geological Survey (USGS), the average annual discharge in the Tijuana River at the international boundary from 1936 through 1981 was approximately 33,000 acre-feet/year, compared to a median discharge of 659 acre-feet/year (Izbicki 1985). The maximum annual discharge was recorded during the 1979-1980 water year when 586,000 acre-feet flowed through the lower Tijuana River valley (Izbicki 1985).

A hydraulics study to determine the low-flow characteristics of river flows was conducted by Boyle Engineering Corporation (1996). Flow rates ranging from 1.7 million gallons per day to 34.8 million gallons per day have been modeled for selected flows to determine the travel times from Stewart’s Creek to the Tijuana River estuary. The predicted travel times vary from a minimum of 4.6 hours at a flow rate of 34.8 million gallons per day to a maximum of 14.4 hours at a flow rate of 1.7 million gallons per day.

Flood Peaks

Flood peaks on the Tijuana River show extreme annual variability. Peak flow events were estimated for the period between 1884 and 1937 by the USACE, and peak flow events were measured from 1937 to 1984 (Philip Williams & Associates 1987). During these periods, the highest flow occurred in 1916, with an estimated peak flow of 75,000 cubic feet per second. An event of this magnitude is expected to have approximately a 1 percent chance of occurring in any given year (Philip Williams & Associates 1987). During the floods of 1993, an equivalent flow of 33,000 cubic feet per second was recorded in the Tijuana River at the international boundary.

In the 1970s, Mexico constructed a concrete flood control channel from approximately 6.5 miles upstream of the international boundary to the confluence of Rio El Alamar. The channel was designed to convey up to 500-year flood flows of 135,000 cubic feet per second. The channel has three feet of freeboard. The United States constructed an energy dissipater at the downstream end of the flood channel. Mexico has designed and completed an environmental review of a proposed extension of the flood channel upstream an additional 4 miles, to below the Abelardo L. Rodriguez Reservoir. This proposed project will control flooding for approximately 1,034 acres of the floodplain. In addition to providing additional flood protection in Mexico, the channel extension will address problems of surface and groundwater contamination.

Surface Water Quality of the Tijuana River Estuary

During wet weather, river flows through Tijuana are degraded by sewage, affecting the water quality of the Tijuana River in the United States and its coastal waters. Various studies have been conducted to assess the water quality of the Tijuana River estuary. A study by Gersberg et al. (1989) found that, despite continued inflow of sewage containing heavy metal, only elevated levels of cadmium were present in the sediments of both the Tijuana River and southern estuary sites. The study also concluded that only lead was found in levels above the international standard for fish. These levels, however, do not pose a significant public health risk. In contrast, Zedler et al. (1986) found that soils in the marsh habitats near the estuary's main channels, downstream of Goat Canyon and in the Oneonta Slough, are contaminated with heavy metals.

3.2.3 Groundwater

Groundwater in Tijuana River Valley

Groundwater in the lower Tijuana River valley occurs in three zones: (1) beneath the Nestor Terrace north of the valley, (2) in the alluvial fill underlying the Tijuana River valley, and (3) in the San Diego formation beneath the alluvium (Tijuana Valley County Water District [TJVCWD] 1994).

The Tijuana River valley aquifer is recharged primarily by direct rainfall, subsurface inflow from adjacent areas, and intermittent flood flows (California Department of Water Resources 1967; USACE 1990; Rempel 1992). The river may also provide groundwater recharge (Dudek and Associates 1994). The amount of groundwater inflow from across the international boundary has been estimated by various sources at 1,580 acre-feet/year (State of California 1952); 1,208 acre-feet/year (USACE 1965); and 1,160 acre-feet/year (USIBWC 1976). There is also potential recharge from water-bearing zones east of Interstate Highway 5.

The chief factors contributing to the reduction of groundwater in storage are agricultural pumping and evapotranspiration from phreatophytes (i.e., deep-rooted plants noted for their ability to obtain water from groundwater on the overlying capillary fringe). There is the possibility of minor outflow from the basin toward the north during periods of high groundwater. The amount of groundwater discharging either directly to the ocean or to the lower reaches of the river has been estimated to be 2,090 acre-feet/year during dry years and 2,827 acre-feet/year during wet years (Dudek and Associates 1994).

It is only when the amount of groundwater removed from a basin chronically exceeds natural recharge from rainfall, subsurface inflow, and intermittent flood flows that the groundwater table levels will begin to decline. Data for the lower Tijuana River valley from 1965 to 1978 show that the groundwater levels can recover from drier-than-normal rainfall and less-than-normal runoff as long as groundwater extraction is reduced.

Groundwater Quantity and Quality

Depending on stream flow, accumulated rainfall, and groundwater pumping, water table elevations vary from year to year and between wet and dry seasons. Sustained high rates of groundwater extraction during the 1950s resulted in a decline in groundwater levels of 23 to 30 feet or more in the Tijuana River valley. By the early 1960s, groundwater table elevations across much of the valley had fallen below sea level, resulting in the intrusion of seawater and highly saline groundwater from underlying and adjacent marine sediments in the alluvial aquifer (State of California 1975; Rempel 1992). By 1967, seawater intrusion had affected most wells south to the international boundary. This saltwater degradation contributed to the declining demand for groundwater from the Tijuana River valley. As

natural recharge rates exceeded rates of consumption, the resulting annual surplus of water increased and water levels rose.

In addition, increased annual precipitation and runoff between 1978 and 1984 greatly reduced the need for groundwater pumping for irrigation. Since 1970, the groundwater levels have risen to within 0 to 15 feet of the ground surface throughout the river floodplain (Philip Williams & Associates 1987; Rempel 1992).

The quality of groundwater in the Tijuana River valley is currently characterized by high levels of sodium chloride and total dissolved solids (TDS). These high salinity levels prevent the current use of well water for irrigation of salt-sensitive crops cultivated within the valley. As a result of lowered groundwater levels and seawater intrusion, groundwater TDS concentrations along the coast have exceeded 27,000 milligrams per liter. TDS concentrations in this area generally range between 1,000 and 1,500 milligrams per liter. The Tijuana River valley groundwater was rated by the state as generally inferior for domestic use because of its high sulfate and high fluoride concentrations (California Department of Water Resources 1967), and generally inferior for irrigation purposes because of high electrical conductivity, high chloride levels, and high percentage of sodium in the vicinity of Spooner's Mesa. In addition to seawater intrusion problems, the poor quality of the groundwater is also attributed to sodium chloride leaking from the San Diego formation, from irrigation return, and from groundwater movement from beyond the international boundary (EPA 1988).

Nevertheless, the Water Quality Control Plan for the San Diego basin designates municipal and domestic supply, agricultural supply, and industrial service supply as beneficial uses for the groundwater east of Hollister Street (6.5 miles west of the San Ysidro POE). The area, however, is exempt from drinking water policies (State of California 1995). The beneficial uses designation does not apply to areas west of Hollister Street.

Groundwater Quality of the Tijuana River Estuary

The USACE (1990) initiated a groundwater sampling program in July 1990 for the Tijuana River estuary. Test results indicate that there were no toxic surface water effects to fish, even at full concentration, and no observable effect on shrimp at a 2:1 dilution rate.

3.2.4 Waters of the United States

Section 404 of the Clean Water Act (CWA) of 1977 (PL 95-217) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters including interstate

wetlands. Waters of the United States are further defined as all other waters such as intrastate lakes, rivers, streams, mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas. Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a

prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory 1987).

Potential jurisdictional boundaries for these water resources are defined in the field as the ordinary high water mark (OHWM) which is that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in soil characteristics, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. During a survey conducted 16-20 February 1998, two biologists surveyed the project corridor for areas that meet the jurisdictional requirements set forth by the USACE under the authority of Section 404 of the CWA.

Six jurisdictional channel waters of the United States (i.e., drainages) were observed in the project corridor (Table 3-1 and Figure 3-5); however, only Spring Canyon Creek was identified on the Imperial Beach and Otay Mesa topographic maps. The Imperial Beach map identified Spring Canyon Creek as an intermittent stream channel. During the surveys, all drainages had water flowing in the channels due to recent rainfall events. Channel width at the OHWM for the six channels in ascending order were 5, 2, 5, 18, 10, and 50 feet.

Table 3-1. Jurisdictional Waters of the United States - Channels.

Channel Number	Channel Name	Project Corridor Length (linear feet)	Project Corridor Area (square feet)
1C	-	584.0	2,918.0
2C	-	349.4	1880.4
3C	-	545.9	2,129.1
4C	Spring Canyon Creek	1,090.9	22,858.5
5C	Deadman's Creek	1,017.7	9,851.9
6C	Stewart's Creek	-	-
Total		3,587.9	39,637.9

Note: The location of 6C is shown on Figure 2-2.

Figure 3-5. Jurisdictional Waters of the United States.

Twenty-four jurisdictional wetland waters of the United States (i.e., vernal pools and other wetlands) were observed within the project corridor (see Figure 3-5). Two of these sites were within the Spring Canyon Creek riparian community. The remaining 22 sites were vernal pools located on Arnie's Point near the eastern terminus of the project corridor. A routine wetland determination data form was completed for each area and is included in Appendix C.

Table 3-2 identifies the individual wetlands by size within the project corridor. There are 2.2 acres of wetlands on the two segments of Spring Canyon Creek within the project corridor. On Arnie's Point, the 22 vernal pools account for 1.1 acres within the project corridor. These vernal pools exhibited low species diversity due to the dominance of Italian ryegrass.

3.3 Biological Resources

A pedestrian survey of the project corridor was conducted by two biologists on 16-20 February 1998. The purpose of the surveys was to determine the present condition of the natural communities and whether any protected species or their habitat existed within the project corridor.

3.3.1 Vegetation

All vegetation communities exhibited at least some exotic plant species invasion. This exotic vegetation, coupled with human disturbances, typifies the non-pristine vegetation communities throughout the project corridor. Vegetation communities were identified and characterized by species composition. Species composition within the project corridor varied due to edaphic (soil related) constraints and natural or human disturbances. The predominant disturbance appeared to be frequent fires. Conversations with USBP agents and the 1996 biological monitoring report (USACE 1996) verify that fires are often caused by illegal immigrants. Four vegetation communities were observed within the project corridor: annual grassland/remnant coastal scrub, Spring Canyon riparian, Deadman's Creek riparian, and annual grasslands/vernal pool complex (Figure 3-6). Vegetation identification and nomenclature follows Munz (1974), Benson (1982), Beauchamp (1986), and Hickman (1993).

The predominant vegetation community throughout the project corridor is annual grassland with a small remnant of coastal scrub. This area has had natural and/or human disturbances (such as frequent fires) which have shifted the coastal scrub vegetation community to an annual grassland. Vegetation within this community was dominated by little barley (*Hordeum pusillum*), white-stem filaree (*Erodium moschatum*), peppergrass (*Lepidium* sp.), cheat grass (*Bromus tectorum*), Russian thistle (*Salsola tragus*), wild oat (*Avena fatua*), and prostrate yellow-cress (*Rorippa curvisiliqua*). Other vegetation

Table 3-2. Jurisdictional Waters of the United States - Wetlands.

Wetland Identification	Data Form Identification	Project Corridor Area (square feet)
1W	Spring Canyon 1	41,241.9
2W	Spring Canyon 2	54,182.5
3W	Vernal Pool 3	215.3
4W	Vernal Pool 4	417.2
5W	Vernal Pool 5	177.4
6W	Vernal Pool 5	490.1
7W	Vernal Pool 5	163.2
8W	Vernal Pool 1	398.4
9W	Vernal Pool 2	3,987.5
10W	Vernal Pool 6	1,275.8
11W	Vernal Pool 7	2,224.0
12W	Vernal Pool 7	224.7
13W	Vernal Pool 8	2,210.0
14W	Vernal Pool 7	1281.0
15W	Vernal Pool 9	22,768.7
16W	Vernal Pool 7	102.3
17W	Vernal Pool 7	654.9
18W	Vernal Pool 7	3,882.5
19W	Vernal Pool 7	1,394.3
20W	Vernal Pool 7	3,602.2
21W	Vernal Pool 7	453.7
22W	Vernal Pool 7	1,260.7
23W	Vernal Pool 7	259.5
24W	Vernal Pool 7	319.9
Total		**143,187.70**

Figure 3-6. Existing Vegetation.

included ripgut grass (*Bromus diandrus*), Italian ryegrass (*Lolium perenne* var. *multiflorum*), goat-nut (*Simmondsia chinensis*), Parish's desert-thorn (*Lycium parishii*), chamise (*Adenostoma fasciculatum*), deerweed (*Lotus scoparius*), San Diego sunflower (*Viguiera lanciniata*), horehound (*Marrubium vulgare*), California burclover (*Medicago polymorpha*), and common sow thistle (*Sonchus oleraceus*).

A small, minimally disturbed coastal scrub community was identified within the project corridor, on the western fringe of Arnie's Point. Due to the steep slope within this area (greater than 30 percent) and a patrol road which acts as a firebreak, fires have not altered this belt of vegetation. Many native species were identified, including Pacific madrone (*Arbutus menziesii*), goat-nut, silver cholla (*Opuntia echinocarpa* hybrid), chamise, and California sagebrush (*Artemisia californica*). Cool season annual grasses were observed invading this area much like the majority of the disturbed coastal scrub community.

The Spring Canyon riparian community was primarily restricted to the nearly level floor of Spring Canyon. Within the project corridor, Spring Canyon Creek flows east to west, about 550 feet north of the primary fence, then south to Mexico as it flows to the west. Two distinct riparian vegetation communities were observed in Spring Canyon, separated by the bend in this creek.

The vegetation of the north-south section near the international boundary was dominated by wetland herbaceous plants including broad-leaved cattail (*Typha latifolia*), spiny rush (*Juncus acutus*), and California bulrush (*Scirpus californicus*). Other species observed in this section included mule fat (*Baccharis salicifolia*), tamarisk (*Tamarix* sp.), castor-bean (*Ricinus communis*), and saltgrass (*Distichlis spicata*). This section had little canopy cover (i.e., less than 20 percent); herbaceous plants covered the entire area (near 100 percent).

The east-west section was characterized by less herbaceous vegetation cover with increased canopy cover and density of shrubby plants. The dominant vegetation was arroyo willow (*Salix lasiolepis*) and mule fat. Other vegetation included giant reed (*Arundo donax*), castor-bean, tamarisk, and broad-leaved cattail. Shrub/tree canopies were intermingled, with an average of 80 to 100 percent cover. The remaining area was covered with herbaceous vegetation.

Deadman's Creek riparian community is a narrow corridor restricted to the stream channel. The creek flows from southeast to northwest and ultimately empties into Spring Canyon Creek. Vegetation primarily consisted of giant reed, with mule fat and castor-bean also present. There was approximately 80 to 90 percent canopy cover of shrubs/trees (including giant reed), with herbaceous vegetation comprising the other 10 to 20 percent cover.

The annual grasslands/vernal pool complex community is limited to the relatively level area at Arnie's Point (eastern portion of the project corridor). This community has been significantly disturbed by border activities (i.e., vehicle use, pedestrian traffic, and construction). This

annual grassland community is composed of white-stem filaree, Italian ryegrass, little barley, blue dicks (*Dichelostemma capitatum*), peppergrass, cheat grass, and wild oat. There were no shrubs or trees present in this area, and herbaceous vegetation cover is estimated at 70 to 100 percent.

3.3.2 Wildlife

Other than the riparian habitat in Spring Canyon, the available habitat within the project corridor is of limited value to wildlife due to human disturbance and ongoing human activity. During the surveys, the following bird species were observed: common raven (*Corvus corax*), phainopepla (*Phainopepla nitens*), black-chinned hummingbird (*Archilochus alexandri*), western kingbird (*Tyrannus verticalis*), mountain plover (*Charadrius montanus*), killdeer (*Charadrius vociferus*), American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), western meadowlark (*Sturnella neglecta*), red-tailed hawk (*Buteo jamaicensis*), rock dove (*Columba livia*), and mourning dove (*Zenaida macroura*). Only one native mammal species, the California ground squirrel (*Spermophilus beecheyi*), was observed in the project corridor. Other animal species that would potentially occur within the project corridor include nimble kangaroo rat (*Dipodomys agilis*), black-tailed jackrabbit (*Lepus californicus*), mockingbird (*Mimus polyglottos*), western whiptail (*Cnemidophorus tigris*), and common kingsnake (*Lampropeltis getulus*) (Brown and Lawrence 1965).

3.3.3 Threatened and Endangered Species and Sensitive Habitats

Federal

The Endangered Species Act (ESA) of 1973 (PL 93-205), as amended, was enacted to provide for the preservation of endangered and threatened species and the ecosystems upon which they depend for survival. The ESA requires all federal agencies to implement protection programs for designated species and to use their authorities to further the purposes of the ESA. The Secretary of Interior and Secretary of Commerce are responsible for the identification of an endangered or threatened species and for the development of recovery plans. The USFWS is responsible for implementing the ESA within the continental United States.

A species listed as endangered is a species which is in danger of extinction throughout all or a significant portion of its range. A species listed as threatened is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those which have been formally submitted to Congress for official listing as endangered or threatened.

The USFWS has also identified species which are candidates for possible addition to the list of Endangered and Threatened Wildlife and Plants (50 CFR Parts 17.11 and 17.12) under the ESA of 1973, as amended. Candidate species are defined as those species for which the

USFWS has on file sufficient information on their biological status and threat(s) to propose them as endangered or threatened, but for which issuance of the proposed rule is precluded by work on higher priority species. Species of concern include those species for which further biological research and field study are needed to resolve their conservation status. Candidate species and species of concern have no legal protection under the ESA.

A total of 53 species, federally listed endangered, threatened, proposed, candidate, or species of concern, occur or potentially occur within the project corridor. Sixteen species are listed as endangered, three are listed as threatened, four are listed as proposed, and 30 are listed as species of concern. Information pertaining to the distribution and habitat requirements for these species is presented in Appendix D.

Critical habitat is defined in Section 3 of the ESA as: (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. No designated critical habitat occurs in the project corridor.

State

The listing of state protected plants is pursuant to Section 1904 (Native Plant Protection Act of 1977) and Section 2074.2 and 2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code. The listing of endangered and threatened animals is contained in California Code of Regulations, Title 14, Section 670.5. Protected California plants and animals are classified as state endangered, state threatened, state candidate endangered, state candidate threatened, and state rare. State candidate species are those for which the California Department of Fish and Game (CDFG) has formally noted as being under review by the department for addition to the state list. The CDFG, Natural Heritage Division, maintains a computerized Natural Diversity Data Base (NDDB) inventory of listed species and sensitive natural communities within California.

Thirteen state listed endangered or state rare species occur or potentially occur within the project corridor. Eleven species are listed as endangered and two are listed as rare by the

state. Information pertaining to the distribution and habitat requirements for these species is presented in Appendix D. In addition, five sensitive natural communities occur, or potentially occur, within the project corridor (Table 3-3).

Table 3-3. List of Sensitive Natural Communities Known to Occur or Potentially Occurring in the Project Corridor.

Community	State[1]	Imperial Beach Quadrangle	Otay Mesa Quadrangle

Maritime Succulent Scrub	S1.1	Y	Y
San Diego Mesa Claypan Vernal Pool	S2.1	Y	Y
Southern Interior Cypress Forest	S2.1		Y
Southern Coastal Salt Marsh	S2.1	Y	
Southern Willow Scrub	S2.1	Y	

[1] S1.1 - Very Threatened; S2.1 - Very Threatened
Source: California NDDB 1997a, 1997b, 1997c, 1997d, 1998a, 1998b

Methodology

A pedestrian survey was conducted on 16-20 February 1998 for federal and state endangered, threatened, proposed, and candidate species potentially occurring or known to occur within the project corridor. Prior to conducting the field surveys, the USFWS and CDFG were contacted to obtain lists of protected species known to occur or potentially occurring in or near the project area (Appendix E). The NDDB was also contacted and provided USGS quadrangle topographic map overlays depicting known populations of protected species and sensitive communities. On 17 February 1998, the biologists visited the herbarium at the San Diego Museum of Natural History to examine specimens of federal and state protected plants.

Survey methodology involved two biologists walking four to six parallel east-west transects spaced approximately 100 feet apart along the western portion of the project corridor. On the Otay Mesa (Arnie's Point) portion of the project corridor, the biologists walked parallel north-south transects spaced approximately 50 feet apart. A California Native Species Field Survey Forms were completed for each protected species and sensitive natural communities located during the February 1998 survey and are included in Appendix F.

Results

Six of 22 vernal pools, located on the Arnie's Point portion of the project corridor, contained the federal and state endangered San Diego button-celery (*Eryngium aristulatum* var. *parishii*) (Figure 3-7). Limited numbers of the San Diego button-celery were

Figure 3-7. Location of Listed Species.

observed during the February 1998 survey, although the USACE (1996) documented the presence of over 7,000 individuals in June 1995 and May 1996.

The majority of the vernal pools contained turbid water, and small aquatic organisms that may have been present in the pools could not be observed; however, fairy shrimp (Anostraca) were observed in three of the six vernal pools containing San Diego button-celery. The shrimp observed in three of the clear vernal pools appeared to be *Streptocephalus* sp. Voucher specimens were not collected, therefore, the shrimp species was not determined or verified. The USFWS (1997) has reported only
three species of Anostraca in the vernal pools of coastal San Diego County, including San Diego fairy shrimp (*Branchinecta sandiegonensis*) and Riverside fairy shrimp (*Streptocephalus woottonii*), both listed as federally endangered.

Three San Diego barrel cactus (*Ferocactus viridescens*), a federal species of concern, were observed within the project corridor (see Figure 3-7). These cacti were located within the small area of undisturbed coastal scrub on the western slope and edge of Arnie's Point.

No other federal or state protected species were observed in the project corridor, although, marginal habitat for additional protected species was present within the project corridor (see Appendix D). The majority of this habitat was highly disturbed and had been cleared and/or graded in the past. The area continues to experience heavy vehicular traffic, foot traffic, and frequent fires. Only limited amounts (approximately 0.56 acres) of isolated coastal scrub community still exist within the project corridor. The primary water source for the riparian corridor in Spring Canyon is a raw sewage outfall from Mexico; therefore, due to the marginal quality of habitat available, the potential for occurrence of other protected species within the project corridor is low.

Two sensitive natural communities were observed in the project corridor. Twenty-two San Diego Mesa claypan vernal pools were observed on the Arnie's Point portion of the project corridor. The Southern Willow Scrub community was also present in Spring Canyon.

3.4 Cultural Resources

A field survey of the project corridor was conducted on 17-19 February 1998. The cultural resources investigation was undertaken in order to relocate any previously identified cultural properties and locate any as-yet undocumented cultural properties that occur within the project corridor. Five previously recorded archeological sites, one previously unrecorded archeological site, and eight non-site localities were identified in the project corridor. As a result of this survey, four of the six archeological sites within the corridor were recommended as potentially eligible for inclusion in the NRHP.

3.4.1 Cultural Overview

Several summaries discuss the prehistory of San Diego County and provide a background for understanding the archeology of the general area surrounding the project area. Moratto's (1984) review of the archeology of California contains important discussions of Southern California, including the San Diego area. Papers by Bull (1983, 1987), Carrico (1987), Gallegos (1987), and Warren (1985, 1987), as well as reports on projects in the region by Alter et al. (1992), Gallegos and Kyle (1992), Higgins et al. (1994), Kyle et al. (1996), Robbins-Wade and Schultz (1996), and Smith (1996), provide summaries of recent work and interpretations.

The earliest accepted archeological manifestation of Native Americans in the San Diego area is the San Dieguito complex, dating between 10,000 and 8,000 years ago (Moratto 1984; Warren 1967). The San Dieguito complex was originally defined by Rogers (1939), and Warren published a clear synthesis of the complex in 1967. Due to the fact that few San Dieguito sites contain stratified deposits, this period is the least understood of the cultural periods in the San Diego region. The subsistence pattern of the San Dieguito was originally thought to be primarily based on hunting, but is now believed to include both hunting and gathering, including marine or riverine shellfish (Higgins et al. 1994). The material culture of the San Dieguito complex consists primarily of scrapers, scraper planes, choppers, large blades, and large projectile points. Rogers considered crescentic stones to be characteristic of the San Dieguito complex as well. Tools and debitage made of fine-grained green metavolcanic material, locally known as felsite, were found at many sites which Rogers identified as San Dieguito. Often these artifacts were heavily patinated. Felsite tools, especially patinated felsite, came to be seen as an indicator of the San Dieguito complex. Until relatively recently, many archeologists felt that the San Dieguito culture lacked milling technology and viewed this as an important difference between the San Dieguito and La Jolla complexes. Sleeping circles, trail shrines, and rock alignments have also been associated with early San Dieguito sites. The San Dieguito complex is chronologically equivalent to other Paleo-Indian complexes across North America, and sites are sometimes called "Paleo-Indian" rather than "San Dieguito." San Dieguito material underlies La Jolla complex strata at the C. W. Harris site in San Dieguito valley (Warren 1966).

Many sites on Arnie's Point have in the past been attributed to the San Dieguito complex based on the high frequency of fine-grained metavolcanics in the region and the predominance of domed scrapers (Alter et al. 1992). However, the presence of fine-grained metavolcanics and domed scrapers, as well as points and knives which are typically attributed to the San Dieguito, on La Jolla sites on Arnie's Point suggests these criteria, in and of themselves, may not be reliable cultural indicators.

The traditional view of San Diego County prehistory has the San Dieguito complex followed by the La Jolla complex at least 7,000 years ago, possibly as long as 9,000 years

ago (Rogers 1966). At that time, the shoreline was located farther west due to the lower sea level during the end of the last Ice Age. The La Jolla complex is part of the Encinitas tradition and equates with Wallace's (1955) Millingstone Horizon. The Encinitas tradition, primarily a

coastal manifestation, is generally "recognized by millingstone assemblages in shell middens, often near sloughs and lagoons" (Moratto 1984). The La Jolla complex, particularly sites in proximity to the coast, is typified by its pattern of shell middens, grinding tools closely associated with marine resources, and utilized flakes that appear to have been used to pry open shellfish (Smith 1996). The La Jolla complex also exhibits an inland manifestation consisting of a more generalized hunting and gathering pattern with increased quantities of ground stone often seen as reflective of oak or small animal exploitation (Higgins et al. 1994). "Crude" cobble tools, especially choppers and scrapers, characterize the La Jolla complex (Moriarty 1966). Basin metates, manos, discoidals, a small number of Pinto series and Elko series points, and flexed burials are also characteristic.

Warren et al. (1961) proposed that the La Jolla complex developed with the arrival of a desert people on the coast who quickly adapted to their new environment. Moriarty (1966) and Kaldenberg (1976) have suggested an *in situ* development of the La Jolla people from the San Dieguito. Moriarty later proposed a Pleistocene migration of an ancestral stage of the La Jolla people to the San Diego coast. He suggested this pre-La Jolla complex is represented at Texas Street, Buchanan Canyon, and the Brown site (Moriarty 1987).

In recent years, archeologists in the region have begun to question the traditional definition of San Dieguito people simply as makers of finely crafted felsite projectile points, domed scrapers, and discoidal cores, who lacked milling technology. The traditional defining criteria for La Jolla sites (manos, metates, "crude" cobble tools, and reliance on lagoonal resources) have also been questioned (Bull 1987; Cardenas and Robbins-Wade 1985; Robbins-Wade 1986). There is speculation that differences between artifact assemblages of "San Dieguito" and "La Jolla" sites reflect functional differences rather than temporal or cultural variability (Bull 1987; Gallegos 1987; Wade 1986). Gallegos (1987) has proposed that the San Dieguito, La Jolla, and Pauma complexes are manifestations of the same culture, with differing site types "explained by site location, resources exploited, influence, innovation and adaptation to a rich coastal region over a long period of time" (Gallegos 1987:30). The classic "La Jolla" assemblage is one adapted to life on the coast and appears to continue through time (Robbins-Wade 1986; Winterrowd and Cardenas 1987). Inland sites adapted to hunting contain a different tool kit, regardless of temporal period (Cardenas and Van Wormer 1984).

The Late Prehistoric period begins approximately 1,500 years ago when Yuman- and Shoshonean-speaking people entered the San Diego region from the Colorado River Basin (Smith 1996). Known locally as the Diegueno, or Kumeyaay, culture, settlement during this period appears to be more intensive and the exploitation of local resources more efficient (Kyle et al. 1996). Cultural patterns of the Kumeyaay include small, pressure-

flaked projectile points, milling tools including mortars and pestles, scrapers, beads, hammerstones, ceramics, and semi-permanent or permanent seasonal village sites (Kyle et al. 1996; Smith 1996). Additional manifestations of the Late Prehistoric period include an increased use of seeds, berries, and bulbs; the hunting of small game; the use of obsidian; and cremations. A significant amount of ethnographic evidence is available from the earliest

Spanish contact to the early 1900s. The culture of the Kumeyaay appears to be closely related to the religious beliefs and trade associations of groups living in the Colorado River basin (Kroeber 1925).

Coastal manifestations of the Kumeyaay differ from their inland counterparts. Fewer projectile points are found on the coast, and there tends to be a greater number of scrapers and scraper planes at coastal sites (Robbins-Wade 1986, 1988). Cobble-based tools, originally defined as "La Jolla," are characteristic of coastal sites of the Late Prehistoric period as well (Cardenas and Robbins-Wade 1985; Winterrowd and Cardenas 1987).

The final phase of the Late Prehistoric period began with the first contact with Spanish explorers including Juan Rodriguez Cabrillo in 1542. By the time of the first European settlement in San Diego, at least 20 permanent or semi-permanent villages had been established in the region (Smith 1996). One such Late Prehistoric village was Millejo which was occupied until at least 1850. The location of this village is described ethnographically and was recorded as site CA-SDI-10,699 located directly north of Smugglers Gulch.

The prehistoric period came to an abrupt end when Southern California was claimed by Spain in the early 1500s. Initial Spanish exploration during the sixteenth and seventeenth centuries left most Native Californian cultures undisturbed but foreshadowed what was to follow. Given Spain's massive New World holdings, the native populations had several centuries' reprieve before this portion of the continent was colonized; however, by 1769 San Diego Mission and the Presidio had been established at the site of present-day San Diego, and colonization was well underway by 1770. In the succeeding decades (as was the case throughout both North and South America), the native populations were all but destroyed by newly imported European diseases and by military aggression on the part of the colonists. By 1822, California had been acquired by Mexico; after a revolt in 1848, it was ceded to the United States. The influx of American settlers during the 1849 gold rush resulted in California entering the Union as the 31st state in 1850. Ethnographic work has concentrated on the mountain and desert peoples, who were able to retain some of their aboriginal culture. Coastal groups were quickly absorbed into the mission system or died of newly introduced diseases. Therefore, ethnographic accounts of the Native Americans of the San Diego coast are sparse.

3.4.2 Previous Studies

A records and literature search was conducted through the South Coastal Information Center at San Diego State University, San Diego, and the San Diego Museum of Man, in order to identify all recorded investigations and archeological sites within 1.0 mile of the project corridor. This search indicated that several previous studies have been conducted within the area. Five archeological sites (CA-SDI-10,801, CA-SDI-10,804, CA-SDI-10,806, CA-SDI-10,808, and CA-SDI-10,809) identified by these studies are within the project corridor.

3.4.3 Survey Results

Five previously recorded sites (CA-SDI-10,801, CA-SDI-10,804, CA-SDI-10,806, CA-SDI-10,808, and CA-SDI-10,809) were relocated and one previously unrecorded site (CA-SDI-14,728) was identified as a result of the cultural resources survey of the project corridor. Each site is located either completely or partially within the project corridor. All six sites are prehistoric in nature.

In addition, eight non-site localities were identified as a result of the survey. Localities consisted of isolated artifact occurrences. None of the localities are considered to be eligible for inclusion in the NRHP.

Site CA-SDI-10,801

This site was previously identified as a campsite on the southeast edge of Spring Canyon, approximately 400 m (1,312 feet) directly west of Arnie's Point and 200 m (656 feet) north of the international boundary. While the cultural deposit extended to a depth of 90 centimeters (cm) below the surface, most cultural material has been recovered from the first 20 cm. Testing of the site, including four shovel tests, one 1-by-1-m excavation unit, and the collection of all artifacts from the surface, resulted in a recommendation of potentially eligible for inclusion in the NRHP based on the depth of the subsurface deposit, the variety of artifacts recovered (lithic and ceramic), and the presence of marine shell and animal bone (Cheever and Gallegos 1987).

Site CA-SDI-10,801 was relocated during the recent survey. Due to surface collection of the site during the testing phase, very few surface artifacts were present; approximately 10 flakes and a chopper were identified. In addition, the midden deposit discussed by Cheever and Gallegos (1987) was identified to a depth of approximately 70 cm below surface eroding out of the unnamed drainage which flows through the site and into Spring Canyon approximately 30 m (98 feet) north of the site. Impacts in the form of vehicle and pedestrian disturbances were noted, as well as the erosion of the midden soil in the drainage.

Although additional impacts were noted and no features or diagnostic artifacts were present, the status of the site remains relatively unchanged since the original testing phase

was conducted. Site CA-SDI-10,801 shows evidence of production and maintenance of stone tools, as well as the exploitation of plant and animal resources from the region, including marine environments, and may provide valuable information regarding prehistoric activity in the area. Westec concluded the site was important under the provisions and guidelines of CEQA (Cheever and Gallegos 1987). Site CA-SDI-10,801 is, therefore, recommended as potentially eligible for inclusion in the NRHP. Approximately 20 percent of the southern portion of the site is located within the project corridor.

Site CA-SDI-10,804

This site was previously identified as a campsite on the northwest side of Spring Canyon, approximately 200 m (656 feet) north of where Spring Canyon crosses the international boundary. Although cultural material was recovered to a depth of 80 cm below the surface, most material was recovered from 50 cm. Testing of the site, including six shovel tests, one 1-by-1-m excavation unit, and the collection of all artifacts from the surface, resulted in a recommendation of potentially eligible for inclusion in the NRHP based on the depth of the subsurface deposit, the variety of artifacts recovered (lithic only), and the presence of marine shell (Cheever and Gallegos 1987).

Site CA-SDI-10,804 was relocated during the recent survey. Although the site had been surface collected, increased vehicle and pedestrian traffic has resulted in additional artifacts being exposed. Over 50 flakes and shatter were observed on the surface. Additional impacts/disturbances were noted.

Although additional impacts were noted and no features or diagnostic artifacts were present, the depth of the subsurface deposit identified during the original testing phase indicates the site may provide valuable information regarding prehistoric activity in the area. Westec concluded the site was important under the provisions and guidelines of the CEQA (Cheever and Gallegos 1987). Site CA-SDI-10,804 is, therefore, recommended as potentially eligible for inclusion in the NRHP. Approximately 10 percent of the southern portion of the site is located within the project corridor.

Site CA-SDI-10,806

This site was previously identified as a low-density lithic scatter with a shallow (20 cm) subsurface deposit approximately 500 m (1,640 feet) west of Spring Canyon and 175 m (574 feet) north of the international boundary. Testing of the site, including shovel tests and the collection of all artifacts from the surface, resulted in a recommendation of ineligible for inclusion in the NRHP (Cheever and Gallegos 1987).

Site CA-SDI-10,806 was relocated during the recent survey. The status of the site generally remains unchanged from the previous testing. Due to surface collection of the site during the testing phase, very few surface artifacts were present; approximately 20 flakes and shatter, a retouched flake, a scraper, and several cores were identified. Additional impacts in the form of vehicle and pedestrian disturbances were noted. No features or diagnostic artifacts were present. Westec concluded the site was not important under the provisions and guidelines of CEQA (Cheever and Gallegos 1987). Because the status of the site remains unchanged since the original testing phase was conducted, site CA-SDI-10,806 is recommended as ineligible for inclusion in the NRHP.

Site CA-SDI-10,808

This site was previously identified as a habitation site on the west side of Spring Canyon, approximately 120 m (394 feet) northeast of where Spring Canyon crosses the international boundary. Although cultural material was recovered to a depth of 70 cm below the surface,

most material was recovered in the upper 40 cm. Testing of the site, including six shovel tests, one 1-by-1-m excavation unit, and the collection of all artifacts from the surface, resulted in a recommendation of potentially eligible for inclusion in the NRHP based on the depth of the subsurface deposit, the variety of artifacts recovered (lithic and ceramic), and the presence of marine shell and animal bone (Cheever and Gallegos 1987).

Site CA-SDI-10,808 was relocated during the recent survey. Due to surface collection of the site during the testing phase, very few surface artifacts were present; less than 10 flakes were identified on the surface. Vehicle and pedestrian disturbances and dumped concrete slabs and soil were noted in the northwest and southwest portions of the project corridor, respectively.

Although some additional impacts were noted since the testing of the site and no features or diagnostic artifacts were present, the depth of the subsurface deposit identified during the original testing phase indicates the site may provide valuable information regarding prehistoric activity in the area. Westec concluded the site was important under the provisions and guidelines of CEQA (Cheever and Gallegos 1987). As a result of these findings, site CA-SDI-10,808 was recommended as potentially eligible for inclusion in the NRHP and a testing phase recommended. As a result of the survey, it appeared the southern portion of the site may be located within the project corridor.

Site CA-SDI-10,809

This site was previously identified as a habitation site on the east side of Spring Canyon, 200 m (656 feet) northeast of where Spring Canyon crosses the international boundary. Although cultural material was recovered to a depth of 80 cm below the surface, most cultural material was recovered in the upper 20 cm. Testing of the site, including seven shovel tests, one 1-by-1-m excavation unit, and the collection of all artifacts from the surface, resulted in a recommendation of potentially eligible for inclusion in the NRHP

based on the depth of the subsurface deposit, the variety of artifacts recovered (lithic and ceramic), and the presence of marine shell and animal bone (Cheever and Gallegos 1987).

Site CA-SDI-10,809 was relocated during the recent survey. Although the site had been surface collected during the testing phase, artifacts were visible on the surface of the site. Over 100 flakes and shatter were observed, in addition to utilized and retouched flakes and marine shell fragments identified to at least four different species. The identification of additional surface artifacts also expanded the boundaries of the site from the previously identified 30-by-30-m area to 180-by-115 m. Additional impacts from vehicle and pedestrian disturbances as well as trash dumping were noted.

Although additional impacts were noted and no features or diagnostic artifacts were identified, the status of the site remains unchanged since the original testing phase was conducted. Site CA-SDI-10,809 shows evidence of production and maintenance of stone tools, as well as the exploitation of plant and animal resources from the region, including marine environments, and may provide valuable information regarding prehistoric activity in the area. Westec

concluded the site was important under the provisions and guidelines of CEQA (Cheever and Gallegos 1987). As a result of these findings, site CA-SDI-10,809 was recommended as potentially eligible for inclusion in the NRHP and a testing program recommended. The entire site is located within the project corridor.

Site CA-SDI-14,728

This site is a low-density lithic scatter located on a terrace overlooking Spring Canyon to the northwest, approximately 75 m west of site CA-SDI-10,801 and 150 m north of the international boundary. Approximately 30 flakes, a utilized flake, a mano fragment, and four fragments of marine shell were identified in a 55-by-32-m area. Vehicle and pedestrian disturbances were also noted. No features or diagnostic artifacts were identified.

Because the potential exists for buried deposits and insufficient information from the pedestrian survey is available to assess the site's research potential, the eligibility status of site CA-SDI-14,728 is unknown. The entire site is located within the project corridor.

3.5 Land Use

As with other resources, land is not available in unlimited quantities. Because of this, land use must be properly planned and controlled. CEQ regulations recognize this need for the rational management of land resources and have provided for a specific consideration of the relationship of a changed pattern in land uses. To consider these factors requires consideration of existing and projected land capabilities and land use patterns.

Land use patterns are natural or imposed configurations resulting from spatial arrangement of the different uses of land at a particular time. Land use patterns evolve as a result of: (1) changing economic considerations inherent in the concept of highest and best use of land, (2) imposing legal restrictions (zoning) on the uses of land, and (3) changing (zoning variances) existing legal restrictions. The critical consideration is the extent to which any changes in land use patterns resulting from an action are compatible with existing adjacent uses and are in conformity with approved or proposed land use plans.

The San Diego Association of Governments (SANDAG) is comprised of 18 local city and county governments. SANDAG serves as the forum for regional decision-making within this association. To conduct regional planning for the association, SANDAG maintains an extensive database which is used daily in developing area-wide plans and in special projects for member agencies. As part of this database, SANDAG compiles, develops, and maintains extensive existing, as well as planned, land use classifications and information for the San Diego Metropolitan Area. SANDAG's existing land use designations have been aggregated into classifications. The information has been aligned to the Regional Urban and Information System (RUIS) land base and has been reviewed by local jurisdictions. SANDAG's planned land use designations were compiled from each local jurisdiction's General Plan or Community Plan's Land Use and Circulation Element maps. The specific land use

designations were generalized into the categories discussed in the following sections. The categories were designed to be compatible with SANDAG's Generalized Land Use Map for use in Series 8 Regional Growth forecasts.

3.5.1 Existing Land Use

According to the SANDAG existing classifications, the project corridor falls within the Undeveloped Generalized Land Use classification (Figure 3-8). Undeveloped lands are defined by SANDAG as "lands under construction and vacant, undeveloped lands." According to the same classification system, lands north and east of the project corridor fall under the same Undeveloped Generalized Land Use classification. Lands to the immediate west (including the San Ysidro POE and associated businesses) are classified as Commercial and Office and Public Facilities and Utilities. The Commercial and Office classification is defined by SANDAG as "strip and general retail, hotels, motels, wholesale, professional, government, and business services." The Public Facilities and Utilities classification is further subdivided into the Transportation, Communication, and Utilities subclass, which is defined by SANDAG as "freeways, airports, terminals, shipping, communication facilities, power plants, waste disposal, and water treatment facilities." Lands immediately south of the international boundary are classified by SANDAG as Residential, Single Family. The Single Family classification is defined as "detached housing units only" (SANDAG 1997).

Figure 3-8. Existing Land Use.

3.5.2 Planned Land Use

According to SANDAG's Planned Land Use classification, the project corridor would fall within the Parks/Open Space classification. This classification is defined by SANDAG as "state and regional parks and preserves, wildlife and open space preserves, and National monuments." According to the same classification system, lands to the immediate north also fall within this classification.

Lands to the immediate west are consistent with the existing land use classifications: Commercial and Office and Transportation, Communication, and Utilities. Both definitions are also consistent with existing land use classifications. Lands immediately east of the project corridor are classified as Light Industrial, which is defined as "all other manufacturing and food processing, industrial parks, research, and development parks." Lands immediately south of the international boundary are also consistent with existing land use classifications (Figure 3-9) (SANDAG 1996).

3.5.3 MSCP Subarea Preserve Plan

The City of San Diego's MSCP Subarea Preserve Plan has been prepared pursuant to the general outline developed by the USFWS and CDFG to meet the requirements of the California Natural Communities Conservation Planning (NCCP) Act of 1992. The Subarea Preserve Plan forms the basis for the Implementing Agreement which is the contract between the city and the USFWS and CDFG that ensures implementation of the plan and thereby allows local agencies to issue take permits at the local level. The Subarea Preserve Plan is also consistent with the MSCP and qualifies as a stand-alone document to implement the MSCP Preserve. The City of San Diego Preserve was developed by the city in cooperation with the USFWS, CDFG, property owners, developers, and environmental groups. The city's "preserve" is also referred to as a Multiple Habitat Planning Area (MHPA) (Ogden 1996).

Description of the Subarea

The City of San Diego subarea encompasses 206,124 acres within the MSCP study area. The subarea is characterized by urban land uses, with approximately three-quarters either built out or retained as open space/park system. The City of San Diego MHPA represents a "hard line" preserve in which boundaries have been specifically determined. The project corridor falls within the Otay Mesa portion of the MHPA Southern Area. The Otay Mesa portion of the preserve consists primarily of slopes and wide, deep canyons draining the vast mesas into the Otay River valley or toward Mexico. The optimum future condition envisioned for the Otay Mesa portion is a network of open and relatively undisturbed canyons containing a full ensemble of native species and providing functional wildlife

Figure 3-9. Planned Land Use.

habitat and movement capability. Integrated into the canyon network would be recreational trails and USBP access roads.

South of Otay Mesa Road, the preserve incorporates most of Spring Canyon and its tributaries, as well as some areas of adjoining mesa tops with vernal pools, grasslands, and coastal sage scrub. This portion connects to the preserve lands to the west through a narrow link across relatively flat lands in the southwest corner. The Spring Canyon area is a mixture of pristine succulent scrub, regenerating coastal sage scrub, and severely eroded and disturbed lands. One of the primary causes of disturbance has been off-road vehicle use, including USBP activities. The USBP must continue activities in this area; therefore, management policies and recommendations have been identified and provided in the City of San Diego MSCP Subarea Preserve Plan (Ogden 1996).

MSCP Management Policies and Recommendations

The following general management recommendations reference USBP activities as they apply to the Otay Mesa area as a whole. First, the USBP should restrict vehicle use to the existing access roads as much as feasible, to avoid disturbances of habitats. Second, the USBP should utilize, to the extent possible, utility maintenance and USBP access roads as trail systems. Third, coordination will continue with the USBP to ensure continued awareness of the preserve and cooperation in maintenance. The USBP presence in this area will help to make the preserve safer for visitors. Improved coordination with the USBP to aid in the identification and prevention of vandalism, off-road vehicle use, dumping, and other disturbances to habitat should also be continued. Fourth, the USBP should ensure that any lighting along the international boundary intrudes as little as possible on lands in the interior of the preserve (Ogden 1996).

3.6 Socioeconomics

The region of influence (ROI) for the project corridor is San Diego County. The project corridor is located in the South Bay region of San Diego County along the international boundary. The South Bay region is located south of the San Diego city limits and extends from the Pacific Ocean to just east of the Lower Otay Reservoir.

3.6.1 Population

The total population of San Diego County in 1996 was 2,690,255, which represents an annual growth rate of 1.2 percent over the 1990 population of 2,498,016. The city limits of San Diego contain 44 percent of the persons in San Diego County, and the city has demonstrated population growth patterns similar to the county. The South Bay region, which contains the project corridor, had a population of 120,549 in 1996 and has grown by 0.6 percent per year since 1990. Population projections for the region are shown in Table

3-4. Although the South Bay region has seen minimal growth, projections indicate substantial increases in population through the remainder of the decade. Population growth in the South

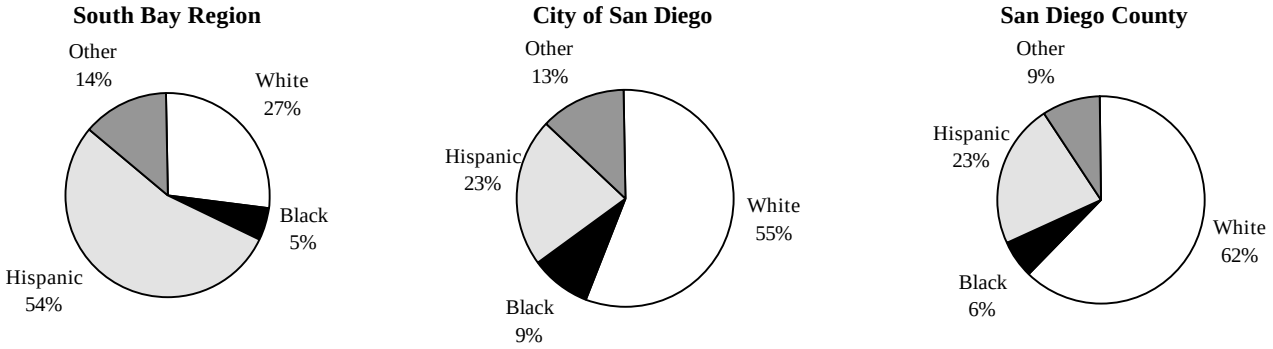
Bay region is expected to average 2.6 percent per year from 1990 to 2005. These projections are approximately one percentage point greater than the estimates for San Diego County and the City of San Diego.

Table 3-4. San Diego Region Population Projections, 1990-2005.

Region	Population			Average Annual Percent Change (percentage)		
	1990	2000	2005	1990-2000	2000-2005	1990-2005
South Bay	116,465	145,771	171,779	2.3	3.3	2.6
City of San Diego	1,110,549	1,314,248	1,409,990	1.7	1.4	1.6
San Diego County	2,498,016	3,004,434	3,267,254	1.9	1.7	1.8

Source: SANDAG/Sourcepoint 1997a

The population of the South Bay region is comprised of 54 percent Hispanic, 27 percent white, and five percent black. The remaining 14 percent are of other ethnic backgrounds. This region has a larger percentage of Hispanics than in San Diego County or the City of San Diego, which is not unexpected given the proximity of the South Bay region to the international boundary. It should be noted that the South Bay region has a larger percentage of Hispanics than other regions of San Diego County located along the international boundary (Figure 3-10).



Source: SANDAG/Sourcepoint 1997b

Figure 3-10. Population by Ethnicity in the San Diego Region, 1996.

3.6.2 Employment and Income

Total employment (wage and salary, self-employed, and military) for San Diego County in 1995 was 1,175,879, representing an annual rate of decline of 0.3 percent since 1990 when employment totaled 1,195,811 (SANDAG/Sourcepoint 1997). The City of San Diego, which accounts for over 50 percent of the jobs in the county, has demonstrated employment trends similar to the county. Total employment in the City of San Diego was 639,382 in 1995, which represents an annual rate of decline of 1.0 percent since 1990. Conversely, the South Bay region has experienced a slight increase in total employment. There were 23,414 jobs in the South Bay region in 1995, a 0.5 percent annual growth rate since 1990.

Employment in San Diego County is concentrated in the service, retail trade, and government sectors, which represent 63 percent of the total employment in 1995. The largest employment sector is services which accounts for 29 percent of the total employment. The City of San Diego's employment structure is similar to that of the entire county. Department of Defense (DOD) cutbacks have had a dramatic impact on the employment structure of the City of San Diego and, consequently, San Diego County as a whole. Since 1990, over 18,000 military jobs have been lost in the City of San Diego. These job losses corresponded to 34.1 percent of total military employment in 1990. The military sector has been the primary source of employment declines in the area. For example, from 1990 to 1995, 81 percent of the 19,932 job losses in San Diego County were the result of military sector cutbacks.

The leading employment sectors in the South Bay region are the same as in San Diego County, although the percentages differ. The largest employment sector in the South Bay region is the government (non-military), representing 25 percent of the employment in the region. The retail trade sector represents 22 percent of the total employment. Trade sectors (retail and wholesale) in the South Bay region are prospering and are becoming a vital economic component for the area as the effects of the North American Free Trade Agreement are being fully realized. The military sector in the South Bay region represents less than 1 percent of the total employment, thus DOD cutbacks which have contributed to employment declines in other areas of San Diego County have not directly impacted the South Bay region.

San Diego County's unemployment rate in 1995 was 6.4 percent, significantly lower than the State of California rate of 7.8 percent but higher than the national average of 5.6 percent (U.S. Department of Labor 1996). Estimates for the South Bay region were not available, although employment trends indicate the unemployment rate for the region would be slightly lower than the unemployment rate for the county.

In 1996, the median household income for San Diego County was $38,477. The City of San Diego had a median household income of $37,838, and the median income for the South Bay region was $31,405. All areas have experienced a decline in real median household income since 1990. A decline in real median income occurs when inflation rates are higher than the actual growth in income. Inflation has averaged about 3 percent per year since 1990, while actual income in the San Diego region has grown by approximately 1.5 percent per year.

3.6.3 Housing

The total number of housing units in San Diego County in 1996 was 999,805. Occupied units totaled 937,403, indicating a vacancy rate of 6.2 percent. The City of San Diego contained 454,506 housing units in 1996 and had a vacancy rate of 5.9 percent; South Bay's housing totaled 33,801 units, with a vacancy rate of 3.3 percent. The housing stock in San Diego County has increased by 5.7 percent since 1990. The total increase in housing units is similar for the City of San Diego. The South Bay region has experienced a housing increase of only 1.5 percent since 1990. Projections of population and housing growth in the South Bay region indicate a decline in the vacancy rate (2.1 percent) by the year 2000, while San Diego County and the City of San Diego would not experience any change in vacancy rates (SANDAG/Sourcepoint 1997).

3.6.4 Environmental Justice

Executive Order 12898 of 11 February 1994, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," states that each federal agency shall identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. There are no minority populations and/or low-income populations within the project corridor.

3.7 Hazardous Materials and Waste

3.7.1 Federal

Regulatory database searches at the federal level were conducted for the project corridor and supplied by Environmental Risk Information and Imaging Services (ERIIS). Database selection followed the standard guidelines developed by the American Society for Testing and Materials (ASTM) in Document E 1527-97, *Phase I Environmental Site Assessment Process*; distances of possible adverse influence also followed the ASTM guidelines. The databases and minimum search distances from the project corridor are presented in Table 3-5.

Table 3-5. Federal Databases and Minimum Search Distances.

Federal Database	Distance (miles)
National Priority List (NPL)	1.0
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	0.5
Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) facilities	1.0

RCRA generators	Project Corridor & Adjacent Area
Emergency Response Notification System (ERNS)	Project Corridor Only

There were no facilities or events identified on the NPL, CERCLIS, RCRA TSD facilities, RCRA generators, or ERNS databases for the project corridor in San Diego County or within the specified search distances.

3.7.2 State

Regulatory database searches at the state level were also supplied by ERIIS, with database selection and distance also following the standard guidelines developed by the ASTM E 1527-97. Table 3-6 lists the databases and minimum search distances from the project area which were researched.

Table 3-6. State Databases and Minimum Search Distances.

State Database	Distance (miles)
California Calsites	1.0
California Solid Waste Disposal Facilities	0.5
California Registered Petroleum Storage Tank (RST)	Project Corridor & Adjacent Area
California Leaking Registered Petroleum Storage Tank (LRST)	0.5

One California Calsite (hazardous waste site) is listed as being within 1.0 mile of the project corridor, but not within the corridor. A California Calsite is a site that contains evidence of potentially hazardous waste. Over 65 percent of the sites on this list require no further action and are closed. No information on the type, quantity, or status of hazardous

waste at this site was listed in the report. There are no reported California Solid Waste Information Systems sites, RST locations, or LRST releases within 0.5 mile of the project corridor.

3.7.3 Field Surveys

A site visit was conducted between 16-20 February 1998 to identify any anomalous topography, suspect materials, dumping, stained soil, stressed vegetation, signs of excavation, or other surface evidence of suspect activities and/or materials. The site visit included a reconnaissance of the neighboring properties to identify nearby activities or substances with the potential of impacting the

project corridor. The site visit was limited to surface features only. No subsurface investigation was performed, and no samples were collected for laboratory analysis; therefore, conclusions about the condition of subsurface soils or groundwater cannot be determined from the site visit.

The location of a former ground-mounted transformer was observed and identified approximately 600 feet east of the San Ysidro POE. There was no evidence of stained soil or stressed vegetation that would indicate hazardous materials had leaked from the transformer.

Raw sewage from residential areas in Mexico was observed draining through a culvert in Deadman's Creek (at the international boundary, approximately 1.4 miles east of the San Ysidro POE) and then into Spring Canyon Creek. It could not be determined from the database reports or from other sources if any industrial waste sources contribute to this outfall. Three vehicles (with engines removed) were also observed along these creekbeds. The vegetation around these vehicles appeared normal and no stained soil was observed. A 55-gallon drum, with no labels or placards was also located near the vehicles. The drum was inverted and half-buried. No stained soil or stressed vegetation was noted. The drum was not checked to determine the contents.

Additionally, surface debris (e.g., paper, plastic, trash) was observed along most of the project corridor. No other evidence of suspect activities and/or materials was noted during the 16-20 February 1998 site visit.

3.8 Air Quality

Air quality is evaluated by measuring ambient concentrations of pollutants that are associated with human health effects. Concentrations of these pollutants that have been established as standards for evaluating air quality are known as ambient air quality standards (AAQS). Both the State of California and the EPA have established AAQS (CAAQS and NAAQS, respectively). The concentrations of ozone (O_3) in the San Diego Air Basin (SDAB) frequently exceed these standards. Concentrations of particulate matter smaller than 10 microns in diameter (PM_{10}) also exceed CAAQS several times per year.

Based on these conditions, the EPA and the California Air Resources Board (CARB) have designated the SDAB as being in "non-attainment" of air quality standards for ozone and PM_{10}. Appendix G lists the current CAAQS and NAAQS for each pollutant of interest and the maximum concentrations recorded in or near the project corridor from 1992 through 1996.

3.9 Noise

The project corridor falls within the Undeveloped Generalized Land Use classification as defined by SANDAG. The noise environment within the project corridor consists of base level, steady "background" noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is usually the sound from individual local sources. Sources of noise in the general vicinity of the project corridor include USBP motor vehicle traffic, off-road recreational vehicles, and departures and arrivals of aircraft at the

Brown Field and Tijuana International airports. The urban environment immediately south of the international boundary (Tijuana) also accounts for a significant portion of the background noise. The noise levels in the vicinity of the project corridor can be generally classified as low (less than 65 decibels [dB]).

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter presents the direct and indirect impacts associated with implementation of the Proposed Action and No-Action Alternative. As discussed in Chapter 2, the Proposed Action would fall entirely within the project corridor, in a 44.5-acre area defined as the "affected area." Impact assessment associated with the Proposed Action is based on this affected area. As discussed in Chapter 1 (Section 1.7), the Final INS Multiple Fence System Master Plan presents a plan for enhanced border control along the international boundary in the USBP San Diego Sector (Imperial Beach, Chula Vista, and Brown Field stations). The master plan presents a plan for all construction activities that would take place within a 14-mile segment (USBP San Diego Sector) of the entire 2,000-mile U.S./Mexico International Boundary and is intended to be used as a planning and programming document for current and future projects within this area. An EA to evaluate the potential cumulative environmental impacts associated with implementation of the master plan (the entire 14-mile section which includes the 1.6-mile section discussed in this EA) is slated to begin in late 1998.

4.1 Earth Resources

4.1.1 Proposed Action

All construction activities associated with the Proposed Action would be confined to the affected area as described in Chapter 2. Within this 44.5-acre area, over one million cubic yards of soil would be disturbed. All soil removed (cut) during construction activities would be used to fill other areas within the affected area. Therefore, no off-site soil disposal would occur.

Direct Impacts

There would be no significant direct impacts to soils (loss of soil productivity) as a result of implementation of the Proposed Action. Direct impacts to soils would include the mixing and relocation of over one million cubic yards of soil and the loss of potential future soil productivity under the infrastructure footprint. Other than farming associated with Stockpen soils, 0 to 2 percent slopes, the only agricultural use suitable for soils found within the affected area would be range (USDA 1973). None of the affected area is currently used for agricultural purposes. The amount of soil suitable for farming (i.e., Stockpen soils) that would be lost due to implementation of the Proposed Action totals 33.1 acres (Figure 4-1). However, since none of the affected area is, or recently has been, in agricultural production, the Proposed Action would have only minor direct impacts on the natural production of grasses and other range plants.

Figure 4-1. Soils impacted in the Affected Area.

Indirect Impacts

There would be no significant indirect impacts to soils as a result of implementation of the Proposed Action. However, implementing the Proposed Action could increase the frequency of landslides (soil sloughing) and soil erosion.

It is difficult to quantify the increased potential for landslides that could occur with implementation of the Proposed Action. Hart (1973) noted that landslides in the San Ysidro Landslide Province are sometimes associated with engineered structures. Therefore, to minimize the potential for soil sloughing or landslides, design and construction of the infrastructure improvements associated with the Proposed Action would incorporate engineering measures appropriate for the soils in the area.

Soil erosion could be another indirect impact as a result of implementing the Proposed Action. Erosion is often associated with the removal of vegetation and subsurface soil disturbance or mixing. According to the soil survey, the predominant soils within the affected area have a moderate to high erosion hazard (USDA 1973). This is due in part to soil composition and texture and the steep slopes that occur over most of the affected area. The erosion hazard is classified as low for the relatively level Stockpen soils found in the easternmost portion of the area (Figure 4-2). Erosion impacts would be minimized by incorporating engineering design and construction measures appropriate for the soils in the area. In addition, in accordance with Section 402 of the CWA, a SWPPP and NOI would be prepared, and the NOI would be filed by the INS with the EPA and the San Diego Regional Water Quality Control Board at least 48 hours prior to the start of construction activities. The SWPPP would be maintained on-site.

4.1.2 No-Action Alternative

There would be no significant direct or indirect impacts to soils as a result of implementing the No-Action Alternative. Soils in the area would remain as described in Chapter 3.

4.2 Water Resources

4.2.1 Proposed Action

Approximately 44.5 acres of soils would be disturbed as a result of grading and earth-moving activities associated with the Proposed Action. Of the 44.5 acres that would be affected by the Proposed Action, approximately 9.4 acres would be developed as an all-weather patrol road and would be considered an impervious surface.

Figure 4-2. Potential Erosion Hazard in the Affected Area.

Direct Impacts

There would be no significant direct impacts on water resources as a result of implementing the Proposed Action. Potential short-term impacts to water quality could occur due to the removal of vegetation, compaction of, and relocation of surface soils and due to the disruption of established drainage courses during the construction activities. However, as previously discussed, standard construction practices would include the implementation of a SWPPP which is designed to eliminate and/or reduce any potential impacts to surface water quality.

Six jurisdictional drainage channels were observed within the project corridor (Figure 4-3). Table 4-1 identifies the extent of these six channels that would be impacted by implementing the Proposed Action. Culverts would be place in each of these channels through the affected area. Impacts to these drainages would be restricted to the width of the affected area. The culverts would be designed to allow for the normal water flow.

Table 4-1. Jurisdictional Waters of the United States Located within the Affected Area - Channels.

Channel Number	Channel Name	Length (linear feet)	Area (square feet)
1C	-	122.2	611.0
2C	-	144.2	288.1
3C	-	151.3	434.4
4C	Spring Canyon Creek	436.7	7,860.6
5C	Deadman's Creek	584.1	5,841.2
6C	Stewart's Creek	50.0	900.0
Total		1,488.5	15,935.3

Note: The location of 6C is shown on Figure 2-2.

Twenty-four jurisdictional wetlands (i.e., vernal pools and riparian wetlands) were observed within the 1.6-mile project corridor. However, only one of the 24 jurisdictional wetlands is located within the affected area associated with the Proposed Action. This one wetland was observed in the Spring Canyon Creek riparian corridor (see Figure 4-3 and Table 4-2). No more than .38 acres of Spring Canyon riparian wetlands would be filled as a result of implementing the Proposed Action.

Activities that result in the dredging and/or filling of jurisdictional waters of the United States are regulated under Section 404 of the CWA. The USACE has established Nationwide Permits (NWPs) to efficiently authorize common activities which do not

Figure 4-3. Jurisdictional Waters of the United States in Relation to the Affected Area.

significantly impact waters of the United States. The NWPs were modified and reissued by the USACE in the Federal Register (Volume 61, Number 241) on 13 December 1996, with an effective date of 11 February 1997. The USACE has the responsibility to authorize permitting under a NWP or to require an Individual Permit.

Table 4-2. Jurisdictional Waters of the United States Located within the Affected Area - Wetlands.

Wetland Identification	Data Form Identification	Area (square feet)
1W	Spring Canyon 1	16,552.8
Total		16,552.8

As part of implementing the Proposed Action, a Section 401 water quality certification would be obtained from the California Regional Water Quality Control Board. The proposed project would be authorized under a Nationwide Permit 26 for discharges of dredged or fill material into headwaters and isolated waters for a single and complete project which causes a loss of between 1/3 and 3 acres of waters of the United States and does not cause the loss of waters of the United States for a distance greater than 500 linear feet of the streambed. The USFWS has identified several nationwide permit terms and conditions; these terms and conditions, along with the wetland mitigation plan developed as part of the project, can be found in Appendix B.

Indirect Impacts

There would be no significant indirect impacts to water resources as a result of implementing the Proposed Action. Minor deterioration of natural drainages and disruption of drainage patterns would be expected. No deterioration of groundwater quality would be expected. The well-drained nature of the soils combined with the relatively narrow affected area would minimize any wide-scale or long-term adverse impacts to water quality.

4.2.2 No-Action Alternative

There would be no significant direct or indirect impacts to water resources as a result of implementing the No-Action Alternative. Water resources in the area would remain as described in Chapter 3.

4.3 Biological Resources

4.3.1 Proposed Action

There would be no significant direct or indirect impacts to biological resources as a result of implementing the Proposed Action.

Direct and Indirect Impacts

Vegetation

The primary direct effect of implementing the Proposed Action would be the loss of vegetation and wildlife habitat. Approximately 44.5 acres of vegetation would be removed within the affected area. This includes 39.3 acres of annual grassland (with remnant scrub), 4.2 acres of annual grassland/vernal pool complex, 0.6 acres of Spring Canyon riparian community, 0.4 acres of Deadman's Creek riparian community, and .08 acres of coastal scrub (Figure 4-4). These numbers do not take into account existing roads within the affected area. The acreage of vegetation loss for each community is minimal relative to similar adjacent areas within the project region. Furthermore, all but the Spring Canyon riparian community are of poor quality due to species composition (i.e., annuals).

Implementing the Proposed Action could result in some positive impacts to area vegetation by minimizing the frequency at which fires occur. Lowering the frequency of fire could allow vegetation succession to occur, resulting in a shift from the annual grasslands back to a native coastal sage scrub community.

Wildlife

Wildlife populations within the affected area would be positively impacted by implementing the Proposed Action, although the magnitude is difficult to quantify. Wildlife occurring north of the affected area would benefit from a reduction in border activity and its detrimental effects on individuals and habitat. Currently, the area adjacent to and several hundred yards north of the international boundary receives significant continuous human disturbance. The area is routinely burned which has resulted in an increase in exotic plant species and a shift from the native coastal scrub community to a less valuable annual grasslands community. Continued pedestrian and vehicular traffic has also created more trails and roads.

Implementing the Proposed Action could decrease and/or control the amount of human activity along the international boundary, thereby potentially decreasing the number of

Figure 4-4. Vegetation Communities Impacted within the Affected Area.

intentional and accidental wildfires. This could positively affect vegetation by influencing a shift back towards the highly desirable native coastal scrub community. Implementation of the Proposed Action should also reduce and/or control the amount of pedestrian and vehicular traffic along the international boundary, as well as in the surrounding area, further reducing disturbances to vegetation and wildlife.

Negative wildlife impacts could occur during construction activities associated with the Proposed Action. Impacts resulting from habitat loss, however, would be minor due to the small area that would be affected, the linear nature of the clearing, and the low quality of the affected habitat. Negative impacts would also be temporary in nature because disturbed soils would be hydromulched and would return to similar or improved wildlife habitat after construction activities are completed. Furthermore, with the anticipated reduction in pedestrian and vehicular traffic after completion of the construction activities, the area north of the affected area could return to the more desirable native coastal scrub which could result in an increase in the number of wildlife species whose home range is in or adjacent to the area.

Wildlife movement within the affected area could be impacted by construction activities associated with the Proposed Action. The greatest movement of small animals would generally happen when a disturbance such as road grading or dozing occurs. Mobile animals would escape to areas of similar habitat, while other slow or sedentary animals which utilize burrows (amphibians, lizards, and some small mammals) could be lost. Due to the small size and linear nature of the affected area, and the fact that the wildlife habitat is already degraded/disturbed, the reduction in the number of animals would not severely impact animal communities.

Additional negative wildlife impacts could occur as a result of high intensity night lighting. Again, impacts of this type are difficult to quantify. The affected area is currently impacted (to an extent) by high intensity portable night lighting used in association with existing USBP activities. In general, night lighting attracts and concentrates insects, which in turn attracts insectivores. An increase in dead insects would also be expected on the ground near the light standards, which could attract more insectivores, and possibly animals that prey upon them. However, any changes from baseline conditions should soon stabilize with continual operation of the lights. Some nocturnal animals may avoid the lighted areas, and others should easily adapt to the new lighting.

Threatened and Endangered Species

Under the ESA, formal consultation with the USFWS is required for any action that may affect listed species. Federal agencies are required to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any threatened or endangered species. No protected species were observed within the affected area during the February 1998 survey. Three individuals (in two locations) of San Diego barrel cactus, a federal species of concern, were observed within the affected area

(Figure 4-5). This species is not listed as federal or state protected and the loss of three individuals would not impact the survival of the species.

The federal and state endangered San Diego button-celery was observed in six of the 22 vernal pools located on the Arnie's Point portion of the project corridor. Fairy shrimp were also observed in three of these six vernal pools. These six vernal pools were located outside the affected area associated with the Proposed Action (see Figure 4-5). Therefore, these protected vernal pool species would not be directly impacted by the Proposed Action.

Marginal habitat for additional protected species was present within the affected area (see Appendix D). The majority of this habitat was highly disturbed and had been burned, cleared, and/or graded in the past. The area continues to experience heavy disturbance from vehicular and foot traffic, as well as frequent fires. The water source for the riparian corridor in Spring Canyon is also a raw sewage outfall from Mexico. Given these circumstances, the potential for the occurrence of additional protected species within the affected area is low, and no negative impacts to these species would be anticipated as a result of implementing the Proposed Action.

Sensitive Habitats

Two California Sensitive Natural Community types were observed in the project corridor. This included the San Diego Mesa Claypan Vernal Pool community and the Southern Willow Scrub community. There were 22 San Diego Mesa Claypan Vernal Pools observed on Arnie's Point. None of these vernal pools was present within the affected area associated with the Proposed Action.

A small area of Southern Willow Scrub community was present in Spring Canyon adjacent to the affected area. None of this community type would be affected by implementation of the Proposed Action.

4.3.2 No-Action Alternative

There would be no significant direct or indirect impacts to biological resources (vegetation, wildlife, threatened and endangered species, or sensitive natural communities) as a result of implementing the Proposed Action. Biological resources would remain as described in Chapter 3.

Figure 4-5. Locations of Listed Species in Relation to the Affected Area.

4.4 Cultural Resources

4.4.1 Proposed Action

A cultural resources inventory survey of the project corridor was performed in order to assess potential direct and indirect impacts associated with implementing the Proposed Action. A record search conducted at the South Coastal Information Center at San Diego State University, San Diego, and the San Diego Museum of Man, located five previously identified sites within the project corridor. In addition, one previously unrecorded site and eight non-site localities were identified as a result of the cultural resources survey.

Of the six archeological sites identified within the project corridor, one (CA-SDI-10,806) is recommended as ineligible for inclusion in the NRHP. This site consists of a shallow, low-density lithic artifact scatter that appears to possess little potential to contribute significant information about the past. Site CA-SDI-10,806 has experienced heavy impacts from erosion, as well as vehicle and pedestrian disturbance, and appears to retain relatively little contextual integrity. No significant impacts would occur to this site as a result of implementing the Proposed Action. In addition, the eight non-site localities are recommended as ineligible for inclusion in the NRHP.

Three of the remaining five archeological sites (CA-SDI-10,801, CA-SDI-10,804, and CA-SDI-14,728) identified within the project corridor are recommended as potentially eligible for inclusion in the NRHP based on their potential to contribute significant information about the prehistoric past. These historic properties have been recommended as potentially eligible because: (1) in the case of the newly identified site, CA-SDI-14,728, the potential exists for buried deposits and insufficient information is available about the site to assess its research potential based exclusively on the results of the survey; and (2) in the case of the previously recorded sites, CA-SDI-10,801 and CA-SDI-10,804, previous testing revealed substantial subsurface cultural deposits containing subsistence-related ecofacts. All three of these potentially eligible sites (CA-SDI-10,801, CA-SDI-10,804, and CA-SDI-14,728) are within the project corridor but outside the affected area associated with the Proposed Action, thus, no direct impacts would occur to these sites.

Based on the survey results and previous testing, both sites CA-SDI-10,808 and CA-SDI-10,809 were recommended as potentially eligible for inclusion in the NRHP and were recommended for further investigations prior to commencing construction activities associated with the Proposed Action. As discussed previously, because the exact location of site CA-SDI-10,808 was not known, and due to the proximity of the affected area, a testing program was implemented (in coordination with the California SHPO) in order to identify the boundaries of the site prior to the start of construction activities and to determine its eligibility status. The testing program resulted in the recommendation that this portion of site CA-SDI-10,808 be determined ineligible for inclusion in the NRHP.

The testing program conducted at site CA-SDI-10,809 recommended the site as eligible for inclusion in the NRHP. Subsequently, a plan for data recovery was coordinated with the California SHPO and a representative sample of the site contents was recovered in order to lessen the adverse effect of burying the site. This data recovery plan has sufficiently sampled the site and has mitigated the expected adverse effects associated with implementation of the Proposed Action.

Direct Impacts

Implementation of the Proposed Action would cause no significant direct impacts to cultural resources. As part of implementing the Proposed Action, a portion of site CA-SDI-10,808 would be buried. Testing of site CA-SDI-10,808 recommended that the portion of the site located within the affected area be determined ineligible for inclusion in the NRHP. Provided construction is confined within the affected area, no further work is recommended at site CA-SDI-10,808, and the presence of this portion of the site should present no further impediment to implementing the Proposed Action.

Site CA-SDI-10,809 would be buried as part of the implementation of the Proposed Action. Because site CA-SDI-10,809 was recommended as eligible for inclusion in the NRHP, a data recovery program was coordinated with the California SHPO. This data recovery plan has sufficiently sampled the site and has mitigated the potential adverse effects of the Proposed Action. It is recommended that further work at site CA-SDI-10,809 is unnecessary and should present no further impediment to construction plans.

Indirect Impacts

Implementation of the Proposed Action would create no significant indirect impacts to the cultural resources in the region beyond that which has already occurred. Since implementation of the Proposed Action would “confine” most vehicular and pedestrian traffic to the affected area, further indirect impacts to cultural resources would not be expected.

4.4.2 No-Action Alternative

Implementation of the No-Action Alternative would result in no direct or indirect impacts to cultural resources. Cultural resources would remain as described in Chapter 3.

4.5 Land Use

As discussed in Chapter 3, CEQ regulations recognize the need for rational management of land resources and have provided for a specific consideration of the relationship of a changed pattern in land use from the existing pattern. To consider this requires consideration of existing and projected land use capabilities and patterns. The critical consideration in determining land use impacts is the extent to which any changes in land use patterns resulting from an action are compatible with existing adjacent uses and are in conformity with approved or planned land use patterns.

4.5.1 Proposed Action

Direct Impacts

Implementation of the Proposed Action would create no significant direct impacts to existing, adjacent, or planned land use patterns.

Existing Land Use

The affected area associated with the Proposed Action would fall entirely within the Undeveloped, Existing Generalized Land Use classification. Undeveloped lands are defined by SANDAG as "lands under construction and vacant, undeveloped lands." The existing land use within the affected area is consistent with this classification. Lands within the affected area are currently vacant, undeveloped (for the most part), and utilized for daily USBP operations. Implementation of the Proposed Action would continue this trend and would not significantly change or conflict with the existing land use classification.

Existing Adjacent Land Use

Lands to the immediate north and east of the affected area also fall under the Undeveloped, Existing Generalized Land Use classification. Lands to the immediate west of the affected area are classified as Commercial and Office and Public Facilities and Utilities. The Commercial and Office land use classification is defined by SANDAG as "strip and general retail, hotels, motels, wholesale, professional, government, and business services." The Public Facilities and Utilities (transportation, communication, and utilities) land use classification is defined as "freeways, airports, terminals, shipping, communication facilities, power plants, waste disposal, and water treatment facilities." Lands to the immediate south of the affected area, in Mexico, are classified by SANDAG as Residential, Single Family. The Single Family classification is defined as "detached housing units only." The existing land use within the affected area is consistent and does not conflict with these adjacent land uses. Lands within the area are currently vacant, undeveloped (for the most part), and utilized for daily USBP operations. Implementation of the Proposed Action would continue this trend and would not significantly conflict with the existing adjacent land use patterns.

Planned Land Use/MSCP Subarea Preserve Plan

The affected area associated with the Proposed Action would fall entirely within the Parks/Open Space, Planned Land Use classification. This classification is defined by SANDAG as "state and regional parks and preserves, wildlife and open space preserves, and National monuments." According to the same classification system, lands to the immediate north also fall within this classification. Lands to the immediate west are consistent with existing land use classifications. Planned land use for the area to the immediate east is classified as Light Industrial. Lands immediately south of the international boundary are also consistent with existing land use classifications previously presented. The Planned Land Use classifications are consistent with the MSCP Subarea Preserve Plan.

As discussed in Chapter 3, the City of San Diego's MSCP Subarea Preserve Plan has been prepared pursuant to the general outline developed by the USFWS and CDFG to meet the requirements of the California NCCP Act of 1992. The affected area associated with the Proposed Action falls within the Otay Mesa portion of the MHPA Southern Area. The optimum future condition envisioned for the Otay Mesa area is a network of open and relatively undisturbed canyons containing a full ensemble of native species and providing functional wildlife habitat and movement capabilities. Integrated into the canyon network would be recreational trails and USBP access roads (Ogden 1996).

One of the primary causes of disturbance in the Southern Area has been off-road vehicle use, including USBP activities (Ogden 1996). The USBP will continue its activities in the Southern Area, and to this end, management policies and recommendations regarding USBP activities (as well as other off-road vehicle use) have been identified in the plan and summarized in this EA (see Section 3.5.3).

Indirect Impacts

Implementation of the Proposed Action would create no significant indirect impacts to existing or planned land use patterns. Operation of the light standards (from dusk to dawn), however, could have potential indirect impacts on adjacent land uses (i.e., Residential, Single Family south of the international boundary). As a result of this, the USBP would attempt to reduce illumination of adjacent residential land uses (to the extent practical and consistent with mission and operational requirements) by not directing the lights skyward or in a horizontal plane. In order to prevent potential indirect impacts to planned land use and implementation of the MSCP Subarea Preserve Plan, the policies and recommendations presented in the plan would be adhered with to the extent practical and consistent with USBP mission and operation requirements.

4.5.2 No-Action Alternative

Implementation of the No-Action Alternative would create no significant direct or indirect impacts to existing, adjacent, or planned land use patterns. Land use would remain as described in Chapter 3.

4.6 Socioeconomics

4.6.1 Proposed Action

There would be no significant direct or indirect socioeconomic impacts as a result of implementing the Proposed Action.

Direct and Indirect Impacts

Population

Implementing the Proposed Action would create no significant in- or out-migration within the ROI. Therefore, the population of the region would not be significantly affected.

Employment and Income

Implementation of the Proposed Action (construction and operation) would be minor in comparison to overall economic activity in the area, and only minor temporary positive impacts would be realized within the ROI. Implementation of the Proposed Action would have additional positive results from decreased illegal immigration and contraband activities. Reductions in these areas decrease inherent societal costs.

Housing

As noted previously, the population in the ROI is not expected to be affected and therefore would not affect housing resources. The Proposed Action would occur in a rural area and near no residential areas. The Proposed Action would not be expected to affect housing values or other parameters.

Environmental Justice

According to Executive Order 12898, “disproportionate impacts” cannot occur unless “high and adverse... environmental effects” are expected. Since implementation of the Proposed Action would not be expected to create significant adverse impacts, there would be no significant environmental justice impacts.

4.6.2 No-Action Alternative

Implementation of the No-Action Alternative would create no significant direct or indirect impacts on the population, employment, or income of the area. Socioeconomics would remain as described in Chapter 3.

4.7 Hazardous Materials and Waste

4.7.1 Proposed Action

There would be no significant direct or indirect hazardous materials and waste impacts as a result of implementing the Proposed Action.

Direct and Indirect Impacts

Based on the information available from the database search and site visit, it is unlikely that the one California Calsite (hazardous waste site) located within 1.0 mile of the affected area would significantly impact or be impacted by implementation of the Proposed Action. The majority of the affected area associated with the Proposed Action, apart from Deadman's and Spring Canyon creeks, is a low environmental risk based on ASTM standards. The raw sewage draining into Deadman's Creek and Spring Canyon Creek is a moderate environmental risk based on ASTM standards. The sewage would be avoided and normal health precautions (e.g., shots, safety briefings, etc.) would be taken during construction and subsequent USBP operational activities. During construction activities, standard precautions to prevent hazardous material (e.g., fuels, oils) spills would be taken. In the event of a hazardous material release, a spill response plan would be implemented and the spill site remediated in accordance with federal, state, and local regulatory guidelines.

4.7.2 No-Action Alternative

Implementation of the No-Action Alternative would create no significant direct or indirect hazardous materials and waste impacts. Local resources would remain as described in Chapter 3.

4.8 Air Quality

4.8.1 Proposed Action

There would be no significant direct or indirect air quality impacts as a result of implementing the Proposed Action.

Direct and Indirect Impacts

Each Air Quality Management District (AQMD) in California establishes its own significance criteria for environmental review of projects based on the specific conditions within each air basin. The San Diego Air Pollution Control District (SDAPCD) is responsible for establishing significance criteria for construction and operational activities within the SDAB. At the time of this EA, the SDAPCD had not established significance criteria for such projects. The SDAPCD uses the General Conformity *de minimis* thresholds to identify the significance of a proposed action within the SDAB (Hamilton 1998). Under Section 176(c) of the Clean Air Act Amendments (CAAA) of 1990, an applicant must make determination of whether the proposed action "conforms" with the State Implementation Plan (SIP). Conformity is defined in Section 176(c) of the CAAA as compliance with the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. However, if total direct and indirect emissions from the proposed action are below the *de minimis* emission thresholds, the proposed action would be exempt from performing an Air Quality Conformity Analysis and would be considered to be in conformity with the SIP. Therefore, the project would be considered to have insignificant adverse impacts on air quality if the threshold levels are not exceeded (Table 4-3).

Table 4-3. General Conformity *de minimis* Thresholds.

Pollutant	Threshold (tons/yr)
Volatile organic compounds (VOC)	50
Nitric oxide and nitrogen dioxide (NO_x)	50
Carbon monoxide (CO)	100

Source: Hamilton 1998

Air quality impacts could result from construction activities as well as continuing operations associated with implementation of the Proposed Action. Construction air emissions occur as engine exhaust through the use of heavy equipment powered by diesel or gasoline combustion, as well as fugitive dust and particulate matter generated from the disturbance of soils. Other sources of emissions could occur away from the affected area in the form of engine exhaust from materials delivery or personnel transport vehicles.
The evaluation of air quality impacts associated with the Proposed Action takes into consideration the types, quantities, and time duration of gas combustion engines that would be utilized and the amount of surface area that would be disturbed. The methodology used for this analysis is based on the guidance provided by the SDAPCD and the CEQA Air Quality Handbook developed by the South Coast Air Quality Management District (SCAQMD).

The primary air emissions as a result of implementing the Proposed Action would originate from temporary construction and other mobile sources. No major stationary source is associated with the Proposed Action.

For the purposes of this analysis, activities associated with the Proposed Action have been separated into three main tasks: (1) installation/construction of the light standards, RVS cameras, and associated power cables; (2) installation/construction of the secondary fence; and (3) roadway preparation and construction (patrol road and maintenance road). All three of these tasks would generate air emissions from the use of internal combustion engines, the disturbance of soil, and fueling operations. Detailed methodology, reference sources, and worksheets are contained in the USACE project file.

Summary

Table 4-4 presents a summary of all calculated emissions for the entire Proposed Action and a comparison of the general conformity pollutants. As demonstrated in the table, none of the threshold levels would be exceeded by implementation of the Proposed Action. Emissions by task are provided in the following sections.

Table 4-4. Total Proposed Project Air Quality Impacts for General Conformity Criteria Comparison.

Proposed Activity	VOC (tons/yr)	NO_x (tons/yr)	CO (tons/yr)
Construction equipment use	2.0	17.3	10.7
Highway vehicle travel	0.134	0.947	1.56
Total annual emissions	2.134	18.25	12.26
de minimis Threshold	50	50	100
Threshold Exceeded?	NO	NO	NO

Light Standards and RVS Cameras

Implementation of the Proposed Action would include the installation of high-pressure sodium floodlights, RVS cameras, support poles, and power supply cables. Light standards would be spaced approximately 400 feet apart within the affected area, therefore, 20 light standards along with buried power cables would be installed. Additionally, up to four pole-mounted RVS cameras would be installed within the affected area. The specific locations of the RVS cameras has not been determined.

A 10-foot wide right-of-way for installation of the power cables and 400 square feet for each light standard and each pole-mounted RVS camera would be disturbed during construction

activities. The total surface area that would be disturbed for this portion of the Proposed Action is estimated to be 93,600 square feet (2.1 acres). The installation of light standards, pole-mounted RVS cameras, and electrical cables is estimated to require approximately 24 working days. Passenger vans with 7-person capacities or a 44-passenger bus would provide personnel transportation.

Tables 4-5 and 4-6 summarize the potential impacts from construction of the light standards, pole-mounted RVS cameras, and installation of electrical cables associated with the Proposed Action.

Table 4-5. Daily Air Quality Impacts from Lighting and RVS Camera Construction.

Proposed Activity	VOC (lbs)	NO_x (lbs)	SO_x (lbs)	CO (lbs)	PM_{10} (lbs)
Construction equipment use	35.7	242.3	20.6	176.5	17.1
Fugitive dust, soil disturbance	--	--	--	--	2,910
Highway vehicle travel	0.68	4.72	0.06	7.87	0.45
Maximum daily emissions	36.4	247	20.7	184	2,928

Table 4-6. Annual Air Quality Impacts from Lighting and RVS Camera Construction.

Proposed Activity	VOC (tons)	NO_x (tons)	CO (tons)
Construction equipment use	0.4	2.8	1.9
Highway vehicle travel	0.008	0.057	.094
Total annual emissions (tons)	0.41	2.86	2.0

The existing power system would provide long-term operation for the light standards and RVS cameras. No significant increase in air quality impacts from the operation of the existing electrical power utility system would result from implementing the Proposed Action.

Secondary Fence

The Proposed Action would include the installation of a secondary fence along the length of the affected area. Based on previous design assumptions, this fence would be supported by poles installed at 20-foot intervals to a depth of 7 feet. Additionally, a subsurface barrier (landing mat) would be installed adjacent to the fence footing along the entire length of the fence. The construction of the secondary fence would primarily utilize military personnel and would be concurrent with the construction of the patrol road.

A 10-foot wide right-of-way for installation of the secondary fence would be disturbed during construction activities. The total surface area that would be disturbed from this portion of the

Proposed Action is estimated to be approximately 84,000 square feet (1.93 acres). The installation of secondary fencing is estimated to require approximately 135 working days. Passenger vans with 7-person capacities or a 44-passenger bus would transport personnel to the immediate site. Tables 4-7 and 4-8 summarize the potential impacts from construction activities associated with the secondary fence.

Table 4-7. Daily Air Quality Impacts from Fencing Construction.

Proposed Activity	VOC (lbs)	NO_x (lbs)	SO_x (lbs)	CO (lbs)	PM_{10} (lbs)
Construction equipment use	35.7	242.3	20.6	176.5	17.1
Fugitive dust, soil disturbance	--	--	--	--	2,013
Highway vehicle travel	1.34	9.59	0.11	15.39	0.78
Maximum daily emissions	37.04	251.9	20.71	191.9	2,031

Table 4-8. Annual Air Quality Impacts from Fencing Construction.

Proposed Activity	VOC (tons)	NO_x (tons)	CO (tons)
Construction equipment use	0.6	4.8	2.8
Highway vehicle travel	0.081	0.580	0.935
Total annual emissions	0.681	5.38	3.73

Patrol and Maintenance Road Construction

The construction of the patrol and maintenance roads would constitute the majority of heavy equipment usage associated with the Proposed Action. Air emissions from this portion of the Proposed Action have been estimated using methods in the CEQA Air Quality Handbook and include combustion engine exhaust emissions as well as fugitive dust generated from activities on unpaved surfaces. Tables 4-9 and 4-10 present a summary of the findings from this detailed analysis.

Table 4-9. Daily Air Quality Impacts from Patrol and Maintenance Road Construction.

Proposed Activity	VOC (lbs)	NO_x (lbs)	SO_x (lbs)	CO (lbs)	PM_{10} (lbs)
Construction equipment use	238	2,425	241.5	1,501	165.8
Fugitive dust, soil disturbance	--	--	--	--	27,245
Highway vehicle travel	0.68	4.72	0.06	7.87	0.45
Maximum daily emissions	238.68	2,430	241.1	1,510	27,411

Table 4-10. Annual Air Quality Impacts from Patrol and Maintenance Road Construction.

Proposed Activity	VOC (tons)	NO_x (tons)	CO (tons)
Construction equipment use	1.0	9.7	6.0
Highway vehicle travel	.045	0.31	0.53
Total annual emissions (tons)	1.045	10.01	6.53

Particulate Emissions from Road Construction and Vehicle Travel on Unpaved Surfaces

The largest contribution to air quality impacts from implementation of the Proposed Action would be the release of dust particles from vehicle travel on unpaved surfaces and the movement of soil during construction operations. Factors that affect the estimation of airborne particulate emissions from exposed, unpaved surfaces include: the type and weight of vehicles used; the composition of the unpaved surface; the amount of time and distance that is traveled; the quantity of soil that is moved; the moisture content of the exposed surface; and other atmospheric factors such as wind and humidity. Although it is not possible to predict such factors as the amount of rainfall during the period of construction or the exact number of vehicle miles, assumptions may be made and approximations used. The following is a list of assumptions used for calculating fugitive dust emissions.

(1) During the cut and fill phase of patrol road construction, water would be used to ensure control of fugitive dust emissions as well as to provide adequate compaction of the road base. It is assumed that the moisture content of unpaved surfaces would be "moist" (moisture content of 15 percent) in all emissions calculations where applicable.
(2) Precipitation conditions in the project area are approximately 10 inches per year. The mean number of days per year with measurable precipitation is 18 in all emissions calculations where applicable.
(3) The percentage of time that the wind speed is greater than 12 mph in the project area is assumed to be 20 percent.
(4) All of the unpaved surface is assumed to be equivalent to typical "farm road" conditions and a factor of 16 percent silt loading is used in emissions calculations where applicable.
(5) The aggregate type is assumed to be "overburden" and the silt content 7.5 percent in all emissions calculations where applicable.
(6) Vehicle speeds of construction equipment on unpaved surfaces are assumed to be 10 mph, or less.

The total quantity of particulate dust (PM_{10}), 10 microns or less in diameter, is estimated to be over 2,000 tons throughout the duration of the Proposed Action. This estimate would be

reduced by the application of water to exposed surfaces and the re-establishment of ground cover by hydromulching as described in the Proposed Action.

Wind Erosion of Unpaved Surfaces

The affected area associated with the Proposed Action encompasses 44.5 acres. Using the method for calculating wind erosion of storage piles given in the CEQA Air Quality Handbook, the emission factor consists of: (1) determining the silt content of aggregate materials (7.5 percent is assumed); (2) the number of days of measurable precipitation (assumed to be 18 in the project area); (3) the percentage of time that wind speeds exceed 12 mph; and (4) the fraction of total suspended particulate that is less than 10 microns in diameter. This factor is multiplied times the total area in acres of uncovered soil or aggregate.

Emissions from Mechanical Soil Displacement

Using the method for calculating particulate emissions from soil moving or bulldozing operations given in the CEQA Air Quality Handbook, the emission factor consists of: (1) the silt content of aggregate materials (7.5 percent is assumed); (2) the moisture content of the surface material (assumed to be 15 percent); and (3) the total hours of operations. The emissions from soil moving or material handling other than bulldozing are calculated based on: (1) mean wind speed in miles per hour (assumed to be 5 mph); (2) the moisture content of the surface material (assumed to be 15 percent); and (3) the quantity of soil handled per day in pounds. The quantity of soil that would be handled during the Proposed Action is estimated to be approximately 1.06 million cubic yards. The period of time to complete the project is estimated at approximately 170 working days. Averaged over this period of time, approximately 5,900 cubic yards of soil would be handled per day. Based on a factor of 100 pounds per cubic foot of loose sand and gravel (Standard Handbook for Civil Engineers, 3rd Edition, 1983), this is equivalent to nearly 16 million pounds of material moved per day.

4.8.2 No-Action Alternative

Implementation of the No-Action Alternative would cause no significant direct or indirect impacts to air quality. Air quality in the region would remain as described in Chapter 3.

4.9 Noise

4.9.1 Proposed Action

Direct Impacts

There would be no significant direct noise impacts as a result of implementing the Proposed Action. On-site noise would occur during construction activities primarily as the result of

heavy-duty diesel- and gasoline-powered construction equipment (see Table 2-1). Noise levels from the construction equipment would range from 75 dBA to 90 dBA at a distance of approximately 50 feet from the source, and 50 dBA to 60 dBA at a distance of approximately 400 feet from the source. It should be noted that noise levels are calculated based on the assumption that noise from localized sources typically falls off by approximately 8 dBA with each doubling of distance from the source of noise.

Off-site noise sources would occur from trucks delivering material (e.g., concrete, etc.) and equipment to the job site, as well as from vehicles used to transport personnel to the construction site. As described in Section 2.1.3 (Construction Activities), approximately 100–140 workers would be involved in the construction activities associated with the Proposed Action. Workers would commute from the bivouac area east of the R.J. Donovan Correctional Facility located on Alta Road to the equipment yard. Noise levels from these vehicles are generally low and would not impact any ambient noise levels.

North of the international boundary, there are no sensitive noise receptors located near the affected area. However, there is a densely populated area south of the international boundary, adjacent to the affected area, and the existing primary fence acts as a sound buffer for this populated area. Construction activities associated with the Proposed Action would occur only during daylight hours and would be temporary in nature. No permanent changes to the ambient conditions would result from the construction activities associated with the Proposed Action.

Indirect Impacts

There would no significant indirect noise impacts as a result of implementing the Proposed Action. No permanent deterioration of the ambient conditions would result, as there would be very few changes to permanent operational noise sources.

4.9.2 No-Action Alternative

Implementation of the No-Action Alternative would create no significant direct or indirect noise impacts. Noise levels in the area would remain consistent with those described in Chapter 3.

5.0 PUBLIC INVOLVEMENT

5.1 Agency Coordination

This chapter discusses consultation and coordination that occurred during preparation of this EA. As discussed previously, copies of agency coordination letters are provided in Appendix B and Appendix E. Coordination has been conducted with the INS, USBP, USACE (Fort Worth, Albuquerque, and Los Angeles districts), California National Guard-Team Engineer, JTF-6, USIBWC, California SHPO, CDFG, and the USFWS.

5.2 Draft EA

The Draft EA was circulated for a 15-day public review period to appropriate resource agencies and individuals. In accordance with NEPA, a legal notice was published in the local newspaper. The Draft EA was also placed in the public library to make copies readily available to the interested public (Appendix H). Comments received on the Draft EA have been incorporated, as appropriate, into this Final EA.

5.3 EA Distribution

The Draft EA was distributed to the following persons, groups, and/or agencies for comments.

CDFG
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Coronado Public Library
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County of San Diego
Department of Planning and Land Use
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Department of Parks and Recreation
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Joint Task Force Six

San Diego Air Pollution

San Diego Gas and

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5.4 Public Review and Comment

During the 15-day public review period for the Draft EA, two comment letters were received. The letters are presented in their entirety in Appendix H. Letters and comments have been alphanumerically depicted (e.g., A-1, with "A" representing the letter received and "1" representing the first comment of that particular letter). Responses to all comments are provided in the following text.

Comment Letter A

U.S. Department of the Interior, Fish and Wildlife Service
Ecological Services, Carlsbad Field Office
Ms. Sheryl Barrett
Assistant Field Supervisor

A-1. Comment noted. In an effort to clarify this statement, the August 1994 Final Programmatic Environmental Impact Statement (PEIS) for JTF-6 Activities along the

U.S./Mexico Border (Texas, New Mexico, Arizona, and California) was prepared by the USACE, Fort Worth District, in response to a request from the INS and JTF-6. The PEIS was prepared to evaluate the potential direct, indirect, and cumulative environmental impacts associated with JTF-6 continuation of its program of providing operational, engineering, and general support to law enforcement agencies. The purpose of the JTF-6 program is to allow law enforcement agencies operating within the southwestern United States, and which have drug interdiction authorities, to conduct their missions more efficiently and effectively. The INS, through its USBP component, has been the primary beneficiary of most of the JTF-6 actions and therefore elected to be the lead agency for the preparation of the PEIS. Support actions provided by JTF-6 fall into three major categories: operational support, engineering support, and general support. These services are provided to any law enforcement agency which has responsibility for control of illegal drugs within the border states of Texas, New Mexico, Arizona, and California.

CEQ regulations state that agencies are encouraged to "tier" their NEPA documents to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review. CEQ regulations (§1508.28) define "tiering" as referring to the coverage of general matters in broader EIS (such as the 1994 PEIS) with subsequent narrower statements or environmental analyses subsequently prepared. Tiering is appropriate when the sequence is: (a) From a program, plan, or policy EIS to one of lesser scope or to a site-specific EIS or EA; and (b) From an EIS on a specific action at an early stage to a supplement, or a subsequent EIS or EA at a later stage (such as environmental mitigation). Tiering in such cases is appropriate when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe. Whenever a broad EIS has been prepared (such as a program or policy statement like the 1994 PEIS) and a subsequent EIS or EA is then prepared on an action included within the entire program or policy (such as a site-specific action like this EA), the subsequent EIS or EA need only summarize the issues discussed in the broader statement and/or incorporate discussions from the broader EIS by reference and shall concentrate on the issues specific to the subsequent action (§1502.20).

As a result of the 1994 PEIS, several site-specific EAs have "tiered" from this document. As a direct result of this, surveys for protected species prior to each specific action have resulted in vast expansion of the knowledge concerning the distribution of protected species. Additionally, habitats supporting California gnatcatcher, Least Bell's vireo, and California least tern have been protected and/or enhanced due to JTF-6 related construction activities near San Diego.

As stated previously, the 1994 PEIS was prepared in an effort to evaluate the overall potential direct, indirect, and cumulative environmental impacts associated with JTF-6 related construction activities within the southwestern United States. This PEIS was selected by the CEQ and the National Association of Environmental Professionals as the best federal programmatic NEPA document in 1994. Consistent with CEQ regulations (§1502.20 and

§1508.28), the 1994 PEIS provided coverage of a general matter with subsequent narrower EAs (including this one) incorporating data and analyses. The PEIS was funded and developed so that site-specific NEPA documents could be tiered from it.

A-2. Comment noted. The INS Multiple Fence System Master Plan for San Diego, California, is in its final stages of development, and an EA to evaluate any potential direct, indirect, and cumulative environmental impacts associated with implementation of the master plan will begin in late 1998 to early 1999. We agree that it would be ideal to prepare and finalize the master plan, and then prepare programmatic NEPA documentation for implementation of the master plan. However, several actions have taken place along the U.S./Mexico international boundary within California over the last several years. Proper NEPA documentation has been prepared for each of these actions. Several of these actions were brought on and authorized by congressional mandates, including the 1996 Illegal Immigration Reform and Immigrant Responsibility Act (authorization for this action). As a result of these mandates, overall mission planning has been affected because the INS has had to respond in a timely manner and in doing so has implemented several enforcement-related construction projects throughout the San Diego area. Proper NEPA documentation has been prepared for each of these individual actions. When these separate actions were authorized, there was no overall "plan" on how enforcement would be conducted in the San Diego area. As a result of this shortcoming, past actions were not implemented in an entirely effective manner (i.e., develop a master plan, prepare programmatic NEPA documentation, and then subsequent site specific NEPA documentation as necessary). The INS recognizes that a master plan which includes proper federal planning and decisionmaking is the best way to complete its mission while at the same time complying with all federal, state, and local environmental legislation. As a direct result of this, the INS Multiple Fence System Master Plan for San Diego has now been developed. The master plan presents an overall plan for enhancing border control in the USBP San Diego Sector (Imperial Beach, Chula Vista, and Brown Field stations). The document is intended to aid in the total operational process that is being conducted by the INS to fight the influx of illegal immigrants and contraband traffic. Once the master plan is finalized and a programmatic EA is conducted, the INS will have an overall enforcement plan for the San Diego area. With this plan and subsequent NEPA documentation, the INS will be able to better formulate alternatives and better assess potential environmental impacts (direct, indirect, and cumulative) that could result from its actions. This will allow for more timely coordination of INS enforcement efforts with federal, state, and local agencies.

A-3. Comment noted. The INS is aware that the USFWS has developed survey protocols for detection of certain species including the California gnatcatcher, San Diego fairy shrimp, and Riverside fairy shrimp. In a letter dated 7 January 1998, addressed to Mr. John Bradleyof your office, the INS, through its contractor (Pacific Western Technologies, Inc.) requested individual species survey protocols. Protocols were received on 6 May 1998.

The biologists who conducted surveys for this EA were not permitted under Section 10(a)1(A) of the ESA. According to our interpretation and understanding of Sections 10(a)1(A), subsection (j), and 9(a)1(A-E), a permit was not required to perform biological surveys of the area to identify potential habitat. As documented in the EA (pg. 3-21), no species were harassed as outlined in Section 9(a)1(A-E). The INS and its subcontractors will assure proper coordination and permitting (as required) on future projects.

A-4. *Wetland Issues* - Comment noted. As part of implementing the Proposed Action, a Section 401 water quality certification would be obtained from the California Regional Water Quality Control Board. The proposed project would be authorized under a NWP 26 for discharges of dredged or fill material into headwaters and isolated waters for a single and complete project which causes a loss of between 1/3 and 3 acres of waters of the United States and does not cause the loss of waters of the United States for a distance greater than 500 linear feet of the streambed. The USFWS has identified several nationwide permit terms and conditions; these terms and conditions, along with the wetland mitigation plan developed as part of the project, are included in the Final EA (see Appendix B).

Vernal Pool Issues - Comment noted. All vernal pools would be avoided with implementation of the Proposed Action as defined in the Final EA. Formal consultation, pursuant to Section 7 of the ESA, is not required.

Vegetation Communities Issues - Comment noted. As discussed in the EA, loss of previously disturbed annual grassland habitat would be mitigated by hydromulching consistent with the MSCP. It is the INS position that the existing disturbed grassland will come back next year even without hydromulching; thus, there would be no loss to this "important resource." Other vegetation communities present in the area of the Proposed Action, as documented in the EA (Chapters 3 and 4), have been greatly disturbed by previous activities. The MSCP also indicates that the entire area is highly disturbed and lacks important native communities. The EA states that there is "remnant" coastal scrub in the area (three dozen of two historically native plant species), but there are "remnant" plant communities throughout the area. It is the INS position that there is no need to mitigate for historical vegetation communities that no longer exist on the site. A few native plant species does not constitute a native plant community.

MSCP Issues - Comment noted. This area is listed in the MSCP to be set aside as a preserve for San Diego County. However, the MSCP also states that the USBP has the authority to cross Spring Canyon and other areas with patrol roads. This can be accomplished as long as the USBP minimizes or controls its actions to the extent possible and consistent with mission objectives. It is the INS position that the USBP and the California National Guard are in compliance with the MSCP and are executing their mission objectives in a manner consistent with the MSCP.

As stated in the EA (Chapter 2), Best Management Practices would be implemented throughout the duration of construction activities, including the development and implementation of a SWPPP. The SWPPP has been developed to eliminate and/or reduce any potential impacts to surface water quality as a result of implementing the Proposed Action. Implementation of Best Management Practices will minimize and avoid impacts to adjacent habitats. Additionally, as stated in the EA (Chapter 2), all construction activities associated with the Proposed Action would take place entirely within the "affected area" associated with the action. No disturbance will take place outside this corridor. All equipment utilized during construction activities would be transported to the immediate construction site via existing dirt roads, thus no additional disturbance would occur. As part of standard construction practices, the affected area would be delineated with stakes or markers. Existing access routes are quite obvious, but the INS is willing to stake these access routes as well. These conditions have been included in the Final EA. Additionally, the USFWS is welcome to visit the site at any time. As part of implementing the Proposed Action, and prior to commencing construction activities, all troops will be educated on the sensitivity of the area. Areas of particular concern (e.g., nearby vernal pools, etc.) will be staked prior to commencing construction. This condition has also been included in the Final EA.

A-5. Comment noted. A location map for the 5-acre bivouac site and the equipment yard has been included in the Final EA. However, as stated in the EA (page 2-14), the bivouac site was developed through a previous action, has been approved for use under an existing Memorandum of Understanding (MOU) between the INS and the County of San Diego, and was covered under previous NEPA documentation.

A-6. Comment noted. A mitigation plan has been developed as part of this project. The plan has been submitted to the USFWS and is included as Appendix B in this EA.

A-7. Comment noted. Section 2.1.5 in the Final EA has been expanded.

A-8. Comment noted. The correction has been made and reflected in the Final EA.

Comment Letter B

International Boundary and Water Commission
United States Section
Environmental Management Division
Mr. Yusuf Farren, P.E.
Division Engineer

B-1. Comment noted. The infrastructure improvements associated with the Proposed Action would be constructed in a manner that would not impact upon the existing transboundary surface water patterns and the visibility and permanency of the international boundary monuments. All potential sanitation problems would be properly addressed to ensure that pollutants do not enter or impact either country.

B-2. Comment noted. Existing monument numbers 231 through 258 would be adequately avoided. The line of sight between monuments shall remain unimpaired. In order to prevent encroachment into Mexico, the INS would confine all work equipment, materials, and personnel associated with this action to United States territory.

B-3. Comment noted. Revision is reflected in the Final EA.

B-4. Comment noted. All comments regarding culverts, conveyance capacity, slope, and dimensions have been addressed by the California National Guard, Team Engineer. This correspondence is included in Appendix H.

B-5. Comment noted. All comments regarding culverts, conveyance capacity, slope, and dimensions have been addressed by the California National Guard, Team Engineer. This correspondence is included in Appendix H.

B-6. Comment noted. All comments regarding culverts, conveyance capacity, slope, and dimensions have been addressed by the California National Guard, Team Engineer. This correspondence is included in Appendix H.

6.0 LIST OF PREPARERS

The following people were responsible for preparation and review of this EA.

NAME	DISCIPLINE/ EXPERTISE	EXPERIENCE	ROLE IN PREPARING EA
Mr. John R. Alexander Geo-Marine, Inc.	Biology	4 years NEPA documents	Report Coordination; Earth Resources and Soils in Chapters 3 and 4; Technical Review
Mr. Thomas Ball Geo-Marine, Inc.	Environmental Science	4 years NEPA documents	Hazardous Waste in Chapters 3 and 4
Mr. Chris Beacham Geo-Marine, Inc.	Socioeconomics	8 years economic analyses and NEPA documents	Socioeconomics and Environmental Justice in Chapters 3 and 4
Ms. Johnna Buysse Geo-Marine, Inc.	Archeology	7 years cultural resource management studies	Project Archeologist; cultural resources survey; Cultural Resources in Chapters 3 and 4
Mr. Chris Ingram Geo-Marine, Inc.	Biology	20 years biological and NEPA documents	EA review
Mr. Joseph Kaskey Geo-Marine, Inc.	Biology	24 years biological and NEPA documents	Chapter 1; EA review and editing
Ms. Kellie Krapf Geo-Marine, Inc.	Archeology	9 years cultural resource management studies	Field supervisor; cultural resources survey

NAME	DISCIPLINE/ EXPERTISE	EXPERIENCE	ROLE IN PREPARING EA
Mr. Mark Merrill Pacific Western Technologies, Ltd.	Water Resources & Noise	23 years environmental studies	Water Resources and Noise in Chapters 3 and 4
Mr. Ron Moore Geo-Marine, Inc.	Land Use	9 years NEPA documents	Project Manager; Chapters 1, 2; Land Use in Chapters 3 and 4
Mr. Robert Moyer Pacific Western Technologies, Ltd.	Air Quality	17 years environmental studies	Air Quality in Chapters 3 and 4
Ms. Denise Pemberton Geo-Marine, Inc.	Archeology	4 years cultural resource management studies	Field archeologist; cultural resources survey
Mr. David Pitts Geo-Marine, Inc.	Biology	8 years environmental and NEPA documents	Field biologist; Wildlife, T/E Species in Chapters 3 and 4; Technical Review
Mr. Rudolph Reinecke Geo-Marine, Inc.	Biology	5 years biological studies	Field biologist; Vegetation and Waters of the U.S. in Chapters 3 and 4; Technical Review
Mr. Brent Tebbets Geo-Marine, Inc.	Socioeconomics	3 years economic analyses and NEPA documents	Economist; Socioeconomic Resources in Chapters 3 and 4

NAME	DISCIPLINE/ EXPERTISE	EXPERIENCE	ROLE IN PREPARING EA

Mr. Eric Verwers U.S. Army Corps of Engineers, Fort Worth District	Biology	10 years environmental impact assessment for federal projects and 5 years wildlife restoration, Fort Worth District	Contract Manager; EA review and coordination; environmental design measures
Dr. Dan Wilkinson Geo-Marine, Inc.	Botany	27 years biological studies and NEPA documents	Program Manager

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