

**Environmental Assessment for
Rehabilitation of the Levee System in the
Tijuana River Flood Control Project**

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Prepared for:

International Boundary and Water Commission
4171 N Mesa St., Suite C310
El Paso, TX 79902

Prepared by: ***IDEALS - AGEISS, LLC***

848 W. Hadley Ave.
Las Cruces, NM 88005

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LIST OF ABBREVIATIONS / ACRONYMS

AQCR	Air Quality Control Region
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
cfs	cubic feet per second
CO	carbon monoxide
CSC	California Species of Concern
dB	decibel(s)
dBA	A-weighted decibel(s)
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FCP	Flood Control Project
FEMA	Federal Emergency Management Agency
gpm	gallon(s) per minute
IBWC	International Boundary and Water Commission
MHPA	Multi-Habitat Planning Area
MSCP	Multiple Species Conservation Plan
MSL	mean sea level
MxIBWC	Mexican Section of the International Boundary and Water Commission
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969, as amended
NERRS	National Estuarine Research Reserve System
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O ₃	ozone
Pb	lead
PM ₁₀	particulate matter with an aerodynamic size less than or equal to 10 microns
PM _{2.5}	particulate matter with an aerodynamic size less than or equal to 2.5 microns
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROW	right-of-way
SBIWTP	South Bay International Wastewater Treatment Plant
SDAB	San Diego Air Basin
SHPO	State Historic Preservation Officer
SO ₂	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasures
TDS	Total Dissolved Solids
TRNERR	Tijuana River National Estuarine Research Reserve

TSCA	Toxic Substances and Control Act
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USIBWC	U.S. Section of the International Boundary and Water Commission

EXECUTIVE SUMMARY

ES.1 Introduction

The U.S. Section of the International Boundary and Water Commission (USIBWC) proposes to rehabilitate the levee system in the Tijuana River Flood Control Project (FCP). The USIBWC operates and maintains the Tijuana River FCP, located in southern San Diego County, California. It consists of a levee system extending from the international border between the United States and Mexico to the start of the natural Tijuana River channel. The purpose of the Proposed Action is to rehabilitate the levee system to ensure it will perform during a 100-year flood event and protect the surrounding communities and to attain Federal Emergency Management Agency (FEMA) levee certification and accreditation to meet the National Flood Insurance Program (NFIP) minimum standards for reducing the risks associated with a major flood event. In compliance with the National Environmental Policy Act of 1969, as amended (NEPA; 42 United States Code [U.S.C.] 4321 et seq.) and Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500 to 1508), USIBWC prepared this environmental assessment (EA) to evaluate the potential environmental consequences of this project.

ES.2 Description of the Proposed Action and Alternatives

The Proposed Action is to rehabilitate the levee system of the Tijuana River FCP to protect surrounding communities from a 100-year flood. The USIBWC conducted a geotechnical analysis and engineering evaluation of both levees to determine requirements to provide reasonable assurance that the levees will perform during a 100-year flood event. The Proposed Action is consistent with these requirements and consists of the following activities:

- 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 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.

Under the No Action Alternative, USIBWC would not rehabilitate the levee system to perform in a 100-year flood. The surrounding communities would remain at risk of flooding.

ES.3 Environmental Consequences

The following resource areas were characterized and evaluated for potential impacts from the Proposed Action and the No Action Alternative.

Water Resources. The Proposed Action would have a beneficial impact on flood control by improving the levee system to control a 100-year flood event. The Proposed Action would not result in changes to hydrology or groundwater resources. Short-term impacts to water quality by released sediment to the river

could potentially occur during rehabilitation activities. In the long term, the Proposed Action would reduce erosion and would result in a beneficial impact to water quality by reducing sedimentation at downstream locations.

Biological Resources. The Proposed Action would have minimal short-term impacts on vegetation within the Tijuana River FCP. Construction activities have the potential to temporarily displace wildlife from noise and increased human disturbance. Best management practices (BMPs) to reduce dust and erosion into the floodplain would further prevent impacts to wildlife species in the area. In addition, the use of BMPs is expected to improve aquatic habitats downstream of the Tijuana River FCP to some extent.

Ground squirrel burrow mitigation and ground squirrel control would potentially decrease the population of ground squirrels and could negatively impact foraging opportunities for raptors. However, given the open habitat of the area, other foraging opportunities would not be impacted and would remain available.

Increased noise and vibrations from construction and sediment removal activities may disturb the daily activities of the Least Bell's vireo and other migratory birds. BMPs, including dust suppression and erosion control, as well as timing, would prevent adverse effects to the Least Bell's vireo and other migratory birds. Construction activities would occur outside the nesting season (April through July). No impacts to Least Bell's vireo designated critical habitat would occur.

Land Use. The Proposed Action would be contained within the Tijuana River FCP. There would be no change to existing land use within or adjacent to the project. The Proposed Action would not conflict with land use plans or preclude adjacent or nearby properties from being used for existing activities. Rehabilitation of the levees would protect surrounding residential communities from potential flooding.

Cultural Resources. The Proposed Action has limited potential to impact cultural resources, since the activities would mostly be surface disturbances. However, based on the considerable frequency of cultural sites on the surrounding terraces above the river, additional prehistoric sites are most likely buried under Tijuana River alluvium, and therefore, modification to the levees or channel sediments that involve deeper excavation may encounter buried cultural deposits including paleontological resources. Cultural resources discovered during excavation would be evaluated for National Register of Historic Places eligibility following their discovery and subject to impact mitigation.

Socioeconomic Resources and Transportation. The Proposed Action would not cause significant impacts to population, income and employment, or housing in the project area. Rehabilitating the levees to ensure they perform during a 100-year flood and protect surrounding communities would be a beneficial impact on the community of San Ysidro, which has high minority and low-income populations. The Proposed Action could cause a short-term increase in traffic during construction activities. No long-term changes to traffic levels or patterns would occur.

Air Quality. Potential impacts to air quality from the Proposed Action would be short term in nature and would not be significant. The short-term impacts would occur from construction activities associated with the movement of heavy equipment. Contaminants generated from construction would include increased wind-borne dust (i.e., fugitive dust), particulate matter, and vehicle emissions. BMPs would be implemented to minimize generation of fugitive dust and diesel particulate matter and exhaust emissions. No additional long-term sources of air pollutants would be created by the Proposed Action.

Noise. Potential noise impacts would be short term and would occur during construction activities associated with the use of heavy equipment. Noise and sound levels would be typical of construction activities and would be intermittent. The noise would be similar to the use of heavy equipment during existing periodic maintenance activities. Noise impacts would be lessened by confining construction activities to normal working hours and employing noise-controlled construction equipment to the extent possible. No new long-term sources of noise would be introduced in the project area.

Public Health and Environmental Hazards. The Proposed Action would involve the use of motorized equipment containing fuel, oil, grease, and hydraulic fluid. Implementing established industry BMPs for controlling releases of these substances would reduce the possibility of accidental releases of these products. Further, during construction activities, industry BMPs would be utilized to prevent the transport of sediment, trash, or construction debris to prevent impacts to downstream plant, animal, and aquatic communities. Rodenticides may be used to prevent additional rodent burrowing. If used, rodenticides would be applied by a licensed applicator and the appropriate rodenticide would be chosen based on the prevailing conditions. The Tijuana River FCP would continue to be managed in accordance with applicable health and environmental compliance requirements.

Cumulative Impacts. Cumulative impacts were addressed by considering the impacts of the Proposed Action in combination with impacts from other past, present, and reasonably foreseeable projects. Four actions were identified in this EA as present or reasonably foreseeable. The scope of the cumulative effect analysis involved evaluating impacts to the environmental resource areas cumulatively by geographic and temporal extent in which the effects would be expected to occur. Cumulative impacts are not considered significant.

ES.4 Conclusions

As analyzed and discussed in this EA, direct, indirect, and cumulative impacts of the Proposed Action and the No Action Alternative have been considered, and no significant impacts have been identified. Therefore, issuance of a Finding of No Significant Impact is warranted, and preparation of an environmental impact statement is not required.

1.0 INTRODUCTION

The U.S. Section of the International Boundary and Water Commission (USIBWC) proposes to rehabilitate the levee system in the Tijuana River Flood Control Project (FCP). In compliance with the National Environmental Policy Act of 1969, as amended (NEPA; 42 United States Code [U.S.C.] 4321 et seq.) and Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500 to 1508), USIBWC prepared this *Environmental Assessment for Rehabilitation of the Levee System in the Tijuana River Flood Control Project* to evaluate the potential environmental consequences of this project. In compliance with these laws and regulations, this environmental assessment (EA) examines the potential environmental consequences of USIBWC's Proposed Action (that is, rehabilitating the levee system) and No Action Alternative (under which USIBWC would not proceed with the project). The EA's purpose is to inform USIBWC and the public of the potential environmental consequences of the Proposed Action and alternatives.

1.1 Purpose and Need for Action

The USIBWC operates and maintains the Tijuana River FCP, located in southern San Diego County, California (Figure 1). It consists of a levee system that runs along a modified stream channel 2.3 miles long, extending from the international border between the United States and Mexico to the start of the natural Tijuana River channel. The floodway between the North and South levees encompasses approximately 400 acres. The primary purpose of the Proposed Action is to rehabilitate the two levees to ensure they will perform during a 100-year flood event and protect the surrounding communities. Second, the purpose of the levee rehabilitation is to attain Federal Emergency Management Agency (FEMA) levee certification and accreditation to meet the National Flood Insurance Program (NFIP) minimum standards for reducing the risks associated with a major flood event.

1.2 Background

1.2.1 USIBWC Authority

The International Boundary and Water Commission (IBWC), which was known as the International Boundary Commission before 1944, was created by the Convention of 1889 and consists of a United States Section (USIBWC) and a Mexican Section (MxIBWC). The IBWC was established to apply the rights and obligations the Governments of the United States and Mexico assumed under the numerous boundary and water treaties and related agreements. Application of the rights and obligations is accomplished in a way that benefits the social and economic welfare of the people on both sides of the boundary and improves relations between the two countries. The mission of the USIBWC is to provide binational solutions to issues that arise during the application of treaties between the United States and Mexico regarding boundary demarcation, national ownership of waters, sanitation, water quality, and flood control in the border region. The USIBWC was authorized to construct its portion of the international flood control project by the Act of Congress of October 10, 1966, as amended by the Act of Congress of September 28, 1976.

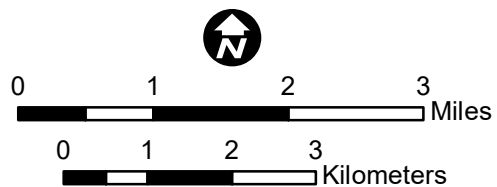
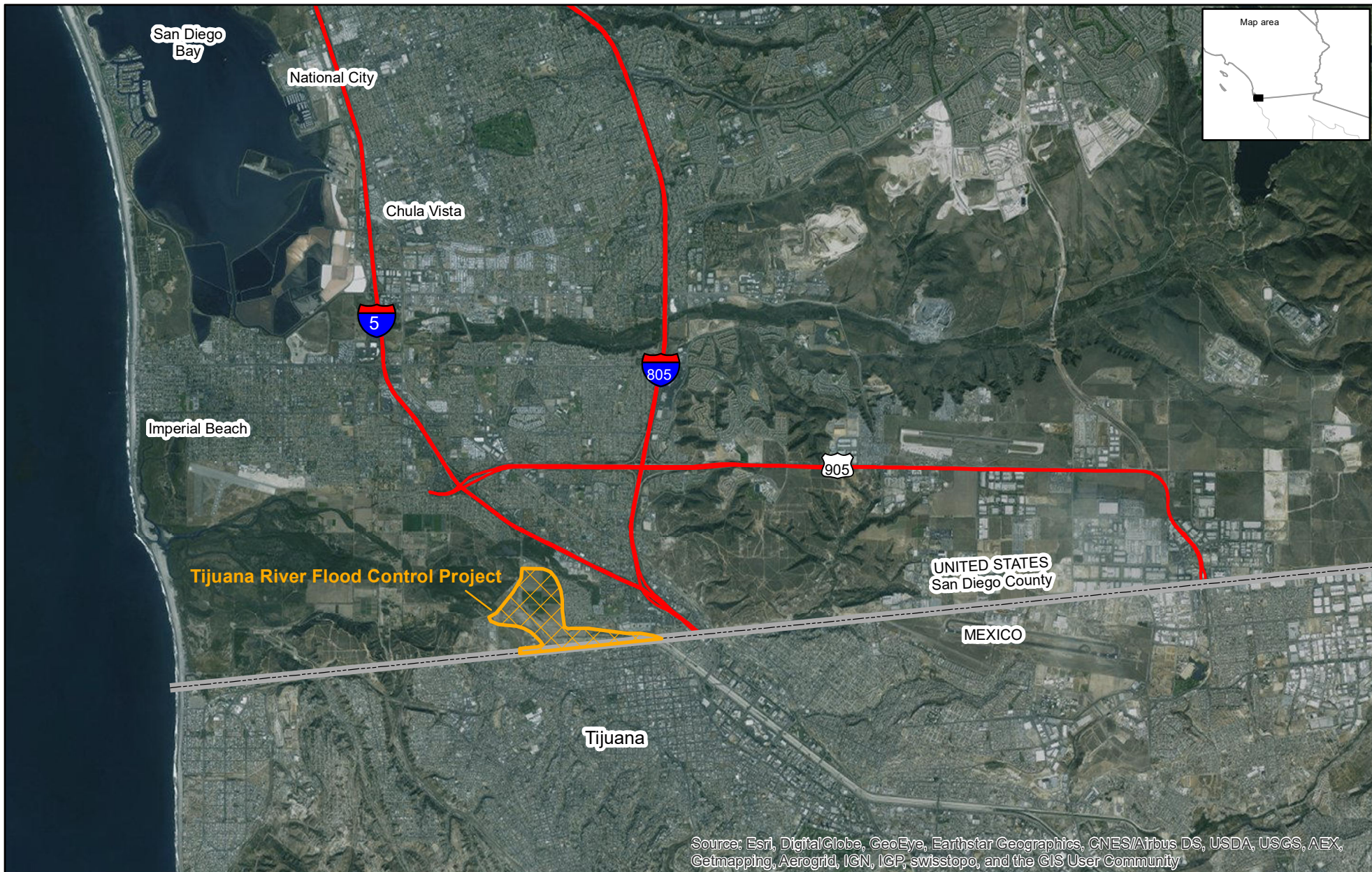


Figure 1. Tijuana River Flood Control Project Location

1.2.2 Flood Control Project Description

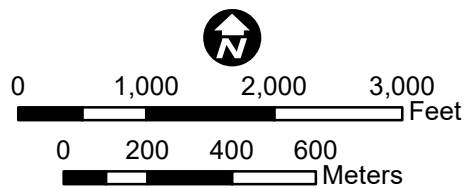
The Tijuana River FCP begins in Mexico and provides flood protection to areas in both the United States and Mexico. A concrete-lined channel for the Tijuana River in Mexico extends from the U.S.-Mexico border upstream approximately 10 miles, and a concrete and rock-lined channel in the United States extends from the boundary downstream 0.9 mile. The downstream portion of the channel in the United States is a flared section to reduce the velocity of flows before discharging into the natural channel downstream of the project. The channel and bordering levees were constructed pursuant to jointly approved design criteria and plans to contain a flood of 135,000 cubic feet per second (cfs), reportedly to correspond to a 330-year flood occurrence (URS 2012a). The levees in the United States tie into high ground on the north to protect the community of San Ysidro, and on the south to protect the South Bay International Wastewater Treatment Plant (SBIWTP) and the City of Tijuana. The U.S. levee on the north bank of the river is 2.0 miles in length, and the U.S. levee on the south bank of the river is 1.9 miles in length (Figure 2). Each Government constructed and maintains at its cost the part of the project in its territory under the supervision of the IBWC.

1.2.2.1 History and Development

In 1964, the City of San Diego asked the USIBWC to plan and construct an international flood control project for the Tijuana River to provide flood protection for practically the entire Tijuana River Valley, approximately 4,800 acres, so that these lands could be developed for recreation, urban, and commercial use. The City Council of San Diego adopted resolutions in 1964, 1965, and 1971 endorsing the project and agreeing to participate financially in the U.S. portion of the Tijuana River FCP.

On a December 21, 1971 resolution, the City Council suspended support of the channel project because of economic considerations, environmental concerns, and a desire to reconsider future land uses. In October 1972, the city asked the USIBWC to provide alternate plans which would eliminate the original concrete-lined channel while satisfying the U.S. obligation to Mexico. The USIBWC, with the assistance of the U.S. Army Corps of Engineers (USACE), submitted alternate plans to the city in February 1973. In October 1973, after public hearings, the city asked the USIBWC to proceed with the alternate plan, which proposed a short segment of concrete channel connecting to the channel in Mexico, a flared energy-dissipating structure, and use of the natural channel to convey flood waters from the structure to the ocean.

A draft Environmental Impact Statement (EIS) on the revised plan was circulated in April 1974 and the final statement was dated May 1976. For the U.S. part of the project, the State of California and the City of San Diego acquired and furnished the rights-of-way (ROWs) for the channel and the levees. The USIBWC contracted with the USACE, Los Angeles District, to prepare the plans and supervise the construction of the U.S. part of the project. Mexico began construction in August 1972. The United States began construction in March 1978 and completed it in December 1978. The project was dedicated on January 22, 1979. In 1980, the Tijuana River FCP safely handled the highest flood flows in the Tijuana River since at least 1916, averting property damage and probably loss of life in the United States and Mexico.



Legend

— Levee

Figure 2. Levee System in the Tijuana River Flood Control Project

In May 2008, USIBWC published the *Final Programmatic Environmental Impact Statement, Improvements to the Tijuana River Flood Control Project (PEIS)* to evaluate potential impacts of measures under consideration for improved operation of the flood control project (USIBWC 2008). The PEIS provides guidance for future environmental evaluations of individual improvement projects whose implementation could be possible within a 20-year timeframe. The USIBWC signed the Record of Decision for the PEIS on June 30, 2008. In the ROD, the Multipurpose Project Management Alternative was selected as the preferred option for implementation of improvements to the Tijuana River FCP. In addition, the ROD stated that as improvement projects are developed for implementation, site-specific environmental documentation will be prepared on the basis of the PEIS. This EA tiers from the PEIS. “Tiering” refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements) with subsequent narrower statements or environmental analyses (such as regional or basinwide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared (40 CFR Part 1502.20).

1.2.2.2 Description of the Levees in the Tijuana River FCP

The U.S. portion of the project consists of an approximate 1,200-foot concrete channel with the same cross-section as the channel at the Mexican border. This channel segment is followed by an energy dissipator, a 3,700-foot-long, flared section to reduce the velocity of flows before discharging into the natural channel below the project. The energy dissipator contains structures of grouted and dumped stone and functions to slow the velocity of flows. The levee system in the United States consists of the North Levee and the South Levee (Figure 2).

The North Levee is approximately 2-miles long. The North Levee extends from the international border to the west for 5,400 feet, makes a 90-degree turn north and travels along Camino De La Plaza Road for approximately 4,000 feet, and turns west for approximately 1,200 feet where it terminates at Dairy Mart Road.

The South Levee is approximately 1.9-miles long and extends from the international border to Dairy Mart Road. The South Levee was realigned around the SBIWTP when the plant was constructed in the mid-1990s. The segment of the South Levee immediately south of the Dairy Mart Road Bridge was constructed as part of the bridge replacement project in the late-1990s. The South Levee consists of three segments: 1) a concrete-lined section extending approximately 1,200-feet downstream from the international border, 2) a section protected with grouted stone for about 4,000-feet downstream of the concrete-lined section, and 3) a section protected with riprap that was realigned around SBIWTP to Dairy Mart Road, approximately 4,800-feet long.

1.3 Consultations and Public Involvement

1.3.1 Agency Consultation

In conjunction with the preparation of this EA, and to comply with NEPA, written correspondence will be sent to federal, state, and local agencies with jurisdictions that could possibly be affected by the proposal. In accordance with Section 7 of the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) was consulted. Per Section 106 of the National Historic Preservation Act (NHPA), the

California State Historic Preservation Officer (SHPO) was also consulted. Consultation letters are provided in Appendix A.

1.3.2 Public Involvement

1.3.2.1 Scoping

On September 22, 2016, USIBWC published a notice of scoping meetings in the San Diego-Tribune newspaper. USIBWC also sent a notification letter to stakeholders to announce the scoping meetings. On September 28, 2016, USIBWC held two scoping meetings at the Tijuana River National Estuarine Research Reserve Training Center, 301 Caspian Way, Imperial Beach, CA 91932. One meeting was held from 3:00 p.m. to 5:00 p.m. and an additional meeting was held from 6:00 p.m. to 8:00 p.m.

The purpose of the scoping meetings was early identification of concerns, potential impacts, relevant effects of past actions, and possible alternative actions. At the scoping meetings, staff: (1) discussed the proposed action and alternatives; (2) summarized the environmental issues tentatively identified for analysis in the EA; (3) presented measures to be implemented to protect the environment; (4) solicited from the meeting participants all available information, especially quantifiable data, on the resources at issue; and (5) encouraged statements from experts and the public on issues that should be analyzed in the EA, including viewpoints in opposition to, or in support of, the staff's preliminary views.

Interested parties could submit comments during the meetings or to: Wayne Belzer, 4171 N. Mesa, C-100, El Paso, TX 79902 or wayne.belzer@ibwc.gov. USIBWC asked that comments be submitted by October 12, 2016. Eight comments/questions were made during the scoping meetings. Questions were asked about the project design, timing for the implementation, and the approach for ground squirrel control. No additional comments were submitting in writing.

1.3.2.2 Draft EA Review

USIBWC sent a letter to recipients on the distribution list including state and regulatory agencies announcing the availability of the Draft EA for review (Appendix B). An electronic copy of the Draft EA and Draft Finding of No Significant Impact were posted on the USIBWC website at http://www.ibwc.state.gov/EMD/reports_studies.html#Environ_Assessments. A Notice of Availability was published in the *Federal Register* notifying the public of the availability of the Draft EA on the website and initiating the public comment period.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Proposed Action is to rehabilitate the levee system of the Tijuana River FCP to protect surrounding communities from a 100-year flood. The USIBWC conducted a geotechnical analysis and engineering evaluation of both levees to determine requirements to provide reasonable assurance that the levees will perform during a 100-year flood event (URS 2012a and 2012b). The Proposed Action is consistent with these requirements and consists of the following activities:

- North Levee enlargement
- North Levee embankment protection
- Rodent burrow repair and mitigation
- Removal of sediment and debris

2.1.1 North Levee Enlargement

The North Levee is deficient in the required freeboard at the westerly end and at one location near the end of the concrete channel. Freeboard of a levee is defined as the height of the levee that extends above the design flood level. It serves as a factor of safety for containing water in the river without overtopping the levee. The westerly area of deficient freeboard extends east from Dairy Mart Road for about 2,250 feet. The levee is deficient by up to 8 feet in height (immediately upstream of Dairy Mart Road). The location near the end of the concrete channel is deficient by approximately 1.5 feet and a concrete parapet wall would be constructed to address this deficiency. Table 1 identifies the locations and deficiencies in freeboard.

Table 1. Locations in the North Levee with Freeboard Deficiencies

River Station	Top of Levee Elevation (feet NAVD88)	Base Flood Elevation (feet NAVD88)	Predicted Freeboard (feet)	Required Freeboard (feet)
22512	44.8	44.21	0.59	4
22643	45.3	45.93	-0.63	4
23414	45.2	47.15	-1.95	4
23520	42.6	47.34	-4.74	3
23598	46.8	47.55	-0.75	3
23691	48.5	47.48	1.02	3
30302	63.8	62.12	1.68	3

Source: URS 2012a

NOTE: River station 22512 is closest to Dairy Mart Road (westerly end) and river station 30302 is near the end of the concrete channel. The river stations are shown on Figure 3.

The Proposed Action would increase the height of the levee at the westerly end by placing embankment fill on the top and the landside slope of the existing levee. The ROW and existing levee crest are likely sufficiently wide that this can be accomplished without filling beyond the existing riverside slope of the levee. The exact footprint of the levee expansion will be determined when the levee rehabilitation design is complete. Design criteria are for the expansion to lie entirely within the USIBWC property and for the footprint to expand on the landside and only on the riverside when property limits exist. The width of the top of the levee would be a minimum of 24-feet wide. The existing pavement or gravel surfacing on the

levee crest would need to be removed prior to placement of the new embankment fills. Pavement or other surfacing would be placed on the levee crest once the embankment is enlarged. Figure 3 shows the area of the levee that would be enlarged and the location of the proposed parapet.

2.1.2 North Levee Embankment Protection

Erosion continues to persist near the 90-degree bend in the North Levee. Toe reinforcement is needed to protect the embankment; therefore, buried riprap would be placed below the riverside toe of slope in a localized area. Buried riprap would be placed about 18 inches below the ground surface of the levee toe. A 30-inch layer of minimum 0.25-ton riprap (18-inch nominal diameter) is recommended (URS 2012a). The buried section riprap would be at least 15-feet wide and extend from the energy dissipator structure to the west and north around the 90-degree bend in the levee, as shown on Figure 4. The riprap would be clean, sound, hard, angular fragments of rock.

There are two earthen ramps on the riverside slopes at the bend (one at the west end of the bend and one at the east end of the bend) for vehicle access to the paved road at the crest (Figure 4). The access ramp at the east end of the bend is near the intersection of the energy dissipator with the levee. This access berm appears to be constraining flow in this area, which is likely to create eddies against the bank that will continue to cause erosion in this area. The access ramps would be removed from the channelized area of the levee and moved north of the bend in the levee to the floodplain area.

2.1.3 Rodent Burrow Repair and Mitigation

Ground squirrels have damaged both levees by creating burrows. Squirrels are attracted to levees because the higher ground allows them to observe potential predators better from their burrows. USIBWC would repair shallow rodent burrows by re-compacting the surface. For deeper rodent burrows, disturbed soil would be removed and replaced with a properly compacted fill. Measures to prevent additional burrowing may include use of the following:

- Erosion control blankets, woven textiles, turf reinforcement, cellular mats, or other alternative armor materials on the landside slopes.
- Structural or hardened features on riverside slopes, such as riprap, concrete facing, revetment mats, gabions, large gauge wire mesh, and mechanically stabilized earth walls. Hardened features would not be used on landslide slopes so as not to impair levee inspections.
- Bentonite clay slurry grout or a 90 percent/10 percent concrete slurry injection to backfill the rodent holes.
- Rodent control through fumigants, toxicants or bait stations. Examples of fumigants that have been used for ground squirrel control include aluminum phosphide and gas cartridges. Aluminum phosphide is a Restricted Use Pesticide and can only be purchased and applied by a certified pesticide applicator. Zinc phosphide and two anticoagulants, chlorophacinone and diphacinone, are registered for ground squirrel control. Zinc phosphide is also a Restricted Use Pesticide. A certified pesticide applicator would be consulted for specific recommendations.

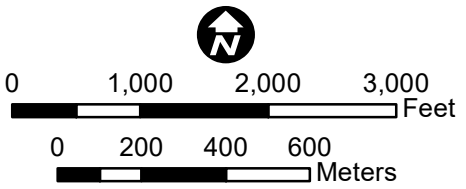


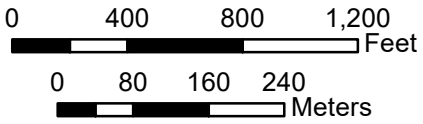
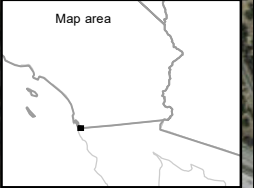
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, ICP, swisstopo, and the GIS User Community

Legend

- Levee
- Proposed Area of Levee Enlargement
- River Station

Figure 3. Proposed Area for North Levee Enlargement





Legend

- Levee
- Proposed Buried Rip Rap

Figure 4. Proposed Area for North Levee Embankment Protection

2.1.4 Removal of Sediment and Debris

Sediments and debris within the concrete-lined portion of the low flow channel leading up to the energy dissipators would be removed (Figure 5). An estimated 7,639 cubic yards of sediment and debris would be removed from a 3,640-foot long by 50-foot wide area.

2.2 No Action Alternative

Under the No Action Alternative, USIBWC would not rehabilitate the levee system to perform in a 100-year flood. The surrounding communities would remain at risk of flooding. The No Action Alternative does not meet the purpose and need for action. The inclusion of the No Action Alternative is prescribed by the CEQ regulations implementing NEPA and serves as a benchmark against which the environmental impacts of the action alternatives may be evaluated.

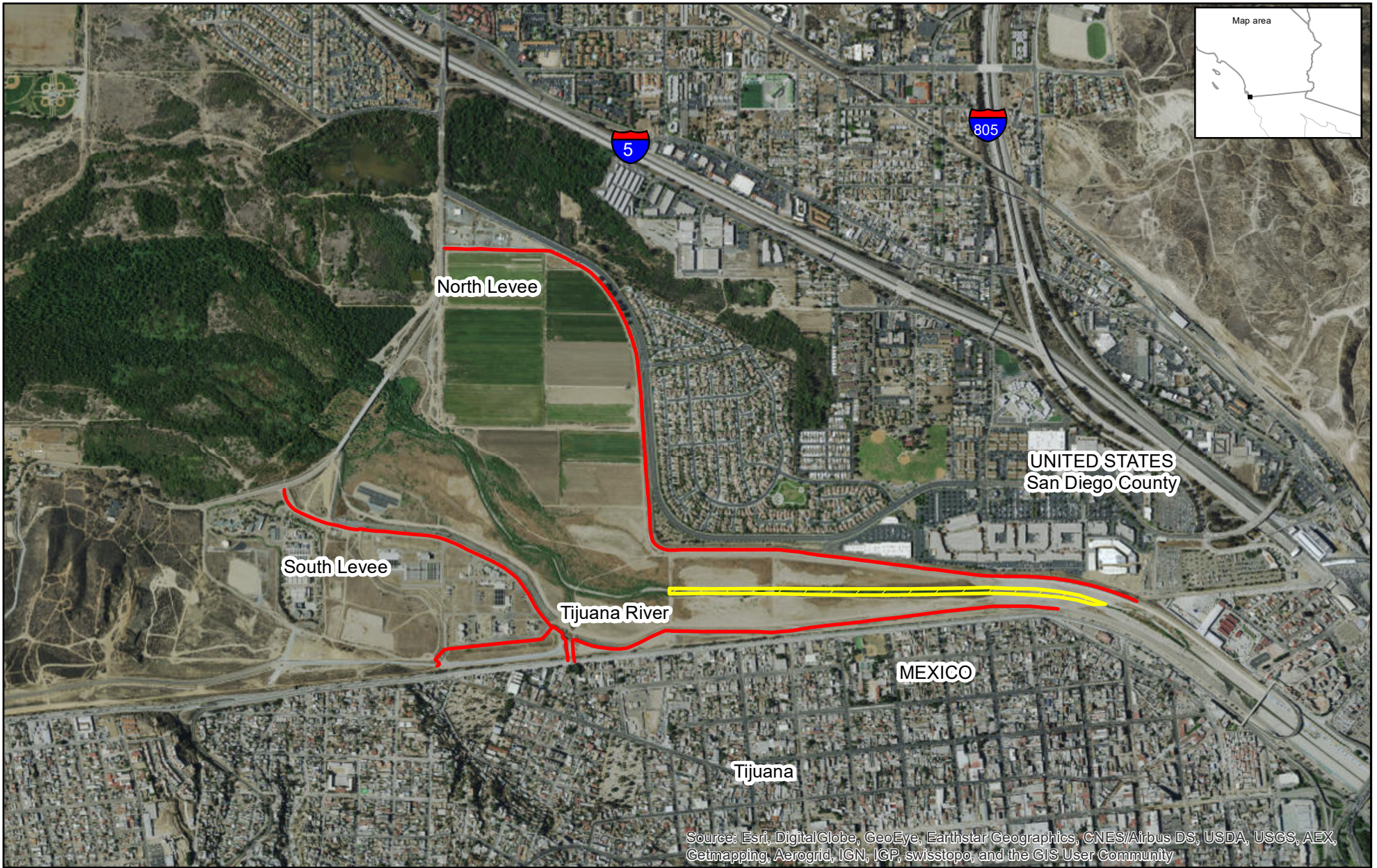
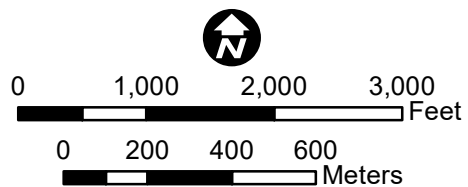


Figure 5. Proposed Area for Sediment and Debris Removal



Legend

- Levee
- Proposed Area of Sediment and Debris Removal

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment and examines the potential environmental impacts of the Proposed Action and the No Action Alternative for the following environmental resource areas:

- Water Resources
- Biological Resources
- Land Use
- Cultural Resources
- Socioeconomics and Transportation, including environmental justice
- Environmental Health, including air quality, noise, and public health and environmental hazards

EAs also commonly address the environmental resource areas listed in Table 2. However, consistent with NEPA implementing regulations and guidance, the USIBWC focuses the analysis in an EA on topics with the greatest potential for environmental impacts. This sliding-scale approach is consistent with NEPA [40 CFR 1502.2(b)], under which impacts, issues, and related regulatory requirements are investigated and addressed with a degree of effort commensurate with their importance. USIBWC concluded that the proposed project would result in no impacts or negligible impacts to the resource areas identified in Table 2 and those resource areas are not considered further in this EA. In terms of the No Action Alternative, the impacts would not occur because the proposed project would not proceed.

The focus of the more detailed analyses in this chapter is on those environmental resource areas that would require new or revised permits, have the potential for significant adverse environmental impacts, or have the potential for controversy.

Table 2. Environmental Resource Areas Not Carried Forward

Environmental Resource Area	Impact Consideration and Conclusions
Geological Resources	The Proposed Action would not expose personnel at the Tijuana FCP site to safety risks associated with earthquake activity or other geologic hazards. The levee rehabilitation activities would all be confined within areas that are currently paved and/or previously disturbed.
Visual Resources	The Tijuana FCP is surrounded by the North and South levees that block from view most of the floodplain and low flow channel of the river. Rehabilitation activities would not change this visual impact and the increase in elevation of the North Levee would provide increase visual obscurity to the residents and businesses to the east of the project area.
Energy Consumption	Energy and water demands at the site currently support agricultural production. The use of these resources would not change under the Proposed Action and therefore, no impacts from the Proposed Action are expected to energy consumption.

3.1 Water Resources

3.1.1 Affected Environment

The Tijuana River is an ephemeral stream that drains a 1,730-square-mile basin situated partly in the United States and partly in Mexico. Originating in Mexico, the river crosses the international boundary into the United States near San Ysidro, California, then flows westerly in a broad floodplain about 5.3 miles to discharge into the Pacific Ocean at a point about 1.5 miles north of the boundary. The lower Tijuana River Valley, where the project area is located, is a relatively wide and flat area confined to the south by high mesas in Mexico and the north by steep-sloped marine terraces (SWIA 2005). Several narrow tributary canyons also drain to the lower valley.

3.1.1.1 Flood Control

Upstream of the project area, the Tijuana River flows through 10 miles of concrete-lined levees in Mexico (USIBWC 2004). After passing the international boundary, the river flows through 1,223 feet of concrete-lined levees/channel and 4,000 feet of grouted stone levees before entering a broad floodplain. Within the United States, the levee on the north bank of the river is 2.0 miles in length whereas the levee on the south bank of the river is 1.9 miles in length. The levees tie into high ground on the north to protect the community of San Ysidro. The South Levee protects the SBIWTP and the City of Tijuana, Baja California. Downstream of the concrete and grouted stone levees the river enters a broad floodplain that reduces the velocity of flows. During periods of low flow, the river flows within a natural channel within this floodplain. The levees adjacent to the floodplain are constructed of compacted fill that consists predominantly of silty sand. Much of the floodplain area between the grouted stone levees and Dairy Mart Road is cultivated.

To moderate the accelerated flows produced by the concrete channel, USACE in the 1970s constructed an energy dissipator system to decrease water flow velocity by distributing it over a large area, allowing the river to conform to its natural course below the concrete-lined section (SWIA 2005).



Energy dissipator between the North and South levees.

Executive Order (EO) 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

3.1.1.2 Hydrology

The east-west-trending Tijuana River Watershed shared between the United States and Mexico flows from the elevated region in the east toward the Tijuana River Estuary west of the project site (Figure 6). The watershed is approximately 1,750 square miles, with approximately 27 percent or 470 square miles located in the United States. Elevation ranges from 6,380 feet above mean sea level (MSL) to 0 feet MSL. A significant volume of the surface flow consists of runoff from seasonal precipitation that predominantly occurs during the winter and spring months (SDIRWMP 2013). Surface water flows during the summer and fall months are typically low, consisting of urban runoff, agricultural runoff, and surfacing groundwater. Other freshwater inputs to the river include releases from the Morena Reservoir, the Barrett Reservoir, and the Rodriguez Dam (SWIA 2005).

In addition, a diversion structure upstream of the border diverts river water during low flows to the Tijuana sewer system. However, during periods of high flow, the diversion structure can become overwhelmed, allowing sewage and fresh water to be discharged to the river and ultimately to the Estuary and ocean (SWIA 2005).

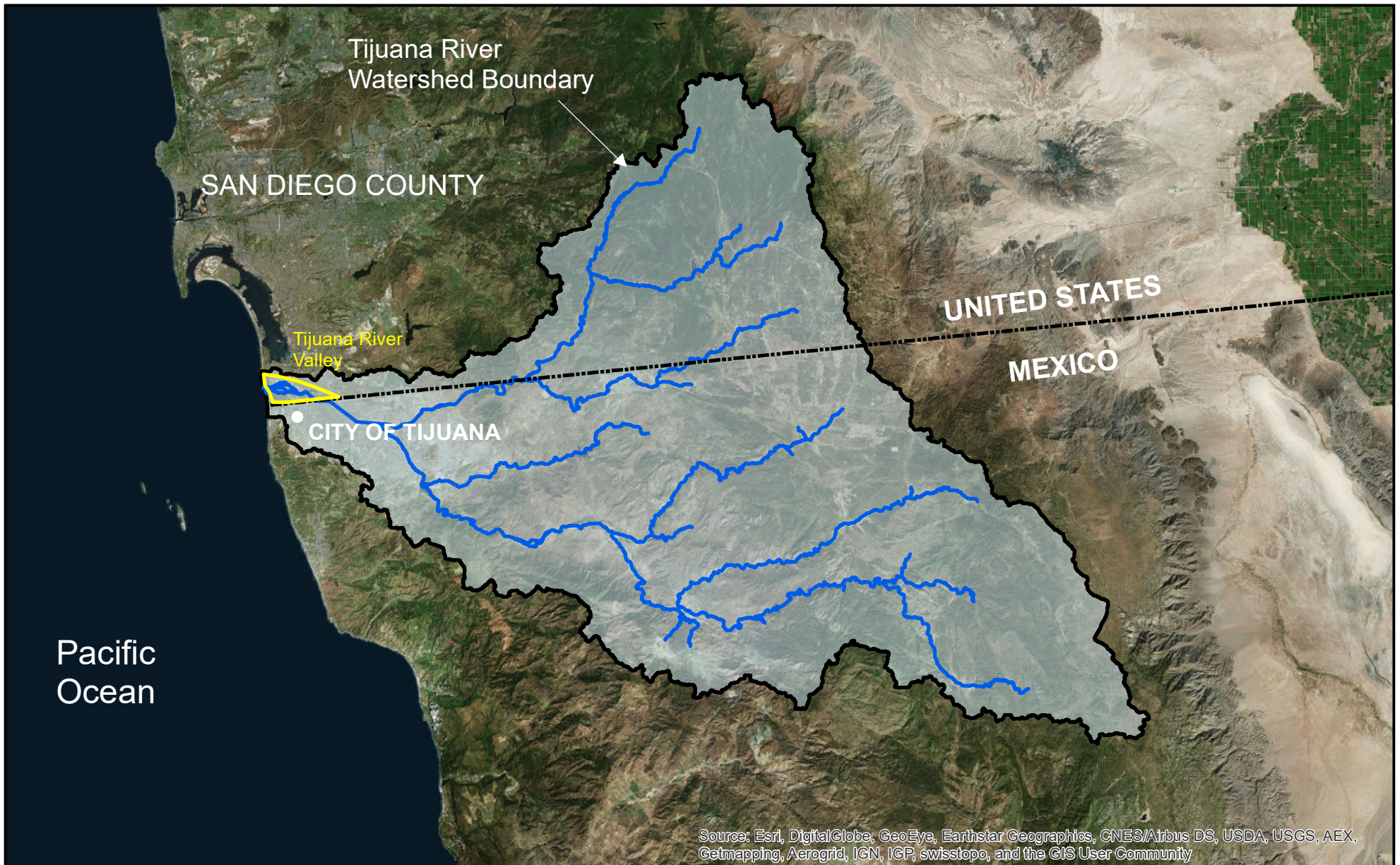
Annual and monthly stream flows within the Tijuana River are highly variable. Mean annual discharges are about 0.85 cubic meters per second with the largest recorded flow on record being 2,123.25 cubic meters per second in 1916 (SWIA 2005). Records dating back to 1973 indicate that the Tijuana River experiences high and low flows as frequently as intermediate flows (SWIA 2005).

3.1.1.3 Groundwater Resources

The project area is located within the Tijuana Groundwater Basin. The southern boundary is the international border with Mexico, the eastern and northern boundaries are the contacts with semi-permeable Pleistocene and Pliocene marine deposits, and the western boundary is the Pacific Ocean (California DWR 2006).

The basin's water-bearing units include Recent and Quaternary alluvium and the San Diego Formation. The Recent and Quaternary alluvium, consisting of river and stream deposits of gravel, sand, silt and clay, is the most productive unit in the basin. The alluvium is less than 150 feet thick with an average thickness of 80 feet. Average well yields are 1,000 gallons per minute (gpm) to yields as great as 2,000 gpm. Groundwater within the alluvium is unconfined (California DWR 2006).

The San Diego Formation consists of Pliocene age well-sorted, medium to coarse sand, silty and clayey sand, sandy silt and sandy clay. The unit's thickness ranges to at least 1,700 feet and well yields average about 350 gpm to as high as 1,000 gpm. Groundwater within this unit is confined (California DWR 2006).



Pacific
Ocean



0 4 8 12
Miles

0 5 10 15
Kilometers

Figure 6. Tijuana River Watershed

The basin is recharged by the Tijuana River and controlled releases from the Barrett and Morena Reservoirs in San Diego County and Rodriguez Reservoir in Mexico. Irrigation waters and septic tanks also contribute to recharge with irrigation water accounting for more than one third of the recharge in the basin (California DWR 2006).

The porous nature of the alluvium allows it to be quickly recharged by stormwater or urban runoff, making it susceptible to contamination by activities on the ground surface and infiltration of contaminated stormwater (SDIRWMP 2013).

A key water quality issue for the Tijuana Basin groundwater is total dissolved solids (TDS). The Lower Tijuana River has experienced significant degradation from elevated TDS concentrations, with concentrations ranging from 500 to 3,000 milligrams per liter. TDS can affect both the usability of groundwater as a domestic water source and as an irrigation water source.

3.1.1.4 Water Quality

Tables 3 and 4 summarize region-wide water quality issues and constituents of concern for inland surface waters and coastal waters for the Tijuana watershed. Of the 11 San Diego watersheds, the Tijuana Watershed has the greatest number of water quality issues (SDIRWMP 2013). Key water quality issues for the Tijuana Watershed include sediment and turbidity, indicator bacteria, nutrients, salinity, toxic inorganic compounds, and toxic organic compounds. Additional discussion is provided in the *2013 San Diego Integrated Regional Water Management Plan* (SDIRWMP 2013).

Even the smallest rainfall events contribute to sediment flows from the unvegetated hillsides located adjacent to the river in the United States and Mexico that negatively impact the river with sediment and turbidity. Sediment can adversely affect the hydraulics of the Tijuana Estuary, decrease tidal flushing, and contribute to the transport of bacteria. Observed elevated coliform bacteria concentrations have occurred as a result of stormwater runoff, urban runoff, and sewer spills. Nutrients are of particular concern in Tijuana River Watershed because discharges to the Tijuana Estuary of elevated concentrations of nitrogen and phosphorus can result in algal blooms and fish kills caused by decreased oxygen levels.

Salinity, measured as TDS and dissolved mineral constituents, varies significantly during periods of high and low flow, and can adversely impact aquatic and wildlife habitat and the usability of water for municipal and irrigation supply. Toxic inorganic compounds, including metals, nitrates, cyanide and unionized ammonia, in the watershed's surface waters originate from non-point sources and also adversely impact aquatic habitat, wildlife habitat, and water supply uses. Toxic organic compounds, also presumed to originate from non-point sources, can adversely impact aquatic habitat, wildlife habitat, and water supply uses.

Table 3. High Priority Constituents of Concern for the Tijuana Watershed as Determined by the San Diego County Comprehensive Receiving Waters and Urban Runoff Regional Monitoring Effort

Watershed	Dry Weather Priority Pollutants	Wet Weather Priority Pollutants
Tijuana River	<ul style="list-style-type: none"> ■ Enterococcus ■ Ammonia as nitrogen ■ Turbidity ■ Total nitrogen ■ Dissolved phosphorus ■ Total phosphorus ■ Total dissolved solids ■ <i>Ceriodaphnia dubia</i> (<i>C. dubia</i>) reproduction 	<ul style="list-style-type: none"> ■ Fecal coliform ■ Biochemical oxygen demand ■ Chemical oxygen demand ■ Total suspended solids ■ Turbidity ■ Dissolved phosphorus ■ Total phosphorus ■ Total dissolved solids ■ Diazinon ■ Bifenthrin ■ Permethrin ■ <i>C. dubia</i> acute survival ■ <i>C. dubia</i> chronic survival ■ <i>C. dubia</i> reproduction ■ <i>Hyalella azteca</i> acute survival

Source: California Department of Water Resources 2006; Table 3-28

Table 4. Summary of Water Quality Issues for Tijuana Watershed Surface Water

Water Quality Issues/Constituents of Concern for Tijuana Watershed								
Trash and Debris	Fecal Indicator Bacteria	Nutrients	Dissolved Oxygen	Turbidity	Sediment	Toxic Organics	Metals	Total Dissolved Solids (TDS)
✓	✓	✓	✓	✓	✓	✓	✓	✓

Source: California DWR 2006; Table 3-29

3.1.2 Environmental Consequences

3.1.2.1 Proposed Action

Potential impacts to water resources, including hydrology and groundwater, are evaluated with respect for the potential to impact flood control, irreversibly diminish water quality, or endanger public health by creating or worsening adverse health hazard conditions.

The Proposed Action would have a beneficial impact on flood control. Improvements to the levee system to mitigate deficient freeboard would increase flood containment capacity to control a 100-year flood event. Embankment protection, levee enlargement, sediment and debris removal, and rodent burrow repair would increase the ability to control floodwaters.

The Proposed Action would not result in changes to hydrology or groundwater resources. Embankment protection, levee enlargement, and removal of sediment and debris have the potential to cause short-term impacts to water quality by releasing sediment to the river, especially if the activities are performed during periods of moderate to high flow.

In the long term, the placement of buried riprap near the 90-degree bend in the North would reduce erosion that occurs at that location. This would result in a beneficial impact to water quality by reducing sedimentation at downstream locations. The removal of sediment and debris in the low flow channel would have no impact to water quality as low flow velocity does not move sediment through the river.

3.1.2.2 No Action Alternative

Under the No Action Alternative, deficient freeboard would not be mitigated and flood containment capacity would continue to be diminished. Not repairing rodent burrows would cause further deterioration and weakening of the levees, posing a risk to flood control and public health and safety. Hydrology and water quality would be negatively impacted by continued sedimentation, particularly in the areas of the energy dissipator structure. No changes to groundwater resources would be expected.

3.2 Biological Resources

3.2.1 Affected Environment

Biological resources in the Tijuana River FCP area have been described in the *Biological Resources Survey, Rio Grande and Tijuana River Flood Control Projects, New Mexico, Texas and California* (CDM 2005); the *Final Supplemental Environmental Impact Statement, Clean Water Act Compliance at the South Bay International Wastewater Treatment Plant* (USIBWC 2005); the *Final Programmatic Environmental Impact Statement- Improvements to the Tijuana River Flood Control Project* (USIBWC 2008); and the *Tijuana River Valley Existing Conditions Report* (TRNERR 2014). Information from these documents is incorporated by reference.

3.2.1.1 Vegetation

The Tijuana River FCP is part of the warm-temperate scrublands biotic community historically dominated by riparian vegetation and the coastal sage scrub/chaparral communities. Coastal sage scrub extends along the entire coastline of San Diego County, except for urban and developed areas and some small coastal cypress/pine areas, salt marshes, and other non-scrub areas. The most common species in the coastal sage scrub community are California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), laurel sumac (*Rhus laurina*), and black sage (*Salvia mellifera*) (CDM 2005). Riparian communities tend to be comprised of Fremont cottonwood (*Populus fremontii*), Gooding's black willow (*Salix goodingii*), and arroyo willow (*Salix lasiolepis*) with an understory of shrubby arroyo willows and mule fat (*Baccharis salicifolia*) (USIBWC 2008).

The Tijuana River is considered ephemeral and the low-flow channel is normally dry as dry-weather flows are currently intercepted at the border for treatment at the USIBWC-operated SBIWTP. Despite the ephemeral nature of the Tijuana River, development of riparian vegetation is possible as represented in areas immediately to the west of the Tijuana River FCP (USIBWC 2008). Vegetation within the Tijuana River FCP has been impacted by urban development, agricultural practices, and vegetation clearing for U.S. Border Patrol operations. The northern portion of the Tijuana River FCP as well as lands to the east of the North Levee, have been under agricultural production since 1953 (USIBWC 2008). As recently as 1980, the agricultural areas extended to the east of the current Tijuana River FCP, and at the same time, the area to the east of the current Tijuana River FCP has been developed into the community of San

Ysidro. Currently, the vegetation within the Tijuana River FCP may be considered non-native grasslands or disturbed/ruderal communities (USIBWC 2008). Non-native grasslands are generally represented by species such as mustards (*Brassica* spp.) and Russian thistle (*Salsola tragus*) and ruderal communities are generally represented by patches of bare ground and species such as Russian thistle, mustards and crown daisy (*Chrysanthemum coronarium*). Within the Tijuana River FCP, vegetation is generally kept at less than 2-feet tall for flood control purposes (USIBWC 2008).

The SBIWTP site to the west of the South Levee contains developed land, disturbed non-native grassland, and disturbed/ruderal land. The non-native grassland is a sensitive vegetation community according to the City of San Diego because it provides foraging habitat for raptors (CDM 2005) even though it is not dominated by native plants.

3.2.1.2 Wildlife

Focus surveys for herpetofauna, mammal, and avian species have not been conducted on the Tijuana River FCP. Potential species in the vicinity of the Tijuana River FCP are based on reports and surveys from the Tijuana River National Estuarine Research Reserve (TRNERR) and the Tijuana River Valley Regional Park.

Reptiles and amphibians

The TRNERR northwest of the Tijuana River FCP provides habitat to a variety of reptiles and amphibians. In surveys conducted in habitats surrounding the Tijuana River FCP the most commonly captured species included: Western fence lizard (*Sceloporus occidentalis*), orange throated whiptail (*Cnemidophorus hyperythrus*), Western skink (*Eumeces skiltonianus*), side-blotched lizard (*Uta stansburiana*), striped racer (*Masticophis lateralis*), and California king snake (*Lampropeltis getula*) (Fisher and Case 2000). Western fence lizards prefer grassland habitat and side-blotched lizards open habitat with rock and may occur within the Tijuana River FCP. Just north of the Tijuana River FCP, gopher snakes were also documented in a wide variety of habitats (Joshi 2015) and may occur within the Tijuana River FCP. Riparian and freshwater ponds support species such as the Pacific slender salamander (*Batrachoseps pacificus*), Pacific treefrog (*Hyla regilla*), and non-native American bullfrogs (*Rana catesbiana*).

Mammals

Several species of small mammals occur in disturbed grassland and ruderal communities and are likely found within the Tijuana River FCP. These species include California jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus auduboni*), and California ground squirrel (*Spermophilus beechyi*), as well as several rat and mice species. Mesocarnivores in the area include striped skunk (*Mephitis mephitis*), the long-tailed weasel (*Mustela frenata*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginia*), and coyote (*Canis latrans*). These species are highly adaptable and tolerate both disturbed habitats and human disturbance.

Birds

Grassland and disturbed ecosystems provide habitat for small mammals which raptors rely on for foraging. Several raptor species have been documented in or near the Tijuana River FCP area including: Cooper’s hawk (*Accipiter cooperii*), Northern harrier (*Circus cyaneus*), red-tailed hawks (*Buteo jamaicensis*), red-shoulder hawks (*Buteo lineatus*; Joshi 2015), and white-tailed kites (*Elanus leucurus*). Raptors are protected as special status under the Migratory Treaty Bird Act, and the white-tailed kite is a USFWS migratory non-game bird of management concern, and a California Fully Protected Species (San Diego County Water Authority 2008). No known bald eagle nesting territories have been documented in the project area, and the available habitat does not support bald eagle foraging or nesting. The project area also does not support habitat for nesting golden eagles.

Over 370 avian species, both resident and migratory, have been reported in the area of the Tijuana Estuary northwest of the Tijuana River FCP. Riparian habitat and ponds provides nesting and foraging for shorebirds and waterfowl such as the Northern pintail, American widgeon, willet and black-necked stilt. Other common birds found throughout the year in the area include Anna’s hummingbird (*Calypte anna*), Yellow-rumped warbler (*Dendroica coronata*), Northern mockingbird (*Mimus polyglottos*), black phoebe (*Sayornis nigricans*), and song sparrow (*Melospiza melodia*) (USFWS 1999; Joshi 2015).

3.2.1.3 Threatened and Endangered Species

USIBWC accessed the USFWS Information, Planning, and Conservation Online system (<http://ecos.fws.gov/ipac/>) on 19 October 2016 to determine if any federally-listed species potentially occur in the vicinity of the Proposed Action. The following species are federally listed in San Diego County (Table 5).

Table 5. Federally Listed, Proposed, and Candidate Species and their State Listing Known to or That May Occur in San Diego County, California

Common Name	Scientific Name	Listing	Habitat Preference
Crustaceans			
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	FE	Vernal pools, ponds and other ephemeral pool-like bodies of water
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE	Vernal pools, ponds and other ephemeral pool-like bodies of water
Insects			
Quino checkerspot butterfly	<i>Euphydryas editha quino</i> (= <i>E. e. wrighti</i>)	FE	Patchy scrublands
Birds			
California least tern	<i>Sterna antillarum browni</i>	FE/SE	Coastal areas and open beaches
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	FT	Coastal sage scrub habitats
Least Bell’s vireo*	<i>Vireo bellii pusillus</i>	FE/SE	Willow-dominated riparian habitats for breeding
Light-footed clapper rail	<i>Rallus longirostris levipes</i>	FE/SE	Coastal salt marshes
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE/SE	Dense riparian habitats
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FT	Flat, open coastal beaches, in dunes, and near stream mouths

Common Name	Scientific Name	Listing	Habitat Preference
Mammals			
Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	FE	Predominantly found on sandy substrates within coastal sage scrub habitats
Flowering Plants			
California orcutt grass	<i>Orcuttia californica</i>	FE/SE	Vernal pools
Otay Mesa-mint	<i>Pogogyne nudiuscula</i>	FE/SE	Vernal pools on coastal mesas
Otay tarplant	<i>Deinandra (=Hemizonia) conjugens</i>	FT/SE	Open coastal sage scrub and native and non-native grasslands in clay soils
Salt marsh bird's-beak	<i>Cordylanthus maritimus ssp. maritimus</i>	FE	Salt marsh
San Diego ambrosia	<i>Ambrosia pumila</i>	FE	Upper terraces of rivers and drainages
San Diego button-celery	<i>Eryngium aristulatum var. parishii</i>	FE/SE	Vernal pools
San Diego thornmint	<i>Acanthomintha ilicifolia</i>	FT/SE	Restricted to gabbro soils within coastal sage scrub, chaparral, and native grassland
Spreading navarretia	<i>Navarretia fossalis</i>	FT	Freshwater-marsh, vernal-pools

FT = Federally Threatened
ST = State Threatened

FE = Federally Endangered
SE = State Endangered

* = designated critical habitat in study area

Riverside fairy shrimp are generally restricted to vernal pools and other non-vegetated ephemeral (i.e., containing water a short time) pools greater than 12 inches in depth in Riverside, Orange, and San Diego counties in southern California, and northwestern Baja California, Mexico. Populations have been documented east of I-5 and the project site in Otay Mesa. Riverside fairy shrimp generally occur in groups of vernal pools referred to as vernal pool complexes. San Diego fairy shrimp are generally restricted to vernal pools and other non-vegetated ephemeral (i.e., containing water a short time) basins 2 to 12 inches in depth in coastal southern California and northwestern Baja California, Mexico. Occupied vernal pool complexes for the San Diego fairy shrimp occur east of I-5 in Otay Mesa and one occurrence in the Tijuana Slough National Wildlife Refuge. Following winter rainstorms, vernal pools form in depressions above an impervious soil layer or layers. Water evaporates from these pools during the spring and early summer. Vernal pools within a complex are generally hydrologically connected, such that water flows over the surface from one vernal pool to another and/or water flows and collects below ground such that the soil becomes saturated with water, thus filling the vernal pool with water. The entire floodplain of the Tijuana River in the study area is highly disturbed and large portions of the floodplain are farmed at various times. Vernal pool complexes do not exist in the levee area of the Proposed Action and therefore impacts to fairy shrimp are not expected.

Quino checkerspot butterfly's historical range included much of non-montane southern California: southwestern Ventura, southwestern San Bernardino, Los Angeles, Western Riverside, and San Diego counties. Quino habitat is characterized by patchy shrub or small tree landscapes with openings of several meters between large plants, or a landscape of open swales alternating with dense patches of shrubs. Current occurrences complexes (estimators of approximate population location and population membership) for the species are located in the Otay Mesa area east of the project site. This species is unlikely to exist in the project area due to lack of habitat.

California least terns are the smallest of the North American terns living along the coast. This species nests in open beaches free of vegetation, and nesting is currently limited to colonies in San Francisco Bay, Sacramento River delta, and areas along the coast from San Luis Obispo County to San Diego County. Least terns need cleared, sandy areas for nesting and depend on estuaries, lagoons, and other open water areas for hunting small fish. Terns are known to occur in the Tijuana Slough National Wildlife Refuge northwest of the project area.

The coastal California gnatcatcher is found only in coastal sage scrub generally dominated by California sagebrush, buckwheat, salvia, and prickly-pear cactus. The gnatcatcher forages through the shrubs and low trees searching for insects. Critical habitat lies east of the project area and this species has been known to occur in the Tijuana Slough National Wildlife Refuge.

Light-footed clapper rails prefer to nest in tidal marshes dominated by cordgrass. There are an estimated 100 pairs in San Diego County with breeding populations scattered throughout coastal lagoons and estuaries. The Tijuana River estuary is an especially critical site, supporting a record 80 pairs in 1999.

The Southwestern willow flycatcher is one of four currently recognized subspecies of the willow flycatcher. The subspecies typically occurs in dense riparian vegetation on moist soils near slow-moving or swampy water. In many cases, nest plants are rooted in or overhang standing water, and occupied sites are typically located along slow-moving stream reaches, at river backwaters, in swampy abandoned channels and oxbows, marshes, and at the margins of impounded water (e.g., beaver ponds, inflows of streams into reservoirs). Critical habitat for the flycatcher has been designated but does not occur within the project area.

The Western snowy plover is a threatened small shorebird. The species nests in a shallow scrape in sand, usually lined with small pebbles and shells along the shores, peninsulas, offshore islands, bays, estuaries, and rivers of the Pacific Coast. Snowy plovers are year round residents of San Diego County and nest along the coastline with breeding concentrations in Camp Pendleton and the Silver Strand.

Within the Tijuana River Valley Regional Park, state and federally endangered species include migrant individuals of the southwestern willow flycatcher, pairs of the light-footed clapper rail within the ponds to the west of Dairy Mart Road, and breeding populations of Coastal California gnatcatchers in the upland areas (CDM 2005). Habitat for these five avian species does not occur in the disturbed habitats of the Tijuana River FCP and therefore no impacts from the Proposed Action are expected.

The final avian species that has the potential to occur in the project area is the Least Bell's vireo. This species is the western-most subspecies, breeding entirely within California and northern Baja California. Vireos can occupy a variety of habitats during the winter including mesquite scrub within arroyos, palm groves, and hedgerows bordering agricultural and residential areas; however, breeding habitat is restricted to willow-dominate riparian areas. Early to mid-successional riparian habitat is typically used for nesting by the Least Bell's vireo because it supports the dense shrub cover required for nest concealment as well as a structurally diverse canopy for foraging. Critical habitat for this species occurs at the north end of the project area (Figure 7) and breeding populations of the Least Bell's vireo occur within the County of San Diego Tijuana River Valley Regional Park. Designated critical habitat extends south of Dairy Mart Road




Figure 7. Location of Least Bell's Vireo critical habitat in relation to the Tijuana River Flood Control Project



0 1,000 2,000 3,000 Feet

0 200 400 600 Meters

Legend

 Final critical habitat - Least Bell's Vireo

 Levee

and south of Camino de la Plaza however, no habitat for the vireo occurs within this portion of the floodplain of the Tijuana River. Although the Tijuana River FCP lacks suitable habitat for the Least Bell's vireo, critical habitat and potential habitat occur just to the north of the project area; therefore, this species is considered further in the analysis.

The Pacific pocket mouse is endemic to the coast of southern California. This subspecies of pocket mouse historically occupied coastal strand, coastal dunes, river alluvium, and coastal sage scrub habitats 2.5 miles of the ocean. The species is currently restricted to coastal sage scrub habitat. The Pacific pocket mouse distribution is very limited in southern California with four known populations documented since its listing in 1994. Habitat for this species does not occur within the project area and therefore no impacts to this species are expected.

Eight listed plant species were listed as potentially occurring in the Tijuana River FCP area.

California Orcutt grass is a tufted annual grass restricted to vernal pools in southern California and a few occurrences in northern Baja California, Mexico. At the time of listing, *O. californica* was thought to be restricted to four general localities: the Santa Rosa Plateau, Skunk Hollow, and Salt Creek (now identified as the Stowe Pools) in Riverside County, and Otay Mesa in San Diego County. The species was likely never widespread, compared to other obligate plant species, because deeper pools with longer inundation times (longer seasonal ponding) are less common in southern California. Preferred habitat for this species does not occur in the project area and therefore no impacts are expected.

Otay Mesa-mint is restricted to vernal pools and has been documented east of the project area in Otay Mesa. It is often found with other federally listed species, including San Diego button-celery, California Orcutt grass, and Riverside fairy shrimp. Habitat for this species does not occur within the Tijuana River FCP; therefore, no impacts are expected.

Otay tarplant has a narrow ecological distribution and is endemic to southwestern San Diego County, California, and northwestern Baja California, Mexico. Known populations occur north of the project area. The species' distribution is strongly correlated to clay soils found in much of the Otay Ranch's Otay Valley Parcel (in eastern Chula Vista), and Otay Mesa (south of the Otay River and west of Otay Mountain) east of the project area. Populations occur in open coastal sage scrub and native and non-native grasslands; habitat is not found in the Tijuana River FCP.

Salt marsh bird's-beak is a hemiparasitic halophyte found in disjunct coastal salt marshes of southern and central California and adjacent northern Baja California, Mexico. Plants have naturally patchy distributions in sites subject to only higher tidal influxes in coastal salt marshes. This species has been documented in the Tijuana estuary. The Tijuana River FCP does not support salt marshes and therefore this species would not be impacted by the Proposed Action.

San Diego ambrosia is found primarily on upper terraces of rivers and drainages; however, several patches of the plant occur within the watershed of a large vernal (ephemeral) pool at the Barry Jones (Skunk Hollow) Wetland Mitigation Bank in Riverside County. Current distribution of extant population of the species occurs east of the Tijuana River FCP.

San Diego button-celery currently occurs in 14 geographic areas in Riverside and San Diego counties. Although the species can be locally abundant, the loss of vernal pool habitat in San Diego County has dramatically decreased the distribution of San Diego button-celery. The closest known population occurs east of the Tijuana River FCP in the Otay Mesa. This species is not likely to occur in the Tijuana River FCP due to lack of preferred habitat.

San Diego thornmint is restricted to gabbro soils derived from igneous rock, and gray calcareous clay soils derived from soft calcareous sandstone and is endemic to San Diego County and northwestern Baja California, Mexico. Current populations are located north and east of the project area. Preferred habitat for the species includes openings within coastal sage scrub, chaparral, and native grassland on gentle southeast to west facing slopes. This species does not occur in the project area and would not be impacted by the Proposed Action.

In San Diego County, Spreading navarretia is typically found in vernal pools. In western Riverside County however, the species is associated with seasonally flooded alkali vernal plain habitat that includes alkali playa (highly alkaline, poorly drained), alkali scrub, alkali vernal pool, and alkali annual grassland components. The majority of the populations of spreading navarretia at the time of listing were concentrated at three locations: Otay Mesa in southern San Diego County, alongside the San Jacinto River in western Riverside County, and near Hemet in western Riverside County. Current distributions are well to the north and east of the project area and therefore no impacts to this species are expected.

In addition to the federally listed species, there are species present in the area of the Tijuana River FCP that are listed as state species of concern. Breeding avian populations known to occur in the Tijuana River Valley Regional Park immediately downstream of the Tijuana River FCP include the yellow warbler (*Dendroica petechia*) and the yellow-breasted chat (*Icteria virens*), both California Species of Concern (CSC) (USIBWC 2008; San Diego County Water Authority 2008). These species both occur in riparian areas not found within the Tijuana River FCP. In addition, Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) is listed as endangered in the State of California and is known to nest in the estuary (TRNERR 2010). The upland areas of the Tijuana River Valley Regional Park support breeding populations of the CSC rufous-crowned sparrow (*Aimophila ruficeps canescens*) (USIBWC 2008). Two CSC, the Coronado skink (*Eumeces skiltonianus interparietalis*), and the San Diego horned lizard (*Phrynosoma coronatum blainvillei*), are known to occur in the TRNERR (TRNERR 2014).

The Baja California birdbush (*Ornithostaphylos oppositifolia*), a state threatened species, occurs in the Tijuana River Valley Regional Park adjacent to the Tijuana River FCP (CDFW 2016). Other rare plant species that may be found in the general vicinity of the Tijuana River FCP where the coastal salt marsh and coastal sage scrub native plant communities are present include goldenspined cereus (*Bergerocactus emoryi*), sea dahlia (*Leptosyne maritima*), Orcutt's bird's-beak (*Dicranostegia orcuttiana*), and wartstemmed ceanothus (*Ceanothus verrucosus*) (CDM 2005). Other sensitive plant species that may occur in the surrounding area include: golden-spined cereus (*Bergerocactus emoryi*), wart-stemmed ceanothus (*Ceanothus verrucosus*), cliff spurge (*Euphorbia misera*), and San Diego barrel cactus (*Ferocactus viridescens*) (USIBWC 2005).

3.2.1.4 Aquatic Ecosystems

The Tijuana River can be characterized as an ephemeral, braided alluvial stream that shifts widely across the valley floor during flood stage (USIBWC 2008). As such, freshwater aquatic ecosystems and fisheries are limited in the Tijuana River FCP and have not been well described. Marine aquatic resources in the area, but not within the Proposed Action area, include the Tijuana estuary. The estuary supports a diverse population of fish species including topsmelt (*Atherinops affinis*), longjaw mudsucker (*Gillichthys mirabilis*), arrow goby (*Clevelandia ios*), California killifish (*Fundulus parvipinnis*), and striped mullet (*Mugil cepalus*; TRNERR 2010). In addition, the estuary provides nursery habitat for commercial and sport fisheries.

3.2.1.5 Unique or Sensitive Areas

Non-native grasslands are considered a sensitive biological resource because they provide foraging habitat for raptors such as red-tailed hawks, red-shoulder hawks, and white-tailed kites (USIBWC 2005). This habitat is found on the SBIWTP property (USIBWC 2005) and some throughout the Tijuana River FCP. Non-native grasslands are generally dominated by wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), foxtail chess (*Bromus madritensis ssp. rubens*), rye-grasses (*Lolium* spp), and fescues (*Vulpia* spp.), with non-native grasses comprising 50 percent or more of the cover during the growing season (USIBWC 2008).

The Tijuana Estuary is located 3 miles west of the Tijuana River FCP. The estuary was designated a National Estuarine Research Reserve in 1982 and contains 2,531 acres of tidally flushed wetlands, riparian lands, and upland habitats (CDM 2005). In February of 2005 the estuary was designated a “Wetland of International Importance Within the Nation” by the Convention on Wetlands of International Importance, better known as the Ramsar Convention. The 1,051-acre Tijuana Slough National Wildlife Refuge is contained within the TRNERR (CDM 2005). The Multiple Species Conservation Plan (MSCP) for San Diego is designed to identify lands that would conserve habitat for federal and state endangered, threatened, or sensitive species. These lands have been determined to provide the necessary habitat quantity, quality, and connectivity to sustain the unique biodiversity of the San Diego region (USIBWC 2005). The Tijuana River Valley’s Multi-Habitat Planning Area (MHPA) delineates core biological resource areas and corridors targeted for conservation, incorporating the 25-year floodplain within the City’s jurisdiction and much of the 100-year floodplain in the valley (TRNERR 2014). The MHPA lands are considered by the City to be sensitive biological resources.

Riparian areas are considered sensitive habitats because of the large number of species they support. There are well-developed riparian areas downstream of the Tijuana River FCP; however the Tijuana River FCP is mowed frequently to prevent the establishment of woody vegetation, including riparian species such as willow or mule fat and no riparian habitat occurs within the project area (USIBWC 2008).

3.2.1.6 Wetlands

A freshwater emergent wetland is classified at the northwest end of the project area where the river crosses under Dairy Mart Road and into the Tijuana River Valley Regional Park. No work is planned in the area and no impacts to the wetland would occur. While the Tijuana River runs through the Tijuana

River FCP, no jurisdictional waters or wetlands are present due to the lack of a baseline flow (USIBWC 2008). Consultation with USACE for sediment dredging may be required.

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

Potential impacts to biological resources are considered significant if the Proposed Action would:

- Affect a threatened or endangered species;
- Substantially diminish habitat for a plant or animal species;
- Substantially diminish a regionally or locally important plant or animal species;
- Interfere substantially with wildlife movement or reproductive behavior;
- Result in a substantial infusion of exotic plant or animal species; or
- Destroy, lose, or degrade jurisdictional wetlands (as defined by Section 404 of the CWA).

Vegetation

Levee enlargement, bank protection, and rodent burrow repair under the Proposed Action would have minimal short-term impacts on vegetation within the Tijuana River FCP area. The banks are sparsely vegetated and the Border Patrol frequently mows the area to maintain visibility. No vegetation occurs on the top of the North Levee where it would be enlarged. Construction equipment has the potential to trample other vegetation within the project area, however, this vegetation is non-native grassland, ruderal communities, and in some cases agricultural crops. Sediment removal would occur within the concrete-lined portion of the low flow river channel upstream of the energy dissipator. No native riparian vegetation occurs within the concrete-lined channel where sediment would be removed, only grasses that have sprouted due to the presence of the sediment. Clearing of the channel of excess sediment and debris would improve conditions for water flow and aquatic habitat. Any riparian vegetation along the river channel would be maintained to support continued development of the habitat.

Wildlife

Construction activities under the Proposed Action have the potential to temporarily displace wildlife from noise and increased human disturbance. The displacement would be temporary and species would likely return to using the area once construction is complete. No impacts to vegetation under the Proposed Action would occur that would further degrade or limit available habitat. Best management practices (BMPs) to reduce dust and erosion into the floodplain would further prevent impacts to wildlife species in the area.

Ground squirrel burrow mitigation and ground squirrel control would potentially decrease the population of ground squirrels and could negatively impact foraging opportunities for raptors. However, given the open habitat of the area, other foraging opportunities would not be impacted and would remain available. The use of rodenticides to remove ground squirrel populations has the potential to impact other non-target species if not properly applied. Ground squirrels could potentially die above ground exposing scavengers (e.g., coyotes and vultures) to low levels of the rodenticides. If used, rodenticides would be applied by a licensed applicator and the appropriate rodenticide would be chosen based on the prevailing conditions.

The use of spot baiting at burrows or bait boxes would reduce the exposure to non-target species. Although studies have shown that semi- and fossorial rodents tend to expire underground, there is a chance that some ground squirrels may be located above ground after application. The treated area would be searched daily after application to reduce the exposure of scavengers to carcasses.



Ground squirrel burrows along the north levee.

Threatened and Endangered Species

Although habitat for listed species does not occur within the project area, critical habitat for the Least Bell's vireo is designated at the northwest portion of the Tijuana River FCP (Figure 7). Potential impacts would be short term and executed in limited footprints throughout the Tijuana River FCP depending on the activity. Increased noise and vibrations from construction and sediment removal activities may disturb the daily activities of the Least Bell's vireo and other migratory birds.

The enlargement of the North Levee occurs in close proximity to the Least Bell's vireo designated critical habitat as well as habitat for other migratory birds. The habitat immediately surrounding the levee, however, is composed of agricultural production within the floodplain and development. BMPs employed during levee enlargement, including dust suppression and erosion control, as well as timing, would prevent adverse effects to the Least Bell's vireo and other migratory birds. Construction activities would occur outside the nesting season (April through July).

USIBWC determined that the Proposed Action "may affect, but is not likely to adversely affect" the Least Bell's vireo. Consultation with the USFWS was performed on November 21, 2016 (Appendix A). When a response is received from the USFWS, it will be incorporated here and in Appendix A.

Aquatic Ecosystems

Although the Tijuana River is ephemeral and often dry except in high flows through the Tijuana River FCP area, aquatic ecosystems in the Tijuana Estuary occur downstream of the Proposed Action area. Removing accumulated sediment and protecting the embankment would increase river flow and prevent

future deposits of sediment downstream in the estuary. Sediment removal and the use of BMPs are expected to improve aquatic habitats downstream of the Tijuana River FCP to some extent. No other impacts to this ecosystem are expected under the Proposed Action.

Unique or Sensitive Areas

Under the Proposed Action, impacts to non-native grasslands would not occur as construction activities would take place away from these habitats. As mentioned above in the aquatic ecosystems section, the removal of extra sediment in the low flow channel may improve habitat and beneficially impact the Tijuana Estuary. The ability of sediment and trash to move downstream during high flows into the estuary would be reduced with the sediment removal.

Wetlands

The Tijuana River FCP does not contain jurisdictional wetlands, and therefore under the Proposed Action, there would be no changes or impacts to wetlands. The wetlands within the Tijuana River Valley Regional Park have undergone extensive sedimentation in recent years, due primarily to sediment transport through the adjacent canyons during storm events (USIBWC 2008). These wetlands, including the wetland on the downstream end of the Tijuana River FCP area, would benefit from removal of extra sediment and debris in the low flow channel to prevent future transportation of the sediment/debris from the Tijuana River FCP during extreme flood events.

3.2.2.2 No Action Alternative

Vegetation

The vegetation under the No Action Alternative would remain as primarily heavily disturbed habitat containing non-native grasslands and ruderal communities. No impacts to vegetation are expected under the No Action Alternative.

Wildlife

The project area contains non-native grasslands, agriculture, and ruderal communities, and provides limited habitat for most wildlife species. Those species adapted to a disturbance regime, and possibly foraging raptors, may use the Tijuana River FCP. No changes in habitat management would occur under the No Action Alternative; therefore no changes, either further degraded or improved, in habitat are expected and no impacts to wildlife species currently using the area would occur.

Threatened and Endangered Species

Under the No Action Alternative, no changes to the current vegetation management and maintenance of the Tijuana River FCP would occur. Habitat for listed species is not present within the Tijuana River FCP and therefore, no impacts from the No Action Alternative are expected to occur.

Aquatic Ecosystems

Except for very high flows, the Tijuana River is generally dry. Under the No Action Alternative, the flow regime would not be modified, and therefore the aquatic ecosystems would not be altered.

Unique or Sensitive Areas

Most unique and sensitive areas occur west of the Tijuana River FCP and not within the Tijuana River FCP nor within the Proposed Action areas. The degraded non-native grasslands in the project area may provide some foraging habitat for raptors, but no changes would be made to the vegetation communities in the project area under the No Action Alternative; therefore, no impacts are expected.

Wetlands

There are no jurisdictional wetlands in the project area, and therefore, under the No Action Alternative, there would be no impacts to these resources.

3.3 Land Use

3.3.1 Affected Environment

The Tijuana River drains an area of approximately 1,731 square miles within Mexico and the United States. The river flows through the City of Tijuana, crosses the international boundary into California and continues westward about 5.3 miles to empty into the Pacific Ocean about 1.5 miles north of the international boundary. Most of the Tijuana river valley in the United States is within the City of San Diego; a smaller section, a 0.4- to 0.8-mile-wide coastal strip almost 3 miles long adjacent to the Pacific Ocean, is within the City of Imperial Beach. This section characterizes existing land uses in the vicinity of and within the Tijuana River FCP. Existing land uses and land ownership in the vicinity of the Tijuana River FCP are shown on Figure 8.

3.3.1.1 Residential and Commercial

The municipality of Tijuana, Baja Mexico is located south of the Tijuana River FCP, and has fully developed neighborhoods directly adjacent to the South Levee area. To the north and east of the levees is the community of San Ysidro, in San Diego County, California. Immediately adjacent to the North Levee is a single-family residential neighborhood and an indoor shopping mall (Figure 8).

3.3.1.2 Agricultural

While the majority of the region has become urbanized, some areas to the west and east of the project site are still used for agriculture. The north section of the floodway, comprising approximately 40 percent of the total area, is leased for agricultural use, as a sod farm (Figure 8). The sod farm area is identified as prime farmland if irrigated and drained (NRCS 2016).

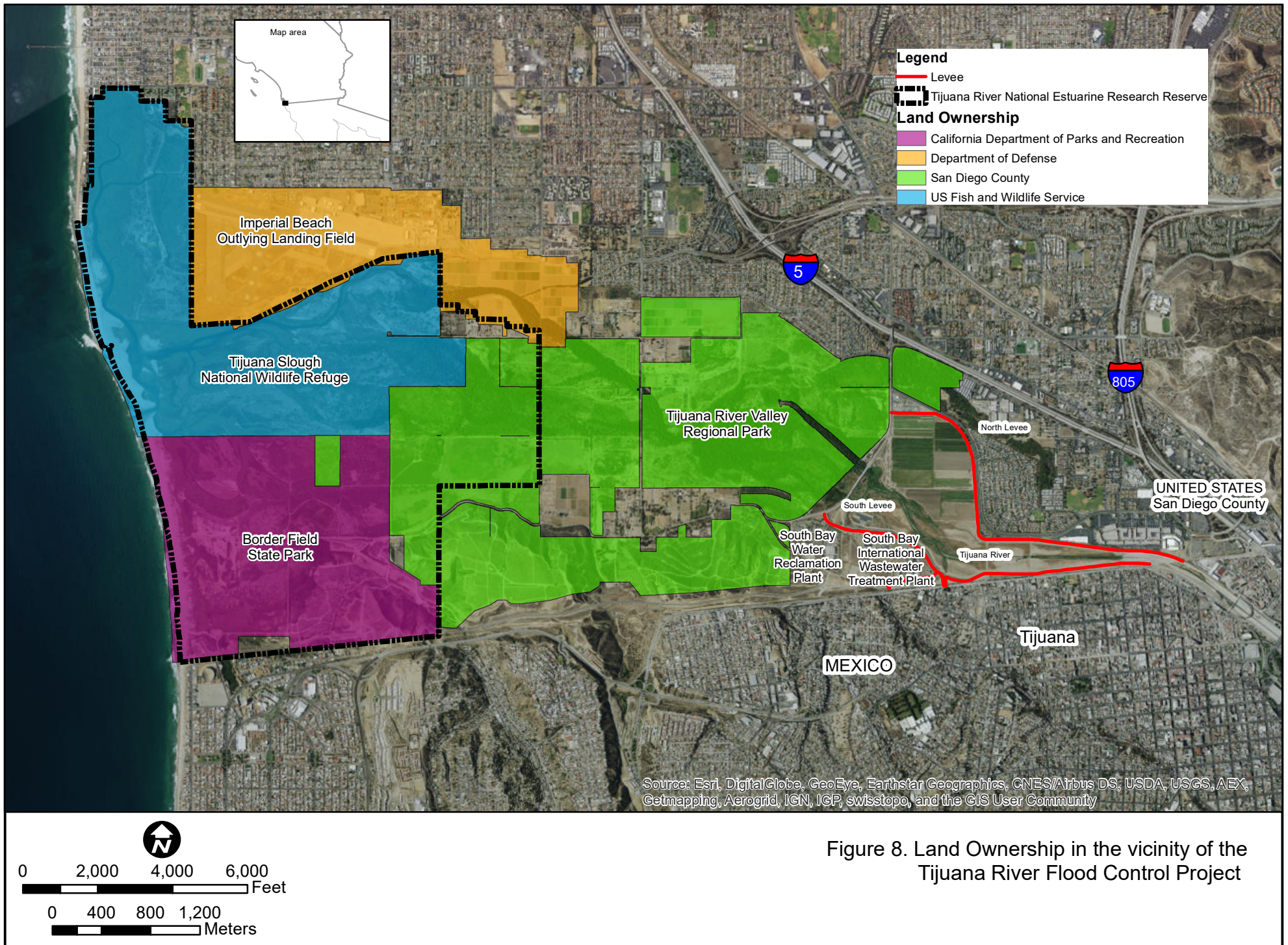


Figure 8. Land Ownership in the vicinity of the Tijuana River Flood Control Project



Sod farming in the floodplain of the Tijuana River.

3.3.1.3 Recreational and Natural Resource Areas

Major recreational and natural areas near the Tijuana River FCP include the Tijuana River Valley Regional Park and the Tijuana River National Estuarine Research Reserve (TRNERR) (Figure 8). San Diego County manages the Tijuana River Valley Regional Park that consists of approximately 1,800 acres. The park is generally bounded on the east by Dairy Mart Road, the TRNERR on the west, the United States/Mexico international border on the south, and Sunset Avenue and the residential community to the north. The park includes a mixture of recreational uses, agriculture, and native habitats.

The TRNERR is part of a nationwide network known as the National Estuarine Research Reserve System (NERRS), created by the Coastal Zone Management Act of 1972. NERRS encompasses estuarine and coastal habitats protected and managed through a federal-state cooperative effort. The TRNERR encompasses approximately 2,293 acres and is managed by the California State Park system and the National Oceanic and Atmospheric Administration. It includes the Tijuana Slough National Wildlife Refuge managed by the USFWS. A California state park, the Border Field State Park, is also located within the TRNERR and is approximately 750 acres. The park provides restrooms, picnic areas, barbecues, horse corrals, and interpretive displays.

Several neighborhood and community parks are located in the general vicinity of the project area. Coral Gate Park is located in the residential subdivision adjacent to the North Levee, and the San Ysidro Athletic Area is approximately 0.25 mile north of the east end of the project area. There are no recreational areas located within the Tijuana River FCP itself.

3.3.1.4 Other Significant Land Uses in the Project Vicinity

United States military land uses are also located in the area. The U.S. Navy's Imperial Beach Outlying Landing Field is located on 1,200 acres within the city limits of Imperial Beach (Figure 8). The field operates as a branch of the Naval Air Station North Island and its mission is to handle the overflow of helicopter squadrons traffic from North Island. Presently, Imperial Beach Outlying Landing Field leases

270 acres for agricultural purposes and 284 acres to the State of California for a wildlife refuge at the southeast corner (CNIC 2016).

The international border between the United States and Mexico is adjacent to the South Levee. The U.S. Department of Homeland Security, U.S. Customs and Border Protection manages approximately 250 acres along the U.S.-Mexico Border. This area contains a border patrol station (Imperial Beach Station), border fence, including secondary and tertiary fences, border lighting, camera towers, and border fence gates.

The SBIWTP, a 25 million gallon per day secondary treatment plant, is located on a 75-acre site south and west of the Tijuana River FCP (Figure 8). It treats sewage originating from Tijuana, Mexico and discharges it to the Pacific Ocean. Both countries share in the operation and maintenance of the SBIWTP (USIBWC 2016). The City of San Diego's South Bay Water Reclamation Plant is located to the west of the SBIWTP (Figure 8). The plant provides local wastewater treatment services and reclaimed water to the South Bay. The plant opened in May 2002 and has a wastewater treatment capacity of 15 million gallons per day (City of San Diego 2016).

3.3.1.5 Land Use Planning Documents

The following local and regional planning documents are central to the management of the Tijuana River Valley.

- Tijuana River Valley: Local Coastal Program Land Use Plan – outlines goals to support the primary land use emphasis of preservation, enhancement, and restoration of the natural features of the area, while still allowing for limited recreational and agricultural use. This plan was written by the City of San Diego in 1999.
- A Binational Vision for the Tijuana River Watershed – outlines future desired conditions of the Tijuana River Watershed and devises strategies and options to achieve the vision. Includes water, air, ecosystems and natural resources, waste, and socioeconomic issues as major areas of concern. This plan was written by the Binational Watershed Advisory Council for the Tijuana River Watershed in 2005.
- Border 2020: U.S. – Mexico Environmental – a binational effort that aims, “to protect the environment and public health in the U.S. – Mexico Border region, consistent with the principles of sustainable development.” This plan was written by Environmental Protection Agency and SEMARNAT in 2011.
- Imperial Beach General Plan & Local Coastal Plan – serves as the City's constitution for physical development and regulating land use throughout the City. This plan was written by the City of Imperial Beach in 2010.
- Multiple Species Conservation Program Subarea Plan – delineates core biological resource areas and corridors targeted for conservation, incorporating the 25-year floodplain within the City's jurisdiction and much of the 100-year floodplain in the valley. This plan was written by the City of San Diego in 1997.

- Recovery Strategy – identifies a collaborative path forward, “...to cost effectively address sediment and trash issues while respecting natural and cultural resources, the roles and responsibilities of agency managers, and the needs of landowners, residents, recreational users, and visitors.” This plan was written by the Tijuana River Valley Recovery Team in 2012.
- TRNERR Comprehensive Management Plan – guides TRNERR in its mission of estuarine resource protection. This plan was written by the California State Parks, the National Oceanic and Atmospheric Administration, and the USFWS in 2010.
- Tijuana River Valley Regional Park- Area Specific Management Directives – provides a guidance document to preserve and manage the biological and cultural resources within Tijuana River Valley Regional Park while balancing the need to provide appropriate passive recreational opportunities. This plan was written by the County of San Diego in 2007.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Potential impacts to land use are considered significant if the Proposed Action would:

- Conflict with applicable ordinances and/or permit requirements;
- Preclude adjacent or nearby properties from being used for existing activities; or
- Conflict with established uses of an area requiring mitigation.

The Proposed Action would be contained within the Tijuana River FCP. There would be no change to existing land use within or adjacent to the project. The Proposed Action would not conflict with land use plans or preclude adjacent or nearby properties from being used for existing activities. Rehabilitation of the levees would protect surrounding residential communities from potential flooding.

3.3.2.2 No Action Alternative

Under the No Action Alternative, the rehabilitation of the levees would not occur. No change to existing land use within or adjacent to the project would occur. Surrounding residential communities would remain at greater risk of flooding.

3.4 Cultural Resources

3.4.1 Affected Environment

Archaeological surveys have been conducted in the area of the Tijuana Estuary since the 1920s (TRNERR 2014) and are summarized in the cultural resources report prepared for the USIBWC for the PEIS by Geo-Marine Inc. in July 2005. Cultural resources within the project area are defined as historic properties that are archaeological sites or historic structures. Historic structures are those structures that were constructed at least 50 years ago. Archaeological sites in the project area date from the Late Prehistoric period to the Historic period (A.D. 500/800 to 1539; Geo-Marine 2005).

Within 0.5 mile of the Tijuana River in the project area, 20 cultural properties or historic districts have been previously documented, all located in San Diego County. A variety of archaeological types are present ranging from shell scatters to habitation sites (TRNERR 2014). A total of 16 of the 20 sites are prehistoric, three are historic (including historic archaeological sites and standing structures, while one archaeological site also contains standing structures), and one site contains prehistoric and historic components. The eligibility status of those sites for listing in the National Register of Historic Places (NRHP) or as historic districts is unknown (Geo-Marine 2005).

Within the Tijuana River FCP, 95 percent of the previously recorded temporal components are within the floodplain, 85 percent are within the prehistoric floodplain, 15 percent are within the prehistoric terrace/fan, 50 percent are within the historic floodplain, and 50 percent are within the historic terrace/fan (USIBWC 2008).

The Tijuana River Valley also contains several recorded paleontological resources associated with the San Diego Formation and unnamed Pleistocene terrace deposits, both of which are fossil-containing formations. These sites are significant because they contain highly preserved fossils, especially fossils from the San Diego Formation, which are preserved as original shell material, with some forms even retaining color. The San Diego Formation also has a high potential for yielding important remains of fossil marine vertebrates, especially marine mammals, which are rare and about which not much is known (TRNERR 2014).

Due to the floodplain/estuary environment along the Tijuana River, most of the prehistoric properties have been identified within plowed fields, road cuts, or in other areas in depths of up to 23 feet deep. Based on the considerable frequency of sites found on the surrounding terraces above the river, additional prehistoric sites are most likely buried under Tijuana River alluvium. Furthermore, frequent historic flooding of the river, including extensive floods that occurred in the lower valley in 1895 and 1916, indicates the high potential for buried sites in this region (Geo-Marine 2005).

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

Potential impacts to historic properties and/or archaeological resources are considered significant if the Proposed Action would:

- Physically destroy, damage, or alter all or part of the property;
- Physically destroy, damage, alter or remove items from archaeological contexts without a proper mitigation plan;
- Isolate the property from or alter the character of the property's setting when that character contributes to the property's qualification for the NRHP;
- Introduce visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect a property resulting in its deterioration or destruction; or
- Transfer, lease, or sell the property without a proper preservation plan.

Enlarging and stabilizing the North Levee, repairing rodent burrows, and removing low flow channel sediments and debris have limited potential to impact cultural resources, since these would mostly be surface disturbances. However, based on the considerable frequency of cultural sites on the surrounding terraces above the river, additional prehistoric sites are most likely buried under Tijuana River alluvium, and therefore, modification to the levees or channel sediments that involve deeper excavation may encounter buried cultural deposits including paleontological resources. Cultural resources discovered during excavation would be evaluated for NRHP eligibility following their discovery and subject to impact mitigation.

In the event cultural materials are encountered during construction, the contractor shall immediately halt work in the area of the find until the material can be evaluated by a qualified cultural resource specialist for NRHP eligibility. Cultural materials are subject to impact mitigation measures as described in the Programmatic Agreement executed March 11, 1994, between the USIBWC, USEPA Region IX, Advisory Council on Historic Preservation, State Historic Preservation Officer, and the City of San Diego. With incorporation of these mitigation measures, impacts to cultural resources would be considered mitigated to a less than significant level.

USIBWC performed consultation with the State Historic Preservation Officer on November 23, 2016 and requested concurrence for the project to proceed as stipulated with no impacts to cultural or historical sites (Appendix A). When a response is received from the State Historic Preservation Officer, it will be included here and in Appendix A.

3.4.2.2 No Action Alternative

Under the No Action Alternative, the levee system would not be rehabilitated by enlarging and stabilizing the North Levee, removing sediment, and repairing rodent burrows. No effects to historical or archaeological resources would occur under this alternative.

3.5 Socioeconomic Resources and Transportation

3.5.1 Affected Environment

This section describes existing regional economics, environmental justice, and transportation resources.

3.5.1.1 Regional Economics

Regional economics are discussed in terms of population, employment/income, and housing.

Population

The Tijuana River FCP is located within San Diego County. The closest communities to the Tijuana River FCP that may be affected by the Proposed Action include the community of San Ysidro and the city of Imperial Beach. Table 6 identifies the populations of these communities in 2012, as well as projected populations for 2020 and 2050. The population of San Diego County is expected to increase by 29 percent from 2012 to 2050. Imperial Beach expects an increase of 19 percent and San Ysidro expects an increase of 33 percent.

Table 6. Population Growth in San Diego County and Relevant Communities Adjacent to the Tijuana River FCP

Jurisdiction	2012	2020	2050	Percent Change 2012-2050
San Diego County ¹	3,143,429	3,435,713	4,068,759	29
Imperial Beach ²	26,609	27,506	31,691	19
San Ysidro ³ (zip code 92173)	29,688	30,895	39,367	33

1 SANDAG 2016a

2 SANDAG 2016b

3 SANDAG 2016c

Employment and Income

The economy of the San Diego region is based primarily on the service, retail trade, government, and manufacturing sectors of the economy. Total employment statistics are shown in Table 7. Jobs are expected to increase similarly in each jurisdiction with increases of 32 to 34 percent from 2012 to 2050.

Table 7. Estimated Total Employment for San Diego County and Relevant Communities Adjacent to the Tijuana River FCP

Jurisdiction	2012	2020	2050	Percent Change 2012-2050
San Diego County ¹	1,450,913	1,624,124	1,911,405	32
Imperial Beach ²	3,665	4,555	4,857	33
San Ysidro ³ (zip code 92173)	7,322	8,284	9,800	34

1 SANDAG 2016a

2 SANDAG 2016b

3 SANDAG 2016c

Median household income for San Diego County in 2010 was \$63,586 (SANDAG 2016d). Median household income for Imperial Beach and San Ysidro in 2010 was \$45,785 and \$36,072, respectively (SANDAG 2016e and f).

Housing

The total number of housing units in San Diego County in 2012 was 1,165,818 (Table 8). Of those units, single family homes accounted for 60 percent and multiple family homes accounted for 36 percent (SANDAG 2016a). Multiple family housing units are expected to increase at a greater rate than single family housing units, a 65 percent increase from 2012 to 2050, as compared to a 9 percent increase for single family housing units over that same time period (SANDAG 2016a). The total number of housing units is expected to increase at a slightly higher rate in San Ysidro (32 percent) than in the county (28 percent) from 2012 to 2050. It is expected that Imperial Beach will see a lower rate of increase at 17 percent.

Table 8. Total Housing Units in San Diego County and Relevant Communities Adjacent to the Tijuana River FCP

Jurisdiction	2012	2020	2050	Percent Change 2012-2050
San Diego County ¹	1,165,818	1,249,684	1,491,935	28
Imperial Beach ²	9,863	10,001	11,528	17
San Ysidro ³ (zip code 92173)	7,782	7,993	10,284	32

1 SANDAG 2016a

2 SANDAG 2016b

3 SANDAG 2016c

3.5.1.2 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, encourages federal facilities to achieve “environmental justice” by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. Accompanying EO 12898 was a Presidential transmittal memorandum that referenced existing federal statutes and regulations to be used in conjunction with EO 12898. One of the items in this memorandum was the use of the policies and procedures of NEPA, specifically that, “Each Federal agency shall analyze the environmental effects, including human health, economic, and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42 USC, Section 4321, et seq.”

To determine whether the project area contains a disproportionately high minority or low-income population, data for Imperial Beach and San Ysidro were compared to data for San Diego County and the state of California.

Minority Populations. The percentage of the population represented by minorities and the poverty rate in the project area, as compared to San Diego County, the state of California, and the entire United States are shown in Table 9. Imperial Beach and San Ysidro have a disproportionately high minority population. The average minority population of these two communities is 79.4 percent. The minority population in the region of comparison is 48.9 percent. Minority populations of Hispanic or Latino nationality dominate with an average of 71.1 percent. The population of Hispanic or Latino persons in San Ysidro is exceptionally high at 93.2 percent.

Table 9. Percentage of Minority Populations and Poverty Rates in the Project Area (2010)

Race and Ethnicity	California	San Diego County	Imperial Beach	San Ysidro (92173)	United States
White	57.6	64.0	62.6	58.3	72.4
Hispanic or Latino (of any race)	37.6	32.0	49.0	93.2	16.3
Black	6.2	5.1	4.4	1.5	12.6
Asian	13.0	10.9	6.6	2.3	4.8

Race and Ethnicity	California	San Diego County	Imperial Beach	San Ysidro (92173)	United States
American Indian	1.0	0.9	1.0	0.8	0.9
Total Minority	57.8	48.9	61	97.8	34.6
Poverty ¹	16.4	14.7	19.7	29.3	15.6

SOURCE: U.S. Census 2010

1 Poverty rates are from 2010-2014 American Community Survey 5-Year Estimates.

Poverty Rates. Poverty rates indicate low-income populations are relatively high in the project area (Table 9). The poverty rates in Imperial Beach and San Ysidro are 19.7 and 29.3, respectively, as compared to 14.7 in San Diego County and 16.4 in the state.

3.5.1.3 Transportation

The primary public roads in the project area are Dairy Mart Road and Camino de la Plaza. Maintenance roads alongside the North and South levees are used by the USIBWC and the U.S. Border Patrol. In addition, USIBWC and the U.S. Border Patrol use a paved road on top of the North Levee. Average weekday traffic counts (two-way, 24-hour volumes) recorded in 2013 are shown in Table 10.

Table 10. Average Weekday Traffic Volumes for Primary Roads in Project Area

Primary Street	First Cross Street	Second Cross Street	Average Weekday Traffic Volume (Year)
Dairy Mart Road	Interstate 5	Servando Avenue	13,800 (2012)
	Servando Avenue	Monument Road	10,200 (2010)
Camino de la Plaza	Willow Road	Interstate 5 Southbound Ramp/Camiones Way	18,200 (2010)

SOURCE: SANDAG 2016g



Access roads used by the U.S. Border Patrol in the floodplain.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

3.5.2.1.1 Regional Economics

Potential socioeconomic impacts are considered significant if the Proposed Action would cause:

- Substantial gains or losses in population, employment, and/or income; or
- Disequilibrium in the housing market, such as severe housing shortages or surpluses, resulting in substantial property value changes.

The Proposed Action would not cause significant impacts to population, income and employment, or housing in the project area. Negligible short-term increases in income and employment could occur in the project area during construction activities.

3.5.2.1.2 Environmental Justice

Potential environmental justice impacts are considered significant if the Proposed Action would cause disproportionate adverse effects on low-income and/or minority populations. Disproportionately high and adverse human health and environmental effects on minority and low-income populations are not expected, as the Proposed Action would not cause significant adverse impacts to water resources, biological resources, land use, cultural resources, socioeconomics and transportation, or environmental health. Rehabilitating the levees to ensure they perform during a 100-year flood and protect surrounding communities would be a beneficial impact on the community of San Ysidro, which has high minority and low-income populations.

3.5.2.1.3 Transportation

Potential impacts to transportation are evaluated with respect to the potential for the Proposed Action to:

- Disrupt or improve current transportation patterns and systems; and
- Change existing levels of safety.

The Proposed Action could cause a short-term increase in traffic during construction activities. Construction vehicles would access the project area using Dairy Mart Road and Camino de la Plaza. However, no long-term changes to existing traffic patterns or volumes would occur on Dairy Mart Road or Camino de la Plaza. Maintenance roads alongside the North and South levees used by USIBWC and the U.S. Border Patrol would remain unchanged except along the North Levee near Dairy Mart Road, as the footprint expansion would require the toe roads to accommodate the levee. No expansion or shift in roads would occur outside of the USIBWC property. The paved road atop the North Levee would be removed and replaced in the area of the North Levee enlargement (Figure 3). The replacement road would remain the same width as the existing road. The Proposed Action would not result in significant impacts to transportation.

3.5.2.2 No Action Alternative

Under the No Action Alternative, the levee rehabilitation would not occur. No impacts or changes to existing regional economics, environmental justice, or transportation conditions would occur. The community of San Ysidro would remain at a greater risk of flooding.

3.6 Environmental Health

3.6.1 Affected Environment

3.6.1.1 Air Quality

The Clean Air Act, Title 42, Section 7407 of the U.S. Code, states that Air Quality Control Regions (AQCR) shall be designated in interstate and major intrastate areas as deemed necessary or appropriate by a federal administrator for attainment and maintenance of concentration-based standards called National Ambient Air Quality Standards (NAAQS). NAAQS have been established for six criteria pollutants: carbon monoxide (CO); lead (Pb); nitrogen dioxide (NO₂); ozone (O₃); particulate matter (which includes both particulate matter with an aerodynamic size less than or equal to 10 microns [PM₁₀] and particulate matter with an aerodynamic size less than or equal to 2.5 microns [PM_{2.5}]); and sulfur dioxide (SO₂). The United States Environmental Protection Agency (USEPA) classifies the air quality within an AQCR according to whether the concentration of criteria air pollutants in the atmosphere exceeds primary or secondary NAAQS. National primary ambient air quality standards define levels of air quality which the USEPA has determined as necessary to provide an adequate margin of safety to protect public health, including the health of “sensitive” populations such as children and the elderly. National secondary ambient air quality standards define levels of air quality which are deemed necessary to protect the public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. All areas within each AQCR are assigned a designation of attainment, nonattainment, unclassifiable attainment, or not designated attainment for each criteria air pollutant. An attainment designation indicates that the air quality within an area is as good as or better than the NAAQS.

Nonattainment indicates that air quality within a specific geographical area exceeds applicable NAAQS. Unclassifiable and not designated indicates that the air quality cannot be or has not been classified on the basis of available information as meeting or not meeting the NAAQS and is therefore treated as attainment. Before a nonattainment area is eligible for reclassification to attainment status, the state must demonstrate compliance with NAAQS in the nonattainment area for 3 consecutive years and demonstrate, through extensive dispersion modeling, that attainment status can be maintained in the future even with community growth.

Generally, areas in violation of one or more of the NAAQS are designated nonattainment and must comply with stringent restrictions until all the standards are met. In the case of ozone, carbon monoxide, and PM₁₀, USEPA divides nonattainment areas into different categories, depending on the severity of the problem in each area. Each nonattainment category has a separate deadline for attainment and a different set of control requirements under the applicable State Implementation Plan.

The Tijuana River FCP is located in San Diego County within the San Diego Intrastate AQCR for the San Diego Air Basin (SDAB). The local agency responsible for air quality within this AQCR is the San Diego Air Pollution Control District. The California Air Resources Board is the state-level agency responsible for administration of state and federal air quality regulations.

Air quality standards in the United States are published in 40 CFR Part 81 Subpart C. San Diego County is classified as moderate nonattainment for the 2008 ozone 8-hour standard. The air quality in San Diego County is considered better than national standards for sulfur dioxide. Carbon monoxide is in attainment within the west portion of the San Diego area, and is considered unclassifiable or in attainment for the remainder of the SDAB. PM_{10} in San Diego County is considered unclassifiable and $PM_{2.5}$ is considered unclassifiable or in attainment. Nitrogen dioxide in the SDAB cannot be classified or is better than the national standard. Total suspended particulates in the east portion of San Diego County cannot be classified, and does not meet primary standards in the west portion.

The estimated emissions in 2012 for the San Diego Air Pollution Control District are as follows (California Air Resources Control Board 2013):

- Carbon monoxide, 527.4 tons per day (192,500 tons per year)
- Total Organic Gas, 498.3 tons per day (181,880 tons per year)
- Nitrogen oxides, 113.9 tons per day (41,574 tons per year)
- Sulfur oxides, 1.9 tons per day (694 tons per year)
- $PM_{2.5}$, 20.3 tons per day (7,410 tons per year)
- PM_{10} , 72.7 tons per day (26,535 tons per year)

Existing maintenance activities by USIBWC personnel consists of routine inspections of levees and access roads. Periodic maintenance activities at the levees, channels and floodway result in the use of heavy equipment including scrapers, mowers, bulldozers and dump trucks. Use of these heavy equipment and associated vehicles is typically limited to once every three months or less and does not represent a significant source of air pollutants.

3.6.1.2 Noise

3.6.1.2.1 Noise Measurement

Noise is generally defined as unwanted sound. Sound is all around us; it becomes noise when it interferes with normal activities such as speech, concentration, or sleep. Ambient noise (the existing background noise environment) can be generated by a number of noise sources, including mobile sources, such as automobiles and trucks, and stationary sources such as construction sites, machinery, or industrial operations. In addition, there is an existing and variable level of natural ambient noise from sources such as wind, streams and rivers, wildlife, and other sources.

Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (dBA) are used to characterize sound levels that can be sensed by the human ear. The typical measurement for quieter sounds, such as rustling leaves or a quiet room, is from 20 to 30 dBA. Conversational speech is commonly 60 dBA, and a home lawn mower measures approximately 98 dBA. All sound levels discussed in this EA are A-weighted.

3.6.1.2.2 Existing Noise Sources in the Project Area

Sources of noise in the project area include motor vehicle traffic and intermittent aircraft activity originating from Outlying Field Imperial Beach, Brown Field Municipal Airport, and the Tijuana International Airport. Noise levels are typical for moderately sized suburban residential developments and industrial areas. Interstate Highway 5 is located approximately 0.2 mile north of the project area and is a major north-south transportation route in San Diego and a major access route to Mexico. U.S. Border Patrol uses off-road vehicles and four-wheel all-terrain vehicles for patrolling in locations where road access is not available. Noise levels of all-terrain vehicles generally exceed 80 dBA at 25 feet depending on the activity and type of vehicle, and represent a major noise source in the project area (USIBWC 2008).

Hourly sound levels measured in August and September 2004 along Monument Road ranged from approximately 40 dBA to 61 dBA. Higher noise levels at this location and throughout the project area are the result of intermittent aircraft overflight. More recent sound measurements in the project area are not available. Existing maintenance activities by USIBWC personnel consist of routine inspections of levees and access roads. Periodic maintenance activities at the levees, channels, and floodway result in the use of heavy equipment including scrapers, mowers, front-end loaders and dump trucks. Use of these heavy equipment and associated vehicles is typically limited to once every 3 months or less and does not represent a significant source of noise (USIBWC 2008).

3.6.1.3 Public Health and Environmental Hazards

Public Health

The Tijuana River is contaminated by continuing spills from the Tijuana sewer system and by drainage of sewage from large populated areas within the Tijuana Municipality not served by any sewer system. Historically, river water has been indistinguishable from raw sewage in the project area, although the situation has improved since the SBIWTP was constructed. Continuing sewage flows during wet weather pose environmental and health concerns, including vector-borne disease, from potential exposure to hazardous wastes (USIBWC 2008).

If the public comes in contact with contaminated water in the Tijuana River related to untreated sewage discharges into the Tijuana River from Mexico, a public health issue would result. Sewage discharges could include pathogens such as bacteria, viruses, and parasites; heavy metals; and organic compounds. In addition, it is likely that floodwaters containing sewage pollutants have impacted soil within the floodplain of the river (USIBWC 2008).

Environmental Hazards

Hazardous materials are chemical substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act and the Toxic Substances and Control Act (TSCA) that pose a substantial hazard to human health or the environment. Hazardous materials include hazardous substances, hazardous chemicals, and toxic chemicals. In general, these materials pose hazards because of their quantity, concentration, physical, chemical, or infectious characteristics.

Hazardous wastes are defined under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), as a solid waste, or combination of solid waste, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Waste may be classified as hazardous due to its toxicity, reactivity, ignitability, or corrosivity.

Waste disposal activities at or near the Tijuana River FCP were identified to determine areas where industrial processes occurred, solid and hazardous wastes were stored, disposed, or released; and hazardous materials or petroleum or its derivatives were stored or used. A data search of waste storage and disposal sites was conducted on November 11, 2016 using NEPAassist, an internet service provided by USEPA (USEPA 2016). NEPAassist uses interactive GIS maps to display facility-based environmental information as reported to the USEPA. The following facility types were queried for the Tijuana River FCP area:

- Superfund Sites: specific facilities designated as Superfund sites by the USEPA, which is a federal program designed to fund the cleanup of sites contaminated with hazardous substances and pollutants.
- Toxic Release Sites: specific facilities regulated by the USEPA that release toxic substances into the environment, listed in the Toxics Release Inventory database.
- Water Dischargers: USEPA-regulated municipal and industrial wastewater treatment facilities discharging water into rivers, streams, lakes, and other waterways.
- Hazardous Waste Sites: USEPA-regulated RCRA sites and/or facilities that handle materials designated as hazardous waste.
- Brownfields Sites: Former industrial or commercial facilities that may still be contaminated by hazardous wastes but are being redeveloped with appropriate uses.

The NEPAassist search included the Tijuana River FCP area and an approximate 3,000-foot radius around the periphery of the project area. No Superfund sites, toxic release sites, brownfields, nor National Pollutant Discharge Elimination System (NPDES) water dischargers were identified for the Tijuana River FCP area. Within 3,000 feet of the periphery of the project area, one NPDES water discharger (SBIWTP) and 10 hazardous waste sites were identified.

The USIBWC has spill prevention, control, and countermeasures (SPCC) and storm water pollution prevention plans for its operations at the nearby SBIWTP. These plans require routine inspections (using checklists included in the plan) of a range of areas, tanks, and containers at the facility (USIBWC 2008). The USIBWC does not have separate SPCC or other management plans for flood control operations.

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

3.6.2.1.1 Air Quality

Potential impacts to air quality are considered significant if the Proposed Action would:

- Increase ambient air pollution above any NAAQS;
- Contribute to an existing violation of any NAAQS; or
- Interfere with or delay timely attainment of NAAQS.

Potential impacts to air quality from the Proposed Action would be short term in nature and would not be significant. The short-term impacts would occur from construction activities associated with the movement of heavy equipment during the North Levee enlargement, North Levee embankment protection, rodent burrow repair and mitigation, and removal of sediment/debris from the concrete-lined portion of the low flow channel. Construction activities would be temporary and would occur in localized areas. Contaminants generated from construction would include increased wind-borne dust (i.e., fugitive dust), particulate matter, and vehicle emissions.

Construction equipment, such as a bulldozer, loader, compactor, and haul truck would emit carbon monoxide, nitrogen oxides, volatile organic compounds, sulfur, and particulate matter during the short-term period of construction. The following are the assumptions for construction emissions (URS 2012a):

- North Levee enlargement would require a dozer (105 HP), loader, compactor, and haul truck for 105 days. The project would excavate, haul, place and compact approximately 9,400 cubic yards of material.
- North Levee embankment protection would require a dozer, loader, compactor, and haul truck for 70 days. The project would move approximately 920 tons of riprap and approximately 1,400 cubic yards of earth cut and fill material.
- Rodent burrow repair and mitigation would require a dozer and compactor for 7 days.
- Removal of sediment/debris would require a dozer, loader, compactor, and haul truck for 70 days. The project would remove about 7,600 cubic yards of material.

Assuming that a 105 HP dozer would be required for 252 days at 8 hours per day, the total nitrogen oxides emissions would be approximately 0.63 ton. This assumes a Tier 3 engine that emits the emission standard of 3.0 grams/bhp-hr (DieselNet 2016)

BMPs would be implemented to minimize generation of fugitive dust and diesel particulate matter and exhaust emissions. Within the construction site, appropriate BMPs would be identified that would provide optimum dust suppression. BMPs typically utilize (but are not limited to) either wind speed reduction or water suppression strategies (or both) during construction by fencing or wetting areas of soil disturbance. Typical BMPs to minimize diesel exhaust emissions can include utilizing USEPA-registered particulate traps and other appropriate controls to reduce emissions of diesel particulate matter, locating construction equipment and staging zones away from sensitive receptors such as children and the elderly, using low

sulfur fuel, reducing unnecessary idling from heavy equipment, using newer and cleaner equipment, and periodically inspecting the work sites to ensure that construction equipment is properly maintained at all times.

Section 176(c)(1) of the *Clean Air Act* requires federal agencies to ensure that their actions conform to applicable implementation plans for the achievement and maintenance of the NAAQS for criteria pollutants. To achieve conformity, a federal action must not contribute to new violations of standards for ambient air quality, increase the frequency or severity of existing violations, or delay timely attainment of standards in the area of concern (for example, a state or a smaller air quality region). Federal agencies prepare written Conformity Determinations for federal actions that are in or that affect NAAQS nonattainment or maintenance areas when the total direct or indirect emissions of nonattainment pollutants (or their precursors in the case of ozone) exceed specified thresholds. Conformity with the USEPA-approved state implementation plan is demonstrated if the project emissions fall below the threshold value *de minimis* emissions. The Proposed Action in the SDAB is located in an area that has been designated as a moderate nonattainment area for ozone (8-hour standard). The *Clean Air Act* conformity threshold values for this area are 100 tons per year for the ozone precursors nitrogen oxides and volatile organic compounds. Due to the short duration of construction, the Proposed Action would not produce emissions that are greater than the threshold *de minimis* values for criteria pollutants as described above. Therefore, the Proposed Action falls into conformity with the USEPA-approved state implementation plans and a written Conformity Determination is not required.

Long-term impacts associated with the Proposed Action are not likely to occur. No additional long-term sources of air pollutants would be created by the Proposed Action and the existing maintenance activities would not be significantly changed after the construction is completed.

3.6.2.1.2 Noise

Noise impacts are evaluated with respect to the potential for:

- Annoyance. Noise can impact the performance of various everyday activities such as communicating and watching television in residential areas. Sound levels that cause annoyance vary greatly by individual and background conditions.
- Hearing hazard. The Occupational Safety and Health Administration has identified the maximum permissible continuous noise level that workers may be exposed to without controls is 90 A-weighted decibels (dBA) for a duration of 8 hours per day [29 CFR 1910.95(b)(2)]. Whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 dBA, a hearing conservation program must be administered [29 CFR 1910.95(c)(1)]. These values are for a duration of 8 hours. Employees can be exposed to greater sound levels for shorter durations.

Sensitive noise receptors near the project area include residences, educational facilities, places of worship, and the Tijuana River Valley Regional Park which includes habitat for federally listed bird species. Section 3.2.2.1 discusses noise impacts on wildlife. A residential community is located along Camino de la Plaza north and east of the North Levee. The nearest residence to the area where the North Levee would be enlarged is approximately 160 feet and to where the North Levee embankment protection work would occur is approximately 250 feet. The nearest school is Willow Elementary School, approximately

0.4 mile north of the sediment removal location. The nearest place of worship, Salon del Reino de los Testigos de Jehova, is also approximately 0.4 mile north of the sediment removal location.

Potential noise impacts would be short term and would occur during construction activities associated with the use of heavy equipment during the North Levee enlargement, North Levee embankment protection, rodent burrow repair and mitigation, and removal of sediment/debris. Construction activities would occur in localized areas. Construction equipment, such as a bulldozer, loader, compactor, and haul truck could be used. This type of construction equipment generates noise levels of about 82 dBA to 88 dBA at 50 feet (Hanson et al. 2006). The magnitude of construction noise impacts would depend on the type of construction activity, the noise level generated by various pieces of construction equipment, the duration of the activity, the distance between the activity and noise-sensitive receptors, and any shielding effects provided by local barriers and topography (Hanson et al. 2006). A reasonable but conservative assumption is that three pieces of loud equipment would operate simultaneously and continuously for one hour or more. The combined sound level of three pieces of the loudest equipment (loader, truck, and bulldozer) is 91 dBA measured at 50 feet.

Sound levels naturally *attenuate* due to distance. The energy in sound waves (and thus the sound intensity) drop with the square of the distance to the sound source. Thus, for stationary sources of noise, sound levels attenuate 6 decibels per doubling of distance (Hanson et al. 2006). A sound level of 91 dBA would attenuate to approximately 81 dBA at 160 feet (the nearest residence to the levee enlargement), 77 dBA at 250 feet (the nearest residence to the embankment protection), and 58 dBA at 0.4 mile (nearest school and place of worship). In addition to distance alone, sound levels are further attenuated by manmade noise barriers, buildings, or by vegetation (Hanson et al. 2006).

Noise and sound levels would be typical of construction activities and would be intermittent. The noise would be similar to the use of heavy equipment during existing periodic maintenance activities and would not represent a significant source of noise. Noise impacts would be lessened by confining construction activities to normal working hours and employing noise-controlled construction equipment to the extent possible. Occupational Safety and Hazard Administration standards for noise would be met to protect workers from hearing hazard during construction.

No new long-term sources of noise would be introduced in the project area. The existing sources of noise discussed in Section 3.6.1.2.2 would remain.

3.6.2.1.3 Public Health and Environmental Hazards

Potential impacts to public health and environmental hazards are considered significant if the Proposed Action would:

- Result in noncompliance with applicable Federal and state regulations;
- Contribute contamination in the project area resulting in adverse effects to human health; or
- Increase the amounts of generated or procured hazardous materials or wastes beyond current permitted capacities or management capabilities.

Under the Proposed Action, the North Levee would be enlarged and stabilized, rodent burrows would be repaired, and channel sediments would be removed. In order to accomplish this, the use of motorized equipment containing fuel, oil, grease, and hydraulic fluid would be necessary. Implementing established industry BMPs for controlling releases of these substances would reduce the possibility of accidental releases of these products. Preventive maintenance and daily inspections of the equipment would ensure that any releases of these hazardous materials are minimized. Safety procedures described in the SPCC Plan developed for construction would be adhered to. Should an accidental release or spill of hazardous substances occur, procedures within the SPCC Plan would be followed to minimize potential impacts. Further, during construction activities, industry BMPs would be utilized to prevent the transport of sediment, trash, or construction debris to prevent impacts to downstream plant, animal, and aquatic communities. Rodenticides may be used to prevent additional rodent burrowing. If used, rodenticides would be applied by a licensed applicator and the appropriate rodenticide would be chosen based on the prevailing conditions. Rodenticides would be on private property, placed in bait boxes or burrows to limit human exposure. No significant impacts from hazardous materials or waste would occur as a result of the Proposed Action.

The Tijuana River FCP would continue to be managed in accordance with applicable health and environmental compliance requirements. The Proposed Action would not adversely affect any USEPA-regulated hazardous materials, waste storage and disposal, or water discharge sites. Likewise, none of these sites would adversely affect the Proposed Action, primarily due to their distance and in some cases, the containment systems in place. The Proposed Action would not result in any increases in exposure to contamination on the site, and there are no ongoing remediation activities at the Tijuana River FCP. For these reasons, adverse impacts to public health and environmental hazards would not be expected to occur.

3.6.2.2 No Action Alternative

3.6.2.2.1 Air Quality

Under the No Action Alternative, no changes or impacts would occur to air quality. No construction activities would be performed on the levee system and current management practices would not change. Consequently, the No Action Alternative would not result in any changes in the generation of air pollutant emissions during operations and maintenance activities. A USEPA General Conformity Determination would not be required.

3.6.2.2.2 Noise

Under the No Action Alternative, no changes to existing noise levels would occur. No construction activities would be performed on the levee system and current management practices would not change. The existing sources of noise discussed in Section 3.6.1.2.2 would remain.

3.6.2.2.3 Public Health and Environmental Hazards

Hazardous material and waste practices of the USIBWC in the Tijuana River FCP are in compliance with applicable state and federal regulations. Under the No Action Alternative, the Tijuana River FCP would continue to be in compliance. There would be no changes to the levee system, as it would not be rehabilitated. Therefore, no impacts to public health and environmental hazards would occur.

4.0 CUMULATIVE IMPACTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.1 Cumulative Impacts

The CEQ regulations (40 CFR 1508.7) require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts on environmental resources result from incremental effects of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken 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 proposed, under construction, recently completed, or anticipated to be implemented in the foreseeable future.

4.1.1 Past, Present, and Reasonably Foreseeable Actions

USIBWC reviewed information on past, present, and reasonably foreseeable future projects and actions that could result in impacts to a particular resource over the same period and in the same general location as the Proposed Action. A review of current and proposed local, state, and federal activities in and near the project area identified three present or future projects within a 1-mile radius of the Tijuana River FCP. Present and reasonably foreseeable future actions that have been identified and are considered in the analysis of cumulative impacts are listed below.

- The SBIWTP is currently under construction until November 2017. The construction involves three secondary sedimentation basins and two flow equalization basins.
- One present activity and two future activities were identified by the U.S. Customs and Border Protection.
 - Mowing of vegetation along levees to maintain visibility (present).
 - Replacement of fencing along the levees.
 - Vegetation control west of the Dairy Mart Bridge. U.S. Customs and Border Protection plans to use an integrated pest management approach for controlling vegetation in the area to improve surveillance capabilities. Management actions include a combination of mechanical, chemical, biological, and grazing methods and would be outlined and analyzed in an EA.

4.1.2 Cumulative Impacts Summary

4.1.2.1 Proposed Action

Water Resources. The Proposed Action and present and future construction projects are subject to state permitting to ensure that impacts to water quality do not occur. This permitting process and associated BMPs would reduce the potential for adverse cumulative impacts to water quality. In addition, the levee maintenance and sediment removal along with vegetation control and improvements to the SBIWTP would beneficially impact water quality in the area. The vegetation management planned by the U.S. Customs and Border Protection, along with the Proposed Action, would beneficially cumulatively impact flood control. No cumulative impacts to groundwater or hydrology are expected.

Biological Resources. The Proposed Action and present/future actions identified in the Tijuana River FCP area have the potential to impact wildlife due to disturbance from construction and have the potential to cause short-term, minor, adverse impacts on migratory bird species. Adherence to timing of construction (avoidance of nesting season) and the spatial and temporal separation of the project activities would reduce any cumulative impacts to insignificant levels. No suitable habitat for threatened and endangered species would be impacted by most of the projects. However, the habitat downstream of Dairy Mart Road is designated as critical habitat for the Least Bell's vireo. Vegetation impacts caused by the U.S. Customs and Border Protection vegetation management project would be minimized through BMPs and timing of the vegetation management and would be addressed in the EA for that project. Therefore, cumulative impacts are not likely to adversely affect any threatened or endangered species.

Land Use. Cumulative impacts to land use are not expected as the Proposed Action and potential future projects are compatible with current land uses.

Cultural Resources. The Proposed Action and other future projects would not affect any known archeological resources within the area. The projects all involve surface disturbance, most in previously disturbed areas. With mitigation as required for discovery of any previously undiscovered cultural material, impacts to cultural resources would be avoided. For this reason, cumulative impacts to cultural resources are not expected.

Socioeconomic Resources and Transportation. When combined with the other present and future projects, the Proposed Action would not contribute to any long-term cumulative impacts to socioeconomics or transportation. Rehabilitation of the levees and improvements to the wastewater treatment plant would be beneficial cumulatively to the surrounding communities. Although increase in traffic from construction would occur, temporal separation of the projects would reduce any cumulative impacts and together the projects would not cause long-term changes to traffic volumes or patterns.

Environmental Health

Air Quality. The other planned projects listed above would result in similar emissions and air quality impacts as the Proposed Action, which would be minor and primarily temporary. Air emissions from construction equipment would not exceed the thresholds for any of the significance criteria. Cumulative impacts on local and regional air quality from construction activities related to the Proposed Action and other proposed and current projects would not be expected to adversely affect regional air quality.

Noise. Levee enlargement and bank protection construction would cause increased short-term localized noise. It is unlikely that all of the planned construction-related projects would occur simultaneously nor are the construction areas close to one another. Therefore, the noise receptors (i.e., people living and working near the planned projects) would only be impacted by some of the projects, but not all of them. Cumulative impacts to noise would be minor, localized, and temporary.

Public Health and Environmental Hazards. Historically, the Tijuana River water has been contaminated by raw sewage, sediment, and debris. Sediment removal, erosion control of the levees, and the improvements to the SBIWTP would provide beneficial cumulative impacts to water quality and therefore to public health.

Herbicide and rodenticide usage would be spatially and temporally separated within the Tijuana River area. Application by licensed applicators and the use of appropriate chemicals would reduce the chance of cumulative environmental hazards. Adherence to BMPs and any SPCC plans would also reduce any potential cumulative impacts from the Proposed Action when combined with present and future projects.

4.1.2.2 No Action Alternative

Under the No Action Alternative activities to improve or rehabilitate the levee system would not occur. Therefore, the No Action Alternative would not result in any cumulative effects.

4.2 Irreversible and Irrecoverable Commitment of Resources

NEPA CEQ regulations require environmental analyses to identify “...any irreversible and irretrievable commitments of resources that would be involved in the proposal should it be implemented” (40 CFR Section 1502.16). A commitment of resources is irreversible when its primary or secondary impacts limit the future options for a resource or limit those factors that are renewable only over long periods of time. Examples of nonrenewable resources are minerals, including petroleum. An irretrievable commitment of resources refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations. An example of an irretrievable resource is the loss of a recreational use of an area or the disturbance of a cultural site. While an action may result in the loss of a resource that is irretrievable, the action may be reversible. Irreversible and irretrievable commitments of resources are primarily related to construction activities.

For the Proposed Action, resources consumed during construction, including labor, fossil fuels, and construction materials (soil and rip rap), would be committed for the life of the project. Non-renewable fossil fuels would be irretrievably lost through the use of gasoline- and diesel-powered construction equipment. Irretrievable commitment of building materials for construction of the Proposed Action would also occur. The expenditure of funds from USIBWC would also be irreversible.

The Proposed Action would continue to commit the levee areas around the Tijuana River FCP for future flood control and retention of the previously disturbed area would continue. Although these resources (e.g., land, soils) could be reclaimed in the future, it is unlikely that they would be restored to their original conditions and functionality. Therefore, these commitments are considered irreversible. Implementation of BMPs used during construction would reduce the potential for the irreversible or irretrievable loss of natural resources as a result of the Proposed Action.

5.0 CONCLUSIONS

Direct, indirect, and cumulative impacts of the Proposed Action and No Action Alternative have been considered. The Proposed Action would cause short-term impacts during construction activities to water quality, biological resources, transportation, air quality, and noise. No long-term adverse impacts would occur. Beneficial impacts to flood control and the San Ysidro community, which has a population with a high percentage of minorities and persons with low-income, would be realized by rehabilitating the levees to perform in a 100-year flood event. Potential beneficial impacts to biological resources may result from removal of sediment and debris and reduced potential for sedimentation downstream of the Tijuana River FCP. No impacts to land use, cultural resources, regional economics, or public health and environmental hazards are expected. The evaluation performed within this EA concludes that there would be *no significant impact* to the human environment as a result of the implementation of any of the alternatives. Therefore, the issuance of a Finding of No Significant Impact is warranted, and preparation of an EIS is not required.

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APPENDIX A

Consultation



INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

November 21, 2016

G. Mendel Stewart, Field Supervisor
U.S. Fish and Wildlife Service
Carlsbad Fish & Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008
Phone: (760) 431-9440

Subject: Informal Consultation for the Rehabilitation of the Levee System in the Tijuana River
Flood Control Project

Dear Mr. Stewart:

The U.S. Section of the International Boundary and Water Commission (USIBWC) requests informal consultation with the U.S. Fish and Wildlife Service (USFWS) for the rehabilitation of the levee system in the Tijuana River Flood Control Project (FCP) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, the Bald and Golden Eagle Protection Act (BGEPA), and the Migratory Bird Treaty Act (MBTA).

Project Background

The USIBWC operates and maintains the Tijuana River FCP, located in southern San Diego County, California (Attachment A, Figure 1). It consists of a levee system that runs along a modified stream channel 2.3 miles long, extending from the international border to the start of the natural Tijuana River channel. The floodway between the north and south levees encompasses approximately 400 acres. The purpose of the Proposed Action is to rehabilitate the two levees to ensure they will perform during a 100-year flood event and protect the surrounding communities. The North Levee is approximately 2-miles long. The North Levee extends from the international border to the west for 5,400 feet, makes a 90-degree turn north and travels along Camino De La Plaza Road for approximately 4,000 feet, and turns west for approximately 1,200 feet where it terminates at Dairy Mart Road. The South Levee is approximately 1.9-miles long. The South Levee extends from the international border to Dairy Mart Road. The South Levee consists of three segments: 1) a concrete-lined section extending approximately 1,200-feet downstream from the international border, 2) a section protected with grouted stone for about 4,000-feet downstream of the concrete-lined section, and 3) a section protected with riprap that was realigned around the South Bay International Wastewater Treatment Plant (SBIWTP) to Dairy Mart Road, approximately 4,800-feet long.

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(915) 832-4100 • Fax: (915) 832-4190 • <http://www.ibwc.gov>

The Tijuana River FCP, upstream of Dairy Mart Road, has been impacted by urban development, vegetation clearing for border patrol operations, and agricultural practices. Currently, the northern portion of the FCP is leased for agricultural production as a sod farm. The low-flow channel is normally dry as dry-weather flows are currently intercepted at the border for treatment at the USIBWC-operated SBIWTP, and the Tijuana River is considered ephemeral. Vegetation within the FCP consists of non-native grassland or disturbed/ruderal communities and is usually kept less than 2-feet tall for flood control purposes. Downstream of Dairy Mart Road are areas of Southern Willow Scrub land, Mule Fat Scrub and freshwater marsh, interspersed with disturbed floodplain and other types of disturbed land (see photos in Attachment A).

A freshwater emergent wetland is classified at the northwest end of the project area where the river crosses under Dairy Mart Road and into the Tijuana River Valley Regional Park. No work is planned in the area and no impacts to the wetland would occur.

Proposed Action

The USIBWC conducted a geotechnical analysis and engineering evaluation of both levees to determine requirements to provide reasonable assurance that the levees will perform during a 100-year flood event. The Proposed Action is consistent with these requirements and consists of the activities listed below.

North Levee enlargement: The North Levee is deficient in the required freeboard at the westerly end and at one location near the end of the concrete channel. Freeboard of a levee is defined as the height of the levee that extends above the design flood level. It serves as a factor of safety for containing water in the river without overtopping the levee. The area of deficient freeboard extends east from Dairy Mart Road for about 2,250 feet. The Proposed Action would increase the height of the levee by placing embankment fill on the top and the landside slope of the existing levee. The right-of-way and existing levee crest are sufficiently wide that this can be accomplished without filling beyond the existing riverside slope of the levee. The width of the top of the levee would be a minimum of 24-feet wide. The existing pavement or gravel surfacing on the levee crest would need to be removed prior to placement of the new embankment fills. Pavement or other surfacing would be placed on the levee crest once the embankment is enlarged.

North Levee embankment protection: Erosion continues to persist near the 90-degree bend in the North Levee. To protect the embankment, buried riprap would be placed below the riverside toe in a localized area. Buried riprap would be placed about 18 inches below the ground surface of the levee toe.

Rodent burrow repair and mitigation: Ground squirrels, most likely California ground squirrels, have damaged both levees by creating burrows. Squirrels are attracted to levees because the higher ground allows them to observe potential predators better from their burrows. USIBWC would

repair shallow rodent burrows by re-compacting the surface. For deeper rodent burrows, disturbed soil would be removed and replaced with a properly compacted fill. Measures to prevent additional burrowing may include use of the following:

- Erosion control blankets, woven textiles, turf reinforcement, cellular mats, or other alternative armor materials on the landside slopes.
- Structural or hardened features on riverside slopes, such as riprap, concrete facing, revetment mats, gabions, large gauge wire mesh, and mechanically stabilized earth walls. Hardened features would not be used on landslide slopes so as not to impair levee inspections.
- Bentonite clay slurry grout or a 90 percent/10 percent concrete slurry injection to backfill the rodent holes.
- Rodent control through fumigants, toxicants, or bait stations. Examples of fumigants that have been used for ground squirrel control include aluminum phosphide and gas cartridges. Aluminum phosphide is a Restricted Use Pesticide and can only be purchased and applied by a certified pesticide applicator. Zinc phosphide and two anticoagulants, chlorophacinone and diphacinone, are registered for ground squirrel control. Zinc phosphide is also a Restricted Use Pesticide. A certified pesticide applicator would be consulted for specific recommendations and prevailing conditions (e.g. soil moisture, vegetation present) would be taken into account to determine the most effective pesticide to use.

Excavation of sediment: Dredging in the floodplain would not occur under the Proposed Action; however, recent hydrological modeling has shown that sediments in the low flow channel up to the energy dissipators should be removed to improve flow. See figures for location.

Threatened, Endangered, and Candidate Species and Critical Habitat

USIBWC accessed the USFWS Information, Planning, and Conservation Online system (<http://ecos.fws.gov/ipac/>) on 19 October 2016 to determine if any federally-listed species potentially occur in the vicinity of the Proposed Action. The following species are federally listed in San Diego County (Table 1).

Table 1. Federally Listed, Proposed, and Candidate Species Known to or That May Occur in San Diego County, California

Common Name	Scientific Name	Federal Listing	Habitat Preference
Crustaceans			
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	E	Vernal pools, ponds and other ephemeral pool-like bodies of water
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	E	Vernal pools, ponds and other ephemeral pool-like bodies of water
Insects			
Quino checkerspot butterfly	<i>Euphydryas editha quino</i> (= <i>E. e. wrighti</i>)	E	Patchy scrublands
Birds			
California least tern	<i>Sterna antillarum browni</i>	E	Coastal areas and open beaches
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	T	Coastal sage scrub habitats
Least Bell's vireo*	<i>Vireo bellii pusillus</i>	E	Willow-dominated riparian habitats for breeding
Light-footed clapper rail	<i>Rallus longirostris levipes</i>	E	Coastal salt marshes
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	Dense riparian habitats
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T	Flat, open coastal beaches, in dunes, and near stream mouths
Mammals			
Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	E	Predominantly found on sandy substrates within coastal sage scrub habitats
Flowering Plants			
California orcutt grass	<i>Orcuttia californica</i>	E	Vernal pools
Otay Mesa-mint	<i>Pogogyne nudiuscula</i>	E	Vernal pools on coastal mesas
Otay tarplant	<i>Deinandra</i> (= <i>Hemizonia</i>) <i>conjugens</i>	T	Open coastal sage scrub and native and non-native grasslands in clay soils
Salt marsh bird's-beak	<i>Cordylanthus maritimus</i> <i>ssp. maritimus</i>	E	Salt marsh
San Diego ambrosia	<i>Ambrosia pumila</i>	E	Upper terraces of rivers and drainages
San Diego button-celery	<i>Eryngium aristulatum</i> <i>var. parishii</i>	E	Vernal pools
San Diego thornmint	<i>Acanthomintha ilicifolia</i>	T	Restricted to gabbro soils within coastal sage scrub, chaparral, and native grassland
Spreading navarretia	<i>Navarretia fossalis</i>	T	Freshwater-marsh, vernal-pools

T = Threatened

E = Endangered

* = designated critical habitat in study area

Existing Conditions for Listed Species

Riverside fairy shrimp are generally restricted to vernal pools and other non-vegetated ephemeral (i.e., containing water a short time) pools greater than 12 inches in depth in Riverside, Orange, and San Diego counties in southern California, and northwestern Baja California, Mexico. Populations

have been documented east of I-5 and the project site in Otay Mesa. Riverside fairy shrimp generally occur in groups of vernal pools referred to as vernal pool complexes. San Diego fairy shrimp are generally restricted to vernal pools and other non-vegetated ephemeral (i.e., containing water a short time) basins 2 to 12 inches in depth in coastal southern California and northwestern Baja California, Mexico. Occupied vernal pool complexes for the San Diego fairy shrimp occur east of I-5 in Otay Mesa and one occurrence in the Tijuana Slough National Wildlife Refuge. Following winter rainstorms, vernal pools form in depressions above an impervious soil layer or layers. Water evaporates from these pools during the spring and early summer. Vernal pools within a complex are generally hydrologically connected, such that water flows over the surface from one vernal pool to another and/or water flows and collects below ground such that the soil becomes saturated with water, thus filling the vernal pool with water. The entire floodplain of the Tijuana River in the study area is highly disturbed and large portions of the floodplain are farmed at various times. Vernal pool complexes do not exist in the levee area of the Proposed Action and therefore impacts to fairy shrimp are not expected.

Quino checkerspot butterfly's historical range included much of non-montane southern California: southwestern Ventura; southwestern San Bernardino; Los Angeles; Western Riverside; and San Diego counties. Quino habitat is characterized by patchy shrub or small tree landscapes with openings of several meters between large plants, or a landscape of open swales alternating with dense patches of shrubs. Current occurrences complexes (estimators of approximate population location and population membership) for the species are located in the Otay Mesa area east of the project site. This species is unlikely to exist in the project area due to lack of habitat.

California least terns are the smallest of the North American terns living along the coast. This species nests in open beaches free of vegetation, and nesting is currently limited to colonies in San Francisco Bay, Sacramento River delta, and areas along the coast from San Luis Obispo County to San Diego County. Least terns need cleared, sandy areas for nesting and depend on estuaries, lagoons, and other open water areas for hunting small fish. Terns are known to occur in the Tijuana Slough National Wildlife Refuge west of the project area.

The coastal California gnatcatcher is found only in coastal sage scrub generally dominated by California sagebrush, buckwheat, salvia, and prickly-pear cactus. The gnatcatcher forages through the shrubs and low trees searching for insects. Critical habitat lies east of the project area and this species has been known to occur in the Tijuana Slough National Wildlife Refuge.

Light-footed clapper rails prefer to nest in tidal marshes dominated by cordgrass. There are an estimated 100 pairs in San Diego County with breeding populations scattered throughout coastal lagoons and estuaries. The Tijuana River estuary is an especially critical site, supporting a record 80 pairs in 1999.

The Southwestern willow flycatcher is one of four currently recognized subspecies of the willow flycatcher. The subspecies typically occurs in dense riparian vegetation on moist soils near slow-

moving or swampy water. In many cases, nest plants are rooted in or overhang standing water, and occupied sites are typically located along slow-moving stream reaches, at river backwaters, in swampy abandoned channels and oxbows, marshes, and at the margins of impounded water (e.g., beaver ponds, inflows of streams into reservoirs). Critical habitat for the flycatcher has been designated but does not occur within the project area.

The Western snowy plover is a threatened small shorebird. The species nests in a shallow scrape in sand, usually lined with small pebbles and shells along the shores, peninsulas, offshore islands, bays, estuaries, and rivers of the Pacific Coast. Snowy plovers are year round residents of San Diego County and nest along the coastline with breeding concentrations in Camp Pendleton and the Silver Strand.

Within the County of San Diego Regional Park, state and federally endangered species include migrant individuals of the southwestern willow flycatcher, pairs of the light-footed clapper rail within the ponds to the west of Dairy Mart Road, and breeding populations of Coastal California gnatcatchers in the upland areas (2008 biological survey). Habitat for these five avian species does not occur in the disturbed habitats of the Tijuana River FCP and therefore no impacts from the Proposed Action are expected.

The final avian species that has the potential to occur in the project area is the Least Bell's vireo. This species is the western-most subspecies, breeding entirely within California and northern Baja California. Vireos can occupy a variety of habitats during the winter including mesquite scrub within arroyos, palm groves, and hedgerows bordering agricultural and residential areas; however, breeding habitat is restricted to willow-dominated riparian areas. Early to mid-successional riparian habitat is typically used for nesting by the Least Bell's vireo because it supports the dense shrub cover required for nest concealment as well as a structurally diverse canopy for foraging. Critical habitat for this species occurs at the north end of the project area (Figure 2) and breeding populations of the Least Bell's vireo occur within the County of San Diego Regional Park. Designated critical habitat extends south of Dairy Mart Road, however, no habitat for the vireo occurs within the floodplain of the Tijuana River FCP (see photos in Attachment A). Although the Tijuana River FCP lacks suitable habitat for the Least Bell's vireo, critical habitat and potential habitat occur just to the north of the project area; therefore, this species is considered further in the analysis.

The Pacific pocket mouse is endemic to the coast of southern California. This subspecies of pocket mouse historically occupied coastal strand, coastal dunes, river alluvium, and coastal sage scrub habitats within 4 kilometers of the ocean. The species is currently restricted to coastal sage scrub habitat. The Pacific pocket mouse distribution is very limited in southern California with four known populations documented since its listing in 1994. Habitat for this species does not occur within the project area and therefore no impacts to this species are expected.

Eight listed plant species were listed as potentially occurring in the Tijuana River FCP area. California Orcutt grass is a tufted annual grass restricted to vernal pools in southern California and a few occurrences in northern Baja California, Mexico. At the time of listing, *O. californica* was thought to be restricted to four general localities: the Santa Rosa Plateau, Skunk Hollow, and Salt Creek (now identified as the Stowe Pools) in Riverside County, and Otay Mesa in San Diego County. The species was likely never widespread, compared to other obligate plant species, because deeper pools with longer inundation times (longer seasonal ponding) are less common in southern California. Preferred habitat for this species does not occur in the project area and therefore no impacts are expected.

Otay Mesa-mint is restricted to vernal pools and has been documented east of the project area in Otay Mesa. It is often found with other federally listed species, including San Diego button-celery, California Orcutt grass, and Riverside fairy shrimp. Habitat for this species does not occur within the Tijuana FCP; therefore, no impacts are expected.

Otay tarplant has a narrow ecological distribution and is endemic to southwestern San Diego County, California, and northwestern Baja California, Mexico. Known populations occur north of the project area. The species' distribution is strongly correlated to clay soils found in much of the Otay Ranch's Otay Valley Parcel (in eastern Chula Vista), and Otay Mesa (south of the Otay River and west of Otay Mountain) east of the project area. Populations occur in open coastal sage scrub and native and non-native grasslands; habitat is not found in the Tijuana FCP.

Salt marsh bird's-beak is a hemiparasitic halophytes found in disjunct coastal salt marshes of southern and central California and adjacent northern Baja California, Mexico. Plants have naturally patchy distributions in sites subject to only higher tidal influxes in coastal salt marshes. This species has been documented in the Tijuana estuary. The Tijuana FCP does not support salt marshes and therefore this species would not be impacted by the Proposed Action.

San Diego ambrosia is found primarily on upper terraces of rivers and drainages; however, several patches of the plant occur within the watershed of a large vernal (ephemeral) pool at the Barry Jones (Skunk Hollow) Wetland Mitigation Bank in Riverside County. Current distribution of extant population of the species occurs east of the Tijuana FCP.

San Diego button-celery currently occurs in 14 geographic areas in Riverside and San Diego counties. Although the species can be locally abundant, the loss of vernal pool habitat in San Diego County has dramatically decreased the distribution of San Diego button-celery. The closest known population occurs east of the Tijuana FCP in the Otay Mesa. This species is not likely to occur in the Tijuana FCP due to lack of preferred habitat.

San Diego thornmint is restricted to gabbro soils derived from igneous rock, and gray calcareous clay soils derived from soft calcareous sandstone and is endemic to San Diego County, California, and northwestern Baja California, Mexico. Current populations are located north and east of the project area. Preferred habitat for the species includes openings within coastal sage scrub,

chaparral, and native grassland on gentle southeast to west facing slopes. This species does not occur in the project area and would not be impacted by the Proposed Action.

In San Diego County, Spreading navarretia is typically found in vernal pools. In western Riverside County however, the species is associated with seasonally flooded alkali vernal plain habitat that includes alkali playa (highly alkaline, poorly drained), alkali scrub, alkali vernal pool, and alkali annual grassland components. The majority of the populations of spreading navarretia at the time of listing were concentrated at three locations: Otay Mesa in southern San Diego County, alongside the San Jacinto River in western Riverside County, and near Hemet in western Riverside County. Current distributions are well to the north and east of the project area and therefore no impacts to this species are expected.

No known bald eagle nesting territories have been documented in the project area, and the available habitat does not support bald eagle foraging or nesting. The project area also does not support habitat for nesting golden eagles.

Analysis of the Effects of the Actions

Although habitat for listed species does not occur within the project area, critical habitat for the Least Bell's vireo is designated at the northwest portion of the Tijuana FCP. Therefore impacts to the Least Bell's vireo are considered in this analysis. Potential impacts would be short term and executed in limited footprints throughout the Tijuana FCP depending on the activity. Increased noise and vibrations from construction and sediment removal activities may disturb the daily activities of the Least Bell's vireo and other migratory birds.

The use of rodenticides to remove ground squirrel populations has the potential to impact other non-target species if not properly applied. Ground squirrels could potentially die above ground exposing scavengers (e.g. coyotes and vultures) to low levels of the rodenticides.

Determination of the Effects from the Proposed Action

The enlargement of the North Levee occurs in close proximity to the Least Bell's vireo designated critical habitat as well as habitat for other migratory birds. The habitat immediately surrounding the levee, however, is composed of agricultural production within the floodplain and development. Best management practices (BMPs) employed during levee enlargement, including dust suppression and erosion control, as well as timing, would prevent adverse effects to the Least Bell's vireo and other migratory birds. Construction activities would occur outside the nesting season (April through July). Removing accumulated sediment and protecting the embankment would increase river flow and prevent future deposits of sediment upstream in the estuary.

If used, rodenticides would be applied by a licensed applicator and the appropriate rodenticide would be chosen based on the prevailing conditions. The use of spot baiting at burrows or bait boxes would reduce the exposure to non-target species. Although studies have shown that semi- and fossorial rodents tend to expire underground, there is a chance that some ground squirrels may

be located above ground after application. The treated area would be searched daily after application to reduce the exposure of scavengers to carcasses.

For these reasons, we conclude that conducting rehabilitation on the Tijuana FCP levees, *may affect, but is not likely to adversely affect* the Least Bell's vireo. No impacts to critical habitat would occur. USIBWC respectfully requests concurrence on this determination in compliance with Section 7 of the ESA. If you have any questions or require more information, please contact me at 915-832-4703 or wayne.belzer@ibwc.gov within thirty (30) days of receipt of this letter.

Sincerely,



Gilbert G. Anaya
Division Chief
Environmental Management Division

Attachment(s):

Attachment A- Project Area Maps and Photos

ATTACHMENT A

Project Area Maps and Photos

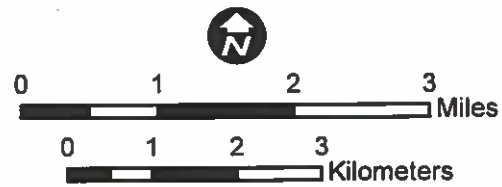


Figure 1. Tijuana River Flood Control Project Location



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, JSCA, AeroGRID, IGN, ICG, swisstopo, and the GIS User Community

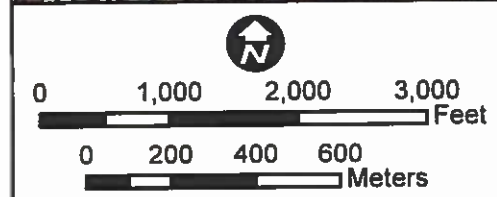
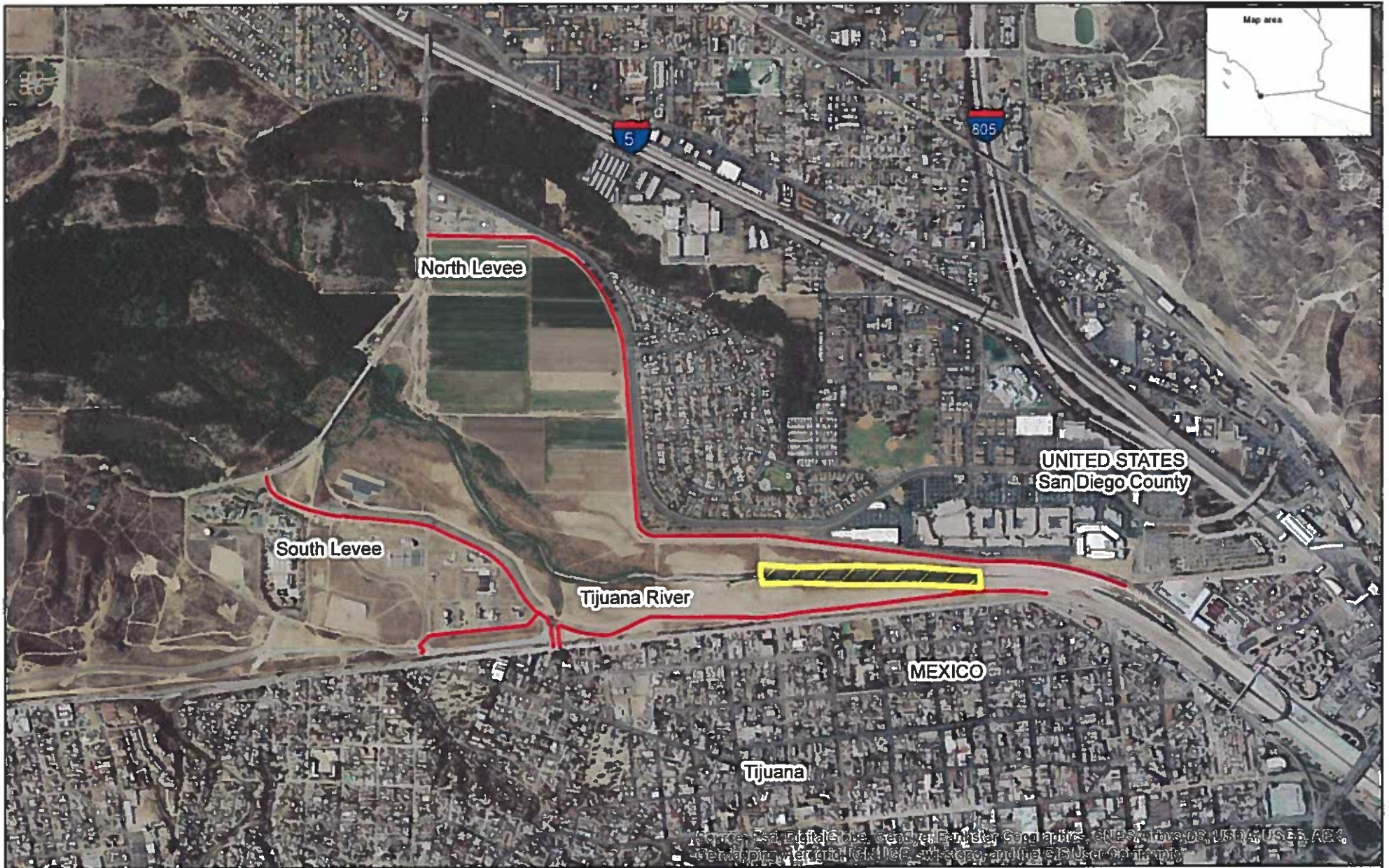


Figure 2. Location of Least Bell's Vireo critical habitat in relation to the Tijuana River Flood Control Project



Legend

- Levee
- Proposed Area of Sediment and Debris Removal

Figure 3. Proposed Area for Sediment and Debris Removal

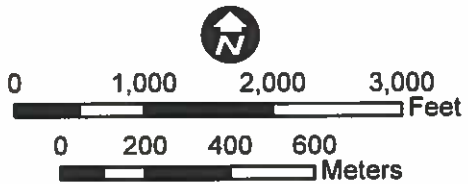




Figure 4 Upstream Reach of Tijuana River FCP
 Programmatic EIS for Improvements to the Tijuana River Flood Control Project



Floodplain habitat between the North and South Levees.



Sod farming in the floodplain of the Tijuana River looking west from North Levee.



Energy dissipator between the North and South Levees. Access road comes off of the North Levee for the border patrol to use.



Access roads used by the border patrol in the Tijuana FCP floodplain. Looking west from North Levee.



Ground squirrel burrows along the North Levee.



Tijuana River Valley Regional Park, west of Dairy Mart Road and the Tijuana FCP.



OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

November 23, 2015

Ms. Julianne Polanco
California State Historic Preservation Officer
1725 23rd Street
Suite 100
Sacramento, CA. 95816

Dear Ms. Polanco:

The United States Section of the International Boundary and Water Commission (USIBWC) requests consultation with the California Office of Historic Preservation (OHP). This pertains to the rehabilitation of the levee system in the Tijuana River Flood Control Project (FCP) pursuant to 36 CFR 800. A Final Programmatic Environmental Impact Statement was completed in 2008 and we are in the final stages of a draft Environmental Assessment (EA) for this project.

Project Background

The USIBWC operates and maintains the Tijuana River FCP, located in southern San Diego County, California (Attachment A, Figure 1). It consists of a levee system that runs along a modified stream channel 2.3 miles long, extending from the international border to the start of the natural Tijuana River channel. The floodway between the north and south levees encompasses approximately 400 acres. The Area of Potential Effects (APE) is to rehabilitate the two levees to ensure they will perform during a 100-year flood event and protect the surrounding communities. The North Levee is approximately 2-miles long. The North Levee extends from the international border to the west for 5,400 feet, makes a 90-degree turn north and travels along Camino De La Plaza Road for approximately 4,000 feet, and turns west for approximately 1,200 feet where it terminates at Dairy Mart Road. The South Levee is approximately 1.9-miles long. The South Levee extends from the international border to Dairy Mart Road. The South Levee consists of three segments: 1) a concrete-lined section extending approximately 1,200-feet downstream from the international border, 2) a section protected with grouted stone for about 4,000-feet downstream of the concrete-lined section, and 3) a section protected with riprap that was realigned around the South Bay International Wastewater Treatment Plant (SBIWTP) to Dairy Mart Road, approximately 4,800-feet long. These levees and the concrete-lined section were built from 1978 to 1979 by Kasler Corporation under contract with USIBWC.

The Tijuana River FCP, upstream of Dairy Mart Road, has been impacted by urban development, vegetation clearing for border patrol operations, and agricultural practices. Currently, the northern portion of the FCP is leased for agricultural production as a sod farm. The low-flow channel is normally dry as dry-weather flows are currently intercepted at the border for treatment at the USIBWC-operated SBIWTP, and the Tijuana River is considered ephemeral. Vegetation within the FCP consists of non-native grassland or disturbed/ruderal communities and is usually kept less

than 2-feet tall for flood control purposes. Downstream of Dairy Mart Road are areas of Southern Willow Scrub land, Mule Fat Scrub and freshwater marsh, interspersed with disturbed floodplain and other types of disturbed land (see photos in Attachment A). A freshwater emergent wetland is classified at the northwest end of the project area where the river crosses under Dairy Mart Road and into the Tijuana River Valley Regional Park. No work is planned in the area and no impacts to the wetland would occur.

Proposed Action

The USIBWC conducted a geotechnical analysis and engineering evaluation of both levees to determine requirements to provide reasonable assurance that the levees will perform during a 100-year flood event. The Proposed Action is consistent with these requirements and consists of the activities listed below.

North Levee enlargement: The North Levee is deficient in the required freeboard at the westerly end and at one location near the end of the concrete channel. Freeboard of a levee is defined as the height of the levee that extends above the design flood level. It serves as a factor of safety for containing water in the river without overtopping the levee. The area of deficient freeboard extends east from Dairy Mart Road for about 2,250 feet. The Proposed Action would increase the height of the levee by placing embankment fill on the top and the landside slope of the existing levee. The right-of-way and existing levee crest are sufficiently wide that this can be accomplished without filling beyond the existing riverside slope of the levee. The width of the top of the levee would be a minimum of 24-feet wide. The existing pavement or gravel surfacing on the levee crest would need to be removed prior to placement of the new embankment fills. Pavement or other surfacing would be placed on the levee crest once the embankment is enlarged.

North Levee embankment protection: Erosion continues to persist near the 90-degree bend in the North Levee. To protect the embankment, buried riprap would be placed below the riverside toe in a localized area. Buried riprap would be placed about 18 inches below the ground surface of the levee toe.

Excavation of sediment: Dredging in the floodplain would not occur under the Proposed Action; however, recent hydrological modeling has shown that sediments in the low flow channel up to the energy dissipators, located entirely in the concrete lined section of the flood control project, should be removed to improve flow. See figures for locations.

Cultural Sites

Cultural resources in the area of the APE consist of several sites that were recorded. Most of these are no longer in existence or located on private property and will not be impacted. In the North Levee location, Regional Environmental Consultants (Recon) conducted a Historic Properties Inventory in 1990 for the City of San Diego Clean Water Program. Site CA-SDI-4934 / 12962, consisted of 50 felsite flakes and two flaked stone tools with isolates recorded nearby. This site was located in an active gravel quarry north of the North Levee. The North Levee locations have been disturbed heavily since this report. The heavy disturbance that has taken place in the North

Levee area will have no adverse effect as we believe there are no cultural properties now in existence along this location.

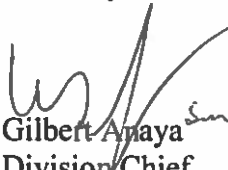
The South Levee areas are similar to the North Levee as this area has also been heavily disturbed. No sites are included in this location, but sites CA-SDI-11245, CA-SDI-4933 and CA-SDI-13486 are nearby but not impacted by this project or no longer in existence.

The USIBWC believes that no historic properties will be affected as this area has been highly disturbed in the past, including regular maintenance, sediment removal, and vegetation control. USIBWC projects are documented under *A Cultural Resources Overview for the Rio Grande and Tijuana River Flood Control Projects* prepared in 2005 by Geo-Marine, Inc. and *Final Programmatic Environmental Impact Statement Improvements to the Tijuana River Flood Control Project* prepared in 2008 by Parsons and are attached here for reference (Attachment B).

USIBWC asks for concurrence for the project to proceed as stipulated with no impacts to cultural or historical sites. All USIBWC projects will have a Field Environmental Monitor (FEM) as part of the project. Our FEM will have Cultural Resource experience in this area.

We look forward to our continuing consultation with CASHPO, and yourself as a point of contact on matters dealing with the FCP. Please feel free to contact Mr. Mark Howe, Cultural Resources Specialist, Environmental Management Division, at (915) 832-4767 or mark.howe@ibwc.gov for any assistance on this project.

Sincerely,



Gilbert Amaya
Division Chief
Environmental Management Division

Attachment(s):
As Stated

APPENDIX B

Distribution List

Distribution List

The following agencies and/or persons were notified when the Draft EA was available for review.

Federal Agencies

State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
430 G Street, #4164
Davis, CA 95616-4164

Area Manager
United States Bureau of Reclamation
Southern California Area Office
27708 Jefferson Ave., Suite 202
Temecula, CA 92590

Regional Administrator
Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

Doug Liden
Environmental Engineer
USEPA Mexico Border Office
610 W. Ash St. STE 905
San Diego, CA 92101

Senior Project Manager, Regulatory Division
U.S. Army Corps of Engineers
5900 La Place Ct. Suite 100
Carlsbad, CA 92008

Bureau of Land Management
California State Office
2800 Cottage Way, Suite W-1623
Sacramento, CA 95825-1886

G. Mendel Stewart, Field Supervisor
Carlsbad Fish and Wildlife Office
United States Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Patrick Gower
Carlsbad Fish and Wildlife Office
United States Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296

Supervisory Patrol Agent
U.S. Border Patrol – Imperial Beach Station
1802 Saturn Blvd.
San Diego, CA 92154

State Agencies

California State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812

Regional Water Quality Control Board
San Diego Region
2375 Northside Drive, Ste. 100
San Diego, CA 92108

California Department of Fish and Wildlife
South Coast Region 5
3883 Ruffin Road
San Diego, CA 92123

CA Department of Parks & Recreation
301 Caspian Way
Imperial Beach, CA 91932

California Coastal Commission
7575 Metropolitan Drive, #103
San Diego, CA 92108

Municipal

City of San Diego Env. Health
9325 Hazard Way
San Diego, CA 92123

City of San Diego Water Utilities
2797 Cominito Cbollas
San Diego, CA 92105

Mayor / City Manager
City of Imperial Beach
825 Imperial Beach Blvd.
Imperial Beach, CA 91932

Office of the Mayor, City of San Diego
202 C St., 11th Floor
San Diego, CA 92101

Mayor's Office
City of Coronado
1825 Strand Way
Coronado, CA 92118

San Ysidro Community Planning Group
Michael Freedman, Chair
3833 Via Del Bardo
San Ysidro, CA 92173-1557

Other

San Diego County Parks & Recreation
5500 Overland Ave #410
San Diego, CA 92123

Sierra Club, San Diego Chapter
3820 Ray St
San Diego, CA 92123

San Ysidro Native Plant Society
P.O. Box 1390
San Diego, CA 92112

Audubon Society
4010 Morena Blvd., Ste. 100
San Diego, CA 92117

Imperial Beach Eagle & Times
1116 Tenth Street
Coronado, CA 92118

Tijuana Sloughs Surf Club
753 Iris Ave
Imperial Beach, CA 91932

WILD COAST
757 Emory St. #161
Imperial Beach, CA 91932

Chris Peregrin
Tijuana River National Estuarine Research Reserve
301 Caspian Way
Imperial Beach, CA 91932

Surfrider Foundation San Diego County Chapter
9883 Pacific Heights Blvd
Suite D
San Diego, CA 92121