



ENVIRONMENTAL STEWARDSHIP PLAN
FOR REPLACEMENT, OPERATION, AND MAINTENANCE
OF TACTICAL INFRASTRUCTURE
SAN DIEGO SECTOR SECONDARY WALL
REPLACEMENT PROJECT

U.S. BORDER PATROL, SAN DIEGO SECTOR
IMPERIAL BEACH STATION AND CHULA VISTA STATION, CALIFORNIA

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



COVER SHEET

ENVIRONMENTAL STEWARDSHIP PLAN FOR REPLACEMENT, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE

U.S. BORDER PATROL SAN DIEGO SECTOR
IMPERIAL BEACH AND CHULA VISTA STATIONS, CALIFORNIA

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

Parties Consulted: Department of the Interior (DOI) including the Bureau of Land Management (BLM) and the U.S. Fish and Wildlife Service (USFWS); U.S. Army Corps of Engineers (USACE); United States Section, International Boundary and Water Commission (USIBWC); Tijuana National Estuarine Research Reserve (TNERR); California State Parks; California Office of Historic Preservation; California Department of Fish and Wildlife (CDFW); California Coastal Commission (CCC); Native American Heritage Commission (NAHC); San Diego Regional Water Quality Control Board; County of San Diego; City of San Diego; City of Imperial Beach; and Metropolitan Transit System Railroad; and local tribes.

Affected Location: United States/Mexico international border in San Diego County, California.

Project Description: The project replaces approximately 12.5 miles of existing secondary border wall, constructs approximately 1.5 miles of new secondary border wall (14 total miles), installs fiber-optic cable, and constructs an all-weather road along the southwestern border of the United States. As part of a separate project, the primary wall is currently being replaced with a bollard wall, which is better suited to USBP's current operational needs. Compared with the primary wall, the current secondary wall is less consistent in placement and often made of different materials. In the Western Segment, the secondary wall is metal and in some sections there is razor-wire along the base and top, whereas in the Tijuana River floodway, the secondary wall is made of concrete bollards. The existing secondary wall does not meet current operational needs and is no longer adequate for the purpose of fulfilling CBP's mission. The new taller and more substantial bollard-style wall that will replace the secondary wall is critical to prevent illegal entries into the United States and to achieve operational control of the border.

The project will include: (1) design, (2) site preparation and material delivery, (3) removal and replacement of the existing secondary wall, (4) removal and replacement of existing motorized vehicle gates, (5) installation of new fiber-optic cable, (6) installation of grouted riprap (wash areas), and (7) construction of a 40-foot-wide all-weather road with electrical and lighting (along 1.5 miles of new section of wall).

Report Designation: Environmental Stewardship Plan (ESP).

Abstract: CBP plans to remove and replace approximately 12.5 miles of existing secondary border wall, construct approximately 1.5 miles of new secondary border wall (14 total miles), install fiber-optic cable, and construct an all-weather road along the United States/Mexico international border in San Diego County, California. The project area lies within the USBP San Diego Sector. With the exception of a small portion that is managed by USIBWC and some staging and access that will occur on state, county, and city roads, the project area is entirely under the administrative jurisdiction of CBP. Project activities will begin near the Pacific Ocean, continuing east along the border, and are divided into four primary segments: the Western, Central, and Eastern segments, and the northern levee of the Tijuana River from the border west to Dairy Mart Road. Construction materials will arrive at the primary staging area and then be distributed to secondary staging areas in each of the four project segments.

This ESP evaluates potential environmental impacts associated with the project. Protections and Best Management Practices (BMPs) for factors such as air quality, noise, geological resources, water use and quality, biological resources, cultural resources, and hazardous materials have been incorporated into the project design.

The public may obtain additional copies of the ESP from the project web site at www.cbp.gov/about/environmental-cultural-stewardship/documents/esp-essr; by e-mailing commentsenv@cbp.dhs.gov; or by written request to Mr. Loren Flossman, Program Manager, Border Wall Program, 1300 Pennsylvania Avenue, NW, Suite 6.2A, Washington, DC 20229.

ENVIRONMENTAL STEWARDSHIP PLAN
FOR REPLACEMENT, OPERATION, AND MAINTENANCE OF TACTICAL
INFRASTRUCTURE
U.S. BORDER PATROL SAN DIEGO SECTOR
IMPERIAL BEACH AND CHULA VISTA STATIONS CALIFORNIA

DEPARTMENT OF HOMELAND SECURITY
U.S. Customs and Border Protection
U.S. Border Patrol

May 2019

TABLE OF CONTENTS

List of Abbreviated Terms.....	iii
1.0 General Project Description	1-1
1.1 Introduction to the Environmental Stewardship Plan.....	1-1
1.2 USBP Background.....	1-2
1.3 Goals and Objectives of the Project.....	1-2
1.4 Agency Coordination, Stakeholder and Tribal Outreach.....	1-2
1.5 Best Management Practices and Mitigation	1-4
2.0 Description of the Project	2-1
2.1 Location	2-1
2.2 Design.....	2-4
2.3 Site Preparation	2-7
2.4 Removal and Replacement of Secondary Wall with Bollard Wall	2-7
2.5 Construction Schedule	2-7
2.6 Operations and Maintenance.....	2-8
3.0 Environmental Setting and Effects Evaluation.....	3-1
3.1 Resources Excluded from Further Analysis	3-1
3.2 Air Quality.....	3-1
3.3 Noise	3-6
3.4 Land Use, Recreation, and Aesthetics.....	3-11
3.5 Geological Resources and Soils	3-18
3.6 Hydrology and Water Management.....	3-20
3.7 Biological Resources	3-29
3.8 Cultural Resources.....	3-44
3.9 Socioeconomics	3-50
3.10 Hazardous Materials and Waste.....	3-52
4.0 Related Projects and Cumulative Effects	4-1
4.1 Related Projects.....	4-1
4.2 Cumulative Effects.....	4-4
5.0 References Cited.....	5-1

FIGURES

2-1:	Regional Location.....	2-2
2-2:	Study Area and Segments	2-3
2-3:	Primary Staging Areas	2-6

TABLES

2-1:	Secondary Wall Segments	2-3
3-1:	National Ambient Air Quality Standards	3-3
3-2:	Conformity <i>de minimus</i> Emissions Thresholds	3-4
3-3:	A-Weighted (dBA) Sound Levels of Construction Equipment and Calculated Attenuation at Various Distances ¹	3-9
3-4:	Existing Jurisdictional Areas within the Study Area.....	3-23
3-5:	Vegetation Communities/Land Cover Types within the Survey Area.....	3-30
3-6:	Sensitive Plant Species Observed.....	3-36
3-7:	List of Cultural Resources within the Study Area.....	3-47

APPENDICES (bound under separate cover)

A:	2019 Waiver
B:	Biological Resources Report
C:	Burrowing Owl Mitigation Plan
D:	Cultural Resources Survey Report
E:	Wetland Delineation Report

List of Abbreviated Terms

°F	degrees Fahrenheit
AF	acre-feet
APE	area of potential effect
APE	area of potential effect
BIS	Border Infrastructure System
BMP	best management practice
CAA	Clean Air Act
CAGN	coastal California gnatcatcher
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CBP	U.S. Customs and Border Protection
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFC	chlorofluorocarbons
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CH ₄	methane
CHRIS	California Historical Resources Information System
City	City of San Diego
CO	carbon monoxide
CO ₂	carbon dioxide
CRHR	California Register of Historical Resources
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
dBH	dB sustained for an hour
DHS	Department of Homeland Security
DO	dissolved oxygen
DTSC	Department of Toxic Substances Control
ESP	Environmental Stewardship Plan
FAC	Facultative
FACW	Facultative-Wetland
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
GHG	greenhouse gas
gpm	gallons per minute
HFC	hydrofluorocarbons
HUD	U.S. Department of Housing and Urban Development
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act of 1996
LBV	least Bell's vireo
LED	light-emitting diode
MBTA	Migratory Bird Treaty Act
MSCP	Multiple Species Conservation Program
N ₂ O	nitrous oxide

NAAQS	National Ambient Air Quality Standards
NERR	National Estuarine Research Reserve
NHPA	National Historic Preservation Act
NI	No Indicator
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
O ₃	ozone
OBL	obligate
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
Pb	lead
PCPI	per capita personal income
PM ₁₀	particulate matter less than 10 microns
PM _{2.5}	particulate matter less than 2.5 microns
POE	port of entry
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
RWQCB	Regional Water Quality Control Board
RWR	Ridgeway's Rail
SANDAG	San Diego Association of Governments
SCIC	South Coastal Information Center
SCWRP	Southern California Wetlands Recovery Project
SDCWA	San Diego County Water Authority
Secretary	Secretary of Homeland Security
SO ₂	sulfur dioxide
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan
TI	tactical infrastructure
TMDLs	Total Maximum Daily Loads
TRF	Tijuana River Floodway
TRVRP	Tijuana River Valley Regional Park
U.S.	United States
USACE	United States Army Corps of Engineers
USBP	United States Border Patrol
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USIBWC	United States International Boundary and Water Commission

1.0 General Project Description

1.1 Introduction to the Environmental Stewardship Plan

The principal mission requirements of the Department of Homeland Security (DHS) include border security and the detection and prevention of illegal entry into the United States. Congress has provided the Secretary of Homeland Security (the Secretary) with a number of authorities necessary to carry out DHS's border security mission. One of these authorities is found in Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA). Section 102(a) of IIRIRA provides that the Secretary shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the U.S. border to deter illegal crossings in areas of high illegal entry into United States (U.S.) lands. In Section 102(b) of the IIRIRA, Congress has called for the installation of additional fencing, barriers, roads, lighting, cameras, and sensors on the southwest border. Finally, in Section 102(c) of the IIRIRA, Congress granted to the Secretary the authority to waive all legal requirements as determined necessary to ensure the expeditious construction of barriers and roads authorized by Section 102 of IIRIRA.

DHS has used the authority granted to it by Congress in Section 102 of IIRIRA to construct needed border infrastructure across the southwest U.S. border. U.S. Customs and Border Protection (CBP) is the DHS component that has primary responsibility for such construction. CBP's construction of border infrastructure has been aided by the waiver authority set forth in Section 102(c) of the IIRIRA. Although the waiver authority has facilitated the construction of border infrastructure, DHS/CBP has continually made a voluntary commitment to responsible environmental stewardship for projects covered by an IIRIRA waiver.

In January of 2019, the Secretary issued a waiver covering the construction of roads and physical barriers in a project area starting at the Pacific Ocean and extending eastward to Border Monument 251. Within this approximately 14-mile project area, CBP will replace the existing secondary border wall that no longer meets the U.S. Border Patrol's (USBP's) operational needs. The existing secondary barrier will be replaced with a bollard-style wall that will improve both operational efficiency and safety for those USBP agents who work in the area. In addition, CBP plans to install fiber-optic cable and construct an all-weather road within the project area. The Secretary's waiver means that CBP does not have any specific legal obligations under the laws that were included in the waiver, but just as was the case with past projects covered by a waiver, DHS and CBP recognize the importance of responsible environmental stewardship of our valuable natural and cultural resources. In order to work toward responsible environmental stewardship, CBP has completed environmental resource surveys, consulted with various stakeholders, and prepared this Environmental Stewardship Plan (ESP). The 2019 waiver for the secondary wall replacement and construction is included as Appendix A.

The results of CBP's environmental review of the project are being published in this ESP.

This ESP was prepared in order to evaluate potential impacts of the project on natural and human resources and to assist CBP and USBP, to the extent practicable while still achieving their security goals, in protecting critical resources during construction and operation of the tactical infrastructure (TI) being installed as a part of the project. This ESP is designed to identify each affected resource and evaluate all potential impacts on that resource. This ESP was not prepared to comply with specific laws or regulations. The ESP includes a summary of the best management practices (BMPs) that have been developed to help CBP avoid, minimize, and mitigate for potential environmental impacts.

The term "Study Area" in this document refers to the area in which permanent or temporary impacts may occur from project construction activities. These impacts will generally be restricted to a width of 50 feet from the centerline on both sides of the existing secondary wall (or to the CBP property line, whichever is less) along the United States/Mexico border, plus one primary staging area (28 acres) and multiple secondary staging areas within secondary wall replacement project impact areas.

1.2 USBP Background

CBP's mission is to safeguard America's borders, thereby protecting the public from dangerous people and materials while enabling legitimate trade and travel. In supporting CBP's mission, USBP is charged with establishing and maintaining operational control of the U.S. border between ports of entry (POEs).

USBP has nine administrative sectors along the United States/Mexico international border. Each sector strives for an optimal combination of personnel, technology, and infrastructure appropriate to its operational requirements. The San Diego Sector is responsible for San Diego County in California. The areas affected by the project include the western portion of the border in San Diego County.

1.3 Goals and Objectives of the Project

The goal of the project is to deter and prevent illegal entry into the United States by improving border infrastructure within the USBP San Diego Sector.

1.4 Agency Coordination, Stakeholder and Tribal Outreach

CBP has notified numerous tribes, agencies (Federal and state), and non-profit organizations of their intent to replace the secondary existing wall (legacy wall) with a larger bollard-style secondary wall. Although the Secretary issued the waiver, CBP has continued to work in a collaborative manner with the Federal, state, and local agencies, Native American tribes, and other stakeholders. CBP requested public input for the project by providing a 30-day scoping review period from December 18, 2018 to January 17, 2019. A

letter was distributed to potentially interested Federal, state, and local agencies; Native American tribes; and other stakeholder groups or individuals. CBP has considered and incorporated comments received during the scoping period into this ESP.

Coordination was conducted with the following agencies:

- California Coastal Commission
- California Department of Fish and Wildlife, Region 5
- California Office of Historic Preservation
- California State Parks
- City of Imperial Beach
- City of San Diego
- County of San Diego
- Department of the Interior, U.S. Fish and Wildlife Service
- San Diego Regional Water Quality Control Board
- Tijuana River National Estuarine Research Reserve
- U.S. Army Corps of Engineers, Regulatory Division
- U.S. Environmental Protection Agency
- U.S. International Boundary and Water Commission

Stakeholders that received the project scoping letter include:

- American Civil Liberties Union, Border Rights Center
- Animal Legal Defense Fund
- American Rivers
- Animal Welfare Institute
- Association of the United States Army
- Audubon Society
- California Veterans Board
- County of San Diego
- County of San Diego Board of Supervisors
- Defenders of Wildlife
- Delaware Ecumenical Council on Children
- Earthjustice
- End Stream Coalition
- Endangered Habitats League
- Endangered Species Coalition
- Environmental Protection Information Center
- Franciscan Action Network
- Friend of the Migratory Bird/Duck Stamp
- Friends of Earth US
- Friends of the Sonoran Desert
- Hope Border Institute
- Great of Broads for Wilderness
- Nature Conservancy
- Rancho Vista del Mar
- Sierra Club San Diego
- Southwest Environmental Center

- Southwest Wetlands Interpretive Association
- Surfrider
- United Veterans Council of San Diego
- Veterans Affairs Regional Office
- Veterans Museum and Memorial Center
- WildEarth Guardians
- Wildcoast
- Wildlands Network

CBP has coordinated with the following tribes to alert them of the project. Tribes included on the notification list include:

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Mission Indians
- Barona Band of Mission Indians
- Cahuilla Band of Mission Indians
- Campo Band of Mission Indians
- Chemehuevi Indian Tribe
- Ewiiapaayp Band of Kumeyaay Indians
- Iipay Nation of Santa Ysabel
- Inaja Band of Mission Indians
- Inaja-Cosmit Band of Mission Indians
- Jamul Indian Village
- Kwaaymii Laguna Band of Mission Indians
- La Jolla Band of Luiseno Indians
- La Posta Band of Mission Indians
- Los Coyotes Band of Mission Indians
- Manzanita Band of Kumeyaay Nation
- Mesa Grande Band of Mission Indians
- Pala Band of Mission Indians
- Rincon San Luiseno Band of Mission Indians
- San Pasqual Band of Mission Indians
- Santa Rosa Band of Mission Indians
- Santa Ysabel Band of Mission Indians
- Soboba Band of Luiseno Indians
- Sycuan Band of the Kumeyaay Nation
- Torres-Martinez Desert Cahuilla Indians
- Viejas Band of Kumeyaay Indians

1.5 Best Management Practices and Mitigation

It is CBP's policy to reduce impacts through the sequence of avoidance, minimization, and mitigation. BMPs vary based on location and resource type. Both general BMPs and species-specific BMPs have been developed during the preparation of this ESP.

General Design BMPs

The following general design BMPs aimed at avoiding and minimizing environmental impacts from construction will be implemented:

1. Maximum use of existing roads for construction access.
2. Limited construction of new access roads and storage areas.
3. Lands and roads disturbed by temporary impacts repaired/returned to pre-construction conditions.
4. Early identification and protection of sensitive resource areas to be avoided.
5. Collection and storage of native plant material for reuse in restoration.
6. Restoration of grades, soils, and vegetation in temporarily disturbed areas.
7. On-site retention of storm water and runoff.

The following sections describe those measures that will be implemented to reduce or eliminate potential adverse impacts on specific aspects of the human and natural environment. Many of these measures have been incorporated by CBP as standard operating procedures based on past projects. Below is a summary of BMPs for each resource category that will be potentially affected.

1.5.1 Air Quality

1.5.1.1 Air Quality Measures Prior to Construction

The contractor will develop a Dust Control Plan prior to construction and submit to the U.S. Army Corps of Engineers (USACE) and CBP for approval.

- A. Measures will be incorporated into the Dust Control Plan to ensure that emissions of particulate matter less than 10 microns in size (PM₁₀) do not significantly impact the environment. Such measures will include dust suppression methods to minimize airborne particulate matter and diesel emissions generated during construction activities.
- B. Standard construction BMPs, such as minimized diesel idling and routine watering of the construction site and access roads, will be used to control fugitive dust during the construction phases of the project.
- C. Additionally, all construction equipment and vehicles will be maintained in good operating condition to minimize exhaust emissions.

1.5.2 Noise

1.5.2.1 Noise Control Measures During Construction

The contractor will develop a Noise Control Plan prior to construction and submit to the USACE and CBP for approval.

- A. All Occupational Safety and Health Administration (OSHA) requirements will be followed by the contractor and included in the Noise Control Plan.

- B. If blasting is necessary, the blasting contractor will provide further analysis of blasting techniques and measures to be taken to ensure negligible impacts from the blasting.
- C. Construction equipment will possess properly working mufflers and will be properly tuned to reduce backfires.

1.5.3 Geological Resources

1.5.3.1 Geological Resource Measures Prior to Construction

The contractor will develop a Storm Water Pollution Prevention Plan (SWPPP) prior to construction and submit to the USACE and CBP for approval.

1.5.3.2 Geological Resource Measures During and After Construction

- A. BMPs described in the SWPPP will be implemented to reduce erosion.
- B. Vehicular traffic associated with construction and operational support will remain on established roads to the maximum extent practicable. Areas with highly erodible soils will be given special consideration when designing the project to incorporate erosion control techniques, such as straw bales (weed seed free), silt fencing, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion.
- C. Erosion control measures, such as water bars, gabions, straw bales, and revegetation, will be implemented during and after construction activities. Revegetation efforts will be needed to ensure long-term recovery of the area and to prevent major soil erosion problems.

1.5.4 Hydrology and Water Management

1.5.4.1 Hydrology and Water Management Measures Prior to Construction

- A. The contractor will develop a SWPPP prior to construction and submit to the USACE and CBP for approval. With regard to managing storm water flows, CBP will address the potential for sedimentation and erosion with appropriate BMPs, many of which are listed in the County of San Diego's BMP Design Manual. A SWPPP will also include BMPs to reduce potential storm water erosion and sedimentation effects on local drainages.
- B. The changing of oil, refueling, and other actions that could result in a release of a hazardous substance will be restricted to designated areas that are a minimum of 100 feet from any wetland or vernal pool preserve. Such designated areas will be surrounded with berms, sandbags, or other barriers to further prevent the accidental spill of fuel, oil, or chemicals. Any accidental spills will be immediately contained, cleaned up, and properly disposed of.

- C. Recycled water will be used for dust suppression to the maximum extent possible. Water tankers will not discard unused water where it has the potential to enter any aquatic or marsh habitat. Water storage within the Study Area will be maintained in closed on-ground containers located on upland areas, not in washes. Pumps, hoses, tanks, and other water storage devices will be cleaned and disinfected.
- D. All engineering designs and subsequent hydrology reports will be reviewed by U.S. Section International Boundary and Water Commission (USIBWC) prior to the start of construction activities so that the results of those activities do not increase, concentrate, or relocate overland surface flows into the United States or Mexico.

1.5.5 Biological Resources

The following summary of general and species-specific Biological BMPs will be implemented, which are referenced in more detail in the Biological Resources Report prepared for the project (Appendix B). This list has been ordered to follow a typical construction sequence and discusses species and habitat-specific BMPs at the end. BMPs were developed in coordination with the U.S. Fish and Wildlife Service (USFWS).

1.5.5.1 Biology General Measures Prior to Construction

- A. **Pre-construction Meeting** – A qualified biologist will attend the pre-construction meeting, discuss the project’s biological monitoring program, and arrange to perform any follow up measures and reporting including site-specific monitoring, restoration or revegetation, and additional fauna/flora surveys/salvage.
- B. **Avian Protection Requirements** – To avoid direct impacts to avian species identified as a listed, candidate, sensitive, or special status species in the Multiple Species Conservation Program (MSCP), and those protected under the California Fish and Game Code (CFGC) and Migratory Bird Treaty Act (MBTA), removal of habitat that supports active nests in the project area of disturbance should occur outside the breeding season for these species (February 1 to September 15). If removal of habitat in the project area of disturbance must occur during the breeding season, the qualified biologist will conduct a pre-construction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. If nesting birds are detected, the qualified biologist will delineate an appropriate buffer around the nest and/or recommend additional measures to be implemented to ensure that harm of birds or eggs or disturbance of breeding activities is avoided.
- C. **Resource Delineation** – Prior to construction activities, the qualified biologist will identify sensitive resources including flagging plant specimens and delimiting buffers, to protect sensitive biological resources (e.g., habitats/flora and fauna species, including nesting birds) during construction. Appropriate steps/care will be taken to minimize attraction of nest predators to the site.
- D. **Education** – Prior to commencement of construction activities, the qualified biologist will meet with the construction crew and conduct an on-site educational session regarding the need to avoid impacts outside of the approved construction area and to protect sensitive flora and fauna (e.g., explain avian and wetland buffers, and clarify acceptable access routes/methods and staging areas).

1.5.5.2 General Biology Measures During Construction

- A. **Monitoring** – All construction (including access/staging areas) will be restricted to areas previously identified, proposed for development/staging, or previously disturbed. The qualified biologist will monitor construction activities as needed to ensure that construction activities do not encroach into biologically sensitive areas, or cause other similar damage, and that the work plan has been amended to accommodate any sensitive species located during the pre-construction surveys. In addition, the qualified biologist will document field activity and identify any compliance concerns.
- B. **Subsequent Resource Identification** – The qualified biologist will note/act to prevent any new disturbances to habitat, flora, and/or fauna on-site (e.g., flag plant specimens for avoidance during access). If active nests or other previously unknown sensitive resources are detected, all project activities that directly impact the resource will be delayed until species specific local, state or federal regulations have been determined and applied by the qualified biologist.

1.5.5.3 General Biology Measures Post-Construction

- A. The qualified biologist will prepare a final as-built report following construction detailing the extent of project impacts.

1.5.5.4 Measures for Sensitive Vegetation Communities

- A. The project area contains sensitive vegetation communities outside of existing access roads and other areas of previous disturbance. Project areas of disturbance, staging areas, and work areas will be limited to these existing roads or other previously disturbed areas as much as possible to minimize impacts to sensitive vegetation communities.
- B. Sensitive resources that are avoidable will be marked to delimit the boundaries of the resource to be avoided.

1.5.5.5 Measures for Sensitive Plant Species

General Measures

- A. A Revegetation Plan will be prepared to guide revegetation of areas temporarily disturbed by construction. The Revegetation Plan will identify areas targeted for sensitive plant salvage and storage for the purposes of translocation into dedicated revegetation areas following construction. The goals will be to repair temporary impacts and offset any permanent impacts incurred during project implementation.

San Diego Viguiera, Beach Goldenaster, and San Diego Marsh-Elder Measures

- A. Areas that are known to or found to support San Diego viguiera, beach goldenaster, or San Diego marsh-elder may require additional measures to preclude access and minimize impacts. Measures may include flagging to identify sensitive areas or the installation of temporary fencing to limit access to these areas.

Snake Cholla and San Diego Barrel Cactus Measures

- A. Prior to any grading or native vegetation clearing associated with construction, any snake cholla or San Diego barrel cactus within the project area will be identified. These identified plants will then be salvaged and moved to nearby suitable habitat outside of the potential impact area to be replanted.
- B. Any snake cholla or San Diego barrel cactus found within the project area during construction activities will be flagged and avoided until the plant(s) can be salvaged. If they are unable to be salvaged then they will be avoided by construction activities where possible.

Other Sensitive Plant Measures

- A. Areas that are known to support other sensitive species (see Attachment 4 of the Biological Resources Report in Appendix B) or species detected during construction monitoring may require additional measures to minimize impacts. Measures may include flagging to identify sensitive areas or the installation of temporary features to limit access to these areas or inclusion in the topsoil and salvage plan.

1.5.5.6 Measures for Sensitive Wildlife Species

- A. Adherence to the general measures above is anticipated to avoid direct impacts to nesting birds (including western burrowing owl, coastal California gnatcatcher, least Bell's vireo, western snowy plover and California least tern) in the project area.
- B. Additional species-specific measures to avoid, minimize, or mitigate for potentially significant direct and/or indirect impacts to western burrowing owl, coastal California gnatcatcher, least Bell's vireo, western snowy plover, California least tern, Quino checkerspot butterfly, and San Diego fairy shrimp are detailed below.

1.5.5.7 Measures for Western Burrowing Owl

- A. A Burrowing Owl Mitigation Plan has been prepared for this project and will be implemented once it is finalized to reduce and mitigate for impacts to western burrowing owl (Appendix C). These include pre-construction, during construction, and post-construction actions.

1.5.5.8 Measures for Coastal California Gnatcatcher and Least Bell's Vireo

The following measures will be implemented to avoid impacts to coastal California gnatcatcher and least Bell's vireo:

- A. Prior to any grading or native vegetation clearing associated with construction within suitable habitat for the coastal California gnatcatcher or least Bell's vireo, a pre-construction survey will be conducted to identify any active nests within the project limits.
- B. Occupied habitat will be marked in such a way for construction activity to avoid direct impact to the habitat and active nests. A buffer will be included to the greatest extent possible to minimize the indirect impacts from noise.
- C. The monitoring biologist will ensure that the marked boundaries are maintained during construction and will report on the general bird activity observed by these two species. A biologist qualified to survey the nests of these two species will periodically monitor the status of the nests to determine when the birds are no longer actively nesting.

1.5.5.9 Measures for Western Snowy Plover and California Least Tern

Currently, the project designs do not include any construction activity within the sandy beach along the western end of the project boundary. Wall replacement activities are not expected to be conducted west of Friendship Park and thus, there would be no direct impacts to western snowy plover or the California least tern, were they to be present along that stretch of beach. However, the following measures are included in the event project designs and limits of work are revised to include the sandy beach habitat in order to avoid impacts to these two species:

- A. Prior to the commencement of construction activities within potentially suitable habitat, a directed search will be conducted to confirm the presence or absence of western snowy plover and California least tern within the project area and, if found to be present, to locate active nests (if any). If active nests are present, no grading or removal of habitat will take place within 500 feet of active nesting sites during the nesting/breeding season (March 1 through September 30 for western snowy plover and May 15 through August 1 for California least tern). Should active nests become inactive prior to the end of the expected breeding season, grading and construction may proceed within approved project limits.
- B. A biologist familiar with western snowy plover and California least tern biology will monitor construction activities to make sure that birds that may move into the area during construction are detected and impacts are avoided.

1.5.5.10 Measures for Quino Checkerspot Butterfly

The following avoidance and minimization measures will be implemented to avoid impacts to Quino checkerspot butterfly:

- A. If Quino checkerspot butterfly or its host plant, dot-seed plantain (*Plantago erecta*), are observed prior to or during construction, temporary fencing, flagging, or other barriers will be installed along the limits of project impacts (including construction staging areas and access routes) to prevent impacts to Quino checkerspot butterfly or dot-seed plantain-occupied habitat. Fencing or other barriers will be installed in a manner that does not impact the habitat or host plant. If work inadvertently occurs beyond the fenced or demarcated limits of impact, all work will cease until the problem has been remedied to the satisfaction of CBP. Temporary barriers or flagging will be removed upon project completion.
- B. A qualified monitoring biologist will be on-site during project construction activities within potentially suitable habitat to ensure compliance with all mitigation and avoidance measures are followed.

1.5.5.11 Measures for San Diego Fairy Shrimp

San Diego fairy shrimp are not known to be present within the Project Area. There are a few ponded areas adjacent to the road on the north side of the existing secondary wall, several of which were observed to be capable of supporting fairy shrimp; however, fairy shrimp were not observed. The following avoidance and minimization measures will be implemented to avoid impacts to San Diego fairy shrimp:

- A. If San Diego fairy shrimp are observed prior to or during construction, temporary fencing (with silt barriers) will be installed along the limits of project impacts (including construction staging areas and access routes) to prevent impacts to San Diego fairy shrimp-occupied habitat and prevent the spread of silt from the construction zone into adjacent habitat. Fencing will be installed in a manner that does not impact the habitat or watershed to be avoided. Temporary construction fencing will be removed upon project completion.

1.5.6 Cultural Resources

1.5.6.1 Cultural Resources Measures During and After Construction

- A. Preconstruction surveys and documentation of cultural resources have been completed within the construction corridor (Appendix D). Cultural resource and tribal monitoring will be implemented for the three affected historic properties (P-37-000222, P-37-003627 and P-37-004281) to avoid adverse effects should features be identified during construction.

- B. Designated construction staging areas and transportation corridors have been identified to limit potential impacts to cultural resources. All construction vehicles and equipment are to stay within designated work areas.
- C. If cultural resources are encountered, work must stop and the monitors must be notified. The monitor(s) will coordinate with the on-site construction supervisor and with the project management.

1.5.7 Hazardous Materials and Wastes

1.5.7.1 Hazardous Materials and Waste Measures During and After Construction

A Hazardous Materials and Waste Plan will be prepared prior to construction activities and submitted to the USACE and CBP for approval. BMPs will be included as standard operating procedures during all construction activities, and will include proper handling, storage, and/or disposal of hazardous and/or regulated materials. The BMPs will include:

- A. Non-hazardous waste materials and other discarded materials, such as construction waste, including old wall panels, will be contained until removed from the construction site. Solid waste receptacles will be maintained at the staging areas, and non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Waste materials and other discarded materials contained in these receptacles will be removed from the site as quickly as practicable.
- B. All fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein.
- C. The refueling of machinery will be completed following accepted industry guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips.
- D. Any spill of reportable quantities will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock, etc.) will be used to absorb and contain the spill. All spills will be reported to the designated CBP point of contact for the project as well as the appropriate federal and state agencies.
- E. A Spill Prevention, Control, and Countermeasures Plan (SPCCP) will be in place prior to the start of operations, and all personnel will be briefed on the implementation and responsibilities of this plan.
- F. All equipment maintenance, laydown, and dispensing of fuel, oil, or any other such activities will occur in the staging areas identified for use in this ESP. The designated staging areas will be located in such a manner as to prevent runoff from staging areas from entering waters of the United States, including wetlands. All used oil and solvents will be recycled if practicable. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed of consistent with U.S. Environmental Protection Agency (USEPA) standards.

1.5.8 Potential Mitigation for Unavoidable Impacts

If unavoidable impacts result from project construction, CBP may implement mitigation measures. The scope or extent of CBP's mitigation will be based on the actual impacts from the project and available funding. CBP will assess the actual impacts from the project after it is complete. CBP's assessment will be based on, among other things, feedback from environmental monitors and the final construction footprint. The following sets out the mitigation measures that would be considered by CBP should mitigation be warranted and funds available:

- A. CBP may coordinate with the Southern California Wetlands Recovery Project (SCWRP) to further their Regional Strategy and contribute to projects that meet Regional Strategy goals.
- B. CBP may consider protection, mitigation, and enhancement activities to benefit the uplands and wetlands of the Tijuana River Valley, such as the following:
 - Implement a 5-year invasive species treatment plan within the area of project impacts for both upland and wetland habitats.
 - Enhance and restore coastal sage scrub habitat in the uplands and freshwater wetland and saltmarsh in Goat Canyon, Yogurt Canyon, the main channel, and in the Tijuana River Estuary. Opportunities to benefit both habitat types exist along routes previously and currently used by Border Patrol agents and along Monument Road in areas of anticipated improvements.
- C. CBP would give preference to direct mitigation but, if additional mitigation measures are necessary and to the extent funding is available, CBP will consider setting funds aside for compensatory mitigation banking. The following is a list of local mitigation banks (suggested by staff from USEPA Region 9) that could be used to offset unavoidable impacts to sensitive habitats and aquatic resources:
 - Cornerstones Phase 1- Marron Valley
 - San Miguel Conservation Bank
 - Rancho San Diego- SANDAG
 - Singing Hills Conservation Bank
 - Crestridge Conservation Bank
 - San Vicente Conservation Bank
 - San Luis Rey Conservation Bank
- D. As mentioned in measure C above, CBP would give preference to direct mitigation, but if additional mitigation is required due to unavoidable impacts to sensitive aquatic resources or habitats and to the extent funding is available, CBP may consider contributing funds toward general and/or out-of-kind restoration opportunities.

2.0 Description of the Project

DHS and CBP will remove and replace approximately 12.5 miles of existing secondary border wall, construct approximately 1.5 miles of new secondary border wall (14 total miles), install fiber-optic cable, and construct an all-weather road. The secondary border wall is a part of the Border Infrastructure System (BIS). The majority of the existing primary wall¹ and secondary wall in the Study Area follows the international border between the city of Tijuana, Mexico, and the city of San Diego, California (Figure 2-1). The primary and secondary walls that are part of the BIS² are operated by CBP in the USBP San Diego Sector. The primary wall was originally installed in the 1990s. As part of a separate project, the primary wall is currently being replaced with a bollard wall, which is better suited to USBP's current operational needs. Compared with the primary wall, the current secondary wall is less consistent in placement and often made of different materials. In the Western Segment, the secondary wall is metal and in some sections there is razor-wire along the base and top, whereas in the Tijuana River floodway, the secondary wall is made of concrete bollards. The existing secondary wall does not meet current operational needs and is no longer adequate for the purpose of fulfilling CBP's mission. The new taller and more substantial bollard-style wall that will replace the secondary wall is critical to prevent illegal entries into the United States and to achieve operational control of the border.

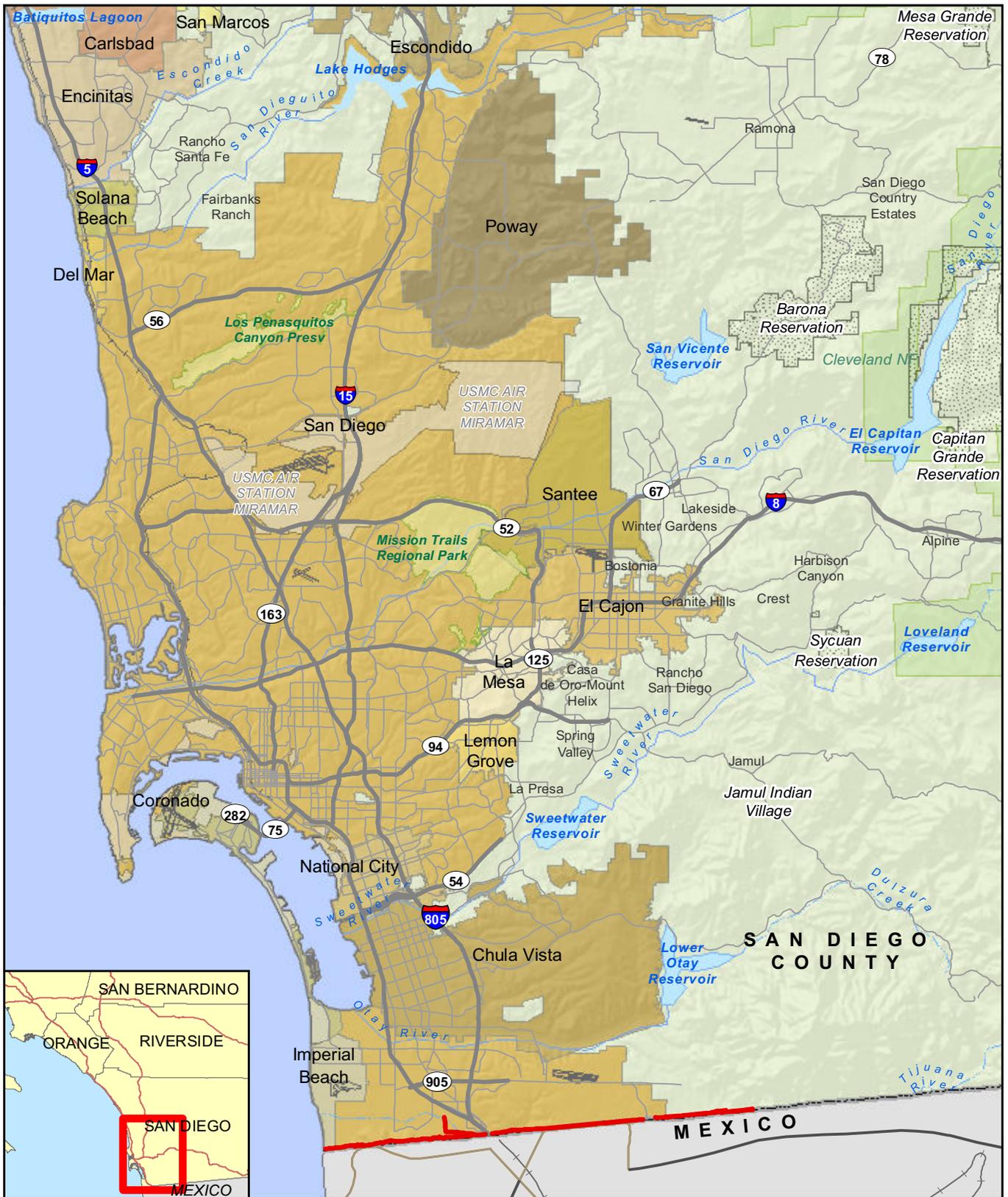
The project will include: (1) design, (2) site preparation and material delivery, (3) removal and replacement of the existing secondary wall, (4) removal and replacement of existing motorized vehicle gates, (5) installation of new fiber-optic cable, (6) installation of grouted riprap (wash areas), and (7) construction of a 40-foot-wide all-weather road with electrical and lighting (along 1.5 miles of new section of wall), as detailed in the following sections.

2.1 Location

The Study Area is in the southwestern corner of San Diego County and follows the United States/Mexico international border (see Figure 2-1). Specifically, it is located directly on the border in Township 18 South, Range 1 East, Sections 32, 33, 34; Township 19 South, Range 1 East, Sections 5 and 6; Township 19 South, Range 1 West, Sections 1–6; and Township 19 South, Range 2 West, Sections 1, 2, and 7–11, using the San Bernardino Meridian on the Imperial Beach OEW, Imperial Beach and Otay Mesa U.S. Geological Survey (USGS) 7.5-minute quadrangles (Figure 2-2).

¹Primary Wall: The southernmost wall on the international border with Mexico.

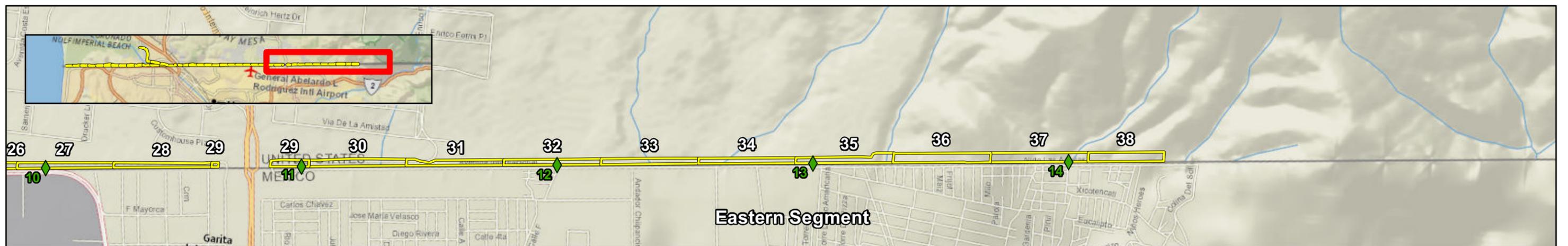
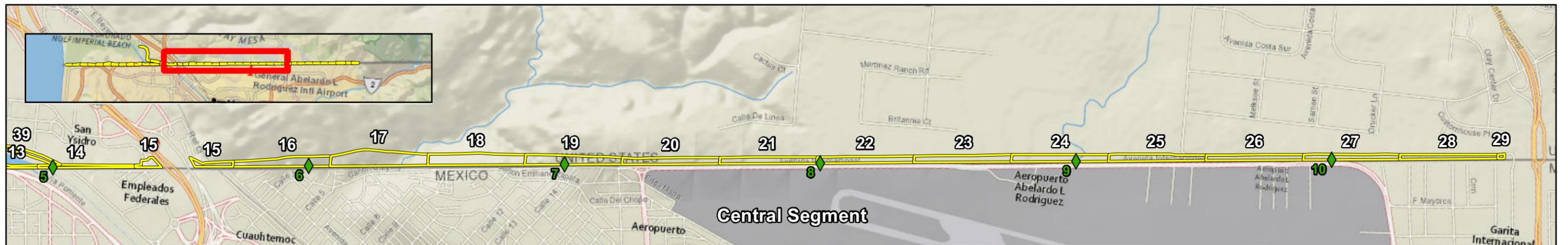
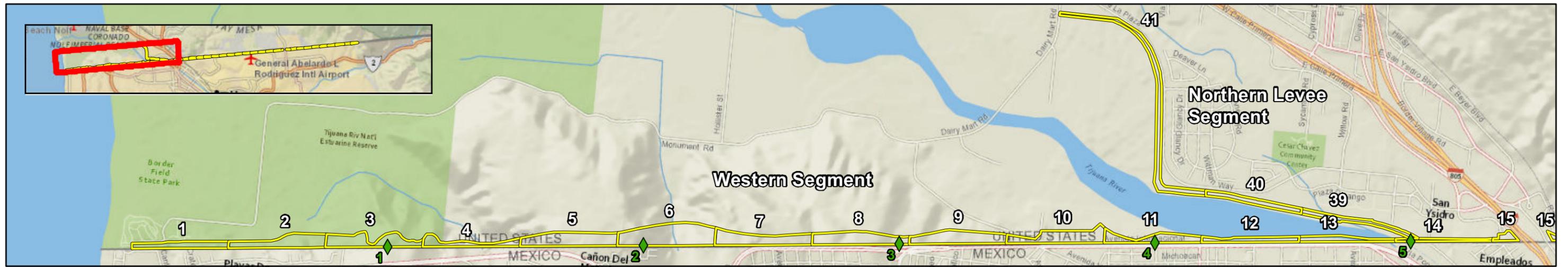
²Border Infrastructure System (BIS) includes the primary wall on the international border, the secondary wall offset 100-300 feet north into the U.S., a tertiary wall, roadways, lighting, and surveillance systems.



Project Area



FIGURE 2-1
Regional Location



- Environmental Constraints Segment #
- ◆ Mile Marker



The Study Area starts at the western end of Border Field State Park near the Pacific Ocean, and stretches eastward to the Otay Mountain area, in southern San Diego County, California along the United States/Mexico international border for approximately 14 miles. For the purposes of this analysis, the project is divided into four primary segments: the Western, Central, and Eastern segments (Table 1), as well as a segment along the northern levee of the Tijuana River from the border west to Dairy Mart Road (see Figure 2-2). The Study Area is located within the USBP San Diego Sector. Except for a small section in the care of USIBWC and some staging and access that will occur on state park, county, and city roads, the Study Area is entirely managed by CBP and contains primary and secondary walls, patrol roads, and lighting and surveillance systems. The Study Area does not include facility elements such as San Ysidro and Otay Mesa POEs¹, which were previously built out and are unnecessary to include in an environmental review.

**Table 2-1
Secondary Wall Segments**

Wall Section	Landmarks	Start and Stop Station Markers	Estimated Wall Distance (miles)
Western	West of Monument Mesa to San Ysidro POE	100+1 to 487+00	5.25
Northern Levee of the Tijuana River Segment	Tijuana River to Dairy Mart Road	Separate alignment	0.25
Central Segment	West of San Isidro POE to Otay Mesa POE	600+00 to 871+00	5.5
Eastern Segment	Otay Mesa POE to end	1000+62 to 1173+88	3.5
Total Length			14.5 miles

The Study Area boundary is generally defined as 100 feet wide, 50 feet on each side of the 12.5 miles of existing secondary wall and 1.5 miles of proposed secondary wall new construction. The Study Area includes a few additional areas beyond the 100-foot-wide buffer, as identified for potential access or staging, and totals 200.72 acres.

2.2 Design

The preliminary design meets the project goals and has been informed by numerous technical studies such as engineering, constructability, and environmental evaluations, which included biological and cultural resource assessments. Streams and storm water also flow through the Study Area, and improved drainage management has been incorporated into the design.

2.2.1 New Wall and Gates

Replacement of the secondary wall will occur within a width of 50 feet from the centerline on both sides of the existing secondary wall (or to the CBP property line, whichever is less), within a 100-foot corridor. Prior to installation of new bollard wall, existing wall, concrete

¹San Ysidro and Otay Mesa ports of entry are the two busiest in the nation (U.S. Department of Transportation 2017).

foundations, and other structural components will be demolished and removed. Vegetation will be removed within the construction area prior to wall replacement. The majority of the corridor is previously disturbed and sparsely vegetated. Where native soils do not meet compaction standards, soils will be over-excavated, backfilled, and compacted.

The replacement wall will consist of a new bollard-type wall 30 feet in height. The wall will consist of steel bollards filled with concrete, designed to withstand vehicle impact and resist cutting with hand tools and torches. Continuous openings in the wall, such as space between bollards, will be no more than 4 inches, except in drainage crossings where spacing will be no more than 5 inches. The wall will deter under-digging below finished grade. Stream crossings will require special designs to accommodate water flow while still preventing people from passing through the bollard wall.

As part of wall replacement, 28 gates along the secondary wall will also be replaced. Gates will be concrete reinforced bollard panels (two hinged panels on reinforced bollard beams) and will be 30 feet in height to match the height of the secondary wall. Gate foundations will also match the adjacent wall foundations.

A fiber-optic cable will be installed along the length of the secondary wall replacement area.

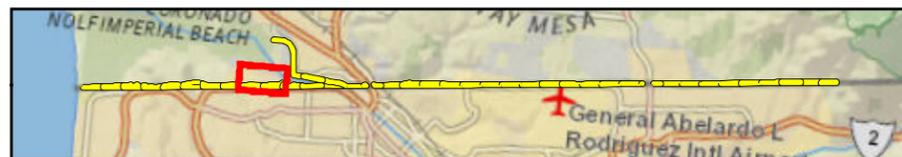
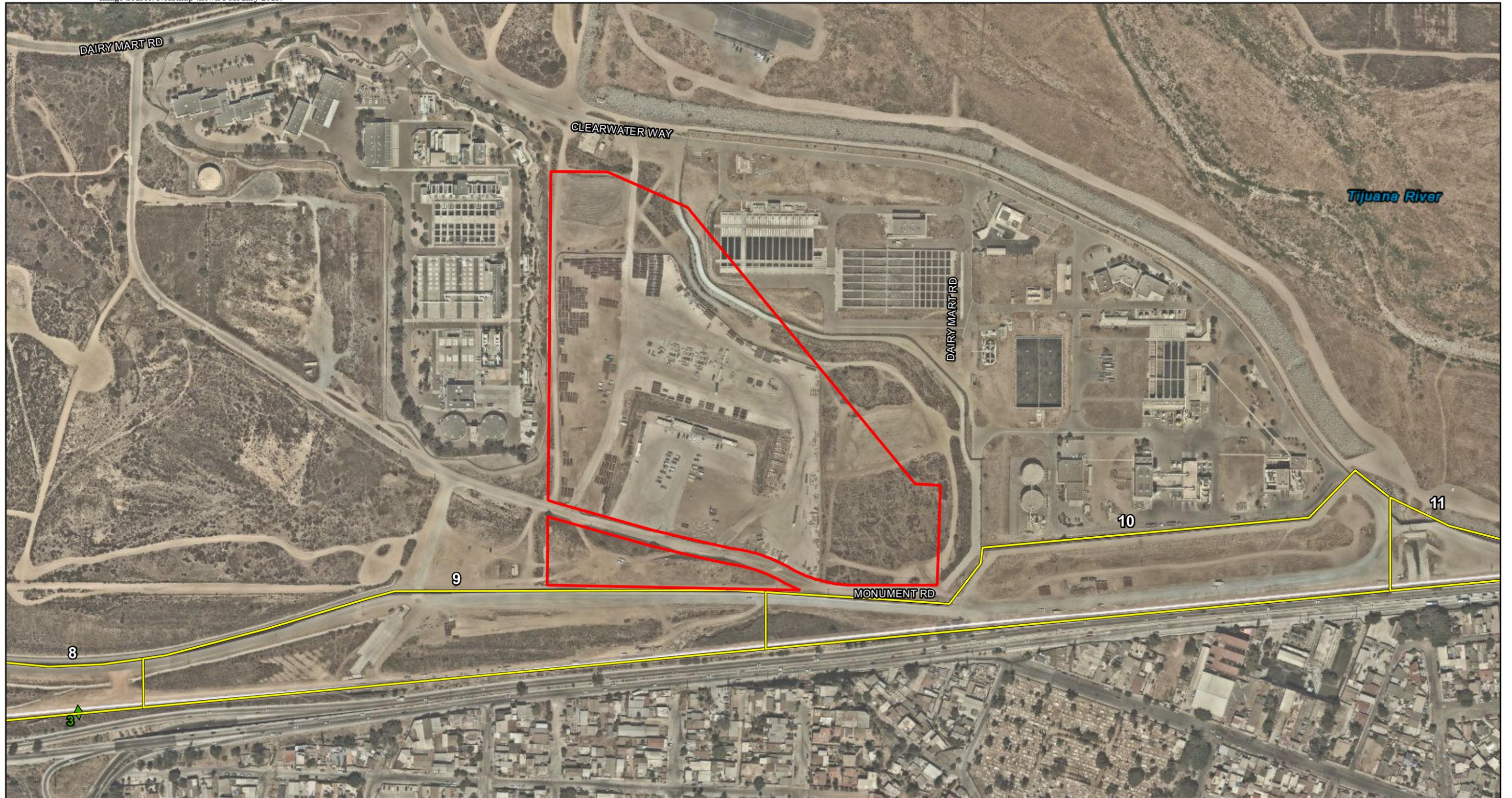
2.2.2 Access, Roads, and Staging Areas

The new bollard wall will be prefabricated off-site and then transported to the site by 18-wheel flatbed trucks using pre-approved haul routes. All equipment and materials will be transported to the Study Area by using heavy diesel trucks, such as tractor trailers and dump trucks, via the designated construction access roads. All egress and ingress to the majority of the construction areas will be from existing roads. These roads are typically greater than 20 feet wide.

For the 1.5-mile portion of the Study Area that requires a new bollard secondary wall, a 40-foot-wide all-weather road will be constructed. The road will be centered on the secondary wall line. Construction of the road will consist of grading and contouring of the surface with heavy diesel earthmoving equipment. The road will be surfaced with caliche or similar local material. If necessary, additional material will be transported to the area via heavy diesel equipment. Electrical lines and lighting will be installed along the new road.

Several areas of the existing roads and the new road will require drainage structures to be left in place for proper surface water flow during storm events. In areas where drainage structures are built, adjacent concrete maintenance road surface aprons may be installed to facilitate the construction, repair, maintenance, and clean out of the culverts.

One primary staging area (approximately 28 acres), located within the Western Segment (Figure 2-3), will be used to receive large wall panel deliveries and store large equipment and construction materials. Each segment will also have secondary staging areas to manage construction equipment and support nearby construction and crane sites as well as store equipment necessary for wall removal and replacement.



-  Primary Staging Area
-  Environmental Constraints Segment #
-  Mile Marker



FIGURE 2-3
Primary Staging Area

Staging areas were planned at disturbed sites to the maximum extent practicable; however, vegetated areas will also be used. Where necessary, staging areas will be cleared of vegetation and graded. Upon completion of construction, temporary staging areas will be rehabilitated. A concrete batch plant will be located off-site.

2.3 Site Preparation

Site preparation includes grading of staging areas, installation of limited additional construction access roads, and construction of crane operations pads. BMPs such as temporary fencing around protected resources and erosion control measures will be necessary, as will biological surveys if construction takes place during the nesting season (from March through September every year). BMPs will limit impacts to all resources. Specific BMPs (see Section 1.5) will be implemented prior to and during construction to ensure minimal disturbance to the Study Area.

In areas of steep terrain, construction cranes may be required for removal and installation of the secondary wall. Recommended crane pads have been identified and smaller trucks may be required to deliver panels up steep roads. In flat areas, construction access is limited to narrow corridors along the wall.

2.4 Removal and Replacement of Secondary Wall with Bollard Wall

The removal of the existing secondary wall and installation of the new 30-foot bollard wall will be conducted in sections. As each section of the existing secondary wall is removed, a new section of bollard wall will be installed. Each new section of bollard wall will be placed into position and secured below ground. In steep or difficult to access areas, work may be supported with a crane, track-mounted drilling rigs, concrete pumps, pile drivers, and excavators. In flat areas, smaller boom-trucks and lifts may be used.

The Study Area includes sections that cross streams and steep terrain. In some cases the existing secondary wall has been installed on top of cement culverts, in which case some drainage modifications or wall realignments may be required. Recycling of the existing secondary wall will be the responsibility of the construction contractor.

2.5 Construction Schedule

It is anticipated that construction will occur seven days per week from 7:00 a.m. to 7:00 p.m., with some exceptions where work may be scheduled 24 hours per day. Construction is expected to last from May 2019 until May 2020 and take approximately 240 work days to complete. Border security lighting exists throughout the Study Area and will provide lighting for construction at night. Existing lighting will be replaced incrementally with light-emitting diode (LED) bulbs, and in some cases lower light poles.

2.6 Operations and Maintenance

This project will not cause significant change in USBP operations. No significant change in the number of patrols is expected. USBP operations routinely adapt to evolving operational requirements and will continue to do so. USBP will retain its flexibility to use the most effective methods to provide a law enforcement resolution to illegal cross-border activity.

Maintenance will include repair of the wall, when necessary, in addition to other activities. The bollard wall will be made from non-reflective steel that requires no paint. Wall maintenance will also include removing accumulated debris after a rain event to avoid flooding. Soil and sand that builds up against the wall and brush will also be removed. Vegetation along the wall will be maintained under a wall maintenance contract; this could include mowing, removal of small trees, and the application of herbicides within the project corridor on both sides of the wall.

3.0 Environmental Setting and Effects Evaluation

3.1 Resources Excluded from Further Analysis

Some resources within the project's region of influence (ROI), which is San Diego County, California, are not addressed in this ESP because they are either not relevant to the analyses or the impacts to such resources are negligible. The resources that are excluded from further analyses, and the reasons for eliminating them are:

- **Sustainability:** The project will use minimal resources during construction and maintenance and there will be minimal changes in USBP operations. Therefore, the project would have a negligible impact on sustainability.
- **Human Health and Safety:** Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage, and no workplace safety laws or regulations were included in the waiver. The OSHA and USEPA issue standards that specify the amount and type of training required for industrial workers, the use of protective equipment and clothes, engineering controls, and maximum exposure limits with respect to workplace stressors. The project will not introduce new or unusual safety risks and construction protocols are expected to be carefully followed. Furthermore, the project will benefit the safety of USBP agents and the public in the vicinity of the border by increasing operational efficiency of border infrastructure and reducing the flow of weapons, illegal drugs, and other contraband into the U.S. Since the only potential impacts of the project on human safety are beneficial, this topic will not be reviewed in detail in the ESP.
- **Prime Farmlands:** No impact will occur on soils protected by the Farmland Protection Policy Act because none are located within the Study Area.
- **Transportation effects on non-federal existing roads:** The vast majority of the project takes place on land under federal jurisdiction. However, some access routes may require use of state park, county, and limited access on some city roads. The anticipated impacts of this limited and temporary use of existing roads to replace the wall is expected to be negligible.

3.2 Air Quality

3.2.1 Environmental Setting

Pursuant to the DHS Secretary's waiver, CBP no longer has any specific legal obligations under the Clean Air Act (CAA). However, CBP recognizes the importance of environmental stewardship and has applied the appropriate standards and guidelines associated with the

CAA as the basis for evaluating potential environmental impacts and implementing appropriate BMPs in regard to air quality.

The CAA required the USEPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The NAAQS include primary and secondary standards. Primary standards provide public health protection, including the health of “sensitive” populations. Secondary standards provide public welfare protections against decreased visibility and damage to animals, crops, and buildings. These standards are applied to six principal pollutants, also known as criteria pollutants, which include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM_{2.5}, PM₁₀), and sulfur dioxide (SO₂). NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety. The NAAQS are located in Table 3-1 below.

Areas that do not meet these NAAQS standards, primary or secondary, are considered nonattainment areas; while areas that meet both the primary and secondary standards are known as attainment areas. For Federal projects the Federal Conformity Rule dictates criteria for conformity determinations. The Federal Conformity Rule was first published in 1993 by the USEPA, following the passage of the CAA in 1990. The rule mandates that a conformity analysis must be used to determine whether a Federal action meets the requirements of the general conformity rule. It requires the responsible Federal agency to evaluate the nature of a proposed action and calculate air pollutant emissions as a result of the proposed action. Per the waiver, the CBP is not required to comply with the General Conformity Rule.

Table 3-1 National Ambient Air Quality Standards				
Pollutant	Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	Primary	8 hours 1 hour	9 ppm 35 ppm	Not to be exceeded more than once a year
Lead (Pb)	Primary and Secondary	Rolling 3-month average	0.15 µg/m ³⁽¹⁾	Not to be exceeded
Nitrogen Dioxide (NO ₂)	Primary	1 hour	100 ppb	98 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Nitrogen Dioxide (NO ₂)	Primary and Secondary	1 year	53 ppb ⁽²⁾	Annual mean
Ozone (O ₃)	Primary and Secondary	8 hours	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Primary Pollution (PM)				
PM _{2.5}	Primary	1 year	12.0 µg/m ³	Annual mean, averaged over 3 years
PM _{2.5}	Secondary	1 year	15.0 µg/m ³	Annual mean, averaged over 3 years
PM _{2.5}	Primary and Secondary	24 hours	35 µg/m ³	98 th percentile, averaged over 3 years
PM ₁₀	Primary and Secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO ₂)	Primary	1 hour	75 ppb ⁽⁴⁾	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Sulfur Dioxide (SO ₂)	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year
<p>⁽¹⁾In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plan to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.</p> <p>⁽²⁾The level of annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard.</p> <p>⁽³⁾Final Rule signed October 1, 2015, and effective December 20, 2015. The previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.</p> <p>⁽⁴⁾The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 Code of Federal Regulations [CFR] 50.4(3)). A SIP call is an USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.</p>				

The Federal *de minimus* (or minimum) threshold emission rates were established by the USEPA in the General Conformity Rule to focus analysis requirements on those Federal actions with the potential to substantially affect air quality. Table 3-2 represents these thresholds by regulated pollutant. As shown in Table 3-2, the *de minimus* thresholds vary depending on the severity of the nonattainment area classification.

Table 3-2 Conformity <i>de minimus</i> Emissions Thresholds			
Pollutant	Status	Classification	<i>De minimus</i> limit Tons/year (tpy)
Ozone	Nonattainment	Extreme	10
		Severe	25
		Serious	50
		Moderate/marginal (inside ozone transport region)	50 (VOCs)/100 (NO ₃)
		All others	100
	Maintenance	Inside ozone transport region	50 (VOCs)/100 (NO ₃)
		Outside ozone transport region	100
CO	Nonattainment / maintenance	All	100
PM _{2.5} (measures directly, as SO ₂ or as NO _x)	Nonattainment / maintenance	All	100
SO ₂	Nonattainment / maintenance	All	100
NO _x	Nonattainment / maintenance	All	100
Source: 40 CFR 93.153			

With respect to the General Conformity Rule, effects on air quality would be considered significant if the proposed Federal action resulted in an increase of a nonattainment or maintenance area's emissions inventory above the *de minimus* threshold levels, established in 40 CFR 93.153(b), for individual nonattainment pollutants or for pollutants for which the area has been redesignated as a maintenance area.

The San Diego Air Basin is comprised of a single air district, the San Diego County Air Pollution Control District, which includes all of San Diego County. The air basin is currently designated by the USEPA as a nonattainment area for the 8-hour O₃ classification and a portion of the county is designated as a maintenance area for carbon monoxide (USEPA 2017). The California Air Resources Board (CARB) classifies San Diego County as nonattainment for O₃, PM₁₀, and PM_{2.5} (California Air Resources Board 2017).

3.2.1.1 Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. GHGs are gases that trap heat in the atmosphere. They include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), fluorinated gases including chlorofluorocarbons (CFC) and hydrofluorocarbons (HFC), halons, as well as ground-level O₃. Although GHG

emissions are not currently regulated under the CAA, the USEPA has indicated that GHG emissions and climate change are issues that need to be considered. An Executive Order (Promoting Energy Independence and Economic Growth, March 28, 2017) rescinded the guidance provided in a CEQ memorandum regarding the approach to meaningful GHG decision-making analyses. Pursuant to the Executive Order, further analysis of GHG impacts from Federal projects is not required.

3.2.2 Effects Evaluation

Air pollution would be expected to increase during construction of the project. The construction phase would generate air pollutant emissions as a result of transporting materials, grading, compacting, trenching, pouring concrete, and other various activities. The primary criteria pollutants of concern during the construction phase would be related to CO, PM₁₀, and PM_{2.5} emissions, although emissions of all criteria pollutants would result from the combustion of fuels from on-road haul trucks transporting materials and construction commuter emissions. Soil disturbance would contribute to increased PM emissions from vehicles and other activities would result in fugitive dust emissions and would be greatest during the initial site preparation. Levels of fugitive dust would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions.

Sensitive receptors to consider in the area include children at local schools, retirement communities, and hospitals that would be most dramatically affected by poor air quality. One school within the U.S., Willow Elementary School, is within a mile of the Study Area (approximately 0.4 mile north). In Tijuana, Colegio Playas Elementary School is located approximately 0.15 mile south of the Western Segment. All other potential sensitive receptors are over one mile away from the proposed area of disturbance. As the construction phase could result in emissions potentially harmful to sensitive receptors, the project may result in temporary, minor adverse impacts. However, due to the temporary nature of the construction and the BMPs implemented air pollution and impacts to sensitive receptors would be minimized.

The San Diego Air Basin comprises approximately 4,526 square miles with a population of approximately 3.3 million. Of the 3.3 million population, many are potential emitters, and a marginal few could potentially be exposed to construction emissions resulting from the project. The Study Area is on either side of the two busiest POEs in the nation, which allows thousands of vehicles to cross the border every day. Each of these trips emits pollutants and ultimately affects air quality in the San Diego Air Basin. In the month of October 2017, there were 1,211,133 personal vehicles, and 2,809 buses that passed through the San Ysidro POE, as well as 88,378 trucks, 40 trains, 1,186,816 personal vehicles, and 2,690 buses that passed through the Otay Mesa POE (United States Department of Transportation 2017). The project is anticipated to require approximately 7,000 truck trips over the approximately 12-month construction period. In comparison to the level of activity and associated emissions in the immediate vicinity, and considering the temporary nature

of the construction phase and the incorporation of BMPs, the project is not anticipated to generate emissions above the *de minimus* thresholds or adversely affect San Diego County's NAAQS designations. Activities associated with construction of the project would not have major effects on regional or local air quality during the construction phase.

Additionally, appropriate BMPs would be incorporated during construction to minimize impacts to air quality, such as fugitive particulate matter emissions. These BMPs were previously listed in Section 1.5.1 of this ESP. Incorporation of these measures during construction would ensure that minimal impacts related to air quality result from project implementation in the San Diego Air Basin.

The operational phase would require routine maintenance and repair activities over the lifetime of the project; however, under the General Conformity rule a number of different Federal activities are exempt. The exemption under 40 CFR 93.153(c)(iv) of the General Conformity rule states, "routine maintenance and repair activities, including repair and maintenance of roads, trails, and facilities" are exempt from General Conformity. All activities associated with the project would include routine maintenance and repair activities and are considered to be exempt under the General Conformity rule. No permanent air quality impacts are anticipated to result from project implementation.

3.3 Noise

3.3.1 Environmental Setting

Noise is defined as unwanted sound, which can be based on objective effects (i.e., hearing loss, damage to structures, etc.) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale quantified in decibel (dB) units. Sound on the dB scale is referred to as a sound level. The threshold of human hearing is near 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. It is generally acknowledged that people perceive intrusive noise at night as being approximately 10 dBA (A-weighted decibel is a measure of noise at a given, maximum level or constant state level) louder than the same level of intrusive noise during the day. This perception is due to the fact that background environmental noise levels at night, in most areas, are approximately 10 dBA lower than those during the day.

Potential sensitive noise receptors within the vicinity of the Study Area include residential areas, schools, and open space areas. Acceptable noise levels have been established by the U.S. Department of Housing and Urban Development (HUD) for construction activities in residential areas (HUD 1984):

- **Acceptable** (not exceeding 65 dB) – This noise exposure may be of some concern, but common building construction will make the indoor environment acceptable and the outdoor environment reasonably pleasant for recreation and play.

- **Normally Unacceptable** (above 65 but not greater than 75 dB) – The noise exposure is significantly more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building constructions may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.
- **Unacceptable** (greater than 75 dB) – The noise exposure at the site is so severe that the construction costs to make the indoor noise environment acceptable may be prohibitive and the outdoor environment will still be unacceptable.

For open space areas, the Federal Highway Administration (FHWA) noise regulations define a *de minimus* threshold. This regulation defines open space lands as “land on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.” The open space areas, as defined, have a *de minimus* threshold of 57 dBA (23 CFR 722, Table 1).

The Study Area is completely secured by DHS, with a small portion over the Tijuana River managed by the USIBWC. The Study Area is completely within Federal jurisdiction, though adjacent properties north of the Study Area are within San Diego City limits. The City of San Diego (City) is interested in minimizing the effects of noise on neighbors. The City code, while not applicable to Federal jurisdictions, does limit noisy construction activities that may cause average sound levels greater than 75 decibels (averaged between 7 a.m. and 7 p.m.) at or beyond residential property lines (City of San Diego 2010).

In addition, loud noise over time is also known to adversely affect some wildlife. Three sensitive bird species listed as rare, threatened, or endangered have the potential to be in proximity of the Study Area. Of those three species, coastal California gnatcatcher (CAGN) is the most likely to be within the Study Area, least Bell’s vireo (LBV) may possibly be in portions of the Study Area, and Ridgeway’s Rail (RWR) is not expected to have any presence in the Study Area. Generally accepted guidance to protect avian species is to avoid noises that exceed 60 dB sustained for an hour (dBH). This is an average sound level over an hour of 60 dB. Louder noises could occur, but should not be sustained for the duration of the hour.

As a general rule of thumb, noise generated by a stationary noise source, or “point source,” will decrease by approximately 4.5 dB to 6 dB for each doubling of the distance, depending on the density of ground surface. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet, then the noise level will be approximately 80.5 dBA at a distance of 100 feet from the noise source, 76.0 dBA at a distance of 200 feet, and so on.

3.3.1.1 Western Segment

On the northern side of the Western Segment, land uses include parks and open spaces such as the Tijuana River National Estuarine Research Reserve, Border Field State Park, Tijuana River Valley Regional Park, Tijuana River County Open Space Preserve, and the

International Friendship Park. The eastern end of the Western Segment includes the Tijuana River and the South Bay International Wastewater Treatment Plant. Ambient noise in the northern area of this segment is generally low due to the nature of the multiple parks and open space present. To the south within Mexico, the Mexican 1D freeway parallels over half the primary wall alignment. This freeway generates considerable ambient noise. A few residences are directly adjacent to the wall in the west, near the beach, but freeways typically separate Mexican residential areas from the border wall in this segment.

3.3.1.2 Northern Levee Segment

At the far eastern end of the Northern Levee Segment are the commercial areas and parking lots of the Las Americas Premium Outlets and the San Ysidro POE located on Interstate 5. Further west is Camino de la Plaza, an arterial road that separates residential areas from the Tijuana River Floodway. At the western end of the north levee is Tijuana River Valley Regional Park, which is just beyond Dairy Mart Bridge Road. South of the levee are the open spaces of the Tijuana River Floodway. A large contributor of ambient noise in this segment is traffic along the Camino de la Plaza roadway and the consumers and workers at the Las Americas Premium Outlets. Apartment complexes along this segment also contribute to the current ambient noise environment.

3.3.1.3 Central Segment

For nearly two miles east of the San Ysidro POE, the open spaces of Pacific Gateway Park are directly adjacent to the northern side of the Central Segment. Continuing east, office parks and commercial distribution centers and industrial uses become intermixed with vacant lots and remnants of open space.

South of this segment within Mexico, just east of the San Ysidro POE, residential areas are directly adjacent to the primary wall for approximately 1.7 miles. East of the residential areas are lands surrounding the Tijuana International Airport, which continue for about two miles, and further east are generally commercial uses before the Otay Mesa POE. The majority of the ambient noise within this segment stems from the activity associated with the operation of the POE, which includes customs activities, vehicle and pedestrian commuters, and public transport trips, along with associated commercial uses. The Tijuana International Airport also contributes to the current noise environment in the area.

3.3.1.4 Eastern Segment

On the northern side of this segment, just east of the Otay Mesa POE, are commercial land uses for approximately one-half mile before open space lands begin. The majority of the northern side consists of open space lands of the Otay County Open Space Preserve. To the south and north of this segment are the semi-trailer truck queues, with truck lines often miles long, waiting to cross the U.S./Mexico border. Within Tijuana, across the four-lane boulevard to the south, are mostly industrial and commercial uses. Within Tijuana, farthest to the east are residential areas at the base of Otay Mountain. The major noise emitters

include the semi-trailer trucks and commercial land uses, which contribute to the dispersed ambient noise environment.

3.3.2 Effects Evaluation

Noise may be created by the transport of construction materials, operation of construction equipment, and numerous construction activities. Noise levels to receptors vary widely depending on several factors, such as climatic and soil conditions, topography, the condition of the equipment, and current ambient noise levels. Areas that are more developed and, therefore, more populated have a greater ambient noise level than parks and open space areas, making it is much easier for an adverse noise impact to result in an open space area. Near the Study Area, sensitive noise receptors could be affected including people in residential, parks, schools, and open space land uses. These uses each have *de minimus* thresholds: the residential threshold is 65 dBA and the open space threshold is 57 dBA (23 CFR 722, Table 1). Assuming the worst case scenario of 85 dBA, the noise emissions would have to travel approximately 1,000 feet before they attenuate to acceptable levels of 57 dBA in open spaces and approximately 400 feet before they attenuate to acceptable levels of 65 dBA in residential areas and schools (Table 3-3).

Noise Source	Distance				
	50 Feet	100 Feet	200 Feet	500 Feet	1,000 Feet
Auger Drill Rig	85	78.5	74.0	63.0	57.0
Backhoe	85	78.5	74.0	63.0	57.0
Compactor	80	74.0	70.0	60.0	53.5
Concrete Mixer Truck	85	78.5	74.0	63.0	57.0
Crane	85	78.5	74.0	63.0	57.0
Dozer	85	78.5	74.0	63.0	57.0
Dump Truck	84	77.5	73.0	62.5	56.0
Excavator	85	78.5	74.0	63.0	57.0
Flat Bed Truck	84	77.5	73.0	62.5	56.0
Pickup Truck	55	51.0	48.0	41.0	37.0

Source: FHWA 2017

¹The dBA at 50 feet is a measured noise emission (FHWA 2017). The 100- to 1,000-foot results are estimates.

Installation of the wall and construction of the all-weather road are anticipated to be completed in segments; therefore, construction noise is temporary and would only occur near work being performed.

As discussed in the setting above, all four segments have varying densities of residential and open space uses along the wall corridor. Ambient noise within the Study Area is caused primarily by cars, trucks and traffic, airplanes, children, music, and other sound sources in the vicinity. Open space land uses, however, are exposed to less ambient noise in comparison, and thus any increase in the noise environment within an open space area

would result in a greater noise impact when compared to the same increase in noise in a residential area.

3.3.2.1 Open Space Lands

The Study Area is surrounded by open space lands along all four segments. Some of these areas are designated parks and open space preserves, whereas other areas of open space are characterized as vacant lots. In designated parks and open space preserves, serenity and quiet are of significance and are subject to the 57 dBA noise threshold defined by the FHWA. Elevated noise levels have the potential to affect recreational activities and impact wildlife. Assuming the worst case scenario of 85 dBA (see Table 3-3), it is estimated that noise levels of 85 dBA from a point source (i.e., crane) near the border would have to travel approximately 1,000 feet before noise would attenuate to an acceptable level of 57 dBA (For wildlife in open space areas, noise may not exceed an average of 60 dB over any one-hour period.) Based on this attenuation rate, construction noise from the Study Area has the potential to impact approximately 900 acres of open space lands north of the Study Area. Wildlife have a slightly higher threshold for sustained noise, an average of 60 dB sustained over an hour versus 57 dB for a person in a parkland setting; therefore, the distance required for attenuation to 60 dB would be slightly less than the 1,000-foot distance quantified for recreational activities.

Noise generated by project construction would be temporary, intermittent, and transient. It is assumed that the project would be installed in sections and only result in certain areas of open space being affected at any given time. Therefore, there is potential for the project to result in a temporary, moderate adverse impact from noise on the open space parks and preserves in the area, but it is not anticipated that the impacts would occur continuously nor would they occur all at once. Once the project is completed, noise levels are anticipated to be similar to existing conditions. Certain noise BMPs, as listed in Section 1.5.2 of this ESP, would be implemented to minimize construction noise impacts.

3.3.2.2 Residential and School Receptors

Residential receptors are present along much of the southern side (within Mexico) of the Study Area and north of the Northern Levee Segment. The Northern Levee Segment, however, will not experience heavy construction, except immediately adjacent to the San Ysidro POE, which is not near any of the residential areas. In many areas, roads and sometimes freeways run between project construction and the residential receptors, which adds to the current ambient noise level.

To achieve attenuation of 85 dBA to a normally acceptable level of 65 dBA, suitable for residential and school receptors, noise would have to travel approximately 400 feet from the noise source to the receptor, often across these intervening roads. Construction of the new bollard-style secondary wall would not affect any U.S. residential receptors, though on the southern side within Mexico approximately 302 acres of residential and school receptors are within the noise contour that could be exposed to temporary unacceptable levels of noise;

however, ambient noise levels in those areas from intervening highways and surrounding land uses are typically high. Also, construction is anticipated to be temporary, intermittent, and transient.

Construction activities are not anticipated to occur along the entire project site for the complete duration of the construction phase, instead the wall is anticipated to be constructed in sections, which would minimize the number of residential receptors exposed to unacceptable noise levels at one time. Therefore, there is potential for the project to result in a temporary, minor adverse impact from noise on residential or school sensitive receptors in the Study Area. Additionally, noise BMPs, as listed in Section 1.5.2 of this ESP, would be implemented to minimize impacts to the residential noise receptors during the construction phase. During the operational phase, noise levels are anticipated to be similar to existing conditions. No permanent adverse noise impacts on residential or school sensitive receptors are anticipated to occur.

3.4 Land Use, Recreation, and Aesthetics

3.4.1 Environmental Setting

3.4.1.1 Land Use and Recreation

The Study Area is comprised generally of Federal land, though some access areas may require temporary use of state, county, and city roads. The majority of the Study Area is under the administrative jurisdiction of CBP. CBP works with USIBWC and other Federal agencies to address parcels within the Study Area pursuant to agreements with those agencies. In considering proposed projects, the critical question is whether the proposed land use would be compatible with existing adjacent land uses and with other known or approved land uses proposed for the area.

The Study Area is currently dedicated to Border Patrol activities in support of homeland security, and the planned project would adhere to that land use. Portions of the Study Area are owned by various other Federal and state agencies, such as USIBWC and California State Parks, but the CBP currently manages all activities within the Study Area.

The Study Area is the international border area between the U.S. and Mexico and also the boundary between the cities of San Diego, California, and Tijuana Municipality, Mexico, an urban city of approximately 1,300,000 inhabitants. Land uses within Mexico along the Study Area are comprised mainly of residential uses, as well as some large highways that parallel certain segments of the project. A large public stadium (a bull ring) is at the far western end by the beach as part of the International Friendship Park.

In the U.S., the Study Area follows the boundary of the City. The City is one of several jurisdictions participating in the regional San Diego County MSCP in cooperation with USFWS, California Department of Fish and Wildlife (CDFW), property owners, developers, and environmental groups. The MSCP delineates core biological resource areas, corridors, and targeted conservation areas. CBP recognizes that many portions of the Study Area are

environmentally sensitive as described in the MSCP; however, the MSCP excludes CBP activities and CBP is not bound by the proposals it contains. To the extent mitigation is warranted, CBP would use the mitigation ratios from the MSCP mitigation tables as guidance if unavoidable impacts to endangered species habitat result from the project. As noted in previous sections, the scope and extent of any mitigation will be based on a final assessment of impacts and available funding.

The San Diego Association of Governments (SANDAG)¹ maintains a database of existing and planned land uses for the region. A Generalized Land Use Map was compiled by SANDAG from each local entity's General Plan or Community Plan Land Use and/or Circulation Element. The classifications include:

- **Residential** - Spaced Rural Residential (low density single-family), Single-Family Detached, Single-Family Attached, Mobile Homes, Multiple Family.
- **Commercial and office** - Shopping Centers (e.g., regional and community centers), Commercial and Office (e.g., strip and general retail, hotels, motels, wholesale, professional, governmental, business services).
- **Industrial** - Heavy Industry (shipbuilding, airframe and aircraft manufacturing), Light Industry (e.g., other manufacturing and food processing, industrial parks, research and development parks), and Extractive Industry (e.g., mining, sand and gravel extraction, salt evaporation).
- **Public Facilities and Utilities** - Transportation, communication, and utilities (e.g., freeways, airports, terminals, shipping, communication facilities, power plants, waste disposal, water treatment facilities), Education, Institutions (e.g., hospitals and other health care facilities, churches, cemeteries), Military.
- **Parks and Recreation** - Recreation, Parks (e.g., state and regional parks and preserves, National Monuments, wildlife preserves, open space preserves).
- **Agriculture** - Intensive Agriculture (e.g., orchards, vineyards, nurseries, greenhouses, poultry, dairies, livestock), Extensive Agriculture (e.g., pasture, fallow).
- **Vacant and Undeveloped** - Land which is currently vacant, some will remain undeveloped, and with some potentially developable.

Existing land uses adjacent to the Study Area vary considerably along the 14.5-mile corridor. The Study Area is divided into four segments: the Western Segment, the North Levee Segment, the Central Segment, and the Eastern Segment (see Figure 2-2), which traverse various land use designations. The following describe the land uses adjacent to these segments.

¹SANDAG is the association of 18 local city and county government entities that serves as the forum for regional decision making within the San Diego metropolitan area. SANDAG develops, compiles, and maintains an extensive land use database used in developing area-wide plans and special projects.

a. Western Segment

Land uses adjacent to the Western Segment generally consist of parks and open space, extractive industry, agriculture, undeveloped parcels, and utilities. Parks and open space are prevalent next to this segment. Starting from the Pacific Ocean and moving east are the Tijuana River National Estuarine Reserve, Border Fields State Park (located completely within the Reserve), the Tijuana River Regional Valley Park (operated by San Diego County), and the Tijuana River Floodway (TRF). The TRF is owned by the USIBWC and managed in part by CBP. Between the TRF and the Study Area is the International Waste Water Treatment Plant, the only heavy industrial facility near the Study Area, which is owned and operated by the USIBWC. Currently there are special gates in the primary wall that allow permitted trucks to enter into and out of the treatment plant into Mexico.

The rugged terrain and natural features also affect land use in the Western Segment. A road through coastal hills generally parallels the border between the primary and secondary walls through most of this segment. The road provides CBP patrol access over Bunker Hill and across Smugglers Gulch to the Tijuana River. The area is affected by erosion and rapid siltation that flows downstream from Mexico across the Study Area and into the Tijuana River Estuary. To reduce the sediment compromising the health of the estuary, some sediment is captured and removed by State Parks from settling basins just north of the Study Area. Sediment removal is ongoing and will not be affected by project implementation.

b. Northern Levee Segment

The Northern Levee Segment is part of the TRF, which is owned by the USIBWC. CBP partially manages and maintains the floodway under Dairy Mart Bridge Road pursuant to an agreement between the two agencies. The floodway creates a gap to allow the Tijuana River to flow across the border between the primary and secondary border walls, which necessitates increased CBP monitoring and surveillance activity along this section.

Within the TRF are lands designated as intensive agriculture and to the west are open space park lands, including the Tijuana River Valley Regional Park, and undeveloped parcels. The intensive agriculture parcel was previously utilized as a sod farm, but it is no longer operational. A field office complex at the intersection of the north levee road and Dairy Mart Bridge Road is now operated by CBP.

Camino de la Plaza is a major thoroughway that generally parallels the northern side of the levee and separates it from a residential area further north. A City of San Diego right-of-way is located on both sides of the Camino de la Plaza roadway. Across Camino de la Plaza to the north are the San Ysidro South neighborhoods, which comprise low-density single-family homes. Further east are the Las Americas Premium Outlets, a commercial district that backs up to the primary wall on the northern levee, just west of the San Ysidro POE.

c. Central Segment

The Central Segment of the Study Area starts at the San Ysidro POE and continues eastward to the Otay Mesa POE. The customs and traffic management facilities associated with the POEs are at either end of this segment. Land uses to the north of this segment include office parks, warehouses, distribution centers, utilities and transportation, institutions, and open space lands. Pacific Gateway Park is a large open space of approximately 1,250 acres that is located adjacent to the secondary wall. The 60-foot-wide Roosevelt Reservation makes up the southern portion of the larger open space between the primary and secondary wall, though no visible demarcation is evident.

There are a variety of industrial, commercial, and utility uses near this segment due to the location adjacent to the U.S./Mexico border. Some of these land uses include Otay Pacific Business Park, Britannia Industrial Park, and the Otay Mesa Chamber of Commerce. The open space area north of this segment is an extension of the Pacific Gateway Park mentioned above. Areas south of this segment consist of a mix of residential, commercial, and industrial uses in Tijuana, Mexico. The Abelardo L. Rodriguez Airport is also on the Mexican side of the border, south of the Otay Mesa POE, and opposite the Otay Pacific Business Park.

d. Eastern Segment

Land uses adjacent to this segment include mainly open space parks and undeveloped areas. This section of the Study Area is generally undeveloped on the north side of the U.S./Mexico border; however, border wall prototypes are present within this area. The western portion of this segment includes portions of the semi-trailer truck crossing and inspection stations for the Otay POE border crossing.

Land uses to the north of this segment are generally designated as undeveloped or open space. Some of these undeveloped areas are part of the Otay County Open Space Preserve, while others are BLM-administered lands. South of this segment within Mexico are industrial, residential, and undeveloped uses.

3.4.1.2 Aesthetics

Aesthetic resources, sometimes referred to as visual resources, consist of various combinations of all available natural and man-made features in the landscape. This combination of features creates the visual character of a given environment. Depending on the combination of features in a setting, visual character can range from aesthetically pleasing to unattractive.

The natural elements that combine to form the aesthetic setting of the Study Area include the arid environment, the coastal mountains that overlook the Pacific Ocean and the Tijuana Estuary, and the open spaces of the Tijuana River Valley and the Otay Mesa. The built environments within the cities of San Diego and Tijuana also contribute urban elements into the visual character, such as major highways and thousands of vehicles at

very busy POEs, the varying character of different residential and commercial areas near the border, the Tijuana airport, the bull ring, and the beach.

The numbered and rusted metal plates of the primary wall are a consistent feature that delineates the southern edge of the project corridor, although these plates are being replaced with the bollard style wall. The concrete road in the western portion of the Study Area and other paved and unpaved access roads internal to the border control area are also common features. The linear border wall is visible for long distances. Dedicated open space and border control roads are notable features along the wall, as is the abrupt wall edge paralleling highways and edging neighborhoods in the city of Tijuana.

a. Western Segment

The topography in the Western Segment is coastal hills with steep slopes and narrow ridges in the western half, and level expanses in the Tijuana River valley to the east. The border control area follows the elevation increase to the top of Bunker Hill, which provides overlooks of the Pacific Ocean, the city of Tijuana, and the Tijuana River estuary. In this coastal hill and mesa area, only the primary wall delineates a straight line over the hills and across the valleys. The larger secondary wall is visible in the far west across the coastal plain and further inland across the Tijuana River Valley. The access road is nearby with switchbacks cut into the hillside. Slopes are revegetated and drainage structures are evident in valleys. Views of the Western Segment currently include the primary wall, an all-weather road, several access roads, and the mountainous ridges and valleys. There is no tall vegetation to screen views. The existing secondary wall, though not a consistent feature, is nearly 20 feet tall, made of steel with double rolls of razor-wire along the base. Within Mexico along the border, residential and other uses currently have views of most of the Study Area due to the variable terrain.

b. Northern Levee Segment

Views in this segment include the Tijuana River Valley Basin and adjacent lands within Mexico. The Tijuana River typically contains debris and trash that flushes downstream with flood waters. The Northern Levee Segment is a completely man-made feature consisting of a narrow strip of land that is developed with an all-weather road. Travelers along the Camino de la Plaza road, as well as residents in the adjacent San Ysidro South neighborhood and frequenters of the shopping center, can view the existing primary wall. The Tijuana Valley River Basin can also be viewed from areas east of where the primary wall is located, although the wall screens the basin from view. Trees exist on the northern side of the segment, but are so few that they provide limited screening from adjacent land uses.

c. Central Segment

The Central Segment is generally flat, consists of dirt access roads, and is bordered by both the primary and secondary walls. Although this segment is densely populated with industrial and commercial uses, views of the Study Area are limited due to the existing

secondary wall. The two POEs, San Ysidro and Otay Mesa, are areas with heavy vehicle traffic to allow people, as well as goods and services, to safely cross the U.S./Mexico border. Vehicles transporting materials travel through this segment, which results in views of access roads, the primary and secondary walls, as well as the adjacent land uses within Mexico.

d. Eastern Segment

The Eastern Segment follows the natural slope of the land and contains wide access roads and a corridor for the construction of border wall prototypes. The primary wall exists along this entire segment as well, but the existing secondary wall only spans approximately 2.5 miles of the 3.75-mile segment. The area surrounding this segment is mostly characterized by open space and adjacent land uses within Mexico. Views of the Study Area are of the natural landscape and remain unobstructed from the northern viewpoints.

3.4.2 Effects Evaluation

3.4.2.1 Land Use and Recreation

Land use areas will not be permanently affected by replacement of the secondary wall nor any other improvements proposed in the border control corridor. Economic factors driving development will continue in the same ways and in the same areas they do now, open spaces and parklands will remain, and opportunities for recreation will also continue. Land POEs will continue to be busy and the airport in Tijuana, Mexico will continue to draw passengers from the San Diego area, as long as it is permitted.

The narrow border control corridor will, however, be temporarily impacted during construction of the proposed project. The construction phase will require one primary staging area (approximately 28 acres) and several smaller secondary staging areas within each segment to manage construction equipment and support construction activities. The BMPs listed in Section 1.5 of this document ensure that lands, roads, and access routes utilized for staging, equipment transportation, and involved in temporary disturbance due to the removal and/or installation of project components will be repaired and/or returned to pre-construction conditions to the extent feasible.

The construction of the bollard-style wall and the 40-foot-wide all-weather road will occur within 50 feet from the centerline on both sides of the existing secondary wall (or to the CBP property line, whichever is less), within a 100-foot corridor. Construction activities will result in direct impacts to approximately 183.37 acres of land with the 200.72-acre Study Area, the majority of which, 143 acres (78 percent), is currently developed or disturbed. Construction activities will permanently impact 40.34 vegetated acres, of which 25.40 acres (14 percent) consist of sensitive vegetation communities. The general land use of mainly previously disturbed or developed road will not change.

Open space is common within this area and it is not anticipated that the planned project will cause a major change to land use or recreational opportunities regionally, especially as

the Study Area is already designated as a restricted access area. The Study Area is adjacent to areas addressed in the City of San Diego's MSCP; however, CBP is not a signatory to the MSCP. CBP does support the broader goals of the MSCP to the degree it can while still achieving its mission and CBP will minimize impacts to resources within the Study Area to the maximum extent feasible. City- and County-protected resources will be avoided to the extent feasible and existing infrastructure will be utilized whenever possible. CBP has several agreements with the County to use access roads and disturbed areas on County-owned and managed lands, such as in the Tijuana River Valley Regional Park (TRVRP), which is adjacent to the Study Area. CBP may utilize existing access roads and will avoid use of parkland roads to the maximum extent feasible to minimize potential impact to park users during construction, operation, and maintenance of the project.

Construction of the planned project will increase border security and may result in a change to illegal traffic patterns. Changes to cross-border violator traffic patterns are unpredictable and beyond the scope of this ESP; however, beneficial indirect impacts are expected as improved cross-border security will substantially reduce or eliminate cross-border violators and benefit recreational opportunities.

3.4.2.2 Aesthetics

The removal and replacement of the secondary wall will affect the appearance of the Study Area. The 30-foot bollard style replacement wall will allow for views through the wall. The replacement wall will be 30 feet tall, which is taller than the current height of the secondary wall. This will result in a wall that is visually more substantial than the existing wall, but less of a visual separator because of the see-through character of the vertical bollards. The existing primary and secondary walls are linear features which are identifying characteristics of the border control area. The increase in wall height above 20 feet may appear out of scale relative to some modest single-story residences nearby. Otherwise, the overall linear character of the walls in border control areas will remain, and could also provide beneficial effects to the aesthetics of the area by providing a clean bollard-style design of a scale suitable to the international border, particularly when adjacent to civic facilities. The transparent qualities of the bollard-style design allow people to see through the wall, which is beneficial for CBP officers in an operational sense and for other viewers wishing to obtain views of the broader landscape across the U.S./Mexico border.

During the construction phase of the planned project, the presence of construction equipment, use of staging areas, and use of lighting may have moderate but temporary impacts on the Study Area's appearance. Removal and installation of project components will cause visible changes to the Study Area; however, those changes will be consistent with the pre-construction conditions and the visible character of the area. There are no publically available scenic vistas that would be adversely affected. The staging areas, as well as areas associated with the project, would be returned to pre-existing conditions once the project has been completed, further minimizing temporary impacts.

The addition of an all-weather road in areas where it does not currently exist within the Eastern Segment will add to the developed appearance of the Study Area. The project is currently accessible from existing unimproved roads, and a new all-weather road will add another linear feature to the landscape. When completed, at least four parallel features will extend east part way up Otay Mountain into an otherwise undeveloped desert landscape, including the new bollard-style wall, the new 40-foot all-weather road, the existing dirt or gravel access roads (sometimes more than one) and the primary wall. The Eastern Segment is at the urban fringe and the project will extend the developed character further into the desert landscape. The combination of the new bollard-style wall with the new all-weather road, in the midst of existing border infrastructure facilities within the western portion of Otay Mountain will become a very visible feature on the landscape. Where most of the project is at ground level, this elevated portion will remind all within view that this is a defined border.

3.5 Geological Resources and Soils

3.5.1 Environmental Setting

The Study Area is located within the Peninsular Ranges Geomorphic Province of southern California, which is a northwest-trending geomorphic province that occupies the southwestern corner of California and extends across the international border into Baja California. The province consists of the San Jacinto and Santa Rosa Mountains, which were formed from the Southern California Batholith, an igneous rock formation. The Southern California Batholith is the core of the rock mass of the San Jacinto Mountains and is classified as Mesozoic granite. However, as the batholith rose, it pushed through overlying sedimentary layers. The second most abundant rock formation of the San Jacinto Mountains is metamorphic, due to the intense heat and pressure exerted on the layers as the batholith rose, causing changes to the sedimentary layers that became visible from earth-building activity (California Geological Survey 2015 and U.S. Geologic Survey 2008).

The soils of the province are primarily made up of Alfisols and Mollisols, both of which exhibit high fertility and are found under savanna and grassland vegetation (Bailey 1995). Much of the region has been converted to a combination of urban and agricultural land use. Soil mapping resources indicate that there are 11 major soil types mapped within the Study Area (California Soil Resource Lab 2018; see soil maps in the Wetland Delineation Report, Appendix E). The soils from Imperial Beach to San Ysidro consist primarily of loams, ranging from finer-particulate composition of sandy loams to large particulate composition of cobbly loams, with a range of infiltration rates from low to high. The soils from just east of the San Ysidro POE to the Otay Mesa POE consist of nine described soil series, several of which occurred in multiple distinct locations. These soils are moderately-drained to well-drained, with the exception of the Huerhuero series, which has very high runoff.

As previously discussed, the Study Area is divided into four segments (see Figure 2-2). Each of the segments has potentially active, inactive, presumed inactive, or actively unknown fault zones. No active Alquist–Priolo Earthquake fault zones are within the Study Area. In addition to potential instability due to fault activity, the Study Area also has a high

potential for landslides. Furthermore, erosion hazards must also be considered and are evaluated based on the factor of K (values ranging from 0.02 to 0.69) attributed to a certain soil type. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. The soils present within each segment and the potential for geologic hazards contained within each are discussed below.

3.5.1.1 Western Segment

The Western Segment is composed of the following soil types: Marine, loamy, coarse sand with 2 to 9 percent slopes (MIC); Terrace escarpments (TeF); Chino silt loam, saline with 0 to 2 percent slopes (CkA); Riverwash (Rm); Carlsbad gravelly, loamy sand with 2 to 5 percent slopes (CbB); Huerhuero loam with 5 to 9 percent slopes (HrC2); Olivenhain cobbly loam with 9 to 30 percent slopes (OhE); Visalia gravelly sandy loam with 2 to 5 percent slopes (VbB); and Chino fine, sandy loam (ChA). The erosivity values of these soil types (measured in K values) range from 0.02 to 0.43. The soils with the greatest presence in this segment are TeF, OhE, and CkA. The TeF soil does not have a K value associated with it, however the other two have a rating of 0.20 and 0.32, respectively. From this it can be assumed that the Western Segment has a moderate risk of erosion. Furthermore, according to the City's Seismic Safety Study, this segment consists of areas that are subject to possible or conjectured landslides, confirmed or highly suspected landslides, and some low lying areas that have a high potential for liquefaction.

3.5.1.2 Northern Levee Segment

The Northern Levee Segment is paved along the area that is planned for wall replacement, entirely within an artificial levy built on riprap and fill soil, underlain by the Tujunga sand with 0 to 5 percent slopes (TuB) soil type. This soil type has a K value of 0.02, providing this segment with a low risk of erosion. However, the area has a high potential for liquefaction because it is along the Tijuana River floodplain where there is shallow groundwater.

3.5.1.3 Central Segment

Soils in the Central Segment are highly disturbed and many of the native soils have been removed. The remaining native soil types in the area include: Diablo clay with 30 to 50 percent slopes (DaF); Huerhuero loam with 2 to 9 percent slopes (HrC); OhE, Olivenhain cobbly loam with 30 to 50 percent slopes (OhF); Stockpen gravelly clay loam with 0 to 2 percent slopes (SuA); and Stockpen gravelly clay loam with 2 to 5 percent slopes (SuB). The soil types that make up the majority of the segment are SuA, HrC, and SuB. The K values of these soil types range from 0.24 to 0.43, and therefore, this segment also has a moderate risk for erosion. This segment has a low potential for liquefaction due to fluctuating groundwater in minor drainages and in steeper areas, which are rare. There is a high risk of landslides.

3.5.1.4 Eastern Segment

The soils in this segment consist of HrC; HrC2; Huerhuero loam with 9 to 15 percent slopes (HrD); Huerhuero loam with 9 to 15 percent slopes eroded (HrD2); Salinas clay with 0 to 2 percent slopes (ScA); TeF; and San Miguel-Exchequer rocky silt loams with 9 to 90 percent slopes (SnG). The majority of this segment consists of the HrC, ScnG, and HrD soil types. The K values for these soils range from 0.43 to 0.55; therefore, this segment has a high potential for erosion. This segment has a moderate risk for landslides, but there are few hills steep enough to create such an occurrence. There are no fault zones within this segment.

3.5.2 Effects Evaluation

The proposed project would affect surface geology in the Study Area through grading during site preparation, reinstallation of 12.5 miles of secondary wall, construction of approximately 1.5 miles of new secondary border wall, installation of the 40-foot all-weather access road, and other construction-related activities. Although the project would alter some soils in the Study Area, many of the soils have been previously disturbed due to past construction and development projects. Effects of construction would be localized and contained within the narrow linear wall corridor.

The disturbance of soils would be confined to the construction phase. Temporary impacts would include the risk of increased erosion and sedimentation of waterbodies within the immediate vicinity. Soil compaction and installation of the new wall and access roads would permanently alter the unprotected topsoil and subsoils beneath the wall and roads. Additional compaction disturbance would occur along truck routes and in staging areas. However, the staging areas would be returned similar to pre-construction conditions once the project has been completed. Ripping or loosening of the surface soils and grading for proper drainage after staging activities are complete and prior to revegetation efforts would be needed to ensure long-term recovery of the areas and to prevent soil erosion.

BMPs to conserve topsoil, minimize erosion, and otherwise lessen effects of the project will also be implemented during the construction and operational phases (refer to Section 1.5.3). Minimization measures will include erosion control techniques, such as straw bales (weed seed free), silt fencing, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion. A SWPPP will also be prepared prior to construction activities and BMPs described in the SWPPP will be implemented to reduce erosion. With the implementation of the BMPs and other erosion control measures, the project is not anticipated to result in an adverse effect to the geological resources present within the Study Area.

3.6 Hydrology and Water Management

3.6.1 Environmental Setting

To thoroughly address the hydrology of the project, a variable-width Study Area was analyzed, which generally extends from 50 feet to as wide as approximately 100 feet from the border. The analyses in this section apply to the Study Area rather than the more specific project area.

3.6.1.1 Groundwater

The Study Area is located in southern San Diego County and the water supply is monitored by the San Diego County Water Authority (SDCWA). The San Diego Integrated Regional Water Management Region contains 24 separate groundwater basins, and two of those basins underlie the Study Area, specifically the Tijuana and Otay Valley groundwater basins. The most productive geological unit in the Study Area is the alluvium under the Tijuana River, which is typically less than 150 feet deep and averages about 80 feet wide. Wells in this area yield as much as 2,000 gallons per minute (gpm), but the average is about 1,000 gpm (California Department of Water Resources 2006).

The Study Area is also immediately adjacent to the South Bay International Wastewater Treatment Plant and the Tijuana River within the Western Segment, which is a source of groundwater recharge in the lower Tijuana River Valley. Groundwater recharge also occurs naturally through precipitation, the Tijuana River, and other water sources in the area.

Groundwater within the region generally occurs in alluvial aquifers, residuum (crystalline bedrock that has weathered in place), aquifers comprised of semi-consolidated or consolidated sediments, and fractured crystalline rock. Other water-bearing formations in the region include the Poway Group, San Diego Formation, San Mateo Formation, La Jolla Group, Santiago Peak Volcanics, and Otay Formation. Only three alluvial aquifer basins within the San Diego region (the Warner, San Luis Rey Valley, and Sweetwater Valley Basins) exceed a storage capacity of 100,000 acre-feet (AF). Ten additional alluvial aquifers typically exceed 50,000 AF. These aquifers provide most of the current groundwater production within the region with yields typically in the range of several thousand AF per year (SDCWA 2013).

3.6.1.2 Surface Water

The Study Area bisects the Tijuana River watershed, and the Tijuana River itself crosses the Study Area before flowing west approximately 0.2 mile to the Pacific Ocean. Average precipitation ranges from 12 inches on the valley floor and up to 20 inches in the nearby upland areas. About a third of the headwater tributaries of the Tijuana River originate in the United States before crossing southward through the Eastern and Central segments of the Study Area into Tijuana, Mexico. Tributaries collect in the concrete-lined channel that is now the Tijuana River in Tijuana, Mexico, before heading north back into the U.S. near the San Ysidro POE. At the U.S./Mexico border, the river flows between two levees as part

of the TRF, before becoming a naturalized stream again through San Diego County's Tijuana River Regional Park, and then ultimately discharging into the Tijuana River Estuary and the Pacific Ocean just north of the U.S./Mexico border.

The Tijuana Watershed is one of the most severely impacted watersheds in the U.S., primarily in the lower western portion of the watershed, below Tijuana, Mexico. It is classified as a Category I (impaired) watershed by the California Water Resources Control Board due to its array of 37 specific water quality impairments¹.

Eight water bodies within the U.S. portion of the Tijuana River watershed are listed on the 303(d) list. Those listed within the Study Area include the Tijuana River and the Tijuana River Estuary. The Tijuana River is listed due to indicator bacteria, eutrophication, dissolved oxygen (DO), pesticides, solids, synthetic organics, trace elements, trash, phosphorous, sedimentation/siltation, selenium, surfactants, nitrogen, and toxicity. The Tijuana River Estuary is listed due to indicator bacteria, eutrophication, DO, lead, nickel, pesticides, thallium, trash, and turbidity (SDCWA 2013).

The Clean Water Act (CWA) requires the California Environmental Protection Agency (CalEPA) to develop Total Maximum Daily Loads (TMDLs) for impaired waters. The statute addresses how the department identifies impaired waters, develops TMDLs, and prepares implementation plans to achieve the needed pollution reductions in the watershed so that the impaired stream will meet applicable standards (USEPA 1999). The San Diego Regional Water Quality Control Board has initiated efforts to develop TMDLs for sediments and trash in the Tijuana River and Estuary; however, no adopted TMDLs for either currently exist (State of California Water Boards 2017). The designation of beneficial uses for waters of the State of California is mandated by the Porter-Cologne Water Quality Control Act. Water quality for designated beneficial uses is protected by the state and works in tandem with sections 303 and 305 of the CWA.

The Tijuana River National Estuarine Research Reserve (NERR), with support from a National Oceanic and Atmospheric Administration (NOAA) Marine Debris Removal Grant, has been working since 2014 to remove debris from the Tijuana River NERR and prevent further debris from washing down the Tijuana River watershed. The effort includes aid from the Southwest Wetlands Interpretive Association, California State Parks, WILDCOAST, and Surfrider to remove and prevent debris in the Tijuana River Valley (NOAA 2017). California State Parks also removes sediment and debris from Goat Canyon in specially constructed sediment basins to prevent sediment contamination from entering the Tijuana River Estuary.

a. Waters of the United States

The USACE regulates "Waters of the United States" under Section 404 of the CWA. Waters of the U.S. are defined in the Code of Federal Regulations as waters susceptible to use in

¹Section 305(b) of the Clean Water Act (CWA) requires each state to provide a list, known as the 303(d) List, which identifies those streams or lakes that do not meet surface water quality standards as "impaired waters."

commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as “non-wetland waters” and are often characterized by an ordinary high water mark (OHWM). Non-wetland waters generally include lakes, rivers, streams, and other open-water habitats.

During a site reconnaissance visit, it was determined that the Study Area contains 0.052 acre of wetland waters and 0.202 acre/1,400 linear feet of non-wetland waters (see Jurisdictional Waters maps in the Wetland Delineation Report, Appendix E). Table 3-4 below summarizes the potential jurisdictional areas within the Study Area, which are detailed in Appendix E (Wetland Delineation Report).

Jurisdictional Areas	Total Acres (linear feet)
USACE Total Jurisdiction (404)	0.254
Wetland Waters of the U.S.	0.052
Non-wetland Waters of the U.S. ¹	0.202 (1,400)
CDFW and RWQCB Total Jurisdictional Areas (1602) ²	0.394
Riparian Habitat	0.192
Streambed ²	0.202 (1,400)

¹Non-wetland waters/streambed area not included in the wetland/riparian areas so that no area is counted twice for the same jurisdiction.

²CDFW/RWQCB area of jurisdiction includes all USACE jurisdictional waters.

USACE = U.S. Army Corps of Engineers; CDFW = California Department of Fish and Wildlife; RWQCB = Regional Water Quality Control Board

b. Areas with Hydrophytic Vegetation

Five vegetation communities within the Study Area contain hydrophytic vegetation: *Arthrocnemum subterminale* Alliance, *Schoenoplectus californicus* Alliance, *Baccharis salicifolia* Alliance, *Salix lasiolepis* Alliance, and disturbed wetlands (see vegetation community maps in the Biological Resources Report, Appendix B). These communities are described in greater detail in Section 3.7.

Arthrocnemum subterminale Alliance occurs in two patches toward the western end of the Study Area, south of the existing secondary border wall. These patches are small in extent, surrounded on most sides by dirt access roads, and dominated by glasswort (*Arthrocnemum subterminale*, Facultative-Wetland [FACW]). Other species commonly scattered throughout these patches include alkali heath (*Frankenia salina*, FACW) and salt marsh fleabane (*Pluchea odorata*, FACW). Within one patch, the total cover of saltwort is approximately 35 percent, with portions of decreased cover where a substantial amount of riprap occurs near a culvert. Scattered big saltbush (*Atriplex lentiformis*, Facultative [FAC]) is found

within the second patch. These areas are mapped in the Biological Resources Report (see Appendix B).

An additional area of *Baccharis salicifolia* Alliance vegetation occurs along a small ephemeral drainage south of the secondary border wall, and contains similar vegetation cover percentages for mule fat (*Baccharis salicifolia*) and arroyo willow (*Salix lasiolepis*), but contains sparse cover of mostly non-native grasses (*Bromus* sp.; No Indicator [NI]) in the understory (see Appendix B).

North of the secondary border wall, *Salix lasiolepis* Alliance vegetation occurs at the outfall of a small culvert and along the base of a manufactured slope leading up to an access road. The cover of arroyo willow is approximately 60 percent, with a mostly unvegetated understory.

Schoenoplectus californicus Alliance occurs along a channel north of the secondary border wall. This area was not able to be accessed due to a wall, but the prevalence of hydrophytic vegetation was obvious as it was dominated by southern bulrush (*Schoenoplectus californicus*, Obligate [OBL]).

Disturbed wetlands occur in three small patches within the Study Area. A disturbed wetland occurs on the north side of the secondary border wall at the outfall of the culvert leading from the *Arthrocnemum subterminale* Alliance vegetation on the south side of the wall. A small disturbed wetland occurs where a basin has been formed west of an access road. A few black willow (*Salix gooddingii*; FACW) individuals dominate at approximately 40 percent cover, but they are immature at only approximately 3 feet in height. The black willows likely undergo regular disturbance due to vegetation trimming. Regular mowing appears to occur in a wetland occurring south of the secondary border wall at the outfall of a small culvert. Here, one dominant species, southern cattail (*Typha domingensis*; OBL), was able to be identified, and the remaining species were unidentifiable due to the disturbance.

3.6.1.3 Soils

Information on the soil types in the Study Area is summarized from the Soil Survey for San Diego County (U.S. Department of Agriculture 1973), the San Diego Association of Governments' (SANDAG's) geographic information system data (SANDAG 1995), and the Hydric Soils of California list obtained from the Natural Resource Conservation Service (2015).

There are 20 soil types within the Study Area that are listed on the Natural Resource Conservation Service hydric soils list (2015). Additional detail on these soils can be found in Appendix E (Wetland Delineation Report). Of these, 14 are listed on the Natural Resource Conservation Service hydric soils list (2015), and are described below.

- **Carlsbad gravelly loamy sand, 2 to 5 percent slopes** is listed as hydric soil and is a member of the Carlsbad series, which is moderately well-drained with medium

to rapid runoff. There is moderately rapid permeability to the duripan, and the duripan is slowly to very slowly permeable.

- **Chesterton fine sandy loam, 2 to 5 percent slopes** is listed as a hydric soil in California and is a member of the Chesterton series, which is moderately well-drained with slow to medium to rapid runoff and there is very slow permeability.
- **Chino fine sandy loam, 0 to 2 percent slopes** and **Chino silt loam, saline, 0 to 2 percent slopes** are listed as hydric soils and are part of the Chino series, which is poorly to somewhat poorly drained. Runoff is slow to very slow and permeability is moderately slow. This series is found in basins and flood plains.
- **Coastal beaches** occur as gravelly and sandy beaches along the shore of the Pacific Ocean where soils are continually washed by ocean waves. Because of this, no vegetation is supported.
- **Diablo clay, 30 to 50 percent slopes** is listed as hydric soil and is a member of the Diablo series, which is well-drained. Runoff is slow during dry conditions and medium to rapid when soils are moist, and soils have slow permeability.
- **Huerhuero loam, 2 to 9 percent slopes** is listed as hydric soil and is a member of the Huerhuero series which is moderately well to poorly drained. Runoff is slow to medium and soils have very slow permeability.
- **Marina loamy coarse sand, 2 to 9 percent slopes** is listed as hydric soil and is a member of the Marina series, which is somewhat excessively drained. Runoff is slow to rapid and soils have moderate permeability.
- **Olivenhain cobbly loam, 9 to 30 percent slopes** is listed as hydric soil and is a member of the Olivenhain series. Soils are well-drained, have slow to medium runoff, and very slow permeability.
- **Riverwash** soils occur in intermittent stream channels and typically consist of sand, gravel, or cobble. Riverwash soil may be devoid of vegetation in many places or may contain sparse patches of shrubs and forbs. The soil is rapidly permeable and excessively drained.
- **Stockpen gravelly clay loam, 0 to 2 percent slopes** and **Stockpen gravelly clay loam, 2 to 5 percent slopes** are listed as hydric soils and are part of the Stockpen Series. Soils are moderately well-drained, have medium runoff, and very slow permeability.
- **Terrace escarpments** consist of steep to very steep escarpments and escarpment-like landscapes. This land type occurs on the nearly even fronts of terraces and alluvial fans between narrow floodplains and adjoining uplands and the sides of entrenched drainage ways within relatively level upland areas.
- **Tujunga sand, 0 to 5 percent slopes** is listed as hydric soil and is a member of the Tujunga Series. Soils can be excessively drained and have little to no runoff.

Observations of these hydric soil indicators are recorded in the Wetland Delineation Report (see Appendix E).

3.6.1.4 Hydrology

The Study Area includes areas where ponding or inundation appears to occur, as well as several ephemeral drainages that convey water through portions of the Study Area.

Hydrology indicators were observed within the Study Area (details are reported in the Wetland Delineation Report in Appendix E). These included three primary indicators, water marks (non-riverine), drift deposits (non-riverine), and surface soil cracks, and two secondary indicators, sediment deposits (riverine) and drift deposits (riverine). The non-riverine primary indicators were observed within the sampled wetland basins and were noted in wetland basins.

All ephemeral drainages within the Study Area occur within the watershed of the Tijuana River. Drainages occur in the Western Segment of the Study Area, west of where the Tijuana River crosses the U.S./Mexico international border as it flows north into the U.S. These western drainages generally flow north either connecting directly to the Tijuana River, or as tributaries to larger ephemeral streams that have connectivity to the Tijuana River. Drainages also occur in the Eastern Segment of the Study Area, east of where the Tijuana River crosses the U.S./Mexico international border, and generally flow south into Mexico and are assumed to have connectivity to the Tijuana River.

The ephemeral drainages throughout the Study Area generally drain water from the surrounding mesas both north and south of the U.S./Mexico international border. Many of these mesas have been developed, on both the north and south side of the border, causing the ephemeral drainages and streams to convey a substantial amount of urban runoff.

3.6.1.5 Floodplains

A floodplain is the area adjacent to a river, creek, lake, stream, or other open waterway that is subject to flooding. If an area is in the 100-year floodplain, there is a 1 in 100 chance in any given year that the area will flood. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) were reviewed to identify project locations within mapped floodplains (FEMA 2012). The FIRMs are official maps of a community on which FEMA has delineated both special hazard areas and the risk premium zones applicable to the community. According to FEMA FIRMs (Panels 06073C2161G, 06073C2162G, 06073C22166G, 06073C2170G, and 06073C2200G), portions of the Study Area do include areas designated as regulated floodways (Tijuana River Floodway) and being within a 100-year floodplain. The Northern Levee Segment is completely within the 100-year floodplain. The Eastern Segment is the only area identified as being completely outside of the 100-year floodplain. The flood hazard zones identified within the Study Area include:

- **Zone A:** Areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage.
- **Zone AE:** The base floodplain, inundated by 1 percent annual chance of flooding, for which base flood elevations have been determined.
- **Zone D:** An area of undetermined but possible flood hazards.
- **Zone X (shaded):** Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods.

- **Zone X (unshaded):** Area of minimal flood hazard, usually depicted on FIRMs as above the 500- year flood level. Zone X is the area determined to be outside the 500-year flood and protected by levee from the 100-year flood.

3.6.2 Effects Evaluation

Pursuant to the DHS Secretary's waiver, CBP no longer has any specific legal obligations under the Clean Water Act (CWA) and therefore CBP is not required to abide by its rules and regulations. Nevertheless, CBP recognizes the importance of environmental stewardship and will provide post-construction determinations of impacts to determine if and where additional stewardship may be necessary, given the availability of appropriate funds.

3.6.2.1 Groundwater

The likelihood for groundwater contamination due to road improvements, wall installation, or installation of drainage systems will be negligible due to the implementation of BMPs listed in Section 1.5.4, including the implementation of a SWPPP and the natural filtration of soils overlying the aquifers in the Study Area. The existing all-weather road has been constructed across the most challenging terrain of the Western Segment; however, the addition of approximately 1.5 miles of new all-weather road within the Eastern Segment would result in a permanent addition of new all-weather (gravel) road surfaces over approximately 7.27 acres of land (40-foot-wide road). This could result in an increase in runoff from the Study Area, and a potential decrease in groundwater infiltration. Construction and operation of the all-weather road is anticipated to have a negligible impact on groundwater recharge.

The project will require water from the local supply, or recycled water when readily available at the Water Treatment Plant, for road construction and fugitive dust suppression during construction activities. It is assumed that each 8-hour construction day would require two 10,000-gallon water trucks to dampen the dirt roads in order to minimize fugitive dust. It is assumed that each truck would be refilled two times throughout the work day. With the assumption of 240 total work days and two refills per truck, it is assumed that about 61 acre-feet of water will be used for the purpose of fugitive dust minimization over the course of about a year's construction. This temporary demand would not have a permanent impact on the local water supply, which is drawn from a diverse set of water sources. Groundwater quality, in addition to groundwater supply, would not permanently be impacted as a result of the project.

3.6.2.2 Surface Water

Implementation of the project will involve site preparation, earthwork, and grading in order to remove and install the secondary wall, install the lighting and communication system, construct the all-weather road, and other various improvements. Construction activities associated with project implementation could also temporarily affect surface water quality during the construction phase and could result in a temporary increase of sedimentation

and/or erosion. A SWPPP will be prepared by the contractor prior to construction and will be implemented with the other BMPs listed in Section 1.5.4 to minimize temporary impacts to the waters present.

BMPs for the handling and storage of hazardous substances, such as fuel, lubricants, and herbicides used during construction, would be implemented to ensure that no hazardous substances would enter adjacent water bodies. A SPCCP would be in place prior to the start of construction, and all personnel would be briefed on the implementation and responsibilities of this plan. A more detailed description of the measures related to hazards and hazardous materials is found in Section 3.10, Hazardous Materials and Waste, of this ESP.

a. Waters of the United States

The wetlands and non-wetland waters will be avoided to the extent feasible and impact minimization measures, as listed in Section 1.5.4, will be implemented. In areas that cannot otherwise be avoided, some wetlands and waters of the U.S. will be impacted by the planned project due to the proposed hardening of stream channels and disturbance caused by construction. This disturbance would result from site preparation, installation of wall replacement materials, the hardening of several stream channels across the Study Area, and construction of the all-weather road. Therefore, the project will result in both permanent and temporary impacts to waters of the U.S. as described in Table 3-4. Based on the results of a final impact assessment and availability of funds, wetland areas will be restored as near to pre-construction conditions as possible (revegetated with appropriate native species) and permanent impacts will be offset in a manner consistent with regional standards.

b. Stream Crossings

The Tijuana River is a perennial stream that crosses the Study Area and also receives runoff from uplands, some of which are also in the Study Area. The majority of streams crossing the Study Area are intermittent and may not be present during construction. The project design includes appropriately sized accommodations for stream crossings, including operable gates that will be automatically opened during storm events to allow large volumes of water to pass through. The current wall is a solid piece of metal, which does not allow water to pass except where culverts exist (see maps in the Wetland Delineation Report, Appendix E).

Some stream crossings as well as jurisdictional wetlands and waters will be impacted from the project implementation. Most stream crossings, and nearby portions of the all-weather road surface will be hardened with concrete. Hardening of the stream channel in some cases will extend northward beyond the Roosevelt Reservation to the full width of the Study Area. Hardening of ephemeral streams will result in increased runoff velocities and limit the ability for vegetation to grow in the stream channels within the Study Area; therefore, these are permanent impacts resulting from the project.

3.6.2.3 Floodplains

The bollard-style wall, along with the all-weather road paralleling it, is a hydro-modification that could impact hydrology and natural hydrologic flows. Some potential impacts of the border wall include increased risk of flooding due to increased runoff velocities, potentially obstructed waterways, slightly reduced infiltration and possibly minimal reductions in groundwater recharge.

The project would replace the existing wall in situ or marginally offset from the current secondary wall position. However, the majority of the wall to be removed is a solid piece of steel. The new bollard-style wall will be made up of individual steel pillars that would more easily allow flow across the wall boundary. In addition, the 40-foot all-weather road could marginally increase runoff velocities within the 1.5-mile section to be developed within the Study Area. Considering the Study Area traverses over 14 miles and concentrates all runoff flows into the Tijuana River, this could be a moderate impact. Adverse effects would include increased 'flashiness' of runoff with higher peak flows over shorter durations.

3.7 Biological Resources

3.7.1 Environmental Setting

South of the Study Area lies Mexico and mainly urban land uses, dominated by the city of Tijuana. North of the Study Area is a mix of open space and urban land use. Open space areas are located in the Western Segment near the Tijuana River and associated estuary and river valley (Tijuana River County Open Space Preserve and Border Field State Park) and in the eastern areas at the base of Otay Mountain and Otay Mesa (Otay County Open Space Preserve), approximately 14 miles from the western edge of the Study Area. Adjacent to the Study Area and in between these two open spaces are a mix of urban and other open space land uses, including: the City of San Ysidro, the San Ysidro POE, the Otay POE, and Pacific Gateway Park open space area. Within the Study Area, the land use is a combination of disturbed land, coastal scrublands, disturbed wetlands, revegetated areas, and artificial hardscape (paved and unpaved access roads). Some of these land use types are suitable habitat for threatened and endangered species.

The Study Area occurs within the Humid Temperate Domain, Mediterranean Division, California Coastal Chaparral Forest, and Shrub Province. Regional climate is defined by hot, dry summers and rainy, mild winters. Average annual temperatures range from 57 to 71 degrees Fahrenheit (°F) in San Diego. Average low temperatures range from 48° F in December to 66° F in August. Average high temperatures range from 65° F in December to 77° F in August. The record low and record high temperatures for San Diego are 29° F and 111° F, respectively. Average precipitation totals 10.34 inches per year.

The elevation of the Study Area ranges from 40 feet on the western limit of the Study Area near the Pacific Ocean to 780 feet on the eastern end of the Study Area on Otay Mesa. The 14-mile stretch from west to east that constitutes the Study Area incorporates several habitat types.

The City's MSCP has protected areas in and near the Study Area. The MSCP is not intended to limit CBP or other law enforcement activities. The MSCP provides CBP and other enforcement agencies an exemption for their activities, with the preference that CBP use existing infrastructure when possible in order to minimize impacts to established protected areas.

The patrol roads, access roads, and surrounding areas within the Study Area are maintained by CBP. Roads, brow ditches, and associated vegetation are regularly mowed, disced, or otherwise disturbed as a part of routine maintenance west of the San Ysidro POE. All vegetation areas between the primary and secondary fencing east of the San Ysidro POE are actively managed to limit the growth of vegetation to preserve sight lines for USBP agents and reduce concealment for cross border violators.

The existing vegetation, wildlife, aquatic resources, federal-listed species, and critical habitat in the Study Area and potential impacts from the project are discussed below. Additional details regarding survey methods, community classifications, wetlands and waters field evaluation summaries and BMPs can be found in the Biological Resources Report in Appendix B.

3.7.1.1 Plants and Vegetation Communities

The following 11 vegetation communities or land cover types were mapped within the Study Area: *Artemisia californica* Alliance, *Artemisia californica-Eriogonum fasciculatum* Alliance, *Arthrocnemum subterminale* Alliance, *Baccharis salicifolia* Alliance, *Encelia californica* Alliance, *Eriogonum fasciculatum* Alliance, *Isocoma menziesii* Alliance, *Malosma laurina* Alliance, Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands, Disturbed Land, and Urban/Developed Land (see Appendix B). These vegetation communities and land cover types are summarized in Table 3-5 below. A brief description of each community is also provided below.

Community or Type (California Native Plant Society Manual of California Vegetation)	City of San Diego Tier	Study Area/Direct Impact Area (acres)*
<i>Artemisia californica</i> Alliance	II	1.09
<i>Artemisia californica-Eriogonum fasciculatum</i> Alliance	II	10.01
<i>Arthrocnemum subterminale</i> Alliance	N/A – wetland	0.04
<i>Baccharis salicifolia</i> Alliance	N/A – wetland	0.19
<i>Encelia californica</i> Alliance	II	1.91
<i>Eriogonum fasciculatum</i> Alliance	II	10.85
<i>Isocoma menziesii</i> Alliance	II	1.08
<i>Malosma laurina</i> Alliance	II	0.22
Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	III	14.94
Disturbed land	IV	27.64
Urban/developed land	N/A	115.39
Total		183.37

N/A = not applicable

*Discrepancies in totals are due to rounding.

A total of 70 plant species was observed during biological surveys, with 43 species (61 percent) considered native and the remaining 27 species (39 percent) considered non-native and/or naturalized into the area. Dominant plant species are discussed by vegetation community below, and a complete list of plant species detected is included in the Biological Resources Report in Appendix B.

a. *Artemisia californica* Alliance

This quintessential alliance of the California coastal sage scrub macrogroup is widespread from the San Francisco Bay Area south to northwestern Baja California. Throughout the range of this alliance, California sagebrush (*Artemisia californica*) is dominant or codominant in the shrub canopy. Within the Study Area, the alliance is found predominantly in the Western Segment. Subdominant shrubs include coyote brush (*Baccharis pilularis*), California encelia (*Encelia californica*), California buckwheat (*Eriogonum fasciculatum*), coastal goldenbush (*Isocoma menziesii*), deerweed (*Lotus scoparius*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). The main shrub layer is usually less than 5 meters in height and may also include laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), or blue elderberry (*Sambucus nigra*). The herbaceous layer is variable both seasonally and annually.

b. *Artemisia californica*-*Eriogonum fasciculatum* Alliance

The *Artemisia californica*-*Eriogonum fasciculatum* Alliance/Association is found throughout the Western Segment of the Study Area and in the central section north of the existing secondary wall. It contains California sagebrush and California buckwheat as either dominant or co-dominant species. Few trees and a relatively open shrub canopy are characteristic of this alliance/association. The shrub canopy may include deerweed, laurel sumac, lemonade berry, and white sage. Most shrubs are less than 2 meters in height. Some emergent large shrubs are up to 5 meters tall. The canopy can be one- or two-tiered, and ranges from intermittent to continuous cover. The herbaceous layer is present and dominated by spring annuals, but may have some perennial grasses and geophytes.

c. *Arthrocnemum subterminale* Alliance

Arthrocnemum subterminale Alliance vegetation occurs in one patch near the western end of the Study Area, south of the existing secondary border wall. This patch is small in extent, surrounded on most sides by dirt access roads, and dominated by glasswort (*Arthrocnemum subterminale*). Other species commonly scattered throughout these patches include alkali heath (*Frankenia salina*), salt marsh fleabane (*Pluchea odorata*) and scattered big saltbush (*Atriplex lentiformis*).

d. *Baccharis salicifolia* Alliance

The *Baccharis salicifolia* Alliance is found in small patches in the Western Segment of the Study Area. This alliance is found in low-lying riparian areas and adjacent to *Arthrocnemum subterminale* Alliance vegetation. Mule fat (*B. salicifolia*) is the dominant species within the shrub canopy. *Baccharis salicifolia* stands typically contain little to no tree cover with an understory dominated by non-native grasses and various native and non-native herb species. These stands form in both seasonally or intermittently flooded habitats such as canyon bottoms, floodplains, irrigation ditches, lake margins, and stream channels. Stands are inherently variable depending on the amount of inundation and scouring. Stands usually form open shrublands or thickets in riparian corridors and along lake margins. The alliance is widespread throughout the warmer parts of California and the Southwest. Statewide, mule fat is dominant or codominant in the shrub canopy, with few to relatively numerous associated shrubs depending on location. In the Study Area these include California sagebrush, coyote bush, tree tobacco (*Nicotiana glauca*), laurel sumac, arroyo willow, blue elderberry, four-wing saltbush (*Atriplex canescens*), big saltbush (*Atriplex lentiformis*) and saltcedar (*Tamarix ramosissima*). Shrubs are generally less than 5 meters in height.

e. *Encelia californica* Alliance

Encelia californica is a relatively short-lived shrub that leafs out and flowers whenever moisture is available, usually in spring and sometimes through the fall. Its leaves drop in drought conditions. This alliance is one of several coastal sage scrub alliances. Despite its preference for sunny, steep exposures, it typically occurs close to the coast in association with some summer fog. In the Study Area it occurs mainly in the Western Segment on bluffs closest to the coast. General alliance characteristics include California encelia as the dominant or codominant in the shrub canopy, with California sagebrush, coyote bush, coastal goldenbush, deerweed, coast cholla (*Cylindropuntia prolifera*), snake cholla (*Cylindropuntia californica*) and black sage occurring as subdominants. Emergent taller shrubs of lemonade berry or blue elderberry may be present at trace cover. Shrubs are generally less than 2 meters in height. The shrub canopy is intermittent to continuous, and the herbaceous layer is variable.

f. *Eriogonum fasciculatum* Alliance

California buckwheat is one of the most diagnostic species of the Californian Mediterranean drought deciduous scrub macrogroups. In coastal southern California, this alliance is usually one of the first of the coastal scrubs to establish in mechanically disturbed areas, such as road cuts or slope failures, and it persists in areas with light to moderate grazing. In general, stands of this alliance are characterized by California buckwheat as dominant or codominant in the shrub canopy. Several stands of this alliance occur in the Eastern Segment of the Study Area. Subdominant species include California sagebrush, coyote bush, California encelia, coastal goldenbush, deerweed, chaparral mallow (*Malacothamnus fasciculatus*), white sage, and black sage. Shrubs are typically less than 2 meters and the

canopy is continuous or intermittent. The herbaceous layer is variable and may be dominated by grasses.

g. *Isocoma menziesii* Alliance

Coastal goldenbush typically forms stands on sandy soils in association with herbs and grasses. Most of these stands are the result of recent or frequent disturbance from fire, flooding, erosion, or human-related clearing. Two stands of this alliance are found in the Eastern Segment of the Study Area, north of the secondary wall, and adjacent to semi-natural stands comprised of non-native grasses.

h. *Malosma laurina* Alliance

Areas mapped as *Malosma laurina* Alliance include laurel sumac as the dominant or codominant species in the shrub canopy. Within the Study Area, this alliance is found in two drainages in the Eastern Segment, adjacent to herbaceous semi-natural stands and *Isocoma menziesii* Alliances. Subdominant species may include California sagebrush, California encelia, California buckwheat, chaparral yucca (*Hesperoyucca whipplei*), lemonade berry, and black sage. Shrubs are usually less than 5 meters in height and the canopy is open to continuous. The herbaceous layer is generally sparse.

i. Mediterranean California Naturalized Annual and Perennial Grassland Semi-natural Stands

This semi-natural stand is found throughout the Study Area. In the Western and Central segments of the Study Area, it occurs in narrow patches along disturbed roadsides. In the Eastern Segment it occurs in large stands north of the secondary wall. These stands are composed of various native and non-native grass and herb species, including Russian thistle (*Salsola tragus*), and ripgut grass (*Bromus diandrus*). The amount of non-native cover present within these stands precludes their inclusion within native alliances or associations.

j. Disturbed Land

Disturbed land within the Study Area consists of a complex of dirt roads and pedestrian and off-road-vehicle trails traversing the area, as well as a series of open areas characterized by exotic vegetation. Disturbed land also includes previously graded areas in the Eastern and Central segments between the primary and secondary walls. The vegetated portions of disturbed land are dominated primarily by highway iceplant (*Carpobrotus edulis*), garland daisy (*Glebionis coronaria*) and Russian thistle (*Salsola tragus*), with scattered non-native grasses. Saltcedar, tree tobacco, and castor bean (*Ricinus communis*) were also present in scattered locations.

k. Urban/Developed Land

Urban/developed land occurs throughout the Study Area and includes the paved and unpaved roads built alongside the secondary wall, parking lots, fencing, and structures. The

majority of urban/developed land is comprised of the unpaved roads used to access existing portions of the primary and secondary walls.

3.7.1.2 Wildlife

A total of 37 animal species were detected within the Study Area and surrounding areas, including 1 invertebrate, 2 reptiles, 32 birds, and 2 mammals. The common animal species observed are summarized below. A complete list of animal species detected during general and focused biological surveys conducted in 2018 is included in the Biological Resources Report in Appendix B. Sensitive animal species observed are discussed later in this section.

a. Invertebrates

Invertebrate species common to urban, scrub, grassland, and riparian communities are expected to be the most common species within the Study Area. Only one invertebrate species, monarch (*Danaus plexippus*), was identified to species and recorded during the 2018 biological surveys.

Other common invertebrate species not observed during the survey but expected to occur within the Study Area include painted lady (*Vanessa cardui*), Behr's metalmark (*Apodemia mormo virgulti*), tarantula hawk (*Pepsis* sp.), and honey bee (*Apis mellifera*).

b. Amphibians and Reptiles

Reptile species observed during the 2018 biological surveys are typical of urban areas and native scrub habitats in San Diego. The following two species were observed: western wall lizard (*Sceloporus occidentalis*) and common side-blotched lizard (*Uta stansburiana*). No amphibians were detected during field surveys.

c. Birds

Many avian species detected during general biological surveys are typical of urban areas, native scrub habitat, open grassland and/or fields, riparian habitat, or marine habitat. A total of 32 avian species were detected. The most commonly observed species within the Study Area include California towhee (*Melospiza crissalis*), rock dove (*Columba livia*), mourning dove (*Zenaidura macroura marginella*), black phoebe (*Sayornis nigricans*), Bewick's wren (*Thryomanes bewickii*), and burrowing owl (*Athene cunicularia*). Coastal California gnatcatcher was also observed during the surveys. As burrowing owl and coastal California gnatcatcher are sensitive species, they are discussed further below.

d. Mammals

The mammal species detected during the 2018 biological surveys are typical of urban-wildland interface areas, native scrub habitat, and/or open grassland and/or fields. The following two mammal species were detected during the 2018 biological surveys: desert cottontail (*Sylvilagus audubonii*) and California ground squirrel (*Spermophilus beecheyi*).

3.7.1.3 Sensitive Vegetation Communities and Special Status Species

a. Sensitive Vegetation Communities

Sensitive vegetation communities are vegetation assemblages, associations, or sub-associations that have cumulative losses throughout the region, have relatively limited distribution, support or potentially support sensitive species, have particular value to other wildlife, or have a combination of these characteristics. Typically, sensitive vegetation communities are considered sensitive whether or not they have been disturbed. Sensitive vegetation communities are regulated by various local, state, and federal resource agencies.

Seven vegetation communities classified as sensitive occur within the Study Area (see vegetation communities maps in the Biological Resources Report, Appendix B). *Baccharis salicifolia* Alliance is considered a wetland habitat (i.e., riparian scrub). *Artemisia californica* Alliance, *Artemisia californica-Eriogonum fasciculatum* Alliance, *Encelia californica* Alliance, *Eriogonum fasciculatum* Alliance, *Isocoma menziesii* Alliance, and *Malosma laurina* Alliance are considered Tier II (uncommon uplands) habitats.

b. Sensitive Plant Species

Plant species will be considered sensitive if they are: (1) listed by state or federal agencies as rare, threatened, or endangered or are proposed for listing; (2) designated by the City as a narrow endemic species (City of San Diego 1997, 2012); (3) covered species under the MSCP; (4) given a California Rare Plant Rank (CRPR) 1B (considered endangered throughout its range) or 2 (considered endangered in California but more common elsewhere), in the CNPS *Inventory of Rare and Endangered Vascular Plants of California*; (5) considered rare, endangered, or threatened by CDFW; or (6) identified by another recognized conservation or scientific group as being depleted, potentially depleted, declining, rare, critical, endemic, endangered, or threatened (Appendix B, Biological Resources Report).

The following five plant species are classified as sensitive; however, they are not listed by state or federal agencies as rare, threatened, or endangered, or proposed for listing. These species were observed during biological surveys of the Study Area: San Diego viguiera (*Bahiopsis laciniata*), snake cholla (*Cylindropuntia californica* var. *californica*), San Diego barrel cactus (*Ferocactus viridescens*), beach goldenaster (*Heterotheca sessiliflora* ssp. *sessiliflora*), and San Diego marsh-elder (*Iva hayesiana*) (Table 3-6). San Diego viguiera and beach goldenaster were observed within the Study Area, while both snake cholla and San Diego barrel cactus were observed just outside the project boundary.

Table 3-6 Sensitive Plant Species Observed			
Scientific Name	Common Name	CRPR	MSCP
<i>Bahiopsis lacinata</i>	San Diego viguiera	4.3	–
<i>Cylindropuntia californica</i> var. <i>californica</i>	snake cholla	1B.1	NE, MSCP
<i>Ferocactus viridescens</i>	San Diego barrel cactus	2B.1	MSCP
<i>Heterotheca sessiliflora</i> ssp. <i>sessiliflora</i>	beach goldenaster	1B.1	–
<i>Iva hayesiana</i>	San Diego marsh-elder	2B.2	–
Status Codes MSCP: Multiple Species Conservation Program covered species NE: City of San Diego MSCP Narrow Endemic species California Rare Plant Ranks (CRPR) 1B: Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing. 2B: Species rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing. Threat Ranks 0.1: Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)			

The Biological Resources Report in Appendix B summarizes the observed and other potentially occurring sensitive plant species that were assessed based on species locations records, habitat suitability, and soil preferences. Sixteen additional species, Coulter's saltbush (*Atriplex coulteri*), south coast salt bush (*Atriplex pacifica*), Orcutt's pin cushion (*Chaenactis glabriuscula* var. *orcuttiana*), Otay tarplant (*Deinandra conjugens*), decumbent goldenbush (*Isocoma menziesii* var. *decumbens*), sea dahlia (*Leptosyne maritima*), Brand's star phacelia (*Phacelia stellaris*), Blochman's dudleya (*Dudleya blochmaniae* ssp. *Blochmaniae*), variegated dudleya (*Dudleya variegata*), cliff spurge (*Euphorbia misera*), Nuttall's lotus (*Acmispon prostrates* [= *Lotus nuttallianus*]), Lewis's evening primrose (*Camissoniopsis* [= *Camissonia*] *lewisii*), slender woolly-heads (*Nemacaulis denudata* var. *denudata*), California screw moss (*Tortula californica*), ashy spike-moss (*Selaginella cinerascens*), and California box-thorn (*Lycium californicum*) have been identified as having a moderate or high potential to occur within the Study Area; although some additional sensitive plant species have a low potential to occur.

During surveys conducted for the replacement of the primary border wall (WRA 2018), the following species were detected within or adjacent to the Study Area for the secondary wall: Shaw's agave (*Agave shawii* var. *shawii*), San Diego bur-sage, San Diego viguiera, snake cholla, San Diego barrel cactus, Tecate cypress, decumbent goldenbush, California box-thorn, and ashy spike-moss. The details of these previous observations are included the Biological Resources Report in Appendix B.

c. Sensitive Plant Species Observed

San Diego viguiera (Bahiopsis lacinata)

San Diego viguiera was found in the Western Segment of the Study Area within areas mapped as *Artemisia californica* Alliance, *Artemisia californica-Eriogonum fasciculatum* Alliance, and *Eriogonum fasciculatum* Alliance.

Snake cholla (Cylindropuntia californica var. californica)

Snake cholla is a CRPR 1B.1 species (CNPS 2018) and is a covered species and narrow endemic species under the MSCP Subarea Plan (City of San Diego 1997). It is generally a prostrate cactus (Cactaceae family) that may grow up to 9 feet and blooms with yellow or green-yellow flowers in April and May. This variety grows only in southern San Diego County and Baja California, with the northernmost known location in Florida Canyon in Balboa Park (Reiser 2001). Snake cholla occurs in coastal sage scrub and chaparral habitats between 100 and 500 feet elevation (CNPS 2018), most often on dry hillsides. It is associated with Huerhuero loam, Gaviota fine sandy loam, and Redding cobbly loam soils (Reiser 2001). Snake cholla is substantially declining in San Diego County and imperiled by development (Reiser 2001).

While snake cholla was not observed within the Study Area, several were observed in adjacent habitat within the Western Segment of the Study Area, occurring within *Artemisia californica* Alliance, *Artemisia californica-Eriogonum fasciculatum* Alliance, *Encelia californica* Alliance, and *Eriogonum fasciculatum* Alliances.

San Diego barrel cactus (Ferocactus viridescens)

San Diego barrel cactus is a CRPR 2B.1 species (CNPS 2018) and is a covered species under the City's MSCP Subarea Plan (City of San Diego 1997). This globular succulent in the cactus family (Cactaceae) usually grows up to eight inches tall, with some individuals growing to 18 inches, and flowers in May and June (Baldwin et al. 2012). It is found only in coastal San Diego County and Baja California, Mexico. Although found as far north as Oceanside coastally and Poway inland, the largest populations of San Diego barrel cactus occur in Otay Mesa, Otay Valley, Point Loma, and Marine Corps Air Station Miramar (Reiser 2001). This species generally occurs in sandy, rocky or dry hills of coastal sage scrub, grassland, chaparral, and vernal pool habitats below 500 feet elevation (Jepson Flora Project 2018; Munz 1974). It is typically found in soil types such as San Miguel-Exchequer rocky silt loams and Redding gravelly loams and is associated with species such as variegated dudleya (*Dudleya variegata*), foothill needle grass (*Stipa lepida*), and California sagebrush (Reiser 2001). It is the only barrel cactus found in coastal areas. San Diego cactus is threatened by urbanization, off-road vehicles, and collecting (Baldwin et al. 2012).

While San Diego barrel cactus was not observed within the Study Area, several were observed in adjacent habitat occurring throughout various areas within *Artemisia californica* Alliance, *Artemisia californica-Eriogonum fasciculatum* Alliance, *Encelia californica* Alliance, and *Eriogonum fasciculatum* Alliances from the Western Segment of the Study Area to the Central Segment.

Beach goldenaster (Heterotheca sessiliflora ssp. sessiliflora)

Beach goldenaster is a CRPR 1B.1 species (CNPS 2018). This herbaceous perennial in the sunflower family (Asteraceae) grows from 7 to 50 inches in height and ranges from decumbent to erect in habit (Baldwin et al. 2012). It is found along the coast mostly in San Diego County and Baja California below 200 feet with a presumed extant population

occurring in Los Angeles County (CNPS 2018). This species is found on coastal dunes and in sandy locales of coastal sage scrub and in Del Mar has soils mapped as Terrace Escarpment (Reiser 2001). San Diego County populations of beach goldenaster are nearly extirpated due to developmental impacts to habitat immediately adjacent to southland beaches (Reiser 2001).

Beach goldenaster was found in the Western Segment of the Study Area within especially sandy locales. These areas are mapped as *Encelia californica* Alliance.

San Diego marsh-elder (Iva hayesiana)

San Diego marsh-elder is a CRPR 2B.2 species (CNPS 2018). This plant is a subshrub with multiple stems and relatively fleshy leaves that grows to three feet tall and produces nodding clusters of inconspicuous flowers between April and September (Munz 1974). This species is distributed in San Diego County and northern Baja California below 1,700 feet. Its habitat is identified as marshes, swamps, and playas (CNPS 2018), alkaline sinks and flats (Munz 1974) and creeks of intermittent streambeds (Reiser 2001). In San Diego County, it has been reported from the Tijuana Estuary to near Lake Hodges, with populations becoming smaller and more localized in the northern part of its range. San Diego marsh-elder is found on sandy alluvial embankments with cobbles on Riverwash, San Miguel-Exchequer or Huerhuero loam soils (Reiser 2001).

3.7.1.4 Special Status Wildlife Species

The following two special status wildlife species were observed during the biological surveys conducted within the Study Area (see also Appendix B): coastal California gnatcatcher (*Polioptila californica californica*) and western burrowing owl (*Athene cunicularia hypugaea*) (Appendix B). In addition, least Bell's vireo (*Vireo bellii pusillus*) has been known to occur within and adjacent to the Study Area (USFWS 2018). Descriptions of these sensitive wildlife species are provided below.

The Biological Resources Report in Appendix B summarizes these observed and other potentially occurring special status wildlife species that were assessed based on species locations records, habitat suitability, and soil preferences. Based on this assessment of species location records and habitat suitability, the following 16 additional special status wildlife species were identified as having a high or moderate potential to occur: San Diego fairy shrimp (*Branchinecta sandiegonensis*), Riverside fairy shrimp (*Streptocephalus woottoni*), California least tern (*Sternula antillarum browni*), and least Bell's vireo are federally listed as endangered. Western snowy plover (*Charadrius alexandrinus nivosus*) is federally listed as threatened and is a CDFW species of special concern. Coast horned lizard (*Phrynosoma blainvillii*), Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), coast whiptail (*Aspidoscelis tigris stejnegeri*), Baja California coachwhip (*Coluber fuliginosus*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), red-diamond rattlesnake (*Crotalus ruber*), northern harrier (*Circus cyaneus hudsonius*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) are CDFW species of special concern. California horned lark

(*Eremophila alpestris actia*) and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) are CDFW watch list species. Coast horned lizard, Belding's orange-throated whiptail, northern harrier, western snowy plover, California least tern, least Bell's vireo, and Southern California rufous-crowned sparrow are also covered by the MSCP.

a. Special Status Wildlife Species Observed

Western Burrowing Owl (Athene cunicularia hypugaea)

Western burrowing owl is a CDFW species of special concern and an MSCP covered species (CDFW 2018a, City of San Diego 1997). Western burrowing owl is primarily restricted to the western United States and Mexico. A year-round resident in San Diego County, breeding western burrowing owls remain in only five primary areas in San Diego County including Otay Mesa, Imperial Beach, North Island Naval Air Station, Warner Valley, and Borrego Valley (Unitt 2004). Habitat for the western burrowing owl includes dry, open, short-grass areas with level to gentle topography and well-drained soils (CDFW 2012). These areas are also often associated with burrowing mammals (Haug et al. 1993). The burrowing owl is diurnal and perches during daylight at the entrance to its burrow or on low posts. Nesting occurs from March through August. Burrowing owls form a pair-bond for more than one year and exhibit high site fidelity, reusing the same burrow year after year (Haug et al. 1993). The female remains inside the burrow during most of the egg laying and incubation period and is fed by the male throughout brooding. Western burrowing owls are opportunistic feeders, consuming a diet that includes arthropods, small mammals, and birds, and occasionally amphibians and reptiles (Haug et al. 1993). Urbanization has greatly reduced the amount of suitable habitat for this species, thereby leading to the decline in the San Diego population (Lincher and Bloom 2007). Other contributions to the decline of this species include the poisoning of squirrels and prairie dogs, road and ditch maintenance, and collisions with automobiles (CDFW 2012).

A total of eight burrowing owls were detected within the Eastern Segment of the Study Area during general surveys. Five of the eight burrowing owls were found between portions of the existing primary and secondary walls in areas mapped as disturbed habitat. Two pairs and one individual owl comprised the five observed between the two walls. Three additional burrowing owls were observed north of the existing secondary wall along the existing associated dirt road in areas also mapped as disturbed habitat. Of these three, two were a pair and one was a lone individual. The habitat adjacent to the north of the road on which these owls were observed on was mapped as naturalized warm-temperate riparian and wetland semi-natural stand and is dominated by non-native grasses and annual vegetation.

In addition to those observed during general surveys, six additional burrowing owls were observed and mapped by monitoring biologists associated with the installation of the primary wall. All observed burrowing owl locations within or near the Study Area are shown in Appendix C. The San Diego Zoo Institute for Conservation Research (ICR) has been monitoring burrowing owls as part of efforts conducted for the primary wall

replacement project and data collected from their project team is included in the burrowing owl mitigation plan prepared for the secondary wall replacement project (see Appendix C).

Coastal California Gnatcatcher (Polioptila californica californica)

Coastal California gnatcatcher is federally listed as threatened, a CDFW species of special concern, and an MSCP covered species (CDFW 2018a and b; City of San Diego 1997). Coastal California gnatcatcher is a non-migratory, resident species found on the coastal slopes of southern California ranging from Ventura County southward through Los Angeles, Orange, Riverside, and San Diego counties into Baja California, Mexico (Atwood and Bontrager 2001; USFWS 2010). In San Diego County the eastern limits of the coastal scrub vegetation communities used by the gnatcatcher are largely bound by mountainous areas and colder winters (Unitt 2004). Coastal California gnatcatchers typically occur in or near mature coastal sage scrub habitat (Atwood and Bontrager 2001). This vegetation generally comprises low (less than three feet in height) shrub and sub-shrub species. Gnatcatchers defend breeding territories ranging in size from two to 14 acres (USFWS 2010). This species' ideal host shrub for nesting is California sagebrush, but it is also found nesting in California buckwheat, common encelia (*Encelia californica*), and broom baccharis (Unitt 2004). Other habitats used by coastal California gnatcatcher include chaparral, grassland, and riparian scrub; disturbed habitats are used where they occur adjacent to sage scrub (Atwood and Bontrager 2001). The primary cause of decline in the coastal California gnatcatcher population is habitat loss and degradation from urban and agricultural development, wildfires, and grazing. Gnatcatcher populations in areas near agriculture or livestock may also be more susceptible to brood parasitism (Atwood and Bontrager 2001).

One adult female California gnatcatcher was observed within the Central Segment of the Study Area. The individual was first detected from vocalizations and then later visually identified within *Artemisia californica* Alliance vegetation. However, much of the *Artemisia californica*-*Eriogonum fasciculatum* Alliance, *Baccharis salicifolia* Alliance, *Encelia californica* Alliance, *Eriogonum fasciculatum* Alliance, *Isocoma menziesii* Alliance, *Malosma laurina* Alliance vegetation within the Study Area is considered suitable breeding habitat for gnatcatcher. Some portions of these habitats in the Central and Eastern segments of the Study Area contain shrub density and height that are lower than are typically preferred for nesting by this species. The entirety of these habitats also provide suitable foraging habitat and habitat for dispersal of juveniles.

In addition to this individual observation during general surveys, several gnatcatcher have been observed within and adjacent to the Study Area in various places throughout the Western Segment by monitoring biologists associated with the installation of the primary wall.

Least Bell's Vireo

Least Bell's vireo is federally and state listed as endangered and an MSCP covered species (CDFW 2018a and b; City of San Diego 1997). Its historical breeding range once extended from northwestern Baja California, Mexico, to interior northern California, as far north as

the city of Red Bluff in Tehama County, California (Franzreb 1989). The species is associated with riparian habitats, including cottonwood–willow woodlands and forests, oak woodlands, and mule fat scrub, and requires dense canopy for foraging and a dense understory for nesting (Unitt 2004; USFWS 1998). Least Bell's vireos migrate to San Diego County arriving at the breeding grounds in mid-March and remain until September or October. Populations are concentrated in the coastal lowlands of the county and are scattered within the foothills (Unitt 2004). Populations of least Bell's vireo have declined drastically due to extensive loss of riparian habitat from urban development, including flood control and damming, introduction of non-native invasive plant species such as giant reed (*Arundo donax*) and saltcedar, and nest parasitism by brown-headed cowbird (*Molothrus ater*) (USFWS 2009). The population has increased as a result of extensive brown-headed cowbird trapping programs and restoration of riparian woodland habitat (Unitt 2004).

Least Bell's vireo has been historically known to occur within and adjacent to the Study Area (USFWS 2018). This species was not detected during current surveys because the species migrates south to Mexico for the winter and would not have been present. Potentially suitable nesting habitat is present within *Baccharis salicifolia* Alliance vegetation within the Western Segment of the Study Area. Suitable foraging habitat is present within the same habitat and adjacent *Encelia californica* and *Artemisia californica*-*Eriogonum fasciculatum* Alliances.

3.7.2 Effects Evaluation

3.7.2.1 Sensitive Vegetation Communities and Special Status Species

a. Sensitive Vegetation Communities

The project will impact eight sensitive vegetation communities occurring within the Study Area. The project will result in direct impacts to 25.40 total acres of sensitive vegetation communities comprising 1.09 acres of *Artemisia californica* Alliance (Tier II), 10.01 acres of *Artemisia californica*-*Eriogonum fasciculatum* Alliance (Tier II), 0.01 of *Arthrocnemum subterminale* Alliance (wetland), 0.19 acres of *Baccharis salicifolia* Alliance (wetland), 1.91 acres of *Encelia californica* Alliance (Tier II), 10.85 acres of *Eriogonum fasciculatum* Alliance (Tier II), 1.08 acres of *Isocoma menziesii* Alliance (Tier II), and 0.22 acres of *Malosma laurina* Alliance (Tier II) (see Table 3-5). Approximately 157.97 acres of direct impacts to non-sensitive vegetation communities would also occur, as shown in Table 3-5. These direct impacts include the total potential impact area.

b. Sensitive Plant Species

The project has potential to impact 17 sensitive plant species occurring within the Study Area. Potential impacts to sensitive plant species that occur or have moderate to high potential to occur within the project impact area are listed below. Impacts may result from soil disturbance or trampling and spills within the Study Area.

The following observed sensitive plant species would be impacted by the project:

- San Diego viguiera
- beach goldenaster
- San Diego marsh-elder

The following plant sensitive species were observed during general surveys but occurred outside the project impact area and are not anticipated to be impacted:

- San Diego barrel cactus
- Snake cholla

The following sensitive plant species not observed but with moderate to high potential to occur within the Study Area may be impacted by the project:

- Coulter's saltbush
- south coast salt bush
- Orcutt's pin cushion
- Otay tarplant
- decumbent goldenbush
- sea dahlia
- Brand's star phacelia
- Blochman's dudleya
- variegated dudleya
- cliff spurge
- Nuttal's lotus
- Lewis's evening primrose
- slender woolly-heads.
- California screw moss
- ashy spike-moss
- California box-thorn

Each species is discussed in further detail in the Biological Resources Report in Appendix B.

3.7.2.2 Special Status Wildlife Species

The project has potential to impact 18 sensitive wildlife species occurring within the Study Area. Potential impacts to sensitive wildlife species that occur or have a moderate to high potential to occur within the project impact area are listed below. Impacts would result from incidental mortality, nest removal, and/or habitat removal within the potential impact area. The project impact area in relation to the observed sensitive wildlife species locations is described in Appendix B.

The following observed sensitive wildlife species would be impacted by the project:

- western burrowing owl
- coastal California gnatcatcher

The following sensitive wildlife species not observed but with moderate to high potential to occur within the Study Area may be impacted by the project:

- San Diego fairy shrimp
- Riverside fairy shrimp
- Coast horned lizard
- Belding's orange-throated whiptail
- coast whiptail
- Baja California coachwhip
- coast patch-nosed snake
- red-diamond rattlesnake
- northern harrier
- Western snowy plover
- California least tern
- least Bell's vireo
- California horned lark
- Southern California rufous-crowned sparrow
- San Diego black-tailed jackrabbit
- northwestern San Diego pocket mouse

Each species is discussed in further detail in the Biological Resources Report in Appendix B.

Impacts will be minimized through implementation of appropriate BMPs for the protection of special status species as well as for general plants, wildlife, and habitats. Temporarily impacted areas will be revegetated with native plants or seeds and are expected to function as suitable habitat after restoration is complete. Should mitigation be necessary, mitigation for impacts to special status species habitats will be consistent with the MSCP mitigation guidelines. As noted in previous sections, the scope and extent of any mitigation will be based on a final assessment of impacts and available funding.

Because the overall purpose of this project is to reduce the amount of illegal cross-border traffic within the Study Area, native habitats are expected to benefit from reduced disturbance. However, changes in illegal cross-border traffic patterns and intensities result from a variety of known and unknown reasons; therefore, these are considered unpredictable and beyond the scope of this ESP.

3.7.2.3 Nesting Birds

Nesting bird species covered under the CFGC 3503.5 have potential to be directly impacted by the project if construction activities (i.e., clearing, grubbing, grading) occur during the

nesting season of February 1 to September 15. Direct adverse impacts to nesting birds would be considered moderate and require avoidance measures.

3.8 Cultural Resources

3.8.1 Environmental Setting

Cultural resources are the remains of past human life that document our history. They are non-renewable and are particularly important to indigenous groups. Examples include prehistoric villages, campsites, milling stations, rock art, railroads, bridges, buildings, agricultural features, plant gathering areas, and trails. Cultural resources are typically protected by state and federal laws because of their cultural significance and the fact that information can be destroyed when these resources are disturbed.

The artifacts of previous cultures such as the Kumeyaay and Luiseño tribes, the Spanish occupations, and the early American Period within the Study Area could include: stone tools, pottery, arrow points, prehistoric and historic archaeological sites, old cans and bottles, historic structures, and human burials. Border monuments are also considered important cultural resources. Cultural resources can occur on the surface and underground, and are not specifically identified on plans to protect their locations.

A cultural resources survey was conducted in support of the project. The survey included a records search of all the resources within one-quarter mile of the Study Area on the U.S. side, as well as a pedestrian survey performed through the entirety of the Study Area. The results of each were utilized to determine the potential for the project to affect cultural resources. The cultural survey and associated results are documented within a formal Cultural Resources Report provided as Appendix D of this ESP. A summary of the report is provided below.

3.8.1.1 Natural Setting

The Tijuana River crosses the border just west of the San Ysidro border crossing and continues west north of the area of potential effect (APE). It is generally accepted that in prehistoric times drainages had more substantial flows and the water table was generally higher (Christenson 1989). These conditions may have resulted in water being available within the APE for a longer period of the year than it is now. The Tijuana River would have been more a regular source of water in prehistoric times.

A variety of usable resources would have been available to prehistoric populations in and around the Study Area. The coastal sage scrub, chamise chaparral, and maritime succulent scrub communities contain many plants used by the ethnographic Kumeyaay population. Three plants in particular, manzanita (*Arctostaphylos* spp.), white sage, and blue elderberry, were used for a variety of purposes in prehistoric times. These plants served as sources of food and wood, and were used for medicinal and ceremonial purposes. Animals available on the mesa would include jackrabbit, brush rabbit (*Sylvilagus bachmani*), desert

cottontail, California ground squirrel, woodrat (*Neotoma* spp.), other small rodents, mule deer (*Odocoileus hemionus*), and various small birds and reptiles.

3.8.1.2 Cultural Setting

The prehistoric cultural sequence in San Diego County is generally conceived as comprising three basic periods: (1) the Paleoindian Period, dated between about 11,500 and 8,500 years ago; (2) the Archaic Period, lasting from about 8,500 to 1,500 years ago (A.D. 500); and (3) the Late Prehistoric Period, lasting from about 1,500 years ago to historic contact (i.e., A.D. 500 to 1769) and represented by the Cuyamaca Complex. These periods are described in detail in the Cultural Resources Report (see Appendix D).

3.8.1.3 Ethnohistory

The Kumeyaay (also known as Kamia, Ipai, Tipai, and Diegueño) occupied the southern two-thirds of San Diego County. The Kumeyaay lived in semi-sedentary, politically autonomous villages or rancherías. A settlement system typically consisted of two or more seasonal villages with temporary camps radiating away from these central places (Cline 1984). Their economic system consisted of hunting and gathering, with a focus on small game, acorns, grass seeds, and other plant resources. The most basic social and economic unit was the patrilocal extended family. A wide range of tools was made of locally available and imported materials. A simple shoulder-height bow was used for hunting. Numerous other flaked-stone tools were made, including scrapers, choppers, flake-based cutting tools, and biface knives. Preferred stone types were locally available metavolcanic, chert, and quartz. Obsidian was imported from the deserts to the north and east. Ground stone objects include mortars and pestles typically made of locally available fine-grained granite; both portable and bedrock types are known. The Kumeyaay made fine baskets, employing either coiled or twined construction. The Kumeyaay also made pottery, using the paddle-and-anvil technique. Most were a plain brown utility ware called Tizon Brownware, but some were decorated (May 1978; Spier 1923).

3.8.1.4 Historic Period

The Spanish Period in Alta California (1769–1821) represents a time of European exploration and settlement. Military and religious contingents established the San Diego Presidio and the San Diego Mission in 1769. The major land use during the Spanish Period was cattle grazing. One of the hallmarks of the Spanish colonial scheme was the rancho system. In an attempt to encourage settlement and development of the colonies, large land grants were made to well-connected individuals.

In 1821, Mexico declared its independence from Spain. During the Mexican period (1821–1848), the missions were secularized, opening vast tracts of former mission lands for private use and settlement. The numerous grants dramatically expanded the rancho system. The southern California economy became increasingly based on cattle ranching. The Mexican period ended when Mexico signed the Treaty of Guadalupe Hidalgo on February 2, 1848, concluding the Mexican-American War (1846–1848) (Rolle and Verge

2008). Just prior to signing the Treaty of Guadalupe-Hidalgo, gold was discovered in the northern California Sierra Nevada foothills, the California Gold Rush began in 1848, and California became a state in 1850.

The great influx of Americans and Europeans, beginning with the Gold Rush, eliminated many remaining vestiges of Native American culture. The American homestead system encouraged settlement beyond the coastal plain into areas where Native Americans had retreated to avoid the worst of Spanish and Mexican influences (Carrico 1987; Cook 1976). By the late 1800s, San Diego County witnessed the gradual development of a number of outlying communities, many of which were established around previously defined ranchos and land grants.

Ranching and farming continued to be the main occupations of residents in and around the eastern APE through much of the twentieth century. After World War II, the Otay Mesa Municipal Water District was established and was a source of dependable water. This water supply allowed for vegetable farming including tomatoes, celery, bell peppers, cucumbers, and barley (City of San Diego 2008). California State Parks and Recreation acquired the area on Monument Mesa and established Border Field State Park in 1972.

Two POEs are adjacent to the APE: the San Ysidro POE and the Otay Mesa POE. The San Ysidro POE, opened in 1906, is one of the busiest land border crossings in the world. Approximately 60,000 vehicles and 20,000 pedestrians cross every day, passing through a northbound and southbound vehicle crossing and two pedestrian crossings. The Otay Mesa POE was opened in 1983, primarily to accommodate truck traffic crossing the border, although auto traffic using it has increased.

3.8.1.5 Cultural Resources Record Search and Survey Results

An archaeologist performed a self-records search of the Study Area with a one-quarter mile search buffer at the California Historical Resources Information System (CHRIS), South Coastal Information Center (SCIC) in order to identify any previously recorded cultural resources; previous archaeological surveys and excavations; and historic maps and historic addresses. The National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) for San Diego County were also reviewed. A total of 147 past investigations have included portions of the current APE and a total of 84 have been recorded within one-quarter mile of the APE. Of the 84 resources, 67 are prehistoric sites, 7 are prehistoric isolated artifacts, 7 are historic sites, 2 resources have both prehistoric and historic components (multi-component), and 1 site has an unknown time period. The prehistoric sites include habitation sites, temporary camps, lithic scatters, and marine shell and lithic scatters. Historic sites include trash scatters, military features, and a railroad depot. There are 9 historic addresses within the one-quarter-mile radius; none are within the APE. A total of 24 cultural resources have been recorded within the SDC Secondary Border Wall APE. These resources are listed in Table 3-7.

**Table 3-7
List of Cultural Resources within the Study Area**

Primary Site Number	Site Type	NRHP Eligibility	Current Status
P-37-004281 CA-SDI-4281	La Jolla habitation site with extensive marine shell and lithic artifact scatter	Concur with Determination of Eligibility	Relocated within Study Area
P-37-008076 CA-SDI-8076	Sparse lithic scatter	Recommend ineligible	Not relocated
P-37-007208 CA-SDI-7208	Lithic scatter	Not eligible	Not relocated
P-37-008079 CA-SDI-8079 CA	Lithic scatter	Not eligible	Not relocated
P-37-008595 CA-SDI-8595	Light artifact and marine shell scatter	Not eligible	Not relocated
P-37-008604	Quarry site with lithics	Not eligible	Likely destroyed, not relocated
P-37-008605 CA-SDI-8605	Lithic scatter	Not eligible	Not relocated
P-37-008652	Lithic scatter and Border Monument 252	Not eligible	Lithic scatter not relocated, monuments are south of the border wall
P-37-008653	Light lithic scatter	Not eligible	Not relocated
P-37-010621	Lithic scatter	Not eligible	Not relocated
P-37-011947 CA-SDI-11947	Originally recorded as standing walls of a structure and associated features	Not eligible	Destroyed, Not relocated
P-37-012256 CA-SDI-12256	Habitation site, widely dispersed lithic scatter	Not eligible	Not relocated
P-37-012257 CA-SDI-12257	Small lithic scatter	Not eligible	Not relocated
P-37-012258 CA-SDI-12258	Lithic scatter	Not eligible	Not relocated
P-37-012259 CA-SDI-12259	Lithic scatter	Not eligible	Not relocated
P-37-012720 CA-SDI-12720	Lithic scatter (6 flakes)	Recommended as Ineligible	Relocated within Study Area
P-37-013486	Shell midden and lithic scatter	Recommended as Ineligible	Not relocated
P-37-016183 CA-SDI-14726	Sparse lithic scatter	Not eligible	Not relocated
P-37-016667 CA-SDI-15039	Sparse lithic scatter	Not eligible	Likely destroyed, not relocated
P-37-010808	Possible habitation site, artifacts and scatter	Potentially eligible	Outside current boundary, will not be impacted
P-37-010809	Possible habitation site, sense lithic debris and artifacts	Potentially eligible	Not relocated, likely mis-mapped, will not be impacted

Primary Site Number	Site Type	NRHP Eligibility	Current Status
P-37-025680	Union Pacific Railroad, 1907-1919, El Centro to San Diego	Concur with Recommendation of Ineligible	Relocated within Study Area
P-37-003627 CA-SDI-3627	Multi-component site with 3 World War II fire control or base-end stations and associated structures and a prehistoric lithic scatter	Concur with Determination of Eligibility of Historic Portion of Site	Relocated within Study Area
P-37-000222 CA-SDI-222	Shell midden with ground stone, bifaces, cores, and percussion tools	Concur with Determination of Eligibility	Relocated within Study Area
9243.1-RDS-001	Sparse lithic scatter	Qualifies as a Non-site under the Management Plan for Otay Mesa Prehistoric Resources	Newly recorded

The cultural resources survey consisted of an on-foot survey of the 183.37-acre survey area. The field survey was conducted on November 15, 19, and 20, 2018 within areas with right-of-entry permission. The primary goal was to systematically survey the APE to determine (1) if there are previously unrecorded cultural resources present, and if so, document the resources' locations and what they consist of and (2) to update conditions of previously recorded cultural resources. The survey area was inspected for evidence of archaeological materials such as flaked and ground stone tools or fragments, ceramics, milling features, and human remains. Intervals between archaeologists were approximately 5 to 10 meters.

Of the 24 previously recorded resources, four sites (P-37-012720, P-37-025680, P-37-003627, and P-37-004281) could be definitively relocated by the presence of artifacts. One new prehistoric site was located during the survey. All sites are summarized in Table 3-7 above.

3.8.1.6 Viewshed Analysis

Two NRHP listed historic structures fall within the APE of the project: the Initial Point of Boundary between U.S. and Mexico Border Monument 258 and the U.S. Inspection Station/U.S. Custom House. Because of the proximity of these two structures to the Study Area and the potential of the project to alter the visual landscape, a viewshed analysis was conducted in an effort to address potential impacts to these two historic properties.

The Initial Point of Boundary between U.S. and Mexico Border Monument 258 were listed in the NRHP in 1974 under Criterion A for their association with the establishment of the United States-Mexico International Border. The monument installed at its present location in 1851 is a white marble obelisk 20 feet in height resting on a rectangular marble pedestal. Due to vandalism, the monument was renovated in 1894 and a protective enclosure added. In the 1960s development on the Mexican side of the border had altered the viewshed, most prominently by a large bullring. By 1980 the wall was more substantial and a park had

been built on both sides of the border around the monument. Currently, the monument is obscured from view from the U.S. side by a 20-foot-plus-tall wall constructed of layered wire mesh and vertical metal posts installed immediately north of its north face. The second border wall, constructed of perforated metal sheets and metal posts, sits approximately 100 feet north of the monument. These existing changes have significantly impacted the integrity of the setting aspect of the monument. Due to the existing lack of setting integrity, any replacement of the secondary border wall in this area will not result in an adverse effect to the setting aspect of integrity.

The U.S. Inspection Station/U.S. Custom House, also known as the “Old Custom House” was constructed in 1932-33 and is located approximately 50 feet north of the U.S.-Mexico border. The building, listed in the NRHP in 1974, was designed by the Supervising Architect’s Office of the Treasury Department. It is listed under Criterion A for its association with the establishment of the U.S.-Mexico International Border and association with the San Ysidro POE, the busiest POE in the United States. The Custom House is also listed under Criterion C as a local example of Mission/Spanish Colonial Revival architectural style.

The setting of the Custom House has been altered significantly since its construction. The POE itself has evolved from a 6-lane basic road (in 1953) with small booths to a 22-plus-lane entry covered by an approximately 560-foot-long-by-50-foot-wide shade/booth structure stretching from road edge to road edge. Large buildings have been constructed to both the north and south of the Custom House, and a pedestrian walkway has been constructed immediately to the east. Construction is currently occurring immediately to the north and west of the building. The existing secondary border wall stops approximately 100 feet to the east of the south end of the building. This development has significantly impacted the integrity of the setting aspect of the Custom House. The replacement of the secondary border wall, due to the fact that a wall already exists, the relatively small bulk of the new wall, and the distance from the Custom House, will not result in adverse effects to the setting aspect of its integrity.

3.8.2 Effects Evaluation

Under the Secretary’s waiver, the CBP does not have any specific obligations under the National Historic Preservation Act (NHPA); however, DHS and CBP recognize the importance of responsible environmental stewardship. CBP has therefore applied the general standards and guidelines associated with the NHPA as the basis for evaluating potential environmental impacts and appropriate BMPs.

Six cultural resources (9243.1-RDS-001, P-37-012720, P-37-025680, P-37-003627, P-37-000222, and P-37-004281) were located during the survey. Of these resources, three sites (P-37-000222, P-37-003627 and P-37-004281) have been recommended eligible for the NRHP. As designed, the six cultural resources will have direct impacts from construction of the project. Avoidance or preservation in place, including monitoring by a professional archaeologist, is the recommended management approach. Construction monitoring is

recommended for the three affected historic properties (P-37-000222, P-37-003627 and P-37-004281) to avoid adverse effects should features be identified during construction.

In addition, two historical properties that are listed in the NRHP are located within a one-half-mile diameter of the Study Area that may be subject to indirect effects. The Initial Point of Boundary Between U.S. and Mexico/Border Monument 258 and the U.S. Inspection Station/U.S. Custom House are both within the visual APE. However, as described above, both properties are in built environments that have permanently altered the viewsheds of these properties. Therefore, no adverse visual effects are anticipated to occur to these properties as a result of the project.

3.9 Socioeconomics

3.9.1 Environmental Setting

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. While population and demographic data are relatively straightforward and maintained by the Census Bureau, there are many factors that can be used as indicators of economic conditions for a geographic area, such as employment and unemployment rates, employment by business sector, and median household income. The proposed project is located within San Diego County, which is one of 58 counties within the state of California. Several resources that determine population and economic activity within this region refer to San Diego County as the San Diego-Carlsbad Metropolitan Statistical Area.

3.9.1.1 Population/Demographics

In 2015, the population of San Diego County was 3,229,521, second most populous in the state of California, and 17th in the Country (Bureau of Economic Analysis 2016). San Diego County's population is predominantly Caucasian (46.0 percent) and Hispanic or Latino (33.5 percent) races, followed by Asian (12.2 percent) and African American (5.5 percent). The remainder is split among American Indian, Pacific Islander, and people claiming to be two or more races (U.S. Census Bureau 2016).

In 2016, the labor force in San Diego County averaged 1,570,422 (Bureau of Labor Statistics 2017). In 2016, the largest number of people employed in San Diego County worked in government and government services; trade, transportation, and utilities; professional and business services; educational and health services; and leisure and hospitality services (State of California Employment Development Department 2017). In 2016, the annual unemployment rate was 4.7 percent (Bureau of Labor Statistics 2017).

In 2015, San Diego County had a per capita personal income (PCPI) of \$53,298. This PCPI ranked 18th in the state and was 99 percent of the state average (\$53,741) and 111 percent of the national average (\$48,112). The 2015 PCPI reflected an increase of 4.2 percent of the 2014 PCPI. The 2014-2015 state change was 5.4 percent and the national change was 3.7 percent. San Diego County had a personal income of \$175,858,666 in 2015, which

ranked 3rd in the state and accounted for 8.4 percent of the state total. The median household income for San Diego County was \$64,309, which is higher than the median household income of the state (\$61,818). In 2016, San Diego County had an average of 13.9 percent of persons in poverty (U.S. Census Bureau 2017).

3.9.1.2 Economic Activity

The project defines the border between the U.S. and Mexico where there are longstanding economic ties, especially between the cities of San Diego and Tijuana. The economies have become increasingly interconnected and the region is a hub for manufacturing of medical equipment and supplies. Tijuana's population is approximately 1.6 million people, and approximately 135,000 people legally cross the border each day (San Diego Regional Profile 2017). The value of commercial exchange between the broader Baja California states and the San Diego region is valued at \$2.1 million daily. As of 2013, the San Diego-Tijuana area had more than 2.1 million jobs, with over 1,470,000 jobs in San Diego, 60,600 jobs in the Imperial Valley, and 637,981 jobs in Tijuana (U.S. Census Bureau 2017).

3.9.1.3 Environmental Justice

On February 11, 1994, Executive Order 12898, *Federal Actions to Address Environmental Minority Populations and Low-Income Populations*, was issued. It addresses environmental justice issues as they relate to various socioeconomic groups and the health effects that could be imposed on them. This Executive Order requires Federal agencies' actions substantially affecting human health or the environment not to exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The Executive Order was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws. Consideration of environmental justice concerns includes race, ethnicity, and the poverty of populations in the vicinity of a proposed action.

3.9.1.4 Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each Federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

3.9.2 Effects Evaluation

As noted throughout, CBP recognizes the importance of environmental stewardship. Thus, CBP has used the standards and guidelines associated with environmental laws, regulations, and executive orders such as Executive Order 12898 and Executive Order

13045, to evaluate potential socioeconomic project impacts and recommend appropriate BMPs.

3.9.2.1 Population/Demographics and Economic Activity

The project is not anticipated to have permanent impacts, direct or indirect, on long-term population or employment. Legal traffic across the U.S./Mexico border will continue at the two largest POEs. The project is anticipated to hire local construction crews and contractors for the duration of construction, reducing the need for new employees or relocation of employees. No potential employees would be required to relocate to San Diego County, thus population and demographics of the County would remain the same as pre-construction conditions. The nature of the work associated with the construction phase would be temporary and therefore would not result in additional long-term employment. Additionally, it is anticipated that a portion of the required supplies would be bought from the businesses in the vicinity of the Study Area. Although the project would result in a short-term beneficial impact to the economy through the provision of temporary jobs and purchasing materials from local businesses, any increase in economic activity would not be sustained to permanently alter the economic status of the residents and/or businesses in the immediate vicinity.

3.9.2.2 Environmental Justice and Protection of Children

The project would have short-term indirect and adverse effects, as well as long-term indirect and beneficial impacts on low-income and minority populations and the protection of children in the areas along the U.S./Mexico international border. Property owners and/or residents in the vicinity of the Study Area may temporarily be impacted by the visual intrusion, noise, and disruptions during construction. However, the construction phase would be temporary. Furthermore, implementation of the project would allow CBP agents to better perform their mission. As a result, the project would indirectly help to deter cross-border violators in the immediate area, which in turn could improve public safety and viable socioeconomic conditions by preventing smugglers, terrorists, and weapons from crossing the border.

3.10 Hazardous Materials and Waste

3.10.1 Environmental Setting

Hazardous materials or wastes have a chemical composition or other properties that make them toxic or otherwise capable of causing illness, death, or some other harmful effect on humans or the environment when mismanaged or released. Solid and hazardous wastes are regulated in California by a combination of mandated laws promulgated by the Federal, state, and regional Councils of Government. The Resource Conservation and Recovery Act (RCRA), an amendment to the Federal Solid Waste Disposal Act, was established to set up a framework for the proper management of hazardous wastes. It describes the waste management program mandated by congress that gave USEPA the authority to develop the

RCRA program. This program provides regulations for the generation, transportation, treatment, storage, and disposal of hazardous wastes.

The USEPA also maintains a list of hazardous waste sites, particularly waste/storage/treatment facilities or former industrial manufacturing sites in the U.S. The chemical contaminants released into the environment (air, soil, or groundwater) from hazardous waste sites may include heavy metals, organic compounds, solvents, or other chemicals. The potential impact of hazardous waste sites on human health is a considerable source of concern to the general public, as well as to government agencies and health professionals.

A search of the California Department of Toxic Substances Control (DTSC) EnviroStor database revealed that two cleanup sites within a quarter mile of the Western Segment of the Study Area were identified as needing a military evaluation (DTSC 2018). The closest one to the border, Bunker Hill, includes old military bunkers, though no specific hazardous materials were identified. A third site in the Las Americas Premium Outlet Stores, near the San Ysidro POE, was identified as a Goodwill store in need of an evaluation. One of two sites identified in Otay Mesa, located approximately half a mile from the border, identifies land use restrictions on a property, while the other site in this location states no further action is warranted. These sites are relatively distant and the Study Area is not likely to be affected. Eleven other sites within the vicinity of the Study Area were previously identified as hazardous waste sites but all cases are now considered closed and require no further action. There are no sites near the Study Area listed as sites of national priority by the USEPA.

CalEnviroScreen, on the same DTSC website, scores the general environmental conditions in terms of nonpoint source hazardous waste (DTSC 2018). The Tijuana River Valley has a relatively high score of 76 to 80 percent, presumably because of the sewage and litter that flushes down the Tijuana River during flood events. The International Water Treatment Facility, located between the Study Area and the Tijuana River, is designed to manage much of the sewage generated in Tijuana but has limited ability to capture and treat uncontained upstream contamination in the Tijuana River watershed during flood events.

In addition to the laws and regulations mentioned earlier, Executive Order 12088, *Federal Compliance with Pollution Control Standards*, as amended, directs Federal agencies to (1) comply with “applicable pollution control standards,” in the prevention, control, and abatement of environmental pollution; and (2) consult with the USEPA, state, and local agencies concerning the best techniques and methods available for the prevention, control, and abatement of environmental pollution.

3.10.2 Effects Evaluation

The sites described in DTSC’s EnviroStor database are generally considered inactive, where no further action is required. One exception is on Bunker Hill, the high point of the Western Segment, where old bunkers should be avoided, mostly because of their historic value, but also because of the unconfirmed potential for the presence of hazardous

materials. This site is within the USBP management area and the potential for the presence of hazardous materials is very low (DTSC 2018).

The relatively high CalEnviroScreen score in the Tijuana River Valley suggests workers should take precautions to protect themselves from potential exposure due to sewage that may have contaminated lowlands in that area (DTSC 2018). Precautions are recommended, including a site-specific safety plan. The potential for worker exposure to hazardous materials outside of the lower Tijuana River Valley, particularly in the Central and Eastern segments, is very low on the U.S. side of the border, but there may be undocumented sources of hazardous materials on the Mexican side of the border.

Within the Study Area there are areas that are characterized by steep and heavily sloped topography, areas that are difficult to access, as well as easily accessible, flatter areas. In the steeper areas there is a high risk of erosion and sediment transport.

All segments of the project will need to accommodate construction activity. Construction typically requires use of hazardous materials, such as fuel and other petrochemicals. To minimize the potential for release of hazardous materials into the environment, BMPs will be implemented throughout construction to avoid release and to anticipate capture requirements in advance of any potential release. The project will incorporate a SWPPP, a SPCCP, and all other BMPs listed in Section 1.5.7. In addition, all construction waste will be properly stored and removed from the site in covered containers as soon as feasible. All waste will be disposed of in compliance with Federal, state, and local regulations. These programs and practices will be put in place in order to minimize or eliminate any potential impacts resulting from the use of hazardous materials, or the containment and transport of waste during construction of the project.

4.0 Related Projects and Cumulative Effects

This section of the ESP addresses the potential combined impacts associated with the implementation of the project and other projects/programs that are planned for the region. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time by various agencies (Federal, state, and local) or individuals. Informed decision making is served by consideration of cumulative impacts resulting from projects that are planned, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

This cumulative impacts analysis summarizes expected environmental effects from the combined impacts of past, present, and reasonably foreseeable future projects. The geographic scope of the analysis varies by resource area. For example, the geographic scope of cumulative impacts on resources such as soils and vegetation is very narrow and focused on the location of the resource. The geographic scope for air quality, wildlife and sensitive species, visual resources, and socioeconomics is much broader and considers more county or region-wide activities. Projects that were considered for this analysis were identified by reviewing USBP documents, news releases, and published media reports, as well as through coordination with planning and engineering departments of local governments and state and Federal agencies, although only projects on the U.S. side of the border were possible to evaluate. Projects that do not occur in close proximity (i.e., within several miles) to the project will not contribute to a cumulative impact (or are not possible to evaluate if they are south of the U.S./Mexico border) and are generally not evaluated further.

4.1 Related Projects

USBP has been conducting law enforcement actions along the border since its inception in 1924 and has continually transformed its methods as new missions, cross-border violator modes of operation, agent needs, and enforcement strategies have evolved. Development and maintenance of training ranges, station and sector facilities, detention facilities, and roads and fences have affected thousands of acres, with synergistic and cumulative impacts on soil, wildlife habitats, water quality, and noise. Beneficial effects have resulted from the construction and use of these roads and fences as well, including but not limited to: increased employment and income for border regions and surrounding communities, protection and enhancement of sensitive resources north of the U.S./Mexico border, reduction in crime within urban areas near the border, increased land value in areas where border security has increased, and increased knowledge of the biological communities and pre-history of the region through numerous biological and cultural resource surveys and studies.

With continued funding and implementation of CBP's environmental conservation measures, including environmental education and training of its agents, use of biological and archaeological monitors, and restoration of wildlife water systems and other habitats,

adverse impacts of future and ongoing projects will be prevented or minimized. However, recent, ongoing, and reasonably foreseeable proposed projects will result in cumulative impacts. General descriptions of these types of activities are discussed below.

4.1.1 Cumulative Southwestern Border Barrier Infrastructure

As of August 2, 2017, CBP has completed 705 miles of barrier infrastructure along the southwest U.S./Mexico border (USBP 2017). A summary of past, present, and reasonably foreseeable future actions near the project area are presented below.

4.1.2 Past Actions

Past actions are those in the relatively recent past that are within the cumulative effects analysis areas of this ESP. The effects of these past actions are generally described throughout the previous sections. For example, the existing pedestrian wall, the two heavily used POEs, the secondary wall, and the previously developed BIS have all contributed to the existing environmental conditions of the area.

4.1.3 Present Actions

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

- **BIS Replacement, Operation, and Maintenance along the San Diego Sector, Imperial Beach and Brown Field Stations:** Project replaces approximately 14 miles of primary pedestrian wall and other BIS improvements along the southwestern border.
- **Brown Field Border Patrol Station:** Proposed new station on State Route 94 at Campbell Ranch Road.
- **BIS Maintenance and Repair:** Routine all-weather road, secondary wall, and associated lighting and water conveyance system repair and maintenance.
- **BIS Revegetation Projects:** A variety of revegetation projects have recently been completed as part of previous BIS construction projects and additional work is planned to minimize BIS project-related impacts and to restore habitat along the border.
- **Tijuana River Vegetation Control:** The USBP manages vegetation in the 168-acre TRF, which crosses the international border from Tijuana, Mexico into San Diego, California. Giant reed (*Arundo donax*), a non-native highly invasive grass, is delivered to the site by flooding, grows to 10 feet tall, and regenerates on-site and downstream. This and other existing native plants obstruct the CBP officers' views, hindering their ability to detect people illegally crossing the border. USBP is proposing modified vegetation control techniques to include use of herbicides to

better manage the invasive species. USBP is in the process of finalizing the EA and acquiring permits for the project.

- **Tijuana River Valley Wetlands Mitigation Project (Under Construction):** This 40-acre mitigation project is underway in an old agricultural field in the Tijuana River Valley, close to and downstream of Dairy Mart Bridge by the San Diego Water Quality Authority.
- **San Diego County I-8 and Highway 80 Checkpoints Improvements Project:** Located approximately 16 miles away, this project is outside the cumulative impacts analysis area; however, it is included as an example of other USBP activities in the area. USBP expanded the footprint at the Interstate 8 and Highway 80 checkpoints and installed improvements including additional lights, wastewater holding tanks, shade canopies, and other minor improvements. The Interstate 8 expansion required construction of two new exit lanes from Interstate 8 to the inspection area and construction of retaining walls and guard rails at the edge of the expansion area. The Highway 80 checkpoint involved ground disturbance and vegetation clearing to the easement boundary in order to facilitate parking and the expanded lanes/inspection area.

4.1.4 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions consist of activities that have been approved and can be evaluated with respect to their effects. The following projects are reasonably foreseeable actions that are likely to occur in the CBP San Diego Sector area.

- **Border Fence:** As a part of this or future administrations, DHS/CBP may construct additional border fencing in the USBP San Diego Sector. Presumably, the additional fence construction would begin at the eastern terminus of the current primary and secondary barriers.
- **California Department of Transportation and U.S. Customs and Border Protection State Route 11 Port of Entry:** Detail to be added
- **Otay Crossings:** Detail to be added
- **Otay Business Park:** Detail to be added
- **USIBWC EA for the Rehabilitation of the Tijuana Flood Control Project Levee System:** Currently the EA is being prepared for a project that would improve the levee on the north side of the vegetation control project area, including the following project components:
 - **North Levee Enlargement:** Increase the height of the levee upstream of Dairy Mart Road for about 2,250 feet by placing embankment fill on the top and on the landside slope of the existing levee.
 - **North Levee Embankment Protection:** Place buried riprap below the riverside toe in a localized area near the 90-degree bend in the levee.
 - **Rodent Burrow Repair and Mitigation:** Repair damaged levees and prevent additional burrowing of rodents.
 - **Removal of Sediment and Debris:** Remove sediment and debris from the concrete lined portion of the low flow channel.

USBP might be required to implement other activities and operations that are currently not foreseen or mentioned in this document. These actions could be in response to national emergencies or security events like the terrorist attacks on September 11, 2001, or to changes in the mode of operations of the cross-border violators.

Plans by other agencies that will also affect the region's natural and human environment include various road improvements by the California Department of Transportation and/or San Diego County. The majority of these projects will be expected to occur along existing corridors and/or within previously disturbed sites. The magnitude of the impacts will depend upon the length and width of the road right-of-way and the extant conditions within and adjacent to the right-of-way. However, currently no large San Diego County projects are ongoing or near completion within the vicinity of the project corridor.

Other organizations, such as Imperial Beach Naval Air Station, Border Field State Park, and the NOAA, routinely prepare or update Resource Management Plans for the resources they manage.

A summary of the anticipated cumulative impacts relative to the project (i.e., construction of the all-weather road and installation of the secondary fence) is presented below. These discussions are presented for each of the resources previously described.

4.2 Cumulative Effects

4.2.1 Air Quality

The emissions generated during and after the installation of the secondary fence and construction of the 40-foot all-weather road will be short-term and minor. While there will be cumulative adverse construction impacts to air quality from each of the current or foreseeable wall development, maintenance, revegetation, and mitigation projects discussed above, the emissions associated with all these actions will also result in short-term and minor impacts to the airshed, even when combined with the other proposed developments in the border region. CBP will minimize air quality impacts by the use of standard BMPs, such as dust suppression, during construction. Deterrence of and improved response time to illegal border crossings created by the construction of infrastructure will lead to improved control of the border. A result of this improved control will be a reduction in the number of off-road enforcement actions that are currently necessary by USBP agents, thus reducing dust generation and serving to benefit overall air quality as well.

4.2.2 Noise

Most of the noise generated by the project will occur during construction and, thus, will not contribute to cumulative impacts of ambient noise levels. Routine maintenance of the secondary wall and roads will result in slight temporary increases in noise levels that will continue to sporadically occur over the long-term and will be similar to those of ongoing road maintenance within the project corridor. Potential sources of noise from other projects are not significant enough (temporally or spatially) to increase ambient noise levels above

the 65 dBA range within the Study Area. Thus, the noise generated by the construction and maintenance of project infrastructure, when considered with the other existing and proposed projects in the region, is considered to have minimal cumulative adverse effect.

4.2.3 Land Use, Recreation, and Aesthetics

The secondary border wall is a part of the Border Infrastructure System (BIS). The majority of the existing primary wall and secondary wall in the Study Area follows the international border with Mexico. This project is consistent with the authorized land use and, when considered with other potential alterations of land use, would not be expected to have a major cumulative adverse impact. Similarly, open space, parklands, and the resultant recreational opportunities they provide will not be affected by the project and will not be negatively impacted when considered with other present and foreseeable projects in the region.

There will be visually apparent changes within the viewsheds that currently include the primary and secondary fence; however, the addition of a taller fence, while potentially causing an adverse visual effect in some areas, does not constitute a major impact on visual resources within the Study Area due to the presence of currently existing infrastructure. When considered alongside the other USBP projects, the 30-foot-high secondary wall will degrade the existing visual character of the region; thus, cumulative impacts will be considered moderate and CBP will minimize impacts to resources to the maximum extent feasible.

Additionally, areas north of the border within the construction corridors will be expected to experience beneficial, indirect cumulative impacts to aesthetics and recreation through the reduction of trash, soil erosion, and creation of trails by illegal pedestrian traffic.

4.2.4 Geological Resources and Soils

The project will not create any dangerous or unstable conditions within any geologic unit, nor will it expose people or structures to potential substantial adverse effects. Further, no geologic resource is located exclusively within the Study Area. The impact of the project, when combined with past and proposed projects in the region, will be considered to have minimal cumulative adverse impacts on geological resources.

The project, when combined with other USBP projects, will not reduce prime farmland soils or agricultural production. Pre- and post-construction SWPPP measures will be implemented to control soil erosion. The permanent impact of approximately 14.5 miles of pedestrian fence and infrastructure, combined with the other USBP projects, will constitute a minor to moderate cumulative adverse impact.

4.2.5 Hydrology and Water Management

As a result of the project, when combined with other USBP projects, increased temporary erosion during construction will occur; however, increased sedimentation and turbidity will

have minimal cumulative impacts on water quality in the Study Area. Pre- and post-construction SWPPP measures for this and other projects will be implemented to control erosion. Withdrawal from domestic water supplies or regional groundwater basins for dust suppression and other construction/maintenance activities, for this and other related projects in the region, could result in cumulatively considerable impacts. These short-term activities will not affect long-term water supplies or the quantity of groundwater in the region. Although the volume of water withdrawn will not affect the public drinking water supplies, it may indirectly contribute to aquifer contamination from surface runoff. With the implementation of appropriate BMPs, the project will not substantially alter existing drainage patterns or substantially affect water quality. When combined with past and planned projects in the region, indirect effects of altered surface drainage and potential consequent erosion will have adverse cumulative impacts on surface water quality, but revegetation and restoration projects will serve as a beneficial and mitigating force on the area's water resources through improved erosion control and prevention.

4.2.6 Biological Resources (Vegetation, Wildlife, Aquatic Species, Special Status Species)

The project will have minimal impacts on native vegetation communities, but as discussed in Section 3.7, some direct negative impacts to wildlife within the Study Area may occur due to loss of habitat, erosion, noise, lighting, or conflict with construction equipment. These adverse impacts will be cumulatively more significant when considered alongside other current and foreseeable projects in the region. However, because construction will be temporary, much of the habitat will be restored, and impacts will be minimized through implementation of appropriate BMPs for the protection of Federal-listed species as well as for general plants, aquatic resources, wildlife, and habitats. These projects, combined, are unlikely to result in any long-term or significant decreases in wildlife populations in the region.

4.2.7 Cultural Resources

Construction of the project has the potential to impact three identified cultural resource sites; however, implementation of monitoring and other avoidance measures, as described in Section 3.8, will result in minimal, if any, adverse impacts. Therefore, the project when combined with other existing and proposed projects in the region will have negligible cumulative impacts on cultural resources.

4.2.8 Socioeconomics

Construction of the project, when combined with other USBP projects, will result in temporary, minor, and beneficial impacts on the region's economy. No impacts on populations, minorities, or low-income families will occur. When practicable, materials and other project expenditures will predominantly be obtained through merchants in the local community. Local construction crews will also be employed to project completion. Safety buffer zones will be designated around all construction sites to ensure public health and

safety. Long-term cumulative effects of the projects on the economy of the region should be beneficial by reducing smuggling and other illegal activity in the area. Legal border crossings and international trade will continue unaffected by the project. The project when combined with other existing and proposed projects in the region will have minor cumulative, temporary beneficial impacts on the region's socioeconomics.

4.2.9 Hazardous Materials and Waste

The use of hazardous substances will be required in small amounts within the Study Area during the construction phase. It is anticipated, with the inclusion of BMPs listed in Section 1.5.7, that impacts resulting from the use of hazardous materials during this phase would be avoided or minimized. Similarly, only minor temporary increases in the use of hazardous materials would potentially be experienced from construction associated with other projects in the region. Removal of the existing fence could generate waste, but most of the existing fence is valuable as a recyclable material. Therefore, the project, when combined with other ongoing and proposed projects in the region, is not expected to have a major cumulative impact on the generation of waste nor the potential for release of hazardous materials.

5.0 List of References

- Atwood, Jonathan L., and David R. Bontrager. 2001. California Gnatcatcher (*Poliophtila californica*), version 2.0. *The Birds of North America* (A. F. Poole and F. B. Gill, editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
<https://doi.org/10.2173/bna.574>.
- Bailey, Robert G. 1995. Description of the Ecoregions of the United States. U.S. Department of Agriculture Forest Service. Accessed at:
<https://www.fs.fed.us/land/ecosysmgmt/>.
- Baldwin, B. G., D. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. Wilken (Editors). 2012. *The Jepson Manual: Vascular Plants of California*. Second edition, thoroughly revised and expanded. University of California Press, Berkeley, Los Angeles, and London. January.
- Bureau of Economic Analysis. 2016. Area Economic Data. Accessed at:
<https://www.bea.gov/regional/bearfacts/action.cfm?geotype=4&fips=06073&areatype=06073>.
- Bureau of Labor Statistics. 2017. Local Area Unemployment Statistics. Accessed at:
<https://data.bls.gov/pdq/SurveyOutputServlet>.
- California Air Resources Board. 2017. Area Designations Maps/State and National. Available at: <https://www.arb.ca.gov/desig/adm/adm.htm>.
- California Department of Fish and Wildlife. 2012. Staff Report on Burrowing Owl Mitigation. State of California. Natural Resources Agency, Department of Fish and Game. March 7.
- _____. 2018a. Special Animals List. Periodic Publication. 65 pp. Natural Diversity Database. October.
- _____. 2018b. State & Federally Listed Endangered & Threatened Animals of California. Natural Diversity Database. October.
- California Department of Toxic Substance Control. 2018. Envirostor Map Review for Study Area. Accessed at:
<http://www.envirostor.dtsc.ca.gov/public/map/?myaddress=US%2FMexico+border>.
- California Department of Water Resources. 2006. California Groundwater Bulletin 118. Accessed at: <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/9-19.pdf>.

- California Geological Survey, Department of Conservation. 2015. Geological Gems of California State Parks: Special Report 230. Accessed at: https://www.parks.ca.gov/?page_id=29631,
- California Native Plant Society (CNPS). 2018. Inventory of Rare and Endangered Plants of California (online edition, v8-02). Sacramento, CA. Accessed December 2018. Available at <http://www.rareplants.cnps.org>,
- California Soil Resource Lab. 2018. Soil Survey Map. Accessed at: <https://casoilresource.lawr.ucdavis.edu/>,
- Carrico, Richard L. 1987. *Strangers in a Stolen Land. American Indians in San Diego 1850-1880*. Sierra Oaks Publishing, Newcastle, California.
- Christenson, Lynne. 1989. The Late Prehistoric Yuman People of San Diego County, California: Their Settlement and Subsistence System. Unpublished Ph.D. dissertation, Department of Anthropology, Arizona State University.
- Cline, Lora L. 1984. *Just Before Dawn*. L. C. Enterprises, Tombstone, Arizona.
- Cook, Shelburne F. 1976. *The Population of the California Indians, 1769-1970*. University of California Press, Berkeley.
- Federal Emergency Management Agency. 2012. National Flood Hazard Layer. Accessed at: <http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cbe088e7c8704464aa0fc34eb99e7f30&extent=-117.13990900512681,32.51154406283972,-116.80757257934603,32.6070343059097>.
- Federal Highway Administration. 2017. Construction Equipment Noise Levels and Ranges – Special Report. Updated June 28, 2017. Accessed at: https://www.fhwa.dot.gov/ENVIRONMENT/noise/construction_noise/special_report/hcn06.cfm.
- Franzreb, K. B. 1989. Ecology and Conservation of the Endangered Least Bell's Vireo. U.S. Department of the Interior, Fish and Wildlife Service. Washington D.C. Biological Report 89(1).
- Jepson Flora Project (eds.). 2018. Jepson eFlora. <http://ucjeps.berkeley.edu/eflora/>. Accessed December.
- Haug, E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing Owl. The Birds of North America, No. 61. Edited by A. Poole and F. Gill.
- Lincher, Jeffrey L. and Peter H. Bloom. 2007. The Status of the Burrowing Owl in San Diego County, California. The Institute of Bird Populations, Proceedings of the California Burrowing Owl Symposium.

- May, Ronald V. 1978. Southern California Indigenous Ceramic Typology: A Contribution to Malcolm J. Rogers Research. *ASA Journal* 2:2.
- Munz, P. A. 1974. *A Flora of Southern California*. University of California Press, Berkeley.
- National Oceanic and Atmospheric Administration. 2017. Marine Debris Program. Accessed at: <https://marinedebris.noaa.gov/removal-projects/tijuana-river-national-estuarine-research-reserve-marine-debris-cleanup-and#prettyPhoto>.
- Natural Resource Conservation Service. 2105. Hydric Soils of California. Revised December 15.
- Reiser, C. H. 2001. *Rare Plants of San Diego County*. Aquafir Press, Imperial Beach, CA.
- Rolle, Andrew and Arthur Verge. 2008. *California: A History*. Harlan Davidson, Wheeling, Illinois.
- San Diego Association of Governments. 1995. Soil Series GIS Data. Data digitized from USDA–1973. Soil Survey, San Diego area. Obtained from http://www.sandag.org/resources/maps_and_gis/gis_downloads/senlu.asp.
- San Diego, City of. 1997. Multiple Species Conservation Program. March.
- _____. 2008. Otay Mesa Community Plan Update: Historic Context Statement and Historic Resource Survey. On file at the City of San Diego, Accessed January 10, 2017 at https://www.sandiego.gov/sites/default/files/omcpu_historical_context.130909.pdf.
- _____. 2010. San Diego Municipal Code, Article 9.5 Noise abatement and Control (§59.5.0404).
- _____. 2012. San Diego Municipal Code, Land Development Code Biology Guidelines. Amended April 23, 2012. Accessed at: <https://www.sandiego.gov/sites/default/files/legacy/development-services/pdf/industry/landdevmanual/ldmbio.pdf>.
- San Diego County Water Authority. 2013. San Diego Integrated Regional Water Management Plan, Regional Characteristics. Accessed at: <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/9-19.pdf>.
- San Diego Regional Profile. 2017. Tijuana Regional Profile. Accessed at: https://usmex.ucsd.edu/_files/frontera-friday/tijuana-regional-profile-2017.pdf.
- Spier, Leslie. 1923. Southern Diegueño Customs. *University of California Publications in American Archaeology and Ethnology* 20(16):295-358. Berkeley.
- State of California Employment Development Department. 2017. San Diego-Carlsbad Metropolitan Statistical Area. Accessed at: [http://www.labormarketinfo.edd.ca.gov/file/lfmonth/sand\\$pd\\$pd.pdf](http://www.labormarketinfo.edd.ca.gov/file/lfmonth/sandpdpd.pdf).

- State of California Water Boards. 2017. TMDLs in Progress. Accessed at:
https://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/tmdlprogress.shtml.
- United States Army Corps of Engineers. 1987. Wetlands Delineation Manual. Technical Report Y-87-1. Environmental Laboratory.
- United States Border Patrol. 2017. Mileage of Pedestrian and Vehicle Fencing by State. Available at: <https://www.cbp.gov/sites/default/files/assets/documents/2017-Sep/Border%20Patrol%20Fence%20Totals.pdf>.
- United States Census Bureau. 2016. Race and Hispanic Origin: San Diego County, California. Accessed at:
<https://www.census.gov/quickfacts/fact/table/sandiegocountycalifornia/AGE275210>.
- _____. 2017. QuickFacts: San Diego County, California. Accessed at:
<https://www.census.gov/quickfacts/fact/table/sandiegocountycalifornia,ca/PST045217>.
- United States Department of Agriculture. 1973. Soil Survey of San Diego Area, California. December. 173 pp.
- United States Department of Housing and Urban Development (HUD). 1984. Guide to HUD Environmental Criteria and Standards Contained in 24 CFR Part 51. Accessed on December 21, 2018 at:
<https://www.hud.gov/sites/documents/13904CPDH.PDF>.
- United States Department of Transportation. 2017. Border Crossing Entry Data. Available at: <https://data.transportation.gov/Research-and-Statistics/Border-Crossing-Entry-Data/keg4-3bc2/data>
- United States Environmental Protection Agency. 1999. Protocol for Developing Nutrient TMDLs. Office of Water. November. 137 pp.
- _____. 2017. Nonattainment Areas for Criteria Pollutants (Green Book). Available at:
<https://www.epa.gov/green-book>.
- United States Fish and Wildlife Service (USFWS). 1998. Draft Recovery Plan for Least Bell's Vireo. U.S. Fish and Wildlife Service, Portland, OR. 139pp.
- _____. 2009. Spotlight Species Action Plan for Least Bell's vireo (*Vireo bellii pusillus*) (2010- 2014). September.
- _____. 2010. Coastal California gnatcatcher (*Polioptila californica californica*) 5-year Review: Summary and Evaluation U.S. Fish and Wildlife Service. September.
- _____. 2018. All Species Occurrences Database. Accessed at
<https://www.fws.gov/carlsbad/GIS/CFWOGIS.html>.

United States Geologic Survey. 2008. Geologic Map of the San Diego 30 feet x 60 feet Quadrangle, California. Accessed at: https://www.parks.ca.gov/?page_id=29631.

Unitt, P. A. 2004. San Diego County Bird Atlas. San Diego Natural History Museum, Ibis Publishing Company. San Diego, California. October.

WRA. 2018. Biological Survey Report for the 14 Mile Fence Replacement, U.S. Customs and Border Protection, San Diego Sector, San Diego County, California.