

Appendix D. Biological Resources Technical Report

This page intentionally left blank.

Biological Resources Technical Report

OC River Walk Project

February 2025

Prepared for:



**City of Anaheim
Community Services Department, Parks Division
200 S. Anaheim Boulevard, Suite 433
Anaheim, California 92805
Contact: Ana Straabe, Principal Project Planner**

Prepared by:



**2375 Northside Drive, Suite 125
San Diego, California 92108**

This page intentionally left blank.

Table of Contents

Acronyms and Abbreviations	v
Executive Summary	ES-1
Section 1 Introduction.....	1
1.1 Purpose of the Report	1
Section 2 Environmental Setting.....	3
2.1 Project Location	3
2.2 Project Description	3
2.3 Project Purpose.....	4
2.4 Land Use.....	4
2.5 Topography and Soils	5
2.6 Hydrology.....	5
2.7 Climate.....	6
Section 3 Regulatory Framework	9
3.1 Federal.....	9
3.2 State	10
3.3 Local	12
3.3.1 County of Orange Central and Coastal Subregion Natural Communities Conservation Plan/Habitat Conservation Plan.....	12
3.3.2 City of Anaheim General Plan.....	12
3.3.3 City of Orange General Plan.....	14
Section 4 Methods.....	17
4.1 Literature Review	17
4.2 General Biological Survey	17
4.2.1 Vegetation and Land Cover Type Mapping.....	17
4.2.2 Plant and Wildlife Species Observations.....	18
4.2.3 Aquatic Resources Delineation	18
4.3 Survey Limitations.....	18
Section 5 Results.....	21
5.1 Vegetation Communities and Land Cover Types.....	21
5.1.1 Aquatic Communities.....	22
5.1.2 Scrub and Riparian Scrub Communities	23
5.1.3 Woodland and Forest Communities.....	24
5.1.4 Disturbed/Developed Land Cover Types	24
5.2 Jurisdictional Aquatic Resources.....	25
5.3 Observed Species.....	26
5.3.1 Plant Species	26
5.3.2 Wildlife Species	26
5.4 Sensitive Species.....	27

5.4.1	Critical Habitat	30
5.4.2	Sensitive Plant Species Observed	30
5.4.3	Sensitive Plant Species Not Observed with a High Potential to Occur	30
5.4.4	Sensitive Wildlife Species Observed	31
5.4.5	Sensitive Wildlife Species Not Observed with a High Potential to Occur	33
5.4.6	Nesting Birds	34
5.4.7	Roosting Bats	35
5.4.8	Wildlife Corridors and Habitat Linkages	35
Section 6	Impact Analysis	37
6.1	Significance Thresholds and Definition of Impacts	37
6.1.1	Direct Impacts	37
6.1.2	Indirect Impacts	38
6.2	Threshold 1: Sensitive Plant and Wildlife Species	38
6.2.1	Guidelines for Determination of Significance	38
6.2.2	Impact Analysis	38
6.2.3	Mitigation Measures	42
6.2.4	Significance after Mitigation	49
6.3	Threshold 2: Sensitive Vegetation Communities	50
6.3.1	Guidelines for Determination of Significance	50
6.3.2	Impact Analysis	50
6.3.3	Mitigation Measures	51
6.3.4	Significance after Mitigation	51
6.4	Threshold 3: Jurisdictional Aquatic Resources	51
6.4.1	Guidelines for Determination of Significance	51
6.4.2	Impact Analysis	51
6.4.3	Mitigation Measures	53
6.4.4	Significance after Mitigation	53
6.5	Threshold 4: Wildlife Corridors and Habitat Linkages	53
6.5.1	Guidelines for Determination of Significance	53
6.5.2	Impact Analysis	53
6.5.3	Mitigation Measures	54
6.5.4	Significance after Mitigation	55
6.6	Threshold 5: Local Policies or Ordinances	55
6.6.1	Guidelines for Determination of Significance	55
6.6.2	Impact Analysis	55
6.6.3	Mitigation Measures	55
6.6.4	Significance after Mitigation	55
6.7	Threshold 6: Regional Conservation Planning	55
6.7.1	Guidelines for Determination of Significance	55
6.7.2	Impact Analysis	56

6.7.3	Mitigation Measures.....	56
6.7.4	Significance after Mitigation.....	56
6.8	Cumulative Impacts.....	56
6.8.1	Cumulative Threshold 1: Sensitive Plant and Wildlife Species.....	56
6.8.2	Cumulative Threshold 2: Sensitive Vegetation Communities	56
6.8.3	Cumulative Threshold 3: Jurisdictional Aquatic Resources.....	57
6.8.4	Cumulative Threshold 4: Wildlife Corridors and Habitat Linkages	57
6.8.5	Cumulative Threshold 5: Local Policies or Ordinances	57
6.8.6	Cumulative Threshold 6: Regional Conservation Planning	58
Section 7	References	59

Tables

Table 1.	Existing Land Use Acreages	4
Table 2.	City of Anaheim General Plan Green Element Consistency	13
Table 3.	City of Orange General Plan Natural Resources Element Consistency	14
Table 4.	Vegetation Communities and Land Cover Types on the Project Site and in the Survey Buffer.....	21
Table 5.	Jurisdictional Aquatic Resources on the Project Site and in the Survey Buffer (Acres).....	26
Table 6.	Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area	27

Appendices

- Appendix A. Figures
- Appendix B. Species Observed
- Appendix C. Aquatic Resources Delineation Report

This page intentionally left blank.

Acronyms and Abbreviations

°F	degrees Fahrenheit
amsl	above mean sea level
BIOS	Biogeographic Information and Observation System
BMP	best management practice
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGF	California Fish and Game Code
City	City of Anaheim
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
FESA	Federal Endangered Species Act
GIS	geographic information system
Harris	Harris & Associates
HCP	Habitat Conservation Plan
MBTA	Migratory Bird Treaty Act
MM	Mitigation Measure
NCCP	Natural Communities Conservation Plan
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OC River Walk	Orange County River Walk
OCWD	Orange County Water District
OHWM	Ordinary High Water Mark
Porter–Cologne	Porter–Cologne Water Quality Control Act
PRC	California Public Resource Code
Project	Orange County River Walk Project
RWQCB	Regional Water Quality Control Board
SAR1 Levee System (Upstream Reach)	Santa Ana River 1 Levee System
SR	State Route
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WL	Watch List

This page intentionally left blank.

Executive Summary

Harris & Associates (Harris) has prepared this Biological Resources Technical Report in support of the Draft Environmental Impact Report for the proposed OC River Walk Project (project). The project site consists of approximately 33 acres of land and approximately 77.8 acres of aquatic areas for a total of 110.8 acres. The majority of the project site is composed of a concrete-lined portion of the Santa Ana River corridor, Collin's Channel, and two Orange County Water District water detention basins (Burris Basin and Former Ball Road Basin). The remainder of the project site is urban and commercial land with small portions of open space vegetated with both native and non-native plant species. The project site is outside the County of Orange Central & Coastal Subregion Natural Communities Conservation Plan/Habitat Conservation Plan area. The project aims to transform the Santa Ana River corridor into an iconic location and experience to be currently known as OC River Walk. The project would be generally designed around the following objectives:

- Activate the existing recreational areas, pedestrian foot traffic, and bikeways in the project vicinity.
- Implement sustainable projects that will benefit and promote the community's health, recreation, economic, safety, entertainment, water supply, and natural resource needs.
- Ensure future uses are integrated to ensure that the projects connect and complement existing or planned recreational, entertainment and transportation facilities, and implement projects identified in the Master Plan to transform the river to create a visually appealing asset.
- Provide outdoor venues for recreation and entertainment while improving the ecology of the river corridor.

The analysis of biological resources was carried out through a review of existing maps, literature, and resource databases, and data was collected during the field survey conducted by Harris biologists. A general biological reconnaissance survey and a formal aquatic resources delineation were conducted by Harris in May 2023 to map vegetation communities and land cover types, document observed plant and wildlife species, evaluate the potential for occurrence of sensitive plant and wildlife species, and identify and document aquatic resources on the project site and within a 100-foot survey buffer surrounding the project site (herein referred to as the survey area). No focused or protocol surveys were conducted during the 2023 survey.

Nine vegetation communities and land cover types were identified in the survey area. Native vegetation and aquatic communities in the survey area are fresh water, emergent wetland, non-vegetated channel, Diegan coastal sage scrub, mulefat scrub (disturbed), and southern willow scrub. The survey area also includes non-native woodland. Two land cover types, disturbed habitat and developed land, were also observed in the survey area.

The results of the 2023 aquatic resources delineation determined that a total of 84.54 acres of non-wetland waters occur in the survey area that are potentially under the jurisdiction of the following agencies: the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife.

No sensitive plant species were observed in the survey area, and based on the literature and database review, no sensitive plant species were determined to have a high potential to occur in the survey area.

Four sensitive wildlife species were observed in the survey area during the biological survey: American white pelican (*Pelecanus erythrorhynchos*), double-crested cormorant (*Phalacrocorax auritus*), least Bell's vireo (*Vireo bellii pusillus*), and yellow warbler (*Setophaga petechial*). Two sensitive wildlife species, American peregrine falcon (*Falco peregrinus anatum*) and western mastiff bat (*Eumops perotis californicus*), were determined to have a high potential to occur in the survey area but were not observed during the biological resource survey. The survey area was determined to have a high potential to support nesting birds, protected under California Fish and Game Code and Migratory Bird Treaty Act, as well as sensitive roosting bats.

The project is required to be in compliance with all federal, state, and local regulations applicable to biological resources, including jurisdictional aquatic resources, as a condition of approval. The project could result in potentially significant direct and indirect impacts to sensitive wildlife species, including sensitive nesting birds and roosting bats. The project could result in potential impacts to five sensitive vegetation communities, including aquatic resources regulated by the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife. Mitigation would include the following measures: monitoring by a qualified biologist, adherence to required mitigation ratios for compensatory mitigation, revegetation of native habitats, and pre-construction sensitive bird surveys. All potentially significant impacts would be reduced to a less than significant level with implementation of mitigation measures. Consistency with federal, state, and local regulations and the application of mitigation measures would ensure that the project is consistent with the City of Anaheim's General Plan Green Element and the City of Orange Natural Resources Element, and would not result in cumulatively considerable impacts to biological resources.

Section 1 Introduction

Harris & Associates (Harris) was contracted by the City of Anaheim (City), the lead agency, to conduct desktop literature reviews and reconnaissance-level biological survey in support of the Draft Environmental Impact Report to analyze the impacts of the Orange County River Walk (OC River Walk) Project (project) in the Cities of Anaheim and Orange, California.

1.1 Purpose of the Report

The purpose of this Biological Resources Technical Report is to document the biological resources present in the project site and 100-foot survey buffer (herein referred to as the survey area); identify potential impacts to special-status biological resources associated with implementation of the project; and document avoidance, minimization, and/or mitigation measures consistent with federal, state, and local rules and regulations. This report includes an introduction; a discussion of environmental setting and a project description; a summary of the applicable federal, state, and local regulations applicable to biological resources; methods for the literature review and survey conducted for the project, including survey limitations; results reflecting data from the survey conducted with a description and analysis of existing biological resources, including sensitive biological resources; an analysis of potential project impacts, including cumulative impacts, and mitigation required to reduce potential impacts from project implementation to below a level of significance; and references consulted during preparation of this Biological Resources Technical Report.

The term “biological resources” refers to plant species, wildlife species, vegetation communities, and aquatic resources in and adjacent to the project site. For the purposes of this report, sensitive biological resources are those defined as follows: (1) species designated as endangered, threatened, rare, protected, sensitive, or species of special concern according to the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), California Native Plant Society (CNPS), or applicable regional plans, policies, or regulations needs due to limited distribution, limited numbers, or significant population declines associated with natural or human-made causes; (2) species and habitat types recognized by local and regional resource agencies as special status; (3) habitats or vegetation communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; (4) wildlife corridors and habitat linkages; or (5) biological resources that may or may not be considered special status but are regulated under local, state, and/or federal laws.

This report discusses potential impacts, avoidance areas, and mitigation measures (MMs) applicable to biological resources associated with implementation of the project in accordance with the federal Endangered Species Act (FESA); California Endangered Species Act (CESA) (CFGC, Section 2050 et seq.); California Environmental Quality Act (CEQA); Clean Water Act (CWA); Porter–Cologne Water Quality Control Act (Porter–Cologne); Migratory Bird Treaty Act (MBTA); and Sections 1600, 1602, 3511, and 4700 of the California Fish and Game Code (CFGC).

This page intentionally left blank.

Section 2 Environmental Setting

The following is a description of the existing conditions in the survey area.

2.1 Project Location

The project site is located along the Santa Ana River corridor, generally extending from Orangewood Avenue north to Ball Road and the existing Anaheim Coves at Burris Basin, encompassing approximately a 2-mile stretch and approximately 111 acres. The project site is adjacent to Angel Stadium, Anaheim Regional Transportation Intermodal Center, the Honda Center, and the Arena Corporate Center (ACC) buildings on the west side in the City of Anaheim (Appendix A, Figures; Figure 1, Regional Location, and Figure 2, Local Vicinity). On the east side, it is near the Sandra Hutchens Regional Law Enforcement Training Center (a facility that includes a combat shooting range), the Orange County Public Works offices, the Stadium Promenade shopping mall, the Extended Stay America – Orange, and the Kinder Morgan Orange Terminal in the City of Orange. The project site is located within the Cities of Anaheim and Orange, with many different landowners and jurisdictional bodies.

The majority of the project site includes the concrete-lined Santa Ana River corridor surrounded by urban development, including commercial, industrial, and residential uses, within the Cities of Anaheim and Orange (Figure 2). The Santa Ana River is within the Orange County Water District's (OCWD) jurisdiction north of the Union Pacific Railroad (UPRR) and within the Orange County Flood Control District's (OCFCD) jurisdiction south of the UPRR. Within the boundaries of the project site, five overcrossings and/or bridges span the Santa Ana River: Ball Road Bridge, UPRR overcrossing, Katella Avenue Bridge, Metrolink/Los Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor) railroad overcrossing, and Orangewood Avenue Bridge. Additionally, State Route (SR-) 57 crosses the Santa Ana River. The northern portion of the project site includes the Orange County Water District (OCWD) pump house, associated water detention basins, and the eastern portion of the Islands Golf Center. The project site's northern boundary connects to the existing Anaheim Coves at Burris Basin.

2.2 Project Description

The project consists of consists of various multi-purpose improvements to transform the Santa Ana River corridor and portions of the existing Santa Ana River Trail, along with related off-site improvements necessary for its implementation. The main components of the Conceptual Master Plan involve creating two water impoundments by installing three inflatable rubber dams, modifying the riverbanks, constructing two pedestrian/bike bridges, providing new trails, improving existing trails, creating new and protection of existing access ramps, constructing two new undercrossings on the west bank at the Union Pacific Railroad and the Metrolink railroad, providing enhanced community amenities (e.g., terraced seating, nature play areas, parklets,

plazas, gathering areas for large-scale events, festivals, and other activities, water access, kayak launch, etc.), and other improvements. These improvements would require the implementation of 19 project elements, which have been categorized into four groups: Group A – Impoundments, Storm Drain Diversions, and Embankments; Group B – New Pedestrian/Bike Bridges; Group C – New Trails and Trail Improvements; and Group D – Enhanced Community Recreation Amenities, as shown Table ES-1, Conceptual Master Plan Elements.

2.3 Project Purpose

The following objectives have been established for the project and will aid decision makers in their review of the project and associated environmental impacts:

1. Adopt a Master Plan for OC River Walk Project to further enhance and accentuate existing recreational areas, facilitate pedestrian and bicycle access, and promote the use of the river corridor open space area for the community benefit.
2. Implement projects identified in the Master Plan that will create visually appealing outdoor public amenities that will benefit and promote environmental and community health, recreation, safety, entertainment, wayfinding, art, education, cultural awareness, beauty, connectivity, water supply, economic, and natural resource needs.
3. Provide seamless and cohesive improvements across jurisdictions on the project site to benefit the public and the area's aesthetics.
4. Implement projects to transform and improve the river and riverbed's groundwater recharge potential and improve the river corridor's ecology (flora and fauna).
5. Maintain and enhance flood protection capacity and resiliency.
6. Enhance connectivity and community access by leveraging the project site's location near ARTIC, major entertainment venues, and adjacent mixed-use developments

2.4 Land Use

The existing land uses and associated acreages on the project site are described in Table 1, Existing Land Use Acreages, and are shown on Figure 2.

Table 1. Existing Land Use Acreages

Land Use	Acres
Aquatic Area (Including Rivers/Creeks/Open Water)	77.81
Urban/Commercial Land (Including Roads)	28.00
Vegetated Land	5.07
Total	110.88

Notes: Acreages rounded to one-hundredth of an acre

The primary land use on the project site is aquatic area, including the Santa Ana River corridor, Collin's Channel, and the two OCWD water detention basins (Burris Basin and Former Ball Road

Basin) in the northwestern portion of the project site. Aquatic land uses comprise approximately 77.81 acres on the project site. Approximately 28 acres of urban/commercial land account for most of the remaining land uses throughout the project site, with a small area, approximately 5.07 acres, of vegetated land primarily in the northwestern portion of the project site. The project site is surrounded by urban and commercial land, including roads, as well as the upstream and downstream extents of the Santa Ana River to the north and south. The northwestern portion of the project site is surrounded by aquatic areas within The Islands Golf Center and OCWD owned and operated water distribution plant.

2.5 Topography and Soils

The project site is in a relatively flat urban setting, with the greatest elevation decreases occurring in the Santa Ana River corridor and the Burris and Former Ball Road Basins (Figure 2 and Figure 3, USGS Topographic Map). The survey area is depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim quadrangle in Township 4 South, Range 10 West, Sections 13, 24, and 25 and the 7.5-minute Orange quadrangle in Township 4 South, Range 9 West, Sections 18 and 19 (Figure 3). The on-site elevation ranges from approximately 133 to 190 feet above mean sea level. The topographic lines on Figure 3 represent the elevations that occur on the project site.

The project site is underlain by three soil types: Metz loamy sand (zero to 2 percent slopes), Pits (zero to 5 percent slopes), and Riverwash (Figure 4, Soils). The northeastern corner of the survey area that cannot be characterized by soil type is water. Metz loamy sand occurs along the eastern edge of the project site and consists of somewhat excessively drained soils that formed in alluvial material from mixed, but dominantly sedimentary rocks, typically found in alluvial fans and floodplains. Pits constitutes a small portion in the northwestern corner of the project site and consists of poorly drained soils that formed in fine-textured alluvium weathered from igneous rocks that are found on flood plains and in basins. Riverwash represents the majority of the survey area and consists of very recent depositions of gravel, sand, and silt alluvium along major streams and their tributaries (USDA 2019). The Riverwash and Pits soil types that occur on the project site are classified as hydric (wetland) soils and have the potential to contain hydric inclusions (USDA 2019).

2.6 Hydrology

The project site is in the Santa Ana River Watershed (Hydrologic Unit 18070203) (USGS 2025). The Santa Ana River Watershed is the largest in Southern California and encompasses 2,840 square miles within portions of Riverside and Orange Counties, and a small part of eastern Los Angeles County (USGS 2025). Santa Ana River Watershed supports a population of over 6 million people across these counties. The total length of the Santa Ana River and the streams that drain into it is approximately 700 miles, starting from its northernmost reaches at the crest of the San Bernardino Mountains out to the coast near Huntington Beach. This network of waterways includes features that are both natural and channelized in concrete. The Santa Ana River is defined by the U.S. Army

Corps of Engineers (USACE) as a traditional navigable water (USACE 2025). Portions of the Santa Ana River are on the CWA Section 303(d) List for impaired waters, however, the reach in the survey area is not listed as impaired (SWRCB 2025).

The portion of the Santa Ana River within the survey area also contains the USACE constructed Santa Ana River 1 Levee System (SAR1 Levee System) (Upstream Reach) (USACE 2015). The SAR1 Levee System (Upstream Reach) was federally authorized and subsequently constructed by the USACE, Los Angeles District. Construction of the SAR1 Levee System (Upstream Reach) was completed in 1999 and is now entirely operated and maintained by Orange County Flood Control District, which is administered by Orange County Public Works staff (USACE 2015).

The National Wetlands Inventory (NWI) results identify several mapped aquatic features in the survey area (Figure 5, National Wetlands Inventory Results) (USFWS 2021). The Santa Ana River within the boundary of the project site is identified as a lake but is more accurately characterized as having lacustrine system¹, as is also Burris Basin in the northwestern portion of the survey area (NWI 2025). The Former Ball Road Basin, west of the Santa Ana River and south of the Burris Basin, is identified on the NWI results as both freshwater emergent wetland and freshwater pond. One riverine feature (Collin's Channel) is identified connecting to the east side of the Santa Ana River in the central portion of the survey area. No other aquatic features are identified in the survey area by the NWI results.

Based on a review of the USGS National Hydrography Dataset (NHD), the survey area contains several mapped aquatic resources, including those that have hydrologic connections to the Santa Ana River (USGS 2025). The Santa Ana River is identified as a stream/river with an artificial path, likely because of the concrete channelization of the river and construction of the SAR1 Levee System (Upstream Reach). Both Burris Basin and Former Ball Road Basin are identified as reservoirs with intermittent connections to each other and the Santa Ana River. Collin's Channel is identified as a canal/ditch that is connected to the Santa Ana River from the east. No other aquatic features are identified in the survey area by the USGS NHD results. The aquatic resources that occur in the survey area are discussed in Section 5.2, Jurisdictional Aquatic Resources.

2.7 Climate

On a regional level, Orange County has a Mediterranean climate, which is characterized by wet winters and dry summers. This is largely because of a semi-permanent high-pressure zone that sits over the Pacific Ocean during much of the year and forms a fog belt (marine layer). Generalized climate in the region is regarded as dry, subhumid mesothermal, with warm dry summers and cold moist winters, which pushes the growing season to the wet months of the year (late winter to early

¹ The lacustrine system includes wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, and emergent mosses or lichens with 30 percent or greater areal coverage; and (3) total area of at least 8 hectares (ha) (20 acres) (NMI 2025).

spring). Annual vegetation often goes dormant (senescent) during the later summer months until initial rainfall starts in the fall. The rainy season typically lasts from late October through April.

Average temperatures for this area range from 52 degrees Fahrenheit (°F) to 72°F. Typically, August is the warmest and driest month, February is the wettest month, and December is the coldest month of the year. Average precipitation in the rainy season is approximately 2.2 inches per month (October to March). The average annual precipitation for the project site between 2003 and 2023 was approximately 13.2 inches. In 2022, the total rainfall was 6.35 inches, approximately 1.7 inches less than 2021 (NRCS 2025). As of May 2023, when the biological resources survey was conducted, total precipitation in the area was 19.4 inches, approximately 18 inches more than May 2022.

This page intentionally left blank.

Section 3 **Regulatory Framework**

This section summarizes federal, state, regional, and local regulations, plans, policies, and programs that provide protection and management of sensitive biological resources that are applicable to the project. The federal government administers nonmarine plant- and wildlife-related issues through the USFWS, while waters of the United States issues are administered by the USACE. California law relating to wetland, water-related, and wildlife issues is administered by the CDFW. Under CEQA, the CEQA lead agency (in this case, the City of Anaheim) assesses impacts associated with a proposed project or program using significance criteria determined by the CEQA lead agency pursuant to the CEQA Guidelines. Biological resources-related laws and regulations that apply include FESA, MBTA, CWA, CEQA, CESA, and CFGC.

3.1 Federal

CWA, Section 404 (33 CFR 328.3[a]). These provisions regulate the discharge of dredged or fill material in waters of the United States (U.S), including wetlands. Activities that discharge dredge or fill material into waters of the U.S. can be authorized by the USACE.

On August 29, 2023, the U.S. Environmental Protection Agency (USEPA) and the USACE issued a final rule to amend the final “Revised Definition of Waters of the U.S.” The 2023 final rule became effective on September 8, 2023. Under the 2023 final rule:

(a) Waters of the U.S. are defined as:

1. Waters which are:
 - i. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
 - ii. The territorial seas; or
 - iii. Interstate waters;
2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under (a)(5) of this section;
3. Tributaries of waters identified in (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
4. Wetlands adjacent to the following waters:
 - i. Waters identified in (a)(1) of this section; or
 - ii. Relatively permanent, standing or continuously flowing bodies of water identified in (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;
 - iii. Intrastate lakes and ponds not identified in (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in (a)(1) or (a)(3) of this section.

FESA, Sections 7 and 9 (16 USC 1531 et seq.; 50 CFR Part 402). FESA prohibits the “take” (i.e., harm, harass, or kill individuals, or destroy associated habitat) of species federally listed as threatened or endangered. Take incidental to otherwise lawful activities can be authorized by the USFWS through a permit under Sections 4(d), 7, or 10(a).

MBTA (16 USC 703–712; 50 CFR 10). The federal MBTA prohibits the direct or indirect take of migratory birds and their active nests unless permitted.

Section 408 of the Rivers and Harbors Act. Section 408 program allows another party, such as a local government, company, or individual, to alter a USACE Civil Works project. The Section 408 program verifies that changes to authorized USACE Civil Works projects will not be injurious to the public interest and will not impair the usefulness of the project.

Sections 9 and 10 of the Rivers and Harbors Act. Section 9 of the Rivers and Harbors Act prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waterways of the United States without Congressional approval. Administration of Section 9 has been delegated to the U.S. Coast Guard. Consultation with the U.S. Coast Guard may be necessary to determine if a Section 9 permit would be required under the Rivers and Harbors Act.

Section 10 of the Rivers and Harbors Act requires that permits be obtained from the USACE in navigable waters of the United States for all structures such as riprap and activities such as dredging. USACE grants or denies Section 10 permits based on the effects on navigation. Most projects covered under this act are also covered under Section 404 of the CWA.

3.2 State

Birds of Prey Protection Provision (CFGC, Section 3503.5). This provision prohibits the taking of birds of prey (order Falconiformes and Strigiformes) including their nests and eggs.

California Endangered Species Act (CFGC, Section 2050 et seq.). Section 2050 of the CFGC prohibits any activities that would jeopardize or take a species designated as threatened or endangered by the state.

California Fish and Game Code, Section 1602. Section 1602 regulates water resources in the State of California. Activities that divert or obstruct the natural flow of or change or use material from the bed, channel, or bank of any river stream or lake may be authorized by the CDFW. CDFW jurisdiction includes intermittent and perennial watercourses and extends to the top of the bank of a stream or lake if unvegetated or to the limit of the adjacent riparian vegetation, located contiguous to the watercourse, if the stream or lake is vegetated.

California Fish and Game Code, Section 3503. Section 3503 of the CFGC prohibits the take, possession, or needless destruction of the nests or eggs of any birds, except as otherwise provided by the code or any regulation made pursuant thereto.

CEQA, as amended (PRC, Section 21000 et seq.). The goal of CEQA is to assist California public agencies in identifying potential significant negative environmental impacts caused by their actions and avoiding or mitigating those impacts when feasible.

California Fully Protected Wildlife Species Provision (CFGC, Sections 3511, 4700, 5050, and 5515). These provisions prohibit the taking of fully protected birds, mammals, amphibians, and fish.

California Native Plant Protection Act of 1977 (CFGC, Sections 1900–1913). These provisions preserve, protect, and enhance endangered or rare native plants of the state.

Regional Water Quality Control Board. The Regional Water Quality Control Board (RWQCB) regulates impacts to water quality under Section 401 of the CWA. A project must comply with Section 401 of the CWA before the USACE can issue a Section 404 Permit. The RWQCB will issue a Section 401 Water Quality Certification or Waiver of Certification, depending on the extent of impacts to waters of the United States. The RWQCB also regulates impact to waters of the state (usually limited to “isolated” waters or swales that may not fall under USACE jurisdiction) under the Porter–Cologne.

Streambed Alteration Agreement (CFGC, Section 1600). The CFGC requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, or their tributaries, or use materials from a streambed, to submit a notification for a Streambed Alteration Agreement to the CDFW.

Natural Community Conservation Planning Act, as amended (CFGC, Sections 2800–2835). The primary objective of the Natural Community Conservation Planning program is to conserve natural communities at the ecosystem level while accommodating compatible land use. The program seeks to anticipate and prevent the controversies and gridlock caused by species’ listing by focusing on the long-term suitability of wildlife and plant communities and including key interests in the process.

Porter–Cologne. Regulated by the RWQCB for impacts to waters of the state. Although water quality issues related to impacts to waterways are normally addressed during 401 Water Quality Certification, should a water of the State of California be determined by the USACE not to have CWA jurisdiction, Porter–Cologne would be addressed under a Construction General Permit, State General Waste Discharge Order, or Waste Discharge Requirements, depending on the level of impact and the properties of the waterway.

3.3 Local

3.3.1 County of Orange Central and Coastal Subregion Natural Communities Conservation Plan/Habitat Conservation Plan

The County of Orange Central & Coastal Subregion Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) was approved in 1996. It provides a planning framework for development projects within the program’s planning area in order to avoid, minimize, and compensate for impacts to wildlife (County of Orange 1996). The purpose of the NCCP/HCP is to sustain and restore species and their habitat identified by CDFW as necessary to maintain the continued viability of biological communities impacted by growth and development.

The City of Anaheim is enrolled in NCCP/HCP. According to the City of Anaheim General Plan Green Element, a portion of the City, generally south of State Route (SR) 91 Freeway and east of SR-55 Freeway, falls within the NCCP/HCP boundary in the City of Anaheim 2004. The City of Orange is enrolled in the NCCP/HCP. A portion of the City near SR-241, SR-261, and Santiago Canyon Road falls within the NCCP/HCP boundary in the City of Orange (ARCGIS 2025). The project site is not within the boundaries of the NCCP/HCP. Therefore, the project is not subject to the requirements of the NCCP/HCP.

3.3.2 City of Anaheim General Plan

The project is in the City of Anaheim and, therefore, subject to the goals and policies of the City of Anaheim General Plan (City of Anaheim 2004). The City of Anaheim General Plan was adopted in May 2004 and was most recently amended in August 2022. It represents the community’s view of its future and is referred to as the blueprint for growth and development in the City of Anaheim. The City of Anaheim General Plan is considered “comprehensive,” because it addresses a multitude of land use-related issues. It is also considered “long-term,” because it is designed to provide policy guidance for the next 20 years and beyond. The City of Anaheim General Plan contains 10 elements that provide a comprehensive “blueprint” for the City of Anaheim’s growth over the next 20-plus years. As shown on the City of Anaheim General Plan Land Use Map (Figure LU-4), the project site is in an area designated as Open Space, Water, and Mixed-Use Urban Core.

The City of Anaheim General Plan element applicable to biological resources on the project site includes the Green Element. Table 2, City of Anaheim General Plan Green Element Consistency, documents the project’s consistency with the applicable Green Element goals and policies.

Table 2. City of Anaheim General Plan Green Element Consistency

Goal/Policy	Proposed Project
Green Element	
Goal 4.1. Maximize the recreational and scenic potential of existing reservoirs, basins and waterways. Policy 1. Support the County of Orange to continue in their efforts to upgrade and maintain the Santa Ana River Trail.	Consistent: The project is designed to implement sustainable projects that will benefit and promote the community's health, recreation, economics, safety, entertainment, water supply, and natural resource needs. The goal of the project is to transform the Santa Ana River to create a visually appealing asset and provide outdoor venues for recreation and entertainment while improving the ecology of the river corridor.
Goal 4.1. Policy 2. Work with the County of Orange and the Orange County Water District to maintain and improve the recreational and scenic resources of the Anaheim Lakes and Five Coves areas and other appropriate water resource areas, including regarding basins and reservoirs.	Consistent: Refer to response to Goal 4.1, Policy 1, regarding the project's design to maintain and improve the recreational and scenic resources of the Santa Ana River and surrounding water basins.
Goal 7.1. Reduce urban run-off from new and existing development. Policy 1. Ensure compliance with the Federal Clean Water Act requirements for National Pollutant Discharge Elimination System (NPDES) permits, including developing and requiring the development of Water Quality Management Plans for all new development and significant redevelopment in the City.	Consistent: The project would include implementation of water quality protection measures, such as water quality detention/swale areas; and implementation of BMPs. The project would be in compliance with the NPDES regulations to ensure the control of polluted runoff, sedimentation, and erosion during construction. Future activities consistent with the project would implement these measures and policies and be consistent with this goal.
Goal 7.1. Policy 2. Continue to implement an urban runoff reduction program consistent with regional and federal requirements, which includes requiring and encouraging the following: • Increase permeable areas and install filtration controls (including grass lined swales and gravel beds) and divert flow to these permeable areas to allow more percolation of runoff into the ground; • Use natural drainage, detention ponds or infiltration pits to collect runoff; and, • Prevent rainfall from entering material and waste storage areas and pollution-laden surfaces.	Consistent: Refer to response to Goal 7.1 Policy 2 regarding urban runoff reduction and management requirements.
Goal 7.1. Policy 4. Require new development and significant redevelopment to utilize site preparation, grading and best management practices that provide erosion and sediment control to prevent construction-related contaminants from leaving the site and polluting waterways.	Consistent: Refer to response to Goal 7.1 Policy 2 regarding water quality protection measures.
Goal 7.1. Policy 5. Coordinate with appropriate Federal, State, and local resource agencies on development projects and construction activities affecting waterways and drainages.	Consistent: Refer to response to Goal 7.1 Policy 2 regarding water quality protection measures. The project would be compliance with all federal, state, and local regulations applicable to the protection of aquatic resources and would ensure no net loss of existing jurisdictional aquatic resources as a result of the project.

Notes: BMP = best management practices; NPDES = National Pollutant Discharge Elimination System

3.3.3 City of Orange General Plan

The project is in the City of Orange and therefore subject to the goals and policies of the City General Plan (City of Orange 2010). The City of Orange General Plan was adopted in March 2010 and was most recently amended in January 2025. It represents a long-term vision for growth and change and is referred to as the blueprint to help influence physical growth and change in the City of Orange while protecting citizen's quality of life. The City of Orange General Plan addresses a broad range of quality-of-life issues and services and contains 10 elements that provide a comprehensive "blueprint" for the City of Orange's growth through the year 2030. As shown on the City of Orange General Plan Land Use Policy Map (Figure LU-5), the project site is in an area designated as Open Space.

The Natural Resources Element of the City of Orange General Plan is the most relevant to biological resources on the project site. Table 3, City of Orange General Plan Natural Resources Element Consistency, outlines the applicable goals and policies, as well as the project's consistency with them.

Table 3. City of Orange General Plan Natural Resources Element Consistency

Goal/Policy	Proposed Project
Goal 1.0: Provide recreational use, scenic enjoyment, and the protection of natural resources and features in open space areas. Policy 1.1: Conserve open space through various public-private funding mechanisms and management strategies including, but not limited to, conservation easements. Policy 1.2: Actively seek out new public open space opportunities through land recycling. Policy 1.3: Promote development of additional open spaces and access points adjacent to waterways and planned trails.	Consistent: The project is designed to implement sustainable projects that will benefit and promote the community's health, recreation, economics, safety, entertainment, water supply, and natural resource needs. The goal of the project is to transform the Santa Ana River to create a visually appealing asset and provide outdoor venues for recreation and entertainment while improving the ecology of the river corridor.
Goal 2.0: Protect air, water, and energy resources from pollution and overuse. Policy 2.3: Reduce the amount of water used for landscaping through the use of native and drought-tolerant plants, proper soil preparation, and efficient irrigation systems as parks and other City facilities are built or renovated. Policy 2.4: Encourage the production, distribution, and use of recycled and reclaimed water for landscaping projects, while maintaining urban runoff water quality objectives. Policy 2.6: Encourage sustainable building and site designs for new construction and renovation projects. Policy 2.8: Encourage development that incorporates pedestrian- and transit-oriented design and landscape elements. Policy 2.11: Protect the ecological integrity and overall health of Orange's watersheds. Policy 2.12: Cooperate with water supply agencies to protect the quantity and quality of local groundwater supplies. Policy 2.13: Control surface runoff water discharges into the stormwater conveyance system to comply with the City's National Pollutant Discharge Elimination System (NPDES) Municipal Permit and other regional permits issued by the Santa Ana Regional Water Quality Control Board.	Consistent: Refer to response to Goal 1, Policies 1.1 through 1.3, regarding the project's design to implement sustainable projects that will benefit and promote the community's health. The project includes trail improvements and two pedestrian/bike bridges that would support alternative transportation modes and bicycle- and pedestrian-friendly neighborhoods to reduce emissions related to vehicular travel. The project also includes two river impoundments for groundwater recharge areas and improve the river corridor's ecology and enhance flood protection capacity. The project includes implementation of water quality protection measures, such as water quality detention/swale areas; and implementation of BMPs. The project would be in compliance with the NPDES regulations to ensure the control of polluted runoff, sedimentation, and erosion during construction.

Table 3. City of Orange General Plan Natural Resources Element Consistency

Goal/Policy	Proposed Project
Policy 2.14: Reduce pollutant runoff from new development by requiring use of the most low development impact practices and effective Best Management Practices (BMPs) currently available. Policy 2.15: Minimize the amount of impervious surfaces and associated urban runoff pollutants in new development and significant redevelopment throughout the community. Policy 2.16: Protect in-stream habitat and natural stream and channel features.	
Goal 4.0: Conserve and protect wildlife habitat, plant and animal species of concern, and general biodiversity. Policy 4.1: Preserve and protect native and habitat-supporting plant resources throughout the City. Policy 4.3: Reduce the impact of urban development on important ecological and biological resources. Policy 4.4: Repair or improve ecological and biological conditions in the urban and natural environments when reviewing proposals for site development and redevelopment, as well as public improvements. Policy 4.5: Protect the Santiago Creek and Santa Ana River corridors from premature urbanization to ensure the continued availability of important sand and gravel, flood control, water recharge, biological, and open space resources.	Consistent: The project is designed to implement sustainable projects that will benefit and promote the community's health, recreation, economics, safety, entertainment, water supply, and natural resource needs. The goal of the project is to transform the Santa Ana River to create a visually appealing asset and provide outdoor venues for recreation and entertainment while improving the ecology of the river corridor. While the project would result in temporary direct loss of wildlife habitat during construction, project would include aquatic and upland habitat restoration to the Santa Ana River corridor, and result in a permanent increase in potentially suitable nesting and foraging habitat for wildlife species.
Goal 5.0: Provide recreational facilities and programs that adequately serve the needs of residents. Policy 5.4: Develop new public parks and open space resources by establishing incentives to use creative techniques available to property owners and developers that support public-private open space partnerships. Policy 5.5: Explore and pursue new approaches to new park development and to providing a balanced mix of amenities and facilities.	Consistent: The project is designed to implement sustainable projects that will benefit and promote the community's health, recreation, economics, safety, entertainment, water supply, and natural resource needs. The goal of the project is to transform the Santa Ana River to create a visually appealing asset and provide outdoor venues for recreation and entertainment while improving the ecology of the river corridor.

This page intentionally left blank.

Section 4 Methods

Before the biological resources survey was performed, sensitive biological resources with potential to occur in the survey area were identified through a review of existing maps, literature, and sensitive species occurrence databases.

4.1 Literature Review

The following databases and publications were reviewed before the biological resource survey was conducted:

- Calflora Database (Calflora 2025)
- CNPS Inventory of Rare and Endangered Plants (CNPS 2025)
- CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2025a)
- CDFW California Natural Diversity Database (CDFW 2025b)
- U.S. Department of Agriculture Soil Survey (USDA 2025)
- USFWS National Wetlands Inventory Wetlands Mapper (USFWS 2025a)
- USFWS Information for Planning and Consultation (USFWS 2025b)

4.2 General Biological Survey

Harris biologists conducted a general biological reconnaissance survey and a formal aquatic resources delineation survey on May 16, 2023. During the survey, the biologists mapped vegetation communities, documented observed plant and wildlife species, and evaluated the potential for occurrence of sensitive plant and wildlife species by walking slowly along the meandering transects throughout the survey area. No in-water surveys were conducted by Harris during the May 16, 2023, survey efforts. The aquatic resources delineation was conducted using the routine on-site determination method described in the USACE Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (USACE 2008). No focused or protocol wildlife surveys or rare plant surveys were conducted during this survey effort.

A discussion of the 2023 survey activities conducted in the survey area is provided in the following subsections.

4.2.1 Vegetation and Land Cover Type Mapping

Vegetation communities and land cover types observed on the project site and within its surrounding 100-foot survey buffer (herein referred to as the survey area) were mapped by Harris biologists using Geographic Information Systems (GIS) aerial maps connected to an iSxBlue II Global Positioning System receiver for maximum accuracy. The vegetation communities and land cover types were documented by walking along meandering transects through the survey area (where accessible).

The vegetation community and land cover type mapping is in accordance with the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986).

4.2.2 Plant and Wildlife Species Observations

Wildlife identifications were made in the field directly through visual observation or indirectly through call, burrow, track, or scat detection. Latin and common names of wildlife follow Crother (2012) for reptiles and amphibians, American Ornithological Society (2019) for birds, Wilson and Reeder (2005) for mammals, and Moyle (2002) for fish.

Plant and wildlife species observed during the survey were recorded in field notebooks, and sensitive species locations were recorded in a Geographic Information Systems-enabled ArcGIS Collector application. Complete lists of observed plant and wildlife species are provided in Appendix B, Species Observed.

In addition to species detected during the survey, the survey area was assessed for the potential of sensitive plant and wildlife species to occur on site, the results of which are presented in Section 5.4, Sensitive Species. Determinations were made through assessment of habitat preferences, knowledge of local and regional distributions, and review of pertinent literature and local recorded occurrences.

Plants that could not be identified in the field by the surveyors were collected and subsequently identified using the Jepson Manual, Vascular Plants of California, Second Edition (Baldwin et al. 2012). Plant nomenclature follows Baldwin et al. (2012). Non-native invasive plant species were identified using the California Invasive Plant Council's California Invasive Plant Inventory rating criteria (Cal-IPC 2025).

4.2.3 Aquatic Resources Delineation

The formal aquatic resources delineation was conducted to identify and document aquatic resources in the survey area. An Arid West Region Ordinary High Water Mark (OHWM) datasheet and a USACE three-parameter wetland determination datasheet for the Arid West Region (wetland determination datasheet) were completed at each sampling point for each unique aquatic resource feature (USACE 1987, 2008). Each aquatic resources sampling point was collected to investigate the presence and extent of potential wetland and non-wetland waters in the survey area. The full results and discussion of the aquatic resources delineation are documented in Appendix C, Aquatic Resources Delineation Report, and summarized in Section 5.2 of this report.

4.3 Survey Limitations

Plants and wildlife were identified by direct observation, vocalizations, or other observance, including tracks, scat, and other signs. Therefore, lists of observed species are not necessarily comprehensive because species can be outside their blooming periods and/or in senescence,

nocturnal, secretive, or within the region (project area) seasonally or during migration only and, therefore, may not have been observed.

Some areas were not directly surveyed due to a lack of habitat (i.e., developed areas), and other areas were not accessible on foot (i.e., open water). These areas were either not directly reviewed because of lack of habitat or could only be visually scanned rather than walked. The Burris and Former Ball Road Basins are on private property and not accessible on foot. In these areas, binoculars were used to collect aquatic resources delineation data to complete the wetland determination datasheets to the extent feasible.

This page intentionally left blank.

Section 5 Results

The results presented below reflect data from the survey conducted in the survey area.

5.1 Vegetation Communities and Land Cover Types

The survey area is in the South Coast subregion of the California Floristic Province (Jepson Online 2025). The vegetation classifications in this report conform to the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) and the California Natural Community List (CDFW 2025c).

A total of nine vegetation communities and land cover types were identified in the survey area: fresh water, emergent wetland, non-vegetated channel, Diegan coastal sage scrub, mulefat scrub (disturbed), southern willow scrub, non-native woodland, disturbed habitat, and developed land. Table 4, Vegetation Communities and Land Cover Types on the Project Site and in the Survey Buffer, shows the vegetation communities occurring on both the project site and survey buffer. Figure 6, Vegetation Communities and Land Cover Types, presents the vegetation community and land cover type boundaries on the Project site and survey buffer.

Table 4. Vegetation Communities and Land Cover Types on the Project Site and in the Survey Buffer

Vegetation Community and Land Cover Type	Project Site (acres)¹	Survey Buffer (acres)¹	Survey Area (acres)¹
Aquatic			
Freshwater ²	3.48	3.15	6.63
Freshwater emergent wetland ²	0.00	0.97	0.97
Non-vegetated channel ²	74.33	1.95	76.28
<i>Subtotal</i>	<i>77.81</i>	<i>6.07</i>	<i>83.88</i>
Scrub and Riparian Scrub			
Diegan coastal sage scrub ²	0.21	0.95	1.16
Mulefat scrub (disturbed) ²	0.38	0.00	0.38
Southern willow scrub ²	0.66	0.97	1.63
<i>Subtotal</i>	<i>1.25</i>	<i>1.92</i>	<i>3.17</i>
Woodland and Forest			
Non-native woodland	0.22	0.00	0.22
Disturbed/Developed			
Disturbed habitat	3.60	2.75	6.35
Developed land	28.00	40.27	68.27
<i>Subtotal</i>	<i>31.60</i>	<i>43.02</i>	<i>74.62</i>
Total	110.88	51.01	161.89

Sources: CDFW 2025c; Holland 1986.

Notes:

¹ Acreages rounded up to one-hundredth.

² Considered a sensitive vegetation community by CDFW.

5.1.1 Aquatic Communities

5.1.1.1 Fresh Water

Fresh water includes year-round bodies of fresh water in the form of lakes, streams, ponds, or rivers. Fresh water includes those portions of water bodies that are usually covered by water and contain less than 10 percent vegetated cover (Holland 1986).

A total of approximately 6.63 acres of fresh water was documented, with 3.48 acres occurring within the project site and the remaining 3.15 acres in the survey buffer (Figure 6). The fresh water in the survey area occurs within both Burris Basin and Former Ball Road Basin, as well as The Islands Golf Center and the OCWD owned and operated water distribution plant in the northwestern portion of the survey area. Both Burris Basin and Former Ball Road Basin have direct surface water connectivity to the Santa Ana River, directly east of the basins.

5.1.1.2 Freshwater Emergent Wetland

Freshwater emergent wetlands are dominated by low-growing perennial wetland species. These can be found in channels, seeps and springs, floodplains, margins of lakes and rivers, and various basins such as pools and ponds, palustrine lakes, montane meadows, and dune swales. Characteristic species include sedges (*Carex* sp.), spikerushes (*Eleocharis* sp.), rushes (*Juncus* sp.), docks and sorrels (*Rumex* sp.), and giant bur-reed (*Sparganium eurycarpum*), and many others (Holland 1986).

A total of approximately 0.97 acre of freshwater emergent wetland was documented within Former Ball Road Basin in the western edge of the survey buffer, outside the project site (Figure 6). The emergent wetland within Former Ball Road Basin appears to receive water from Burris Basin through a large concrete box culvert under Ball Road from the northwest. Saturated soils and surface water were observed in the emergent wetland during the May 2023 survey, and dominant plant species included curly dock (*Rumex crispus*), tall flatsedge (*Cyperus eragrostis*), Goodding's willow (*Salix gooddingii*), mulefat (*Baccharis salicifolia*), and arundo (*Arundo donax*).

5.1.1.3 Non-Vegetated Channel

Non-vegetated channel consists of predominantly sandy, gravelly, or rocky channels lacking or with reduced vegetation. Variable water lines inhibit the growth of vegetation, although some weedy species of grasses may grow along the outer edges of the channel. Vegetation may exist here but is usually less than 10 percent of the total cover (Holland 1986).

Non-vegetated channel comprises the majority of the survey area. A total of approximately 76.28 acres of non-vegetated channel was documented, with 74.33 acres occurring within the project site and the remaining 1.95 acres in the survey buffer (Figure 6). The Santa Ana River and Collin's Channel are both defined as non-vegetated channels. The extent of the Santa Ana River that runs

northeast to southwest through the majority of the survey area is a fully concrete- and riprap-lined channel and does not support any vegetation. Collin's Channel is a riprap- and concrete-lined channel that enters the eastern edge of the survey area and connects to the eastern side of the Santa Ana River. Sparse grasses and weeds were observed growing through the rock riprap in Collin's Channel, however, no substantial vegetation community was observed in the channel.

5.1.2 Scrub and Riparian Scrub Communities

5.1.2.1 Diegan Coastal Sage Scrub

Diegan coastal sage scrub is composed of a variety of soft, low, aromatic shrubs, characteristically dominated by drought-deciduous species, such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and sages (*Salvia* spp.), with scattered evergreen shrubs, including lemonade berry (*Rhus integrifolia*) and laurel sumac (*Malosma laurina*) (Holland 1986).

A total of approximately 1.16 acres of Diegan coastal sage scrub was documented, with 0.21 acre occurring on the project site and 0.95 acre in the survey buffer (Figure 6). Diegan coastal sage scrub was observed in the northwest corner of the survey area, bordering the Burris Basin, The Islands Golf Center, and the OCWD facilities. The Diegan coastal sage scrub in the survey area appears to be part of restoration efforts and shows evidence of purposefully planted (installed) vegetation. Dominant species in the Diegan coastal sage scrub include California sagebrush, California buckwheat, Cleveland sage (*Salvia clevelandii*), and mulefat.

5.1.2.2 Mule Fat Scrub (Disturbed)

Mulefat scrub is defined as depauperate, tall, herbaceous riparian scrub strongly dominated by mulefat. This early seral community is maintained by frequent flooding. Absent this, most stands would succeed to cottonwood- or sycamore-dominated riparian forests or woodlands. Mulefat scrub is often found along intermittent stream channels or large rivers with fairly coarse substrate and moderate depth to the water table. Characteristic species include mulefat, valley sedge (*Carex barbarae*), narrowleaf willow (*Salix exigua*), sandbar willow (*S. hindsiana*), arroyo willow (*S. lasiolepis*), and stinging nettle (*Urtica holosericea*) (Holland 1986).

Approximately 0.38 acre of mulefat scrub (disturbed) occurs on the project site, along the southwest shoreline of Burris Basin in the northwestern portion of the survey area (Figure 6). No mulefat scrub was documented in the survey buffer. This habitat is relatively sparse, with patchy coverage of mulefat and has encroachment of black mustard (*Brassica nigra*) from nearby disturbed areas.

5.1.2.3 Southern Willow Scrub

Southern willow scrub consists of dense, broad-leaved, winter-deciduous stands of trees dominated by shrubby willows (*Salix* sp.) in association with mulefat. This vegetation community typically occurs on loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows (Holland 1986).

A total of approximately 1.63 acres of southern willow scrub was documented, with 0.66 acre occurring in the northwestern portion of the project site and 0.97 acre in the western edge of the survey buffer (Figure 6). The 0.66 acre of southern willow scrub on the project site is within and along the western shore of Burris Basin. This area is dominated by Goodding's willow, with mulefat and a small stand of bulrush (*Typha* sp.) in the understory. The 0.97 acre of southern willow scrub along the western edge of the survey buffer within Former Ball Road Basin is densely vegetated with Goodding's willow with mulefat and black mustard (*Brassica nigra*) in the understory and outer edges.

5.1.3 Woodland and Forest Communities

5.1.3.1 Non-Native Woodland

Non-native woodland consists of exotic trees, usually intentionally planted, which are not maintained or artificially irrigated. Characteristic species in non-native woodland include eucalyptus (*Eucalyptus* sp.), tamarisk (*Tamarix* sp.), pines (*Pinus* sp.), or other non-native species.

Approximately 0.22 acre of non-native woodland occurs on the project site, in a narrow stand between The Islands Golf Center putting green and Burris Basin in the northwestern portion of the survey area (Figure 6). This area is dominated by arundo and tamarisk, with a small number of young Goodding's willows in the northern edge bordering the southern willow scrub to the northwest.

5.1.4 Disturbed/Developed Land Cover Types

5.1.4.1 Disturbed Habitat

Disturbed habitat is a land cover type characterized by a predominance of non-native species, often introduced and established through human action. Disturbed habitat has often been physically disturbed by human activity and is no longer recognizable as a native or naturalized vegetation association but continues to retain a soil substrate. Typically, vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species (i.e., weeds).

A total of approximately 6.35 acres of disturbed habitat was documented, with 3.60 acres occurring on the project site and 2.75 acres in the survey area (Figure 6). Disturbed habitat was documented bordering the western, southern, and southeastern edges of Burris Basin and the northern and eastern edges of Former Ball Road Basin in the northern portion of the survey area, as well as

along the northeastern edge of the Santa Ana River. Alteration of these areas from apparent mechanical disturbance was observed. These areas are dominated by black mustard, star thistle (*Centaurea calcitrapa*), and fountain grass (*Pennisetum* sp.), with patches of bare dirt throughout.

5.1.4.2 Developed Land

Developed land refers to areas that have been constructed upon or disturbed so severely that native vegetation is no longer supported. Developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials. Examples of these areas may include graded landscapes or areas, graded firebreaks, graded construction pads, construction staging areas, or areas that are repeatedly used in ways that prevent revegetation (e.g., parking lots, trails that have persisted for years).

A total of approximately 68.27 acres of developed land was documented, with 28 acres occurring on the project site and 40.27 acres in the survey area. The developed land in the survey area is the second most prevalent land cover type in the survey area, after non-vegetated channel. In the survey area, developed land includes roadways, parking lots, concrete sidewalks and bike paths, commercial and industrial buildings, The Islands Golf Center putting green, and areas of ornamental landscaping and decorative hardscape.

5.2 Jurisdictional Aquatic Resources

The results of the 2023 aquatic resources delineation determined that a total of 84.54 acres of non-wetland waters occur in the survey area that are potentially under the jurisdiction of the USACE, RWQCB, and CDFW, pursuant to Sections 404 and 401 of the CWA and Section 1602 of the CFGC. In addition, the reach of the Santa Ana River in the survey area contains the SAR1 Levee System (Upstream Reach) and therefore is potentially under the jurisdiction of the USACE pursuant to the Rivers and Harbors Act, Section 408.

Of the total 84.54 acres of aquatic resources documented in the survey area, 78.47 acres occur on the project site. These include aquatic and riparian vegetation communities (i.e., fresh water, non-vegetated channel, freshwater emergent wetland, and southern willow scrub) that occur in the survey area, which may fall under the regulatory jurisdiction of the USFWS, RWQCB, or CDFW (Figure 6). The regulatory agencies categorize aquatic resources into two types of ‘waters’: wetland waters (i.e., delineated areas that contain hydrophytic plants, hydric soils, and wetland hydrology) and non-wetland waters (i.e., delineated areas that do not meet the criteria for wetlands, as previously defined). In the survey area, freshwater emergent wetland is considered a wetland water, while fresh water and non-vegetated channel are considered non-wetland waters.

Potentially jurisdictional aquatic resources mapped in the survey area are shown on Figure 7, Aquatic Resources. Table 5, Jurisdictional Aquatic Resources on the Project Site and in the Survey Buffer

(Acres), provides a summary of these aquatic resources potentially under the jurisdiction of the USACE, RWQCB, and CDFW.

Table 5. Jurisdictional Aquatic Resources on the Project Site and in the Survey Buffer (Acres)

Feature	Project Site (acres)	Survey Buffer (acres)	Jurisdiction
Santa Ana River	74.33	1.63	USACE ¹ /RWQCB/CDFW
Collin's Channel	<0.01	0.32	USACE/RWQCB/CDFW
Burris Basin	3.48	3.15	USACE/RWQCB/CDFW
Burris Basin Southern Willow Scrub	0.66	0.97	USACE/RWQCB/CDFW
Former Ball Road Basin (Including Freshwater Emergent Wetland)	0.00	0.97	USACE/RWQCB/CDFW
Total²	78.47	7.04	—

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

¹ Potentially subject to both the CWA Section 404 and Rivers and Harbors Act, Section 408.

² Total rounded to one-hundredth of an acre.

A detailed discussion of the aquatic resources delineation results is included in Appendix C.

5.3 Observed Species

5.3.1 Plant Species

Appendix B lists the vascular plant species observed in the survey area during the biological resources survey. A total of 34 plant taxa were observed on the project site, 19 (56 percent) of which were native and 15 (44 percent) of which were non-native. No sensitive plant species were observed in the survey area. However, no focused rare plant surveys were conducted. The sensitive plant species evaluated for potential to occur in the survey area are described in Section 5.4.

5.3.2 Wildlife Species

Appendix B lists the wildlife species detected in the survey area during the biological resources survey. A total of 48 wildlife species, including five invertebrates, three fish, one amphibian, one reptile, 36 birds, and two mammals, were observed in the survey area during the biological resources survey. Of the 48 wildlife species observed in the survey area, four species, American white pelican (*Pelecanus erythrorhynchos*), double-crested cormorant (*Phalacrocorax auritus*), least Bell's vireo (*Vireo bellii pusillus*), and yellow warbler (*Setophaga petechia*), are designated as sensitive. The sensitive species observed and those evaluated for potential to occur in the survey area are described in Section 5.4.

5.4 Sensitive Species

Sensitive species are those recognized by federal, state, or local agencies as being potentially vulnerable to impacts because of rarity, local or regional reductions in population numbers, isolation/restricted genetic flow, or other factors. Special-status plants include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW; those considered sensitive by the CDFW; those species included in the California Rare Plant Rank (CRPR) inventory maintained by the CNPS. Sensitive wildlife species include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW; those considered sensitive by the CDFW; California Watch List (WL).

No focused sensitive plant or protocol sensitive wildlife surveys were conducted within the survey area during the 2023 survey.

As described in Section 4.1, Literature Review, distributions of historical sensitive species observations within 1 mile of the survey area were reviewed in preparation of this report. For the purposes of this biological resources assessment, those species that are known to occur or have some potential to occur within 1 mile of the survey area are addressed in this section. The list of potentially occurring sensitive plant and wildlife species is provided in Table 6, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area, along with an assessment of their potential for occurrence in the survey area.

Table 6. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/CRPR	Habitat	Potential to Occur
Plants				
<i>Abronia villosa</i> var. <i>aurita</i>	Chaparral sand-verbena	None/None/1B.1	Occurs in sandy soils in coastal sage scrub, chaparral, and desert dune habitats at elevations between 245 and 5,250 feet above mean sea level (amsl). Blooms January to September.	<i>Not Expected.</i> The survey area is out of elevation range for this species. Diegan coastal sage scrub is present only in northwestern portion; however, it is likely a planted restoration area. A historical location (from 1924) in the Santa Ana River exists, however, this occurrence is likely extirpated (Figure 8, Sensitive Species with Potential to Occur) (CDFW 2025b; Calflora 2025).
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woollystar	FE/SE/1B.1	Occurs in sandy or gravelly soils in chaparral and coastal sage scrub at elevations between 300 and 2,000 feet amsl. Blooms April through September.	<i>Not Expected.</i> The survey area is out of elevation range for this species. Diegan coastal sage scrub is present only in northwestern portion; however, it is likely a planted restoration area. A historical location exists; however, this occurrence is documented within the Orange County Quadrangle, and the exact location is not known (CDFW 2025b; CNPS 2025).

Table 6. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/CRPR	Habitat	Potential to Occur
Wildlife				
Fish				
<i>Oncorhynchus mykiss irideus</i> (Southern California Distinct Population Segment)	Southern California steelhead	FE/SSC/None	Occurs in cool, well oxygenated freshwater streams, primarily in the upper watersheds of most rivers year-round.	<i>Not Expected.</i> The Santa Ana River, the only potentially suitable habitat, is completely concrete lined, with concrete spillways making fish passage unlikely. Water levels are too low for fish passage, and mechanical disturbance is currently preventing higher potential for likelihood. A historical location within 1 mile of the survey area exists, however, the point is not specific but mapped to the quadrangle and therefore could be further away than 1 mile (Figure 8) (CDFW 2025b).
Reptiles				
<i>Phrynosoma blainvillii</i>	Blainville's horned lizard	None/SSC/None	Occurs in open areas of sandy soil and low vegetation in foothills, valleys, and semi-arid mountains in grasslands coniferous forests, woodlands, and chaparral. Also found in lowlands within sandy washes with scattered shrubs and long dirt roads.	<i>Not Expected.</i> No suitable habitat is present in the survey area. A historical location within 1 mile of the survey area exists but is not known in the survey area (Figure 8) (CDFW 2025b).
Birds				
<i>Falco peregrinus anatum</i>	American Peregrine falcon	None/FP, BCC/None	Occurs in open landscapes with cliffs (or skyscrapers) for nest sites, as well as along rivers and coastlines or in cities.	<i>High Foraging. Not Expected Nesting.</i> High potential exists for the species to be observed foraging in the survey area, however, no suitable nesting habitat is present. A historical location within 1 mile of the survey area exists but is not known in the survey area (Figure 8) (CDFW 2025b).
<i>Laterallus jamaicensis ssp. coturniculus</i>	California black rail	FP/ST/None	Occurs in tidal salt marshes or grassy marshes with dense strands of grasses, rushes, and sedges for nesting.	<i>Low Foraging. Not Expected Nesting.</i> Suitable foraging habitat is limited to the small wetland areas in the Burris Basin and Former Ball Road basin. No suitable nesting habitat is present in the survey area. A historical location (from 1986) in the Santa Ana River exists, however, this occurrence is likely extirpated (Figure 8) (CDFW 2025b; Calflora 2025).

Table 6. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/CRPR	Habitat	Potential to Occur
<i>Pelecanus erythrorhynchos</i>	American white pelican	BCC/SSC/None	Occurs in coastal bays, inlets, estuaries, and sloughs and inland freshwater lakes. Nests on isolated islands in freshwater lakes or ephemeral islands in shallow wetlands. Breeding range in California is limited to the northeastern corner of the state.	Present. High Foraging, Not Expected Nesting. Observed in the Santa Ana River in the northern portion of the survey area (Figure 9, Sensitive Species Observed). Suitable foraging habitat occurs in the Santa Ana River and in the Burris and Former Ball Road Basins. No suitable nesting habitat occurs in the survey area.
<i>Phalacrocorax auritus</i> (nesting colony)	Double-crested cormorant	None/WL/None	Occurs in salt and freshwater habitats. Nests on the ground, on cliff edges, trees, shrubs, and in artificial surfaces on and near Channel Islands and coast lines and lakes elsewhere in the U.S.	Present. High Foraging, Moderate Nesting. Observed during 2023 survey foraging in the Santa Ana River and sunning on sediment piles in the river channel in the northern survey area (Figure 9). Suitable foraging habitat occurs in the Santa Ana River and Burris Basin. Suitable nesting habitat is present, but lower likelihood to nest due to high levels of human activity and frequent disturbance.
<i>Setophaga petechial</i>	Yellow warbler	None/SSC/None	Nests in well-developed riparian woodlands and montane scrub.	Present. High Foraging, Moderate Nesting. Observed in the southern willow scrub in Former Ball Road Basin (Figure 9). No nests were observed directly. Suitable southern willow scrub is limited to Burris Basin and Former Ball Road Basin in the survey area, which provide suitable foraging and moderate quality, limited nesting habitat. No historical locations for this species occur in the survey area.
<i>Sternula antillarum browni</i>	California least tern	FE, FP/SE/None	Nests on open sandy dunes and flats lacking vegetation in colonies along California coastlines, in lagoons, bays, and estuaries.	Low Foraging. Not Expected Nesting. Low potential exists for the species to be observed foraging in the Santa Ana River in the survey area because of the far distance to nesting habitat. Not expected for nesting within the survey area, and no established colony has been documented in the survey area. Historical location within 1 mile of the survey area exists but are not known in the survey area (Figure 8) (CDFW 2025b).

Table 6. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/CRPR	Habitat	Potential to Occur
<i>Vireo belli pusillus</i>	Least Bell's vireo	FE/SE/None	Occurs in riparian scrub and riparian forest; and is a summer resident in Southern California below 2,000 feet.	Present. High Foraging, Moderate Nesting. At least one individual was observed in the southern willow scrub in Former Ball Road Basin (Figure 9). No nests were observed directly. Suitable southern willow scrub is limited to Burris Basin and Former Ball Road Basin in the survey area, which provides suitable foraging and moderate quality nesting habitat. No historical locations for this species occur in the survey area.
Mammals				
<i>Eumops perotis californicus</i>	Western mastiff bat	None/SSC/None	Occurs in open, semi-arid woodlands, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban habitats with abundant roosting locations	Low Roosting; High Foraging. An abundance of overpasses, bridges, and buildings provide crevices suitable for temporary roosting during foraging. Foraging habitat is present above the open water in the Santa Ana River and Burris Basin. A historical location within 1 mile of the survey area exists, but none is known in the survey area (Figure 8) (CDFW 2025b).

Notes: BCC = Bird of Conservation Concern; FC = federal candidate; FP = federally protected; FE = federally endangered; FT = federally threatened; SE = state endangered; None = No status indicated for species; SE = state endangered; SSC = state species of special concern; WL = state watch list

CNPS CRPR Rare Plant Ranking

1B = rare, threatened, or endangered in California and elsewhere; 2B = rare, threatened, or endangered in California but more common elsewhere; 3 = a watch list of species about which more information is needed; 4 = a watch list of species of limited distribution

Threat Ranks: .1 = seriously threatened; .2 = moderately threatened

Bold text: Species observed within the survey area.

5.4.1 Critical Habitat

The potential presence of critical habitat on the project area was also analyzed. No critical habitat for sensitive plant or wildlife species occurs in or within 1 mile of the survey area (CDFW 2025a, 2025b; USFWS 2025b).

5.4.2 Sensitive Plant Species Observed

No sensitive plant species were observed in the survey area during the 2023 survey.

5.4.3 Sensitive Plant Species Not Observed with a High Potential to Occur

Based on the literature and database review, no sensitive plant species were determined to have a high potential to occur in the survey area.

5.4.4 Sensitive Wildlife Species Observed

Four sensitive wildlife species, American white pelican (*Pelecanus erythrorhynchos*), double-crested cormorant (*Phalacrocorax auritus*), least Bell's vireo (*Vireo bellii pusillus*), and yellow warbler (*Setophaga petechial*), were observed in the survey area during the 2023 biological survey. These sensitive wildlife species observed in the survey area are shown on Figure 9 and described in the following subsections.

5.4.4.1 American White Pelican (*Pelecanus erythrorhynchos*), BCC, SSC

American white pelican is a USFWS Bird of Conservation Concern and a CDFW Species of Special Concern. American white pelican is a huge waterbird with very broad wings, a thick body, short legs, a long neck, and a massive bill that gives the head a unique, long shape. This species occurs in coastal bays, inlets, estuaries, and sloughs and in inland freshwater lakes. American white pelicans nest on isolated islands in freshwater lakes or ephemeral islands in shallow wetlands and forage for fish in shallow water on inland marshes, along lake or river edges, and in wetlands. This species' breeding range in California has been reduced to the northeastern corner of the state (primarily Modoc, Siskiyou, and Lassen Counties), where they breed with regularity at Lower Klamath and Clear Lake National Wildlife Refuges. Threats to this species include diseases, severe weather, and loss of breeding and foraging habitats due to disturbance and water level changes.

An American white pelican was observed foraging in the Santa Ana River in the northern portion of the survey area during the 2023 biological survey (Figure 9). Suitable foraging habitat occurs in the Santa Ana River and Burris Basin in the northwestern portion of the survey area. No suitable nesting habitat occurs in the survey area, and no known nesting sites have been documented in or surrounding the survey area (Shuford and Gardali 2008).

5.4.4.2 Double-Crested Cormorant (*Phalacrocorax auritus*), WL

Double-crested cormorant, a CDFW Watch List species, is a large waterbird with a small head, a long, kinked neck, and a thin, strongly hooked bill. Adults are brown-black with a small patch of yellow-orange skin on the face. Double-crested cormorants inhabit coasts and banks of inland lakes, and fresh, salt, and estuarine waters. This species resides along the entire coast of California and nests in colonies on the ground, on rocks or reefs with no vegetation, or atop both live and dead trees and occasionally human-made structures. Double-crested cormorants perch beside open water on unvegetated surfaces and require an elevated perch or open length of water for take-off. This species eats primarily fish captured by swimming underwater, with just a few insects, crustaceans, or amphibians supplementing their diet. Threats to this species include loss of nesting habitat, and pollution, particularly discarded fishing gear and oil spills.

Double-crested cormorants were observed foraging in the Santa Ana River and perching on the sediment piles in the center of the river channel in the northern portion of the survey area during

biological surveys (Figure 9). Suitable foraging habitat occurs in the Santa Ana River and Burris Basin in the northwestern portion of the survey area. No suitable nesting habitat occurs in the survey area.

5.4.4.3 Least Bell's Vireo (*Vireo bellii pusillus*), FE, SE

Least Bell's vireo, a federally endangered and state endangered species, is a small songbird with a dull ashy-grey head, darker wings and tail, and a predominately buffy white underside. Least Bell's vireo has narrow, white eye-rings and faint wingbars. This species is restricted to riparian woodland and is most frequent in areas that combine an understory of dense young willows or mulefat with a canopy of tall willows. Least Bell's vireo occurs in riparian habitat in California and Baja California, Mexico, foraging for insects and spiders among dense shrubs and trees along rivers and streams. Historically, least Bell's vireo was a common summer visitor to riparian habitat throughout much of California. Currently, this subspecies is found only in riparian woodlands in Southern California, with most breeding pairs in San Diego, Santa Barbara, and Riverside counties – with some in Los Angeles and Ventura Counties. Least Bell's vireo arrives in breeding grounds in late March and early April and returns to its wintering ground in September. This species is threatened by urbanization, agriculture, wildfires, firewood cutting, livestock grazing, flood control projects, and reservoir construction.

Least Bell's vireo was observed calling in the survey buffer, outside the project site, in the southern willow scrub in Former Ball Road Basin during the 2023 survey (Figure 9). The suitable nesting and foraging habitat for least Bell's vireo in the survey area is limited to the small stands of southern willow scrub in Burris Basin and Former Ball Road Basin. There is potential for the species to move between the two stands of southern willow scrub over Ball Road and through the concrete box culvert that runs under the road connecting the two basins. No least Bell's vireo nests were observed during the survey; however, no protocol surveys were conducted.

5.4.4.4 Yellow Warbler (*Setophaga petechial*), SSC

Yellow warbler, a CDFW Species of Special Concern, is a bright yellow, small songbird with a medium-length tail and a rounded head. Males are bright yellow with streaking on their breasts and females are lighter yellow. The species nests in thickets along streams, both disturbed and well-developed riparian woodlands, and montane scrub. Yellow warblers feed primarily on insects and spiders. Nests are cups made out of grasses, bark strips, hairs, and feathers and placed in a deciduous sapling or shrub, 2 to 16 feet above the ground. Threats to this species include habitat loss and nest parasitism, particularly by brown-headed cowbirds (*Molothrus ater*).

Yellow warbler was observed in the survey buffer, outside the project site, in the southern willow scrub in Former Ball Road Basin during the 2023 survey (Figure 9). The suitable nesting and foraging habitat for yellow warbler in the survey area is limited to the small stands of southern willow scrub in Burris Basin and Former Ball Road Basin. The potential for this species to nest in the survey area is low because the available southern willow scrub does not have a well-developed

canopy and is disturbed from apparent OCWD maintenance and the presence of unhoused encampments. Similar to least Bell's vireo, there is potential for the species to move between the two stands of southern willow scrub in the basins. No nests were observed during the survey; however, no focused surveys were conducted.

5.4.5 Sensitive Wildlife Species Not Observed with a High Potential to Occur

Based on the literature and database review, six sensitive wildlife species were considered for their potential to occur in the survey area but were not observed during the biological resources surveys (Table 6). Two sensitive wildlife species, including American peregrine falcon (*Falco peregrinus anatum*) and western mastiff bat (*Eumops perotis californicus*), were determined to have a high potential to occur in the survey area but were not observed during the biological resource survey. These sensitive wildlife species with high potential to occur are described in the following subsections.

5.4.5.1 American Peregrine Falcon (*Falco peregrinus anatum*), FDL, BCC/SDL

American peregrine falcon is a federally delisted, USFWS Bird of Conservation Concern, and state delisted species. American peregrine falcon is a large falcon with long, pointed wings and a long tail, and adults are blue-gray above with barred underparts and dark head. This species inhabits riparian woodland, forest, inland wetlands, and open landscapes with cliffs or other high human-made structures such as skyscrapers and bridges, for nest sites, as well as along rivers and coastlines or in cities. This subspecies migrates throughout California, and breeds along the coast of Southern and Central California, inland north coastal mountains, Klamath Mountains, Cascade Range, Sierra Nevada, and Channel Islands. American peregrine falcons eat a variety of birds and bats and are known to occasionally steal fish and rodents captured by other raptors. Threats to this species include loss of nesting and foraging habitat and poisoning from rodenticides.

Suitable foraging habitat and prey is present in the Santa Ana River and in both Burris Basin and Former Ball Road Basin in the survey area. However, no cliffs or high skyscrapers and bridges suitable for nesting are present in the survey area. One historical location for American peregrine falcon exists within 1 mile of the survey area, however, this species is not known to occur in the survey area (Figure 8) (CDFW 2025b).

5.4.5.2 Western Mastiff Bat (*Eumops perotis californicus*), SSC

Western mastiff bat, a CDFW Species of Special Concern, is North America's largest bat, with a long tail, dark grey fur, long narrow wings, and large ears that are oriented forward and joined at the midline above the forehead. Western mastiff bat typically roosts colonially in rock crevices on the face of steep rocky cliffs, rock outcrops, and abandoned quarries. This species has been known to occasionally roost in buildings and palm trees; however, roosting in these structures appears to occur temporarily during migration. Western mastiff bat forages primarily on large moths, also eating other insects including beetles, crickets, bees, dragonflies, cicadas, and plant bugs. This

species forages over open habitats, including meadows, grasslands, ponds, reservoirs, bays, riparian zones, sometimes in urban environments opportunistically while traveling between higher quality habitats. Threats to this species include loss and fragmentation of rocky habitat through mining, water impoundments, and road construction, as well as poisoning from pesticide use.

Suitable foraging habitat is present above the open water in the Santa Ana River and Burris Basin and the narrow riparian fringes around Burris Basin and Former Ball Road Basin. The survey area offers an abundance of overpasses, bridges, and buildings with crevices suitable for temporary roosting by the western mastiff bat during foraging. A historical location for this species exists within 1 mile of the survey area, but none is known in the survey area (Figure 8) (CDFW 2025b).

5.4.6 Nesting Birds

The survey area contains suitable nesting habitat for several bird and raptor species protected under the CFGC and MBTA. The majority of the survey area is developed, and specific to the Santa Ana River, lined with concrete and riprap, devoid of vegetation suitable for most nesting birds and raptors. However, the survey area, particularly the Santa Ana River corridor, contains large expanses of open areas over slowly moving water suitable for insect- and aquatic-foraging bird species that may be attracted to the area for feeding and, therefore, may have higher potential to be found nesting within the survey area. The highest-quality suitable nesting habitat for riparian species occurs in the northwestern portion of the survey area, specifically the southern willow scrub, non-native woodland, disturbed mulefat scrub along the fresh open water of Burris Basin, and within the emergent wetland and southern willow scrub in Former Ball Road Basin. Suitable nesting habitat for cavity nesters is present in the trees, both native and ornamental, and structures throughout and surrounding the survey area. A large amount of avian activity was observed in the southern willow scrub of Former Ball Road Basin, including red-winged blackbirds (*Agelaius phoeniceus*), a yellow warbler, and a least Bell's vireo. The riprap-lined banks of the Santa Ana River channel and the shores of Burris Basin and Former Ball Road Basin also serve as suitable nesting habitat for ground-nesting shorebirds, such as killdeer (*Charadrius vociferus*), of which many were observed perching on the deposited sediment "islands" and banks in the river channel during the 2023 surveys. Forster's terns (*Sterna forsteri*) were observed hunting mosquito fish within the Santa Ana River channel and could be utilizing the deposited sediment islands or other shoreline habitats in the survey area for nesting. Additionally, human-made infrastructure, such as light posts, building ledges, and overpasses provide potential nesting habitat for birds and raptors. Large colonies of cliff swallows (*Petrochelidon pyrrhonota*) were observed nesting under the Ball Road overpass in the survey area. Nesting materials were observed on parking lot light posts immediately west of the survey area in the Honda Center parking lot and were likely used by nesting osprey (*Pandion haliaetus*) hunting in the Santa Ana River corridor or the OCWD Basins.

5.4.7 Roosting Bats

The survey area contains suitable roosting and foraging habitat for both common and sensitive bat species. Several concrete bridge overpasses span the width of the Santa Ana River channel and provide crevices suitable for structure-dwelling bats, including Mexican long-tongued bat (*Choeronycteris mexicana*) and big brown bat (*Eptesicus fuscus*). Ornamental and native tree species present on either side of the river channel also provide suitable roosting habitat for tree-roosting bats, such as the hoary bat (*Lasiurus cinereus*), western red bat (*Lasiurus blossevillii*), and western yellow bat (*Lasiurus xanthinus*). Further, these potential roosting sites are in proximity to open water where bats that forage on insects over sources of open water, such as the western mastiff bat. While no bats were observed using the survey area for roosting or foraging during the biological resource surveys, no nighttime focused acoustic surveys were conducted, and the availability of suitable habitat indicates bats are likely roosting and foraging in the survey area.

5.4.8 Wildlife Corridors and Habitat Linkages

Wildlife corridors provide routes for local movement and also regional linkages and corridors, often following linear topographical, vegetation, or water features. These corridors can be continuous habitats features or “steppingstone” areas, providing critical rest and foraging areas for, for example, birds traveling along migratory routes. Local routes of movement provide constant connections to resources that include sources of water, home/cover sites, and foraging areas. Regional linkages and movement corridors provide larger patches of open space to allow relatively free movement of wildlife species along multiple paths between important resources. These areas allow for not only long-term genetic flow between subpopulations but also critical pathways of seasonal/migratory movements. Larger predatory mammals often use regional corridors for hunting and reproduction needs. Potential wildlife corridors can include streams, riparian areas, and culverts under roadways. Habitat characteristics considered in the 2023 survey included topography, habitat quality, and adjacent land uses.

The survey area is likely to be used as a wildlife movement corridor and provides suitable nesting, foraging, and dispersal areas primarily for highly mobile species like bats and birds, and some movement opportunities for mammals. The area surrounding the survey area consists of dense urban development which restricts movement for many small mammals, amphibians, and reptiles. Mesocarnivores and medium-sized mammals, such as raccoon (*Procyon lotor*), coyote (*Canis latrans*), or bobcat (*Lynx rufus*), have some potential to utilize the access roads that border the Santa Ana River channel for movement and may use the channel as a water source when moving through the area. The Santa Ana River flows from the northeast and has upstream connection to large open space preserves such as Chino Hills State Park and Santiago Oaks Regional Park, approximately 8 and 5 miles northeast, respectively. The Santa Ana River channel is one of the widest and longest uninterrupted paths to these open space areas through the dense urban sprawl of Orange County, and while high quality native habitat is scarce, it presents a viable route of movement through these areas.

The survey area also holds value for migrating birds flying through to wintering grounds that are protected by the MBTA. The survey area is within the path of the Pacific Flyway, along which millions of birds, especially waterfowl, migrate annually between Alaska and Canada, through California, to Mexico and South America. The Santa Ana River corridor and surrounding freshwater basins provide an important stopover area for a large variety of birds during their annual migration. Open water attracts shorebirds including various terns, stilts, and egrets that utilize waterways to forage.

Section 6 Impact Analysis

6.1 Significance Thresholds and Definition of Impacts

Appendix G of the CEQA Guidelines (CEQA Guidelines, Section 15000 et seq.) defines “significant effect on the environment” as a “substantial, or potentially substantial adverse change in the environment.” Appendix G of the CEQA Guidelines further indicates that there may be a significant effect on biological resources if the project would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impacts to biological resources from implementation of the project are categorized quantitatively as direct and indirect impacts.

6.1.1 Direct Impacts

Direct impacts to biological resources occur when significant alterations or destruction occurs during the course of, or because of, project implementation. Examples of such impacts include removing, disturbing, or grading vegetation; dredging or grading a stream bank; filling wetlands with any materials; erecting any structures, including in a stream; and severing or physically restricting wildlife corridors and the distribution of individual species or resources. Other direct impacts may include loss of foraging or nesting habitat and loss of individual species as a result of habitat clearing.

6.1.2 Indirect Impacts

Indirect impacts may include elevated levels of noise or lighting, change in surface water hydrology within a floodplain, and increased erosion or sedimentation. These types of indirect impacts can affect vegetation communities or their potential use by sensitive species. They can also cause the disruption of normal wildlife functions or activities, impacting individual species.

6.2 Threshold 1: Sensitive Plant and Wildlife Species

6.2.1 Guidelines for Determination of Significance

Significant impacts to sensitive plant and wildlife species could result if the project has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFW and USFWS.

6.2.2 Impact Analysis

6.2.2.1 Sensitive Plant Species

Direct Impacts

No sensitive plant species were observed in the survey area during the 2023 survey. Further, none of the sensitive plant species analyzed in the literature and database review were determined to have a high potential to occur in the survey area. As discussed in Section 4.3, Survey Limitations, no focused sensitive plant species surveys were conducted in the survey area during the 2023 survey.

Implementation of the project would result in impacts primarily to developed land and non-native habitats, including the concrete and riprap-lined Santa Ana River channel, that do not provide suitable habitat for sensitive plant species. The native and aquatic habitats in the northern end of the project site are disturbed and have little to no potential to support sensitive plant species. Therefore, direct impacts to sensitive plant species are considered less than significant, and no mitigation is required.

Indirect Impacts

No sensitive plant species were identified during the survey within the survey area, therefore, no temporary construction or long-term operational indirect impacts to sensitive plant species are anticipated. Temporary indirect impacts to sensitive plant species, if present, could result during construction of the project, and may include dust, which could disrupt plant vitality in the short term, or construction-related soil erosion and runoff that may permanently impact plant viability. Permanent edge effects may include intrusions by humans and therefore possible trampling of individual plants, invasion by exotic plant and wildlife species, exposure to urban pollutants (fertilizers, pesticides, herbicides, and other hazardous materials), soil erosion, litter, and

hydrologic changes (e.g., surface and groundwater level and quality). However, the project site and surrounding area already consist of disturbed habitat and urban uses subject to these edge effects. The project would be required to be in compliance with the National Pollutant Discharge Elimination System (NPDES) regulations through implementation of site design, source control, and incorporation of construction and permanent Best Management Practices (BMPs). The project's consistency with the Goals and Policies in both the City of Anaheim General Plan Green Element and the City of Orange General Plan Natural Resources Element is demonstrated in Tables 2 and 3. Consistency with the General Plan's goals and policies applicable to biological resources ensures further minimization of indirect impacts from implementation of the project. Therefore, indirect impacts to sensitive plants during construction activities and operation of the project are less than significant, and no mitigation is required.

6.2.2.2 Sensitive Wildlife Species

Direct Impacts

The four sensitive wildlife species that were observed during survey and the two additional sensitive wildlife species that were determined to have a high potential to occur in the survey area are described in Sections 5.4.4, Sensitive Wildlife Species Observed, and 5.4.5, Sensitive Wildlife Species Not Observed with a High Potential to Occur (Figures 8 and 9). The sensitive wildlife species observed in the survey area, American white pelican, double-crested cormorant, least Bell's vireo, and yellow warbler, were observed in the northern portion of the survey area, primarily within the Santa Ana River channel and Former Ball Road Basin. Least Bell's vireo and yellow warbler were observed calling in the survey buffer, outside the project site, in the southern willow scrub in Former Ball Road Basin during the 2023 survey (Figure 9). American white pelican and double-crested cormorant were observed foraging in the northern end of the Santa Ana River channel. In addition, two sensitive wildlife species, American peregrine falcon and western mastiff bat, were not observed but determined to have a high potential to forage in the survey area.

The project has the potential to directly impact these species during construction activities through temporary displacement of individual wildlife or temporarily disrupt portions of their habitat (foraging habitat for American white pelican, double-crested cormorant, American peregrine falcon, and western mastiff bat, and suitable nesting and foraging habitat for least Bell's vireo and yellow warbler). While implementation of the project would result in temporary direct loss of habitat, including nesting and foraging habitat, for many of the sensitive wildlife species observed or with a high potential to occur in the survey area, the project proposes improvements to the Santa Ana River corridor, including aquatic and upland habitat restoration. Therefore, implementation of the project would result in a permanent increase in potentially suitable nesting and foraging habitat for sensitive wildlife species.

Potential temporary direct impacts to the sensitive wildlife species observed or determined to have a high potential to occur are discussed below. An analysis of the exact acreage of temporary impacts that would occur to these sensitive wildlife species in the survey area as a result of the project is not provided at the programmatic level because such analysis would be speculative in nature since not all future site-specific projects are known at this time. Future project-specific analysis would be conducted in the review phase of the project, and any impacts to these sensitive wildlife species would be avoided, minimized, or mitigated as conditions of project approval prior to the implementation of the future site-specific projects.

Approximately 83.88 acres of aquatic communities, including fresh water, freshwater emergent wetland, and non-vegetated channel, occur in the survey area (Table 4). Of this total, approximately 77.81 acres of aquatic communities occur on the project site and have the potential to be temporarily impacted during project implementation. These aquatic communities provide suitable foraging habitat for sensitive American white pelican and double-crested cormorant, both observed using the Santa Ana River corridor in the northern portion of the survey area. These habitats also provide suitable foraging habitat for American peregrine falcon and western mastiff bat, both determined to have a high potential to occur in the survey area. The Santa Ana River corridor (defined as a non-vegetated channel), in particular, provides a wide, open area above fresh water which American peregrine falcon and western mastiff bat can use as foraging habitat. Direct temporary impacts to fresh water, freshwater emergent wetland, and non-vegetated channel could result in direct impacts to American white pelican double-crested cormorant, American peregrine falcon, and western mastiff bat in the form of temporary loss of foraging habitat. Therefore, potential temporary direct impacts to these sensitive wildlife species would be potentially significant without mitigation.

The 3.17 acres of scrub and riparian scrub vegetation communities, including Diegan coastal sage scrub, mulefat scrub (disturbed), and southern willow scrub. Although they are of low quality, these communities have the potential to provide some suitable nesting and foraging habitat for sensitive wildlife species. Of this total, approximately 1.25 acres of scrub and riparian scrub vegetation communities occur on the project site and have the potential to be temporarily impacted during project implementation. Least Bell's vireo and yellow warbler were observed using the southern willow scrub in Former Ball Road Basin in the northwestern portion of the survey area. There is potential for least Bell's vireo and yellow warbler to use these vegetation communities in both Burris Basin and Former Ball Road Basin by moving across Ball Road, which separates the two stands of southern willow scrub. Direct temporary impacts to Diegan coastal sage scrub, mulefat scrub (disturbed), and southern willow scrub could result in direct impacts to least Bell's vireo and yellow warbler in the form of temporary loss of foraging habitat. Therefore, potential temporary direct impacts to these sensitive wildlife species would be potentially significant without mitigation.

The 0.22 acre of non-native woodland is limited to a narrow stand between The Islands Golf Center putting green and Burris Basin in the northwestern portion of the project site and does not provide high-quality nesting, roosting, or foraging habitat for the sensitive wildlife species observed or with a high potential to occur in the survey area. Therefore, potential impacts to sensitive wildlife species from removal of the non-native woodland would be less than significant, and no mitigation is required.

The 6.35 acre of disturbed habitat and 74.62 acres of developed land throughout the survey area provides little to no suitable habitat value for the sensitive species observed or with a high potential to occur in the survey area. However, a large number of overpasses, bridges, and buildings with crevices are present within the developed land that could provide suitable temporary roosting habitat for the western mastiff bat foraging on the project site. Potential impacts to western mastiff bat roosting habitat are discussed further under Sensitive Roosting Bats section below. Therefore, direct temporary impacts to other sensitive wildlife species are unlikely. Potential impacts to sensitive wildlife species would be less than significant, and no mitigation is required.

Indirect Impacts

Temporary construction-related and long-term operational indirect impacts to wildlife generally include lighting, increased human activity, hydrologic quality (increased turbidity, excessive sedimentation, flow interruptions, and changes in water temperature), noise, vibration, and trash and garbage, which can attract both introduced terrestrial and native terrestrial and avian predators (such as American crows [*Corvus brachyrhynchos*], common ravens [*Corvus corax*], coyotes, domestic dogs [*Canis familiaris*], raccoons, and striped skunks [*Mephitis mephitis*]). These indirect impacts in the form of habitat disturbance and potential predation could have a significant impact on the sensitive wildlife species observed or determined to have a high potential to occur in the survey area, identified in Sections 5.4.4 and 5.4.5. As previously discussed in Section 6.1.2, Indirect Impacts, the project and subsequent project approvals would be required to be in compliance with the NPDES regulations, through implementation of site design, source control, and incorporation of construction and permanent BMPs. The project's consistency with the City of Anaheim General Plan Green Element Policies and Goals is demonstrated in Table 2. Consistency with the General Plan Green Element ensures minimization of indirect impacts from implementation of the project. Therefore, indirect impacts to sensitive wildlife during construction activities and operation of the project would be less than significant, and no mitigation is required.

Nesting Birds

The project site consists primarily of the concrete- and riprap-lined Santa Ana River channel, which provides limited habitat suitable for nesting birds protected under the CFGC and MBTA. The majority of the highest-quality suitable nesting habitat occurs in the northwestern portion of the survey buffer, outside the project site, specifically the southern willow scrub, non-native

woodland, and disturbed mulefat scrub along the fresh open water of Burris Basin, and within the emergent wetland and southern willow scrub in Former Ball Road Basin. A large amount of avian activity was observed within the vegetation in the survey buffer, including red-winged blackbird, least Bell's vireo, and yellow warbler, observed in the southern willow scrub of Former Ball Road Basin. In addition, the ornamental trees within the non-native woodland surrounding Burris Basin in the northwestern portion of the project site may provide suitable nesting habitat for bird and raptor species. No active nests or nesting behavior were observed during the 2023 biological survey. Focused nest surveys were not conducted due to the programmatic nature of the project.

As previously discussed under Section 6.1.1, Direct Impacts, the project would be required to implement regulations protecting sensitive nesting birds, including the CFGC and MBTA. Implementation is ensured through conditions of subsequent project-level approval. Due to known presence of federal and state endangered avian species, potential temporary direct impacts to these sensitive nesting birds protected under the CFGC and MBTA are considered potentially significant without mitigation.

Sensitive Roosting Bats

As previously discussed, suitable roosting habitat for sensitive bat species, including western mastiff bat, Mexican long-tongued bat, hoary bat, big brown bat, and western red bat, occurs in the structures and ornamental trees within the developed land throughout the survey area. Although roosting bats were not observed during the biological surveys, the availability of suitable roosting with nearby foraging habitat suggest roosting is likely occurring in the survey area. No focused nighttime mist-netting or acoustic surveys were conducted. As described in Section 2.2, Project Description, the majority of the developed land uses currently in the survey area would remain in place, and no impacts would result to the potential roosting habitat provided by the trees or structures those areas. Any potential direct impacts to the developed land in the survey area, particularly removal of any bridges, overpasses, or ornamental trees, could result in direct impacts to sensitive bats in the form of permanent and temporary roosting habitat loss. Potential impacts to sensitive roosting bat species during construction are considered potentially significant without mitigation.

6.2.3 Mitigation Measures

6.2.3.1 Sensitive Plant Species

Direct Impacts

No mitigation is required.

Indirect Impacts

No mitigation is required.

6.2.3.2 Sensitive Wildlife Species

Direct Impacts

Significant direct impacts to sensitive wildlife species could result during project construction in the species' suitable habitat. Implementation of Mitigation Measure BIO-1 would reduce potential impacts to sensitive wildlife species through conducting monitoring by a qualified biologist during construction of the project.

MM BIO-1 **Qualified Monitoring Biologist.** Before the start of construction activities, the City of Anaheim project manager (or designee) shall retain a qualified monitoring biologist to implement required monitoring and document the names and resumes of the people involved in the biological monitoring of the project and a schedule for the proposed work.

The qualified monitoring biologist shall be responsible for the following monitoring and reporting tasks:

- **Biological Construction Mitigation/Monitoring Exhibit.** Before the start of construction within the future site-specific proposed survey area, the qualified monitoring biologist shall submit a Biological Construction Mitigation/Monitoring Exhibit, which includes limits of work, proposed monitoring schedule, bird, focused sensitive species, or other wildlife surveys/survey schedules (including general avian nesting and U.S. Fish and Wildlife Service protocol), timing of surveys, bird construction avoidance areas/noise buffers/barriers, other impact avoidance areas, and any subsequent requirements determined by the qualified monitoring biologist. The Biological Construction Mitigation/Monitoring Exhibit shall include the construction site plan, written and graphic depiction of the project's biological mitigation/monitoring program, and a schedule for construction activities. Where the potential for impacts to biological resources is limited (e.g., construction within a footprint that consists entirely of previously developed or disturbed lands), the Biological Construction Mitigation/Monitoring Exhibit may be limited to a pre- and post-maintenance verification inspection. For highly sensitive resource areas, full-time biological monitors may be required. The Biological Construction Mitigation/Monitoring Exhibit shall be approved by the City of Anaheim project manager (or designee) before the start of construction.
- **Avian Protection.** To avoid any direct impacts to raptors and/or any migratory birds protected under the Migratory Bird Treaty Act, removal of habitat that supports active nests on the proposed area of disturbance should occur outside the breeding season for these species (January 15 to August 31). If removal of

habitat on the proposed area of disturbance must occur during the breeding season, the monitoring biologist shall conduct a pre-construction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. The pre-construction survey must be conducted within 10 calendar days before the start of construction, the results of which must be submitted to the City of Anaheim project manager (or designee) for review and approval before initiating any construction activities. If nesting birds are detected, a letter report or mitigation plan as deemed appropriate by the City of Anaheim shall be prepared and include proposed measures to be implemented to ensure that disturbance of raptor and bird breeding activities are avoided. The report or mitigation plan shall be submitted to the City of Anaheim for review and approval and implemented to the satisfaction of the City of Anaheim. The monitoring biologist shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction.

- **Resource Marking/Protection.** Prior to the start of construction activities within the future site-specific proposed survey area, the qualified monitoring biologist shall supervise the placement of orange construction fencing or similar visible marker, staking, or flagging along the limits of the construction area, particularly where adjacent to sensitive biological avoidance areas, as shown on the Biological Construction Mitigation/Monitoring Exhibit to ensure crews remain within the approved construction limits. These demarcations shall not be required for areas with existing barriers, such as chain-link fencing, along the limits or facilities that are within and/or adjacent to developed and non-sensitive habitat areas. This task shall include flagging plant specimens and delineating buffers to protect sensitive biological resources (e.g., habitats, sensitive plant and wildlife species, including nesting birds) prior to construction.
- **Cover Trenches.** The qualified monitoring biologist shall oversee the construction site so that cover and/or escape routes for wildlife from excavated areas shall be provided daily. Steep trenches, holes, and excavations during construction shall be covered at night with backfill, plywood, metal plates, or other means, and if plastic sheeting is used, the edges must be covered with soils such that small wildlife cannot access the excavated hole. Soil piles shall be covered at night to prevent wildlife from burrowing in. Sandbags shall weigh down the edges of the sheeting. These areas may also be fenced to prevent wildlife from gaining access. Exposed trenches, holes, and excavations shall be inspected twice daily (i.e., each morning and before sealing the exposed area) by the qualified monitoring biologist to monitor for wildlife entrapment. Excavations shall provide an earthen ramp to allow for a wildlife escape route. The qualified monitoring biologist shall

verify that the contractor has covered all steep-walled trenches or excavations prior to the end of construction daily. If wildlife species are encountered within any trenches or excavated areas, the qualified monitoring biologist shall remove them, if possible, or provide them with a means of escape (e.g., a ramp or sloped surface at no greater than a 30-degree angle) and allow the species to disperse. In addition, the qualified monitoring biologist shall train construction personnel to increase awareness of the possible presence of wildlife beneath vehicles and equipment and to use best judgment to avoid killing or injuring wildlife (refer to Pre-Construction Meeting/Education).

- **Structure Clearance.** Before the issuance of any permit to allow for the removal or demolition of trees on the project site (particularly any ornamental trees in the developed land areas), the qualified monitoring biologist shall conduct clearance surveys to flush out any wildlife species nesting, roosting, or otherwise occupying the trees. If wildlife species are encountered within any of the trees (outside the general bird nesting season), the qualified monitoring biologist shall remove them, if possible, or provide them with a means of escape and allow the species to disperse. If tree-roosting bats are suspected, slow removal by gently pushing the tree over with heavy equipment is required.
- **Pre-Construction Meeting/Education.** Before the start of any construction activity where the site plan for the construction area indicates that significant impacts to biological resources may occur, a pre-construction meeting shall be held on site with the following in attendance: City of Anaheim project manager (or designee), the construction contractor (if applicable), and the qualified monitoring biologist. At this meeting, the qualified monitoring biologist shall identify and discuss the construction protocols that apply to the proposed activities and the sensitive nature of the adjacent habitat with appropriate project personnel.

At the pre-construction meeting, the qualified monitoring biologist shall submit to the construction contractor a copy of the Biological Construction Mitigation/Monitoring Exhibit that identifies areas to be protected, fenced, and monitored. This data shall include all buffer limits, if applicable.

Before the start of construction activities, the qualified monitoring biologist shall meet with the construction contractor and crew and conduct an on-site educational session regarding the need to avoid impacts outside the approved construction footprint and to protect sensitive plants and wildlife that may occur at the specific facility. This may include but not be limited to explanations of the avian and aquatic resource buffers, the flag system for retention of sensitive plants, and clarification of acceptable access routes/methods and staging areas.

- **Biological Monitoring and Reporting.** The qualified monitoring biologist shall inspect/monitor the project construction area in accordance with the approved Biological Construction Mitigation/Monitoring Exhibit. This may be limited to pre- and post-maintenance inspections, weekly visits, or full-time monitoring, as determined by the qualified monitoring biologist.

The qualified monitoring biologist shall document monitoring events via a Consultant Site Visit Record. This record shall be sent to the project manager each month. However, if weekly reports are submitted as part of a separate agency permit requirement, these reports may be forwarded to the project manager in place of Consultant Site Visit Record submittals.

If no deviations from the construction site plan occur during maintenance, no additional documentation is required. However, if deviations from the site plan do occur, such as unanticipated impacts to sensitive vegetation communities or unanticipated discharge of pollutants, a Final Monitoring Report shall be prepared within 3 months following the completion of mitigation monitoring detailing maintenance and monitoring that occurred and any remedial or compensatory measures taken.

Direct impacts to vegetation communities used by sensitive wildlife species would be conserved or restored through the implementation of Mitigation Measures BIO-2 and Mitigation Measure BIO-3. These mitigation measures provide mitigation or revegetation for impacts to sensitive vegetation communities and jurisdictional aquatic resources that support sensitive wildlife species in the survey area.

MM BIO-2 Sensitive Vegetation Communities and Jurisdictional Aquatic Resources Impacts Mitigation. Any direct impacts to sensitive vegetation communities or jurisdictional aquatic resources would require mitigation to comply with state and/or federal authorizations in accordance with the minimum ratios described in the following table and the ratios defined in any state and/or federal permit(s) issued for the project.

Mitigation Ratios for Potential Impacts to Sensitive Vegetation Communities and Jurisdictional Aquatic Resources within the Survey Area

Vegetation Community	Jurisdiction	Minimum Mitigation Ratio
Fresh Water	USACE/RWQCB/CDFW	2:1
Freshwater Emergent Wetland	USACE/RWQCB/CDFW	2:1
Non-Vegetated Channel	USACE/RWQCB/CDFW	2:1
Diegan Coastal Sage Scrub	CDFW	2:1
Mulefat Scrub (Disturbed)	CDFW	2:1
Southern Willow Scrub	USACE/RWQCB/CDFW	2:1

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

- Potential direct impacts to sensitive vegetation communities, including jurisdictional aquatic resources, resulting from project implementation shall be mitigated through one of the following two options:
 - Project compensatory mitigation for proposed impacts to sensitive vegetation communities, including jurisdictional aquatic resources, shall be provided through in-kind and on-site creation, enhancement, and/or restoration. A Habitat Mitigation and Monitoring Plan shall be provided and prepared in accordance with the City of Anaheim and regulatory agency requirements.
 - Compensatory mitigation requirements that are not able to be satisfied through on-site creation, enhancement, and/or restoration shall be satisfied through the acquisition of mitigation bank credits via a resource agency-approved mitigation site within the Santa Ana River Watershed or by acquisition of other approved off-site mitigation credits. Prior to implementation of project construction impacts that would require compensatory mitigation, documentation demonstrating the availability of mitigation credits (i.e., credit ledger) at the approved mitigation site must be submitted to the City of Anaheim project manager (or designee) for confirmation.

When proposed mitigation involves habitat enhancement, restoration, or creation, the Habitat Mitigation and Monitoring Plan shall include the following information:

- Conceptual planting plan including planting zones, grading, and irrigation.
- Seed mix/planting palette.
- Planting specifications.
- Monitoring program including success criteria.
- Long-term maintenance and preservation plan.

For mitigation that involves habitat acquisition, the Habitat Mitigation and Monitoring Plan shall include the following:

- Location of proposed acquisition.
- Description of the biological resources to be acquired, including support for the conclusion that the acquired habitat mitigates for the specific maintenance impact and satisfies the requirement of no net loss.
- Documentation that the mitigation area would be adequately preserved and maintained in perpetuity.

The identification of mitigation site credits shall be provided to the City of Anaheim project manager (or designee) and shall include the following:

- Location of approved mitigation site.

- Description of the mitigation credits to be acquired, including support for the conclusion that the acquired habitat mitigates for the specific maintenance impact and satisfies the requirement of no net loss.
- Documentation of the credits that are associated with a mitigation bank, which has been approved by the appropriate resource agencies.
- Documentation in the form of a current mitigation credit ledger.

MM BIO-3 Habitat Restoration in Temporary Impact Areas. Temporary direct impact areas shall be restored to pre-construction topographic contours and conditions, including the revegetation of native plant communities, where appropriate. Habitat restoration and erosion control treatments shall be installed within these short-term impact areas. Habitat revegetation shall feature native species that are typical of the area, and associated erosion control best management practices shall include silt fence and microplastic- and weed-free straw fiber rolls, where appropriate. The revegetation areas shall be monitored and maintained for 25 months to ensure adequate establishment and sustainability of the plantings/seedings.

Where a project activity involves potential disturbance of non-native invasive plant species (as identified by the California Invasive Plant Council), these plants shall be entirely removed where feasible, and the removal shall be monitored by the qualified monitoring biologist to ensure that dispersal of propagules (e.g., seeds, stems, etc.) are avoided or minimized. Where removal of plant roots is not feasible (e.g., where erosive flows are predicted), aboveground plant material shall be fully removed and monitored by the qualified monitoring biologist. Where aboveground plant material cannot be removed (e.g., due to limited access), herbicides shall be applied by a licensed pest control advisor, using chemicals permitted as safe within aquatic environments.

Significant direct impacts could result to sensitive least Bell's vireo and yellow warbler during project construction in these species' suitable habitat. Implementation of Mitigation Measure BIO-4 would reduce potential impacts to these sensitive wildlife species through focused species surveys by a qualified biologist prior to the start of project construction.

MM BIO-4 Least Bell's Vireo and Yellow Warbler Pre-Construction Surveys. For any work proposed in or near suitable habitat between February 15 and August 15 (March 15 and September 15 for least Bell's vireo), a pre-construction survey for least Bell's vireo and yellow warbler shall be performed to reaffirm the presence and extent of occupied habitat. The pre-construction survey area for the species shall encompass all potentially suitable habitat within the project work zone and a 300-foot survey buffer. The pre-construction survey shall be performed to the satisfaction of the City of Anaheim project manager (or their designee) by a qualified biologist familiar with the species. The results of the pre-construction survey shall be

submitted in a report to the City of Anaheim project manager (or their designee) for review and approval before initiating any construction activities. If least Bell's vireo or yellow warbler are detected, a minimum 300-foot buffer delineated by orange biological fencing shall be established around the detected species. In addition, on-site noise reduction/attenuation techniques shall be incorporated, as appropriate, to avoid impacts to breeding least Bell's vireo and yellow warbler from elevated construction noise levels during the breeding season. The City of Anaheim project manager (or their designee) shall have the discretion to modify the buffer width depending on site-specific conditions. In addition, noise monitoring may be required to ensure that the elevated construction noise levels are appropriately attenuated at the edge of occupied habitat to a level that is not expected to adversely affect nesting bird behavior (i.e., not to exceed an hourly average of 60 A-weighted decibels or ambient whichever is greater, at the edge of occupied habitat).

Indirect Impacts

No mitigation is required.

6.2.4 Significance after Mitigation

6.2.4.1 Sensitive Plant Species

Direct Impacts

Direct impacts to sensitive plant species were determined to be less than significant, and no mitigation is required.

Indirect Impacts

Indirect impacts to sensitive plant species were determined to be less than significant, and no mitigation is required.

6.2.4.2 Sensitive Wildlife Species

Direct Impacts

Implementation of Mitigation Measure BIO-1 through Mitigation Measure BIO-4 would mitigate potential direct impacts to sensitive wildlife species and their habitats to below a level of significance through monitoring by a qualified biologist, providing mitigation ratios for acreage impacts, the creation and restoration of impacted vegetation communities, and pre-construction sensitive nesting bird surveys.

Implementation of Mitigation Measure BIO-1 would mitigate potential direct impacts to sensitive nesting birds and roosting bats to below a level of significance. This mitigation measure would

require monitoring by a qualified biologist who is responsible for conducting pre-construction nesting bird surveys and identifying and flushing any roosting bats from trees prior to construction.

Indirect Impacts

Indirect impacts to sensitive wildlife species were determined to be less than significant, and no mitigation is required.

6.3 Threshold 2: Sensitive Vegetation Communities

6.3.1 Guidelines for Determination of Significance

A significant impact would result if the project had a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFW or USFWS.

6.3.2 Impact Analysis

6.3.2.1 Direct Impacts

A total of nine vegetation communities and/or land cover types occur in the survey area (Table 4) that cover a total of 161.89 acres. Construction of the project has the potential to impact six sensitive vegetation communities that occur in the survey area, including 6.63 acres of fresh water, 0.97 acre of freshwater emergent wetland, 76.28 acres of non-vegetated channel, 1.16 acres of Diegan coastal sage scrub, 0.38 acre of mulefat scrub (disturbed), and 1.63 acres of southern willow scrub.

An analysis of the exact acreage of impacts that would occur to the sensitive vegetation communities in the survey area as a result of the project is not provided at the programmatic level because such analysis would be speculative in nature since the future project specifics are not known at this time. As future project specifics come forward, project-specific analysis would be conducted in the review phase, and any impacts to sensitive vegetation communities would be avoided, minimized, or mitigated as conditions of project approval prior to the implementation of the future project. Potential impacts to sensitive vegetation communities from implementation of the project would be potentially significant and mitigation is required.

6.3.2.2 Indirect Impacts

Most of the indirect impacts to sensitive plant species described in Section 6.2, Threshold 1: Sensitive Plant and Wildlife Species, also result in potentially significant indirect impacts to sensitive vegetation communities. As previously discussed in Section 6.2.2, Impact Analysts, under Sensitive Plant Species/Indirect Impacts, the project would be required to be in compliance with the NPDES regulations through implementation of site design, source control, and incorporation of construction and permanent BMPs. The project's consistency with the City of Anaheim General Plan Green Element Policies and Goals is demonstrated in Table 2. Consistency with the General Plan Green

Element ensures minimization of indirect impacts from implementation of the project. Therefore, indirect impacts to sensitive vegetation communities during construction activities and operation of the project would be less than significant, and no mitigation is required.

6.3.3 Mitigation Measures

6.3.3.1 Direct Impacts

Development of the project would result in potentially significant direct impacts to sensitive vegetation communities. Implementation of Mitigation Measure BIO-1 through Mitigation Measure BIO-3 (described in Section 6.2.3.2, Sensitive Wildlife Species) would reduce direct impacts to sensitive vegetation communities through monitoring by a qualified biologist, providing mitigation ratios for acreage impacts, creating new vegetation, and restoring impacted vegetation.

6.3.3.2 Indirect Impacts

No mitigation is required.

6.3.4 Significance after Mitigation

6.3.4.1 Direct Impacts

Implementation of Mitigation Measure BIO-1 through Mitigation Measure BIO-3 would reduce potential direct impacts to sensitive vegetation communities to below a level of significance through monitoring by a qualified biologist, adhering to required mitigation ratios for acreage impacts, and creating new vegetation communities and restoring impacted ones.

6.3.4.2 Indirect Impacts

Indirect impacts to sensitive vegetation communities were determined to be less than significant, and no mitigation is required.

6.4 Threshold 3: Jurisdictional Aquatic Resources

6.4.1 Guidelines for Determination of Significance

A significant impact would result if the project had a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal wetland) through direct removal, filling, hydrological interruption, or other means of disturbance.

6.4.2 Impact Analysis

6.4.2.1 Direct Impacts

As discussed in Section 5.2, a total of 85.51 acres of non-wetland waters, freshwater emergent wetland, and riparian potentially under the jurisdiction of the USACE, RWQCB, and CDFW occur in the survey area. These potentially jurisdictional aquatic resources in the survey area include

approximately 82.91 acres of non-wetland waters (Santa Ana River, Collin's Channel, Burris Basin, and Former Ball Road Basin), 0.97 acre of wetland (emergent wetland in Former Ball Road Basin), and 1.63 acre of riparian (southern willow scrub in Burris Basin). As discussed in Section 6.3, Threshold 2: Sensitive Vegetation Communities, the project would result in direct impacts to the aquatic and riparian vegetation communities also potentially under the jurisdiction of the USACE, RWQCB, and CDFW. Further, the reach of the Santa Ana River in the survey area contains the SAR1 Levee System (Upstream Reach) and therefore is under the jurisdiction of the USACE pursuant to the Rivers and Harbors Act Section 408. An analysis of the exact acreage of impacts that would occur to wetlands in the survey area as a result of the project is not provided at the programmatic level because such analysis would be speculative in nature since future project specifics are not known at this time. As future project specifics come forward, project-specific analysis would be conducted in the review phase of the project, and any impacts to jurisdictional aquatic resources would be avoided, minimized, or mitigated as conditions of project approval prior to the implementation of the future site-specific projects.

As previously discussed in Section 3, Regulatory Framework, the project would be required to be in compliance with all federal, state, and local regulations protecting biological resources as a condition of subsequent project-level approvals. This includes complying with applicable federal and state regulations that ensure no net loss of aquatic resources, such as Section 404 of the federal CWA, Section 408 of the Rivers and Harbors Act, Section 1600 of the CFGC, and Porter-Cologne. The project would be required to obtain regulatory permits from the USACE, RWQCB, and CDFW and provide compensatory mitigation for impacts prior to the start of construction that would ensure that no net loss of resources would result from implementation of the project. Therefore, direct impacts to jurisdictional aquatic resources would be less than significant with mitigation incorporated.

6.4.2.2 Indirect Impacts

Most of the indirect impacts to sensitive plant species and sensitive vegetation communities described in Sections 6.2.1 and 6.2.2 would also result in potentially significant indirect impacts to jurisdictional aquatic resources. As previously discussed in Section 6.2.2, the project would be required to be in compliance with the NPDES regulations, through implementation of site design, source control, and incorporation of construction and permanent BMPs. The project's consistency with the City of Anaheim General Plan Green Element Policies and Goals is demonstrated in Table 2. Consistency with the General Plan Green Element ensures minimization of indirect impacts from implementation of the project. Therefore, indirect impacts to jurisdictional aquatic resources during construction activities and operation of the project would be less than significant, and no mitigation is required.

6.4.3 Mitigation Measures

6.4.3.1 Direct Impacts

Development of the project would result in potentially significant direct impacts to jurisdictional aquatic resources. Implementation of Mitigation Measure BIO-1 through Mitigation Measure BIO-3 (described under Sensitive Wildlife Species Direct Impacts Mitigation) would reduce direct impacts to jurisdictional aquatic resources through monitoring by a qualified biologist, providing mitigation ratios for acreage impacts, and restoring temporary impact areas.

6.4.3.2 Indirect Impacts

No mitigation is required.

6.4.4 Significance after Mitigation

6.4.4.1 Direct Impacts

Implementation of Mitigation Measure BIO-1 through Mitigation Measure BIO-3 would mitigate potential direct impacts to jurisdictional aquatic resources to below a level of significance through monitoring by a qualified biologist, adhering to required mitigation ratios for acreage impacts, and restoring temporary impact areas.

6.4.4.2 Indirect Impacts

Indirect impacts to jurisdictional aquatic resources were determined to be less than significant, and no mitigation is required.

6.5 Threshold 4: Wildlife Corridors and Habitat Linkages

6.5.1 Guidelines for Determination of Significance

A significant impact would result if the project interfered substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

6.5.2 Impact Analysis

6.5.2.1 Direct Impacts

As discussed in Section 5.4.8, Wildlife Corridors and Habitat Linkages, the survey area is likely used as a wildlife movement corridor and provides suitable nesting, foraging, and dispersal areas primarily for highly mobile species like bats and birds, and some movement opportunities for mammals. The dense urban development surrounding the survey area restricts movement opportunities for many small and large mammals, amphibians, and reptiles. However, mesocarnivores and medium-size mammals, such as raccoon, coyote, or bobcat, could utilize the access roads that

border the Santa Ana River channel for movement and may use the channel as a water source when moving through the area. The Santa Ana River channel, the widest and longest uninterrupted path through the dense urban sprawl of Orange County connecting to open space areas to the north, presents a viable route of wildlife movement through the survey area. The survey area also holds value for migrating birds, protected by the MBTA, flying within the Pacific Flyway to their wintering grounds.

Project impacts are proposed primarily in areas adjacent to and within existing development and would only be temporary impacts that occur during construction activities in the survey area. All existing wildlife corridors would remain in place, and their quality increased after implementation of the project. Therefore, significant direct long-term impacts to wildlife corridors and habitat connectivity provided by the survey area are not expected to occur. While project activities may temporarily disrupt wildlife movement through the survey area, the project is not expected to have a significant impact on habitat linkage over the long-term because the overall habitat quality of the existing corridors would be maintained and improved following project implementation. Therefore, impacts to wildlife corridors and habitat connectivity would be less than significant, and no mitigation is required.

6.5.2.2 Indirect Impacts

Wildlife movement corridors and habitat connectivity would be impacted by many of the other indirect effects discussed in Section 6.2.2 for impacts to sensitive wildlife species. As previously discussed in that section, the project would be required to be in compliance with the NPDES regulations, through implementation of site design, source control, and incorporation of construction and permanent BMPs. The project's consistency with the City of Anaheim General Plan Green Element Policies and Goals is demonstrated in Table 2. Consistency with the General Plan Green Element ensures minimization of indirect impacts from implementation of the project. Therefore, indirect impacts to wildlife movement corridors and habitat connectivity during construction activities and operation of the project would be less than significant, and no mitigation is required.

6.5.3 Mitigation Measures

6.5.3.1 Direct Impacts

No mitigation is required.

6.5.3.2 Indirect Impacts

No mitigation is required.

6.5.4 Significance after Mitigation

6.5.4.1 Direct Impacts

Direct impacts to wildlife movement corridors and habitat linkages within the project area were determined to be less than significant, and no mitigation is required.

6.5.4.2 Indirect Impacts

Indirect impacts to wildlife movement corridors and habitat linkages within the project area were determined to be less than significant, and no mitigation is required.

6.6 Threshold 5: Local Policies or Ordinances

6.6.1 Guidelines for Determination of Significance

A significant impact would result if the project conflicted with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

6.6.2 Impact Analysis

As discussed in Section 3.3.2, City of Anaheim General Plan, the project is located in the City of Anaheim; therefore, it is subject to the goals and policies in the City General Plan. The City General Plan element applicable to biological resources includes the Green Element. Table 2 documents the project's consistency with the Green Element goals and policies applicable to biological resources on the project site. As demonstrated in Table 2, the project would be consistent with the City General Plan goals and policies. Therefore, impacts would be less than significant, and no mitigation is required.

6.6.3 Mitigation Measures

No mitigation is required.

6.6.4 Significance after Mitigation

Impacts from conflicts with the City General Plan Green Element goals and policies were determined to be less than significant, and no mitigation is required.

6.7 Threshold 6: Regional Conservation Planning

6.7.1 Guidelines for Determination of Significance

A significant impact would result if the project conflicted with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.

6.7.2 Impact Analysis

As discussed in Section 3.3, Local, although the City of Anaheim is enrolled NCCP/HCP, the project site is not within the boundaries of the NCCP/HCP and is therefore not subject to the requirements of the NCCP/HCP. Therefore, impacts to conservation planning would be less than significant, and no mitigation is required.

Although the project is not subject to the NCCP/HCP, the avoidance, minimization, and mitigation measures proposed in Section 6.2.3, Mitigation Measures, would reduce potentially significant impacts to sensitive plant and wildlife species, sensitive vegetation communities, and jurisdictional aquatic resources to a less than significant level.

6.7.3 Mitigation Measures

No mitigation is required.

6.7.4 Significance after Mitigation

Impacts to conservation planning were determined to be less than significant, and no mitigation is required.

6.8 Cumulative Impacts

6.8.1 Cumulative Threshold 1: Sensitive Plant and Wildlife Species

The cumulative survey area specific to biological resources was defined by nearby surrounding areas with similar biological resources. Cumulative projects in the vicinity of the survey area would have the potential to result in impacts to sensitive plant and wildlife species, including loss of habitat. Cumulative projects that are proposed in the City would be similar to the project and would impact primarily developed land covers and could potentially include portions of undeveloped open space in the City. Implementation of these cumulative projects have the potential to result in impacts to sensitive plant and wildlife species. However, all projects proposed in the City, like the OC River Walk project, are required to comply with CEQA, including limiting impacts to biological resources. Through implementation of Mitigation Measures BIO-1 through BIO-4, the project would reduce temporary and permanent impacts to sensitive plant and wildlife species to less than significant and would therefore not contribute to cumulative impacts. Therefore, cumulative impacts to sensitive plant and wildlife species would be less than significant with mitigation incorporated.

6.8.2 Cumulative Threshold 2: Sensitive Vegetation Communities

As discussed in Section 6.8.1, Cumulative Threshold 1: Sensitive Plant and Wildlife Species, the project's implementation of Mitigation Measures BIO-1 through BIO-3 (provided in Section 6.2.3) ensures the project, in combination with other cumulative projects within the City, would not result in

cumulatively considerable impacts to biological resources, specifically sensitive vegetation communities. In fact, the project would provide a net benefit to the vegetation communities in the survey area by protecting and restoring the functions of the Santa Ana River aquatic and adjacent habitats. Therefore, because the project minimizes impacts to sensitive vegetation communities, it would not result in a cumulatively considerable impact to sensitive vegetation communities.

6.8.3 Cumulative Threshold 3: Jurisdictional Aquatic Resources

As discussed in Section 6.8.1, the project's implementation of Mitigation Measures BIO-1 through BIO-3 (provided in Section 6.2.3) ensures the project, in combination with other cumulative projects within the City, would not result in cumulatively considerable impacts to biological resources, specifically jurisdictional aquatic resources. In fact, the project would provide a net benefit to the vegetation communities in the survey area by protecting and restoring the functions of the Santa Ana River aquatic and adjacent habitats. Therefore, because the project minimizes impacts to jurisdictional aquatic resources, it would not result in a cumulatively considerable impact to jurisdictional aquatic resources. In addition, all cumulative projects with potential impacts to jurisdictional aquatic resources would be required to comply with applicable federal and/or state regulations that ensure no net loss of resources, such as Section 404 of the federal CWA, Sections 9, 10, and 408 of the Rivers and Harbors Act, Section 1600 of the CFGC, and Porter-Cologne. Therefore, because the project minimizes impacts to jurisdictional aquatic resources and would comply with federal and state permitting regulations, the project would not result in a cumulatively considerable impact to jurisdictional aquatic resources.

6.8.4 Cumulative Threshold 4: Wildlife Corridors and Habitat Linkages

As discussed in Section 6.5.2, Impact Analysis, the project is not expected to result in significant impacts on wildlife corridors and habitat linkages over the long term because the overall habitat quality of the existing corridors would be maintained following project implementation. Therefore, the project would not result in a cumulatively considerable impact to wildlife corridors and habitat linkages.

6.8.5 Cumulative Threshold 5: Local Policies or Ordinances

As discussed in Section 6.6.2, the project's demonstrated consistency with the applicable City of Anaheim General Plan Green Element goals and policies (provided in Table 2) ensures that the project, in combination with other cumulative projects within the City, would not result in cumulatively considerable impacts to biological resources. Therefore, because the project minimizes impacts to biological resources and demonstrates consistency with the City of Anaheim General Plan Green Element, the project would not result in a cumulatively considerable impact associated with a conflict with local policies and ordinances protecting biological resources.

6.8.6 Cumulative Threshold 6: Regional Conservation Planning

As discussed in Section 3.3, the project site is not within the boundaries of the NCCP/HCP and is therefore not subject to the requirements of the NCCP/HCP. Therefore, the project would not result in a cumulatively considerable impact associated with a conflict with a Habitat Conservation Plan.

Section 7 **References**

- American Ornithological Society. 2019. Sixtieth Supplement to the American Ornithological Society's Check-List of North American Birds. *The Auk* 136 (3):1–23. July 1. Accessed February 2025. <https://doi.org/10.1093/auk/ukz042>.
- Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken. 2012. *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, California. January.
- Calflora. 2025. Calflora Database. Accessed February 2025. <https://www.calflora.org/entry/wgh.html>.
- Cal-IPC (California Invasive Plant Council). 2025. Invasive Plant Inventory. Accessed February 2025. <https://www.cal-ipc.org/plants/inventory/>.
- CDFW (California Department of Fish and Wildlife). 2025a. Biogeographic Information and Observation System Database. Accessed February 2025. <https://wildlife.ca.gov/Data/BIOS>.
- CDFW. 2025b. California Natural Diversity Database. State and Federally Listed Endangered, Threatened, and Rare Plants of California. Accessed February 2025. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline>.
- CDFW. 2025c. California Natural Community List. Updated June 1, 2023. Accessed February 2025. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline>.
- CNPS (California Native Plant Society). 2025. Rare Plant Inventory. A Science-Driven Approach (online edition, v9.5). Accessed February 2025. <http://www.rareplants.cnps.org/>.
- City of Anaheim. 2004. City of Anaheim General Plan. May 2004. Accessed February 2025. <https://www.anaheim.net/712/General-Plan>.
- County of Orange. 1996. County of Orange Central and Coastal Subregion Natural Communities Conservation Plan/Habitat Conservation Plan. Approved July 1996. Accessed February 2025. <https://planningandsustainability.uci.edu/community/pdf/nccp-ia-srchbl.pdf>.
- Crother, B.I. 2012. Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding, edited by J.J. Moriarty. 7th ed. Society for the Study of Amphibians and Reptiles (SSAR); Herpetological Circular no. 39. August 2012. Accessed February 2025. http://home.gwu.edu/~rpyron/publications/Crother_et_al_2012.pdf.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, the Resources Agency, Department of Fish and Wildlife, Natural Heritage Division. October.
- Jepson Online. 2025. "The Jepson Herbarium." Accessed February 2025. <https://ucjeps.berkeley.edu/eflora/>.

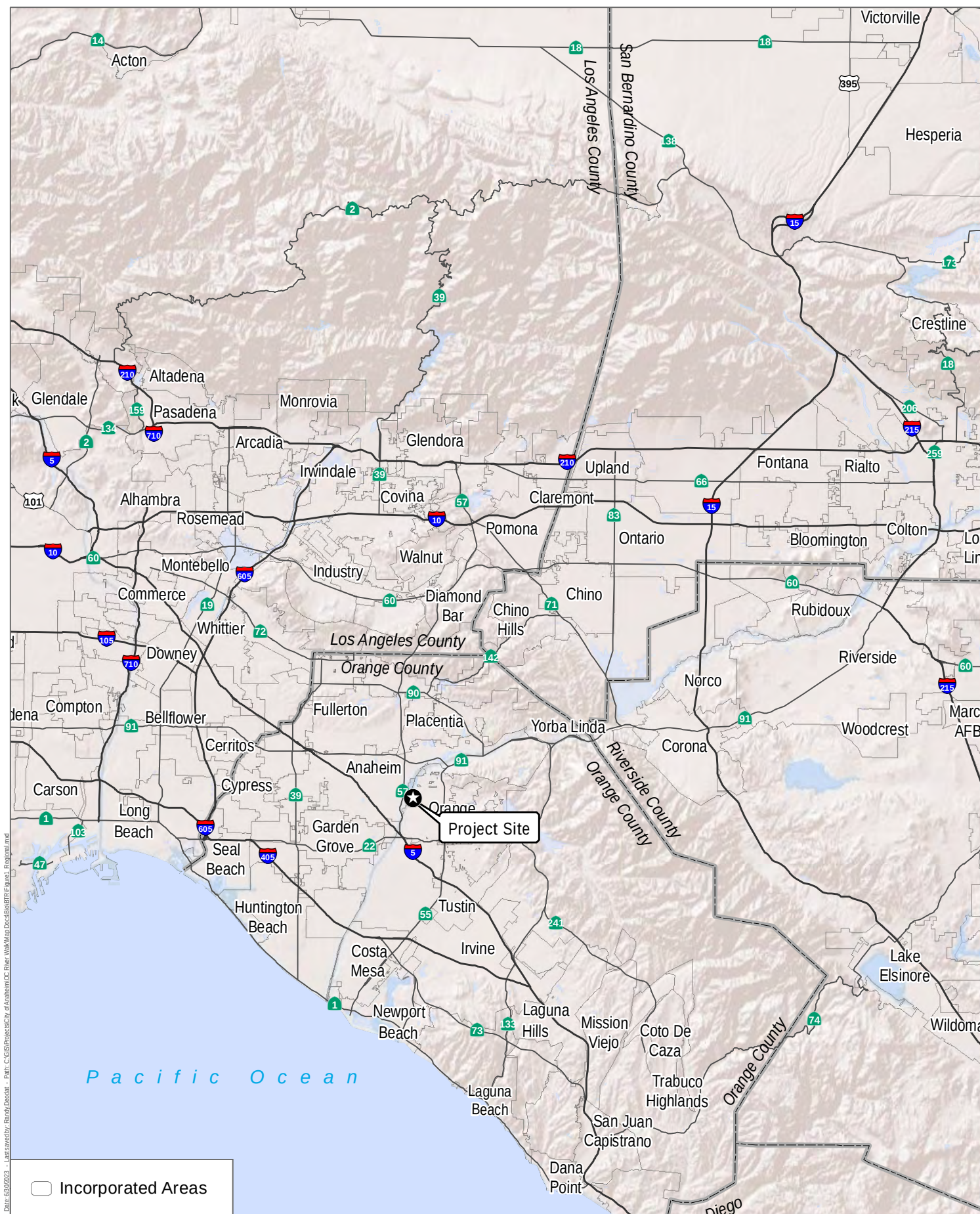
- Moyle. 2002. Inland Fishes of California. Accessed February 2025. https://www.waterboards.ca.gov/water_issues/programs/tmdl/records/state_board/1998/ref2608.pdf.
- NRCS (Natural Resources Conservation Service). 2025. National Water and Climate Center: WETS Table. Accessed February 2025. https://www.wcc.nrcs.usda.gov/climate/navigate_wets.html.
- Shuford W.D. and T. Gardali, editors. 2008. Species Accounts: American White Pelican (*Pelecanus erythrorhynchos*). Excerpt from California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento. Accessed February 2025. <https://www.contracosta.ca.gov/DocumentCenter/View/34166/Shuford-Gardali-2008-California-Bird-Species-of-Special-Concern-PDF>.
- SWRCB (State Water Resources Control Board). 2025. California Integrated Report (Clean Water Act Section 303(d) List and 305(b) Report). Accessed February 2025. https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html.
- USACE (U.S. Army Corps of Engineers). 1987. Corps of Engineers Wetlands Delineation Manual. Final report. Wetlands Research Program Technical Report Y-87-1 (online edition). Prepared by Environmental Laboratory, U.S. Army Waterways Experiment Station. Wetlands Research Program. January 1987. Accessed February 2025. <https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf>.
- USACE. 2008. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region.
- USACE. 2015. Santa Ana River 1 Levee System. August 2015. Accessed February 2025. https://www.spl.usace.army.mil/Portals/17/docs/LeveeSafetyProgram/San_Ana_River_1_Levee_System_PI_Report_No-01_ES_M_20151023.pdf.
- USACE. 2025. “TNWs & Navigable Waters in Los Angeles District.” Accessed February 2025. <https://www.spl.usace.army.mil/Missions/Regulatory/Jurisdictional-Determination/Navigable-Waterways/>.
- USDA (U.S. Department of Agriculture). 2019. Web Soil Survey. Natural Resources Conservation Service, Soil Survey Staff. Last modified July 31. Accessed February 2025. <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
- USDA. 2025. Web Soil Survey of Orange County Area, California. Accessed February 2025. <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.
- USFWS (U.S. Fish and Wildlife Service). 2021. National Wetlands Inventory Wetlands Mapper. Last updated November 30. Accessed February 2025. <https://www.fws.gov/wetlands/Data/Mapper.html>.

- USFWS. 2025a. National Wetlands Inventory Wetland Mapper. Accessed February 2025.
<https://www.fws.gov/wetlands/Data/Mapper.html>.
- USFWS. 2025b. Information for Planning and Consultation. Accessed February 2025.
<https://ipac.ecosphere.fws.gov/location/index>.
- USGS (U.S. Geological Survey). 2025. National Hydrologic Dataset. Accessed February 2025.
<https://www.arcgis.com/home/webmap/viewer.html?url=https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer&source=sd>.
- Wilson and Reeder. 2005. Mammal Species of the World. Third Edition.
<http://www.departments.bucknell.edu/biology/resources/msw3/>.

This page intentionally left blank.

Appendix A. Figures

This page intentionally left blank.



Source: ESRI 2020.

Figure 1

Regional Location

OC River Walk Project



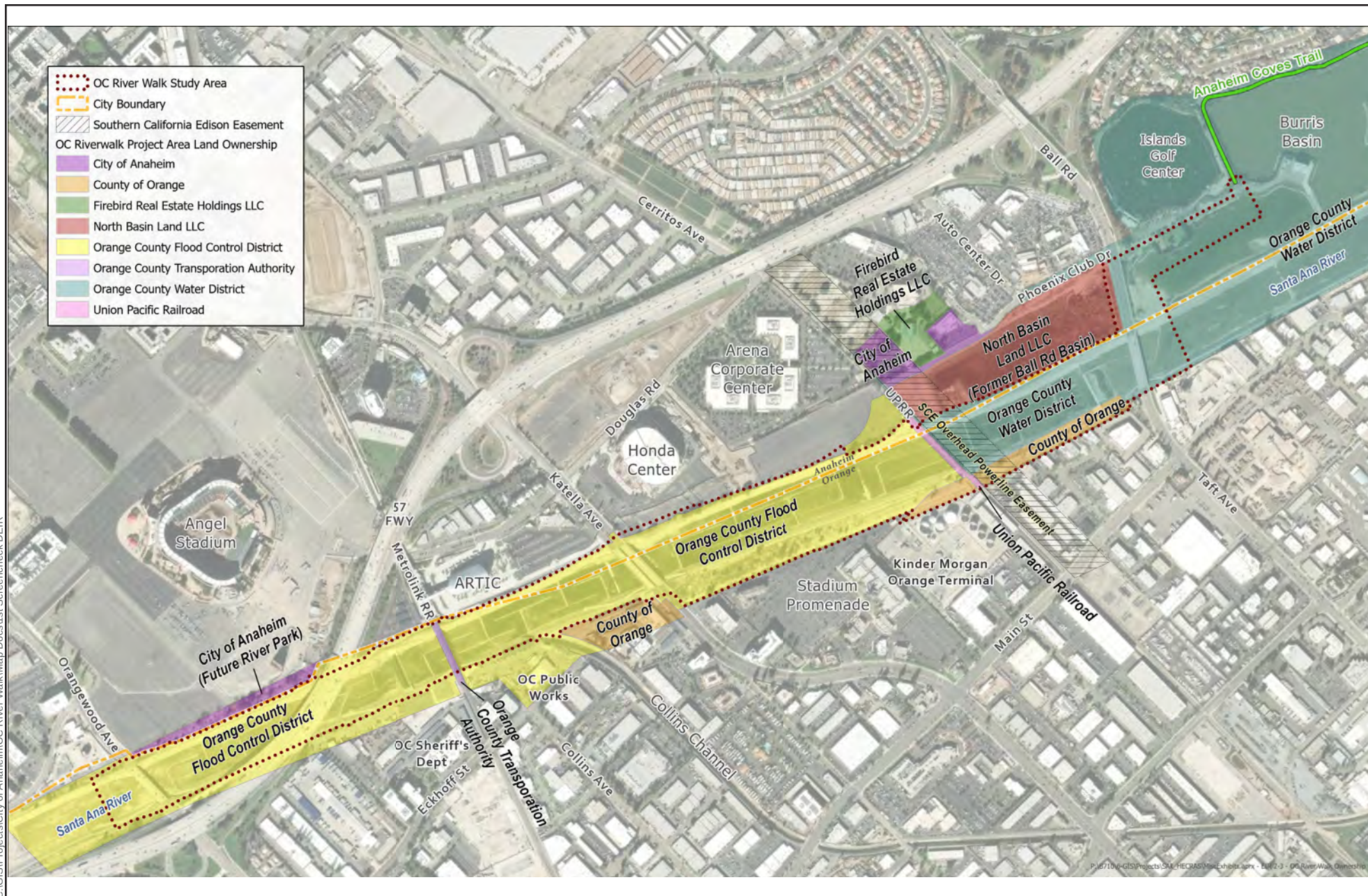
Harris & Associates



0 5 10

Miles

C:\GIS\Projects\City of Anaheim\OC River Walk\Map Docs\1st Screenshot DEIR



Source: PACE Advanced Water Engineering 2024.



Harris & Associates

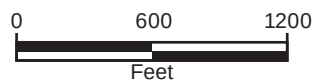
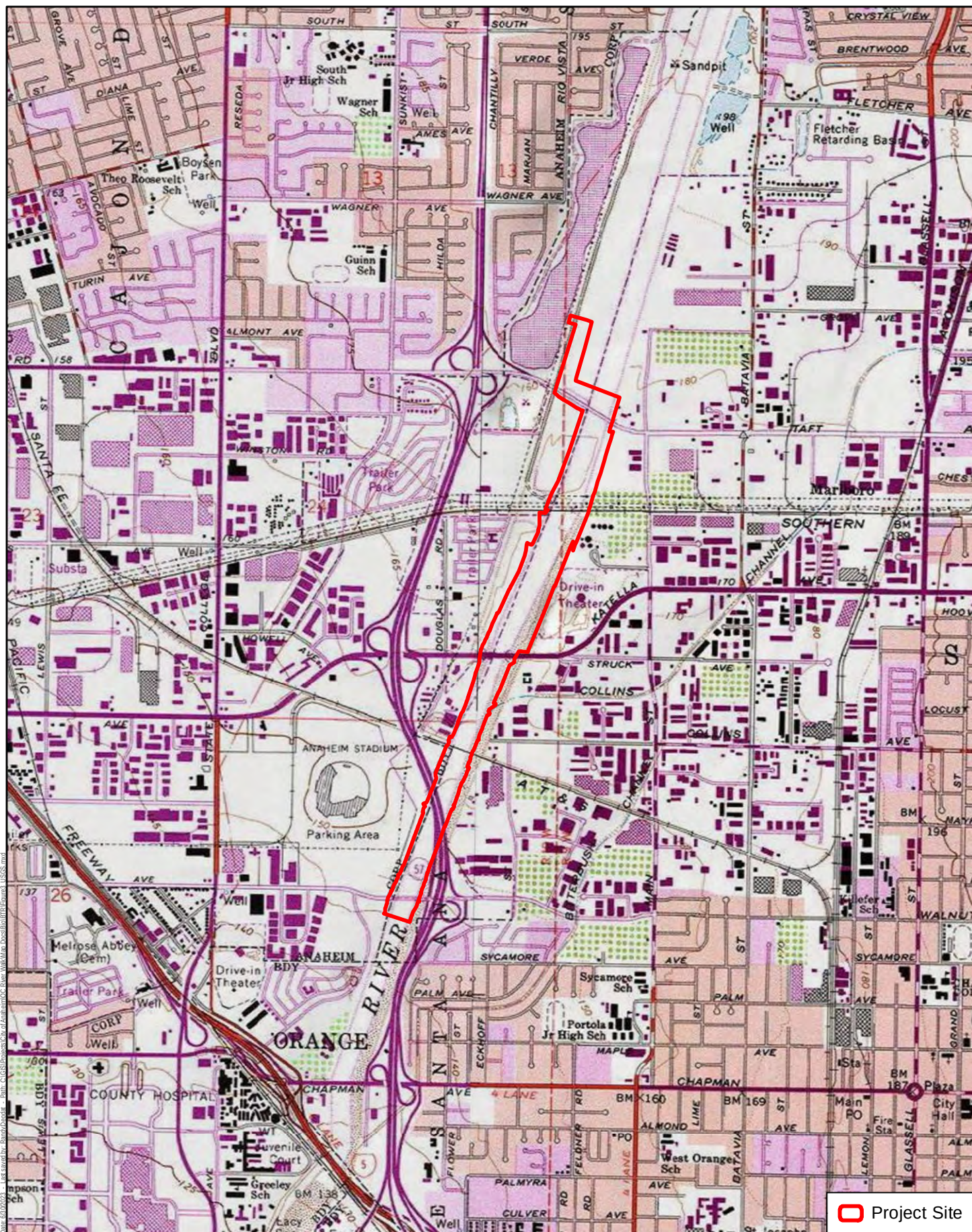


Figure 2
Local Vicinity
OC River Walk Project



Harris & Associates

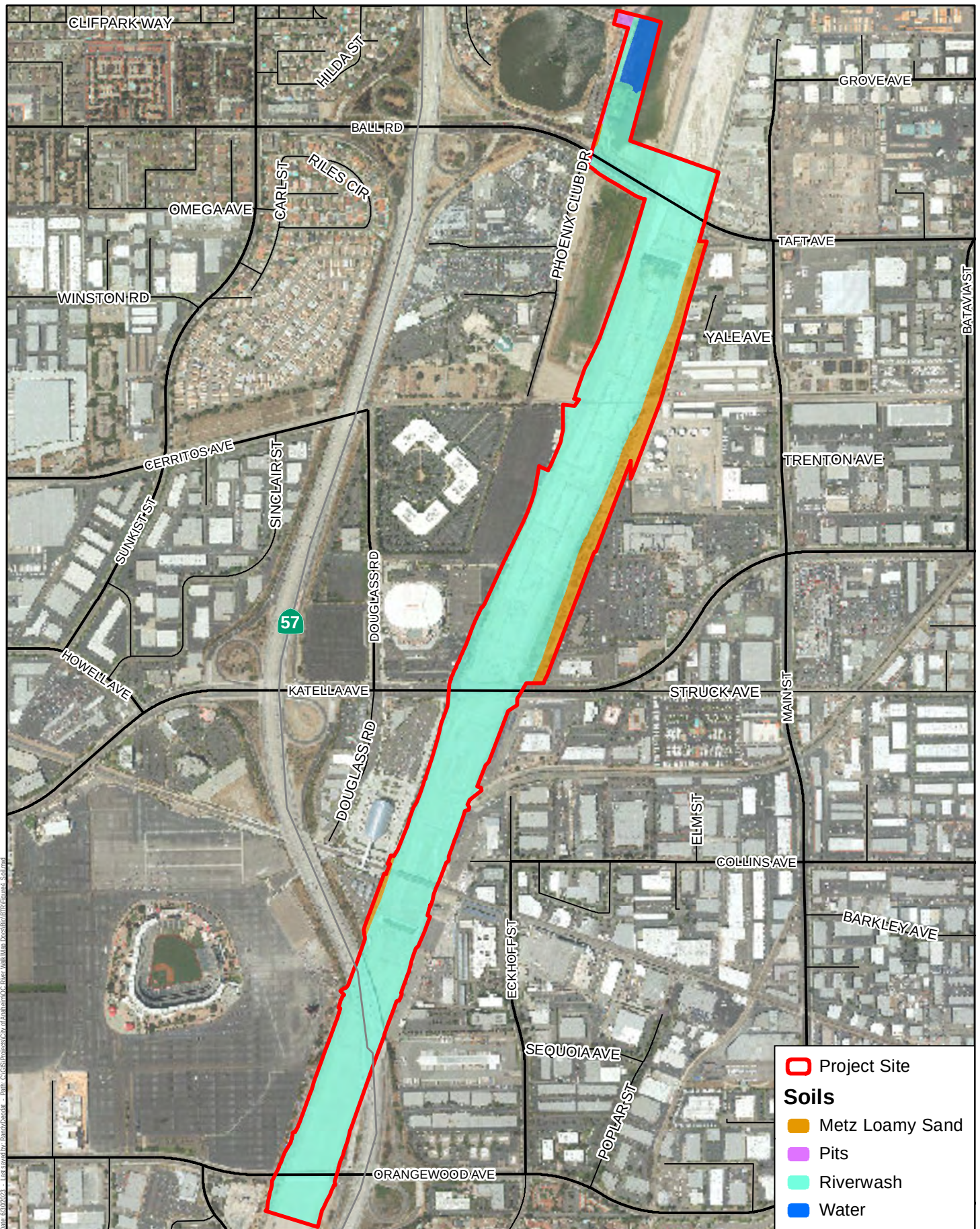


0 1,000 2,000
Feet

Figure 3

USGS Topographic Map

OC River Walk Project





Source: USFWS 2023; Maxar Imagery 2021.

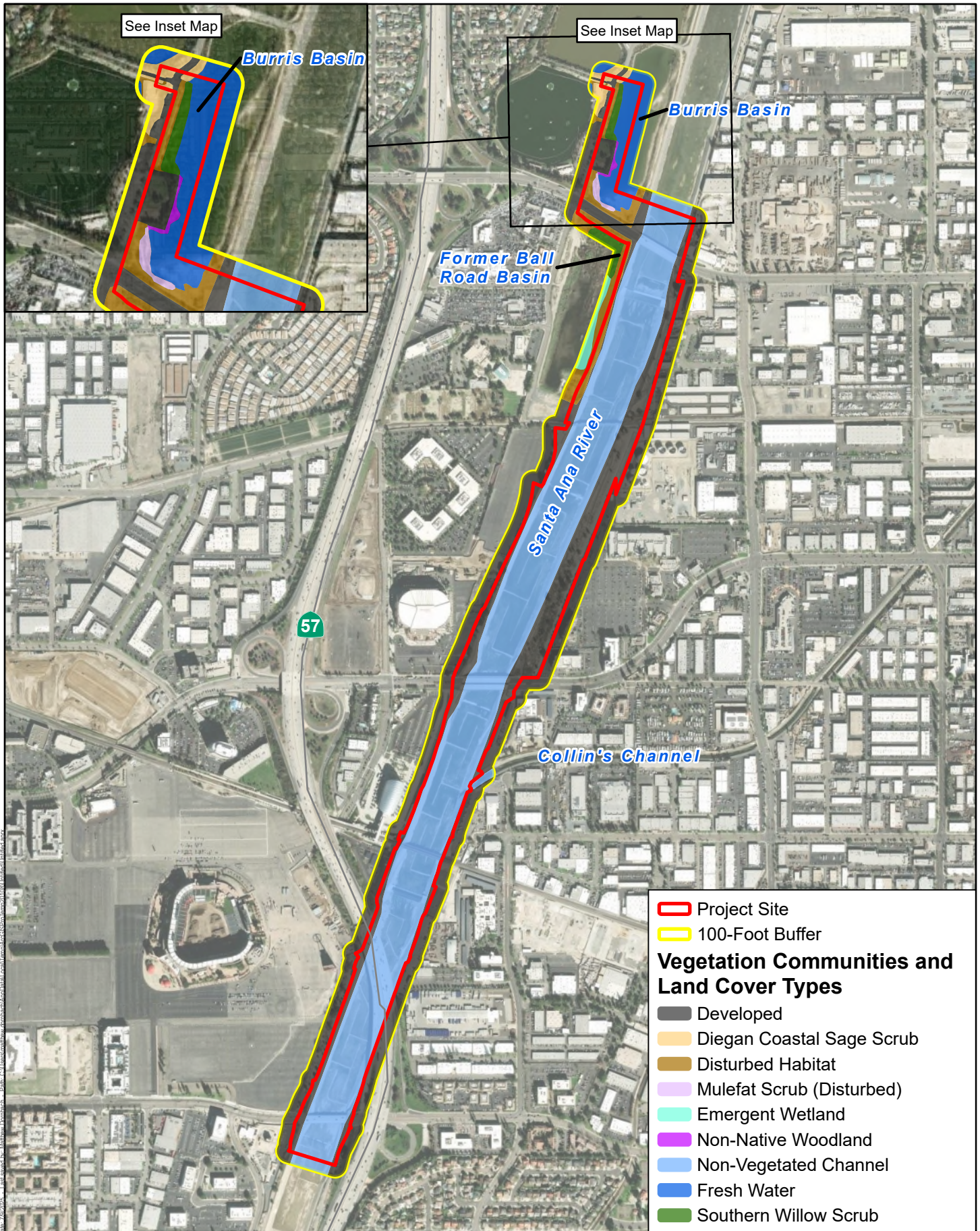


Harris & Associates



0 1,000 2,000
Feet

Figure 5
National Wetlands Inventory Results
OC River Walk Project



Source: Maxar Imagery 2021.



Harris & Associates



0 500 1,000
Feet

Figure 6

Vegetation Communities and Land Cover Types

OC River Walk Project



Source: Maxar Imagery 2021.





Source: CNDDDB 2023; Maxar Imagery 2021.



Harris & Associates



0 1,000 2,000
Feet

Figure 8
 Sensitive Species with Potential to Occur
 OC River Walk Project



This page intentionally left blank.

Appendix B. Species Observed

This page intentionally left blank.

Plant Species Observed

Scientific Name	Common Name	Special Status
GYMNOSPERMS		
Pinaceae – Pine family		
<i>Pinus coulteri</i>	Coulter pine	
<i>Pinus jeffreyi</i>	Jeffrey pine	
EUDICOTS		
Adoxaceae – Muskroot family		
<i>Sambucus nigra ssp. caerulea</i>	Blue elderberry	
Anacardiaceae – Sumac Or		
* <i>Schinus terebinthifolius</i>	Brazilian pepper tree	
Asteraceae – Sunflower family		
<i>Ambrosia acanthicarpa</i>	Annual bur-sage	
<i>Artemisia californica</i>	California sagebrush	
<i>Baccharis pilularis ssp. pilularis</i>	Coyote brush	
<i>Baccharis salicifolia ssp. salicifolia</i>	Mulefat	
* <i>Centaurea melitensis</i>	Tocalote	
* <i>Erigeron bonariensis</i>	Flax-leaved horseweed	
<i>Heterotheca grandiflora</i>	Telegraph weed	
<i>Pseudognaphalium stramineum</i>	Cotton batting everlasting	
* <i>Verbesina encelioides ssp. exauriculata</i>	Golden crownbeard	
Boraginaceae – Borage family		
<i>Heliotropium curassavicum var. oculatum</i>	Alkali heliotrope	
Brassicaceae – Mustard family		
* <i>Brassica nigra</i>	Black mustard	
Euphorbiaceae – Spurge family		
<i>Croton californicus</i>	California croton	
* <i>Ricinus communis</i>	Castorbean	
Geraniaceae – Geranium family		
* <i>Erodium moschatum</i>	Whitestem filaree	
Lamiaceae – Mint family		
<i>Salvia apiana</i>	White sage	
<i>Salvia clevelandii</i>	Fragrant sage	
<i>Salvia mellifera</i>	Black sage	
Moraceae – Mulberry family		
* <i>Ficus carica</i>	Edible fig	
Myrsinaceae – Myrsine family		
* <i>Anagallis arvensis</i>	Scarlet pimpernel	

Scientific Name	Common Name	Special Status
Polygonaceae – Buckwheat family		
<i>Eriogonum fasciculatum</i>	California buckwheat	
Salicaceae – Willow family		
<i>Salix gooddingii</i>	Goodding's black willow	
<i>Salix lasiolepis</i>	Arroyo willow	
Solanaceae – Nightshade family		
<i>Datura wrightii</i>	Wright's jimsonweed	
* <i>Nicotiana glauca</i>	Tree tobacco	
Verbenaceae – Vervain family		
* <i>Lantana camara</i>	Lantana	
MONOCOTS		
Arecaceae – Palm family		
* <i>Syagrus romanzoffiana</i>	Queen palm	
* <i>Washingtonia robusta</i>	Mexican fan palm	
Cyperaceae – Sedge family		
<i>Schoenoplectus americanus</i>	American bulrush	
Poaceae – Grass family		
* <i>Arundo donax</i>	Giant reed	
* <i>Hordeum vulgare</i>	Commercial barley	

Legend

*= Non-native or invasive species

Special Status

Federal

FE = Endangered

FT = Threatened

State

SE = Endangered

ST =Threatened

CRPR – California Rare Plant Rank

1A. Presumed extinct in California and elsewhere

1B. Rare or Endangered in California and elsewhere

2A. Presumed extinct in California, more common elsewhere

2B. Rare or Endangered in California, more common elsewhere

3. Plants for which we need more information – Review List

4. Plants of limited distribution – Watch List

Threat Ranks

.1 – Seriously endangered in California

.2 – Fairly endangered in California

.3 – Not very endangered in California

Wildlife Species Observed

Scientific Name	Common Name	Special Status
INVERTEBRATES		
Moths, Skippers, and Butterflies		
<i>Pontia protodice</i>	Checkered white	
<i>Vanessa annabella</i>	West coast lady	
<i>Hyles lineata</i>	White-lined sphinx	
<i>Estigmene acraea</i>	Salt marsh moth	
* <i>Hyles euphorbiae</i>	Leafy spurge hawk-moth	
VERTEBRATES		
Fish		
<i>Cyprinus carpio</i>	Common carp	
<i>Gambusia affinis</i>	Western mosquitofish	
<i>Micropterus</i> sp.	Bass	
Amphibians		
* <i>Lithobates catesbeianus</i>	American bullfrog	
Reptiles		
<i>Sceloporus occidentalis</i>	Western fence lizard	
Birds		
<i>Branta canadensis</i>	Canada goose	
* <i>Alopochen aegyptiacus</i>	Egyptian goose	
<i>Anas platyrhynchos</i>	Mallard	
<i>Phalacrocorax auritus</i>	Double-crested cormorant	WL
<i>Pelecanus erythrorhynchos</i>	American white pelican	SSC, BCC
<i>Ardea alba</i>	Great egret	
<i>Egretta thula</i>	Snowy egret	
<i>Nycticorax nycticorax</i>	Black-crowned night-heron	
<i>Cathartes aura</i>	Turkey vulture	
<i>Buteo jamaicensis</i>	Red-tailed hawk	
<i>Himantopus mexicanus</i>	Black-necked stilt	
<i>Recurvirostra americana</i>	American avocet	
<i>Charadrius vociferus</i>	Killdeer	
<i>Larus occidentalis</i>	Western gull	
<i>Sterna forsteri</i>	Forster's tern	
* <i>Streptopelia decaocto</i>	Eurasian collared-dove	
* <i>Zenaida macroura</i>	Mourning dove	
<i>Calypte anna</i>	Anna's hummingbird	
<i>Selasphorus sasin</i>	Allen's hummingbird	
<i>Tyrannus verticalis</i>	Western kingbird	

Scientific Name	Common Name	Special Status
<i>Vireo bellii pusillus</i>	Least Bell's vireo	FE, SE
<i>Corvus brachyrhynchos</i>	American crow	
<i>Corvus corax</i>	Common raven	
<i>Tachycineta bicolor</i>	Tree swallow	
<i>Petrochelidon pyrrhonota</i>	Cliff swallow	
<i>Hirundo rustica</i>	Barn swallow	
<i>Psaltirparus minimus</i>	Bushtit	
<i>Mimus polyglottos</i>	Northern mockingbird	
<i>Geothlypis trichas</i>	Common yellowthroat	
<i>Setophaga petechia</i>	Yellow warbler	SSC
<i>Melospiza melodia</i>	Song sparrow	
<i>Agelaius phoeniceus</i>	Red-winged blackbird	
<i>Icterus cucullatus</i>	Hooded oriole	
<i>Haemorhous mexicanus</i>	House finch	
<i>Carduelis psaltria</i>	Lesser goldfinch	
* <i>Vidua macroura</i>	Pin-tailed whydah	
Mammals		
<i>Sylvilagus audubonii</i>	Desert cottontail	
<i>Spermophilus beecheyi</i>	California ground squirrel	

Legend

*= Non-native or invasive species

Special Status

Federal

BCC = Bird of Conservation Concern

FE = Endangered

FT = Threatened

State

CFP = California Fully Protected Species

SE = Endangered

SSC = California Species of Special Concern

ST = Threatened

WL = California Watch List

Appendix C. Aquatic Resources Delineation Report

This page intentionally left blank.

Aquatic Resources Delineation Report

Orange County River Walk Project

December 2023

Prepared for:



City of Anaheim
Community Services Department, Parks Division
200 S. Anaheim Boulevard, Suite 433
Anaheim, California 92805
Contact: Ana Straabe, Principal Project Planner

Prepared by:



600 B Street, Suite 2000
San Diego, California 92101
(619) 236-1778

This page intentionally left blank.

Table of Contents

Acronyms and Abbreviations	iii
Section A Site Description, Landscape Setting	1
A.1 Project Overview	1
A.1.1 Project Location	1
A.1.2 Project Purpose	2
A.1.3 Project Description.....	2
A.2 Project Site Access.....	2
Section B Site Alteration, Current, and Past Land Use.....	5
B.1 Topography and Soils.....	5
B.2 Hydrology	6
B.3 Vegetation Communities and Land Cover Types	7
B.3.1 Fresh Water	7
B.3.2 Emergent Wetland	7
B.3.3 Non-Vegetated Channel	8
B.3.4 Southern Willow Scrub	8
Section C Precipitation Data and Analysis.....	9
C.1 Climate and Growing Season	9
C.2 Antecedent Precipitation Tool and Natural Resources Conservation Service Wetlands Climate Table Results Summary	9
C.3 Wetland Hydrology and Analysis.....	10
Section D Methods.....	11
D.1 Pre-Field Review	11
D.2 On-Site Aquatic Resources Delineation	11
D.3 On-Site Ordinary High Water Mark Investigation	13
D.4 Streamflow Duration Assessment	13
Section E Aquatic Resources Descriptions	15
E.1 Non-Wetland Waters	15
E.1.1 Santa Ana River.....	15
E.1.2 Collin's Channel.....	16
E.1.3 Orange County Water District Basin 1.....	17
E.1.4 Orange County Water District Basin 2.....	18
Section F Deviation from Local Wetlands Inventory or National Wetlands Inventory....	21
Section G Mapping Method	23
Section H Conclusions.....	25
Section I Preliminary Jurisdictional Determinations	27

Section J	Disclaimer Statement.....	29
Section K	References	31

Tables

Table 1. Non-Wetland Waters in the Survey Area	15
Table 2. Summary of Non-Wetland Waters in the Survey Area.....	25
Table 3. Potential Jurisdiction of Aquatic Resources in the Survey Area	28

Attachments

Attachment A. Figures

Attachment B. Statement of Access

Attachment C. Antecedent Precipitation Tool and NRCS WETS Table Results

Attachment D. Arid West Ordinary High Water Mark Datasheets

Attachment E. Photographic Log

Attachment F. Geographic Information Systems Data

Attachment G. ORM Bulk Upload Aquatic Resources Spreadsheet

Acronyms and Abbreviations

°F	degrees Fahrenheit
CDFW	California Department of Fish and Wildlife
County	County of Orange
GPS	Global Positioning System
Harris	Harris & Associates
NHD	National Hydrography Dataset
NIDIS	National Integrated Drought Information System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OC River Walk	Orange County River Walk
OCWD	Orange County Water District
OHW	ordinary high water mark
project	Orange County River Walk Project
RWQCB	Regional Water Quality Control Board
SAR1 Levee	Santa Ana River 1 Levee System
SART	Santa Ana River Trail
TNW	traditional navigable water
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

This page intentionally left blank.

Section A Site Description, Landscape Setting

A.1 Project Overview

The City of Anaheim is the Lead Agency responsible for preparing a Draft Environmental Impact Report to analyze the impacts of the Orange County River Walk (OC River Walk) Project (project). The project consists of various multi-purpose improvement opportunities that are identified in an effort to transform the Santa Ana River corridor and portions of the existing Santa Ana River Trail (SART) into an iconic location and experience. This Aquatic Resources Delineation Report documents the aquatic resources that occur on the project site and a 100-foot survey buffer (survey area).

A.1.1 Project Location

The project site is located along the Santa Ana River corridor, generally extending from Orangewood Avenue north to Ball Road and the existing Anaheim Coves at Burris Basin, encompassing approximately a 2-mile stretch and approximately 111 acres. The project site is adjacent to Angel Stadium, Anaheim Regional Transportation Intermodal Center, the Honda Center, and the Arena Corporate Center (ACC) buildings on the west side in the City of Anaheim (Appendix A, Figures; Figure 1, Regional Location, and Figure 2, Local Vicinity). On the east side, it is near the Sandra Hutchens Regional Law Enforcement Training Center (a facility that includes a combat shooting range), the Orange County Public Works offices, the Stadium Promenade shopping mall, the Extended Stay America – Orange, and the Kinder Morgan Orange Terminal in the City of Orange. The project site is located within the Cities of Anaheim and Orange, with many different landowners and jurisdictional bodies.

The majority of the project site includes the concrete-lined Santa Ana River corridor surrounded by urban development, including commercial, industrial, and residential uses, within the Cities of Anaheim and Orange (Figure 2). The Santa Ana River is within the Orange County Water District's (OCWD) jurisdiction north of the Union Pacific Railroad (UPRR) and within the Orange County Flood Control District's (OCFCD) jurisdiction south of the UPRR. Within the boundaries of the project site, five overcrossings and/or bridges span the Santa Ana River: Ball Road Bridge, UPRR overcrossing, Katella Avenue Bridge, Metrolink/Los Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor) railroad overcrossing, and Orangewood Avenue Bridge. Additionally, State Route (SR-) 57 crosses the Santa Ana River. The northern portion of the project site includes the Orange County Water District (OCWD) pump house, associated water detention basins, and the eastern portion of the Islands Golf Center. The project site's northern boundary connects to the existing Anaheim Coves at Burris Basin..

A.1.2 Project Purpose

The following objectives have been established for the project and will aid decision makers in their review of the project and associated environmental impacts:

1. Adopt the OC River Walk Conceptual Master Plan for OC River Walk Project to further enhance and accentuate existing recreational areas, facilitate pedestrian and bicycle access, and promote the use of the river corridor open space area for the community benefit.
2. Implement projects identified in the OC River Walk Conceptual Master Plan that will create visually appealing outdoor public amenities that will benefit and promote environmental and community health, recreation, safety, entertainment, wayfinding, art, education, cultural awareness, beauty, connectivity, water supply, economic, and natural resource needs.
3. Provide seamless and cohesive improvements across jurisdictions on the project site to benefit the public and the area's aesthetics.
4. Implement projects to transform and improve the river and riverbed's groundwater recharge potential and improve the river corridor's ecology (flora and fauna).
5. Maintain and enhance flood protection capacity and resiliency.
6. Enhance connectivity and community access by leveraging the project site's location near ARTIC, major entertainment venues, and adjacent mixed-use developments..

A.1.3 Project Description

The project consists of consists of various multi-purpose improvements to transform the Santa Ana River corridor and portions of the existing Santa Ana River Trail, along with related off-site improvements necessary for its implementation. The main components of the Conceptual Master Plan involve creating two water impoundments by installing three inflatable rubber dams, modifying the riverbanks, constructing two pedestrian/bike bridges, providing new trails, improving existing trails, creating new and protection of existing access ramps, constructing two new undercrossings on the west bank at the Union Pacific Railroad and the Metrolink railroad, providing enhanced community amenities (e.g., terraced seating, nature play areas, parklets, plazas, gathering areas for large-scale events, festivals, and other activities, water access, kayak launch, etc.), and other improvements. These improvements would require the implementation of 19 project elements, which have been categorized into four groups: Group A – Impoundments, Storm Drain Diversions, and Embankments; Group B – New Pedestrian/Bike Bridges; Group C – New Trails and Trail Improvements; and Group D – Enhanced Community Recreation Amenities, as shown Table ES-1, Conceptual Master Plan Elements.

A.2 Project Site Access

The majority of the project site is publicly accessible on public roadways and the SART (Figure 2). Starting from Interstate (I-) 5 north, take Exit 107A toward Pomona onto State Route 57 north and, after 2 miles, take Exit 3 for Ball Road, turn right, and then turn left into the Islands Golf Center

to access the northern portion of the project site. The remainder of the project site to the south includes the Santa Ana River corridor and can be accessed via the SART. The geographic coordinates for the northern and southern limits of the project site are approximately 33.821440°N, -117.870396°W and 33.795975°N, -117.878083°W, respectively (Attachment B, Statement of Access).

This page intentionally left blank.

Section B Site Alteration, Current, and Past Land Use

The survey area is in the highly developed eastern portion of the City of Orange, adjacent to the City of Anaheim (Figures 1 and 2). The Santa Ana River corridor, which makes up the majority of the survey area, is entirely concrete lined and has concrete riprap lining the riverbanks (Figure 2). The portion of the Santa Ana River in the survey area also contains the U.S. Army Corps of Engineers (USACE) constructed Santa Ana River 1 Levee System (SAR1 Levee System) (Upstream Reach) (USACE 2015). The SAR1 Levee System (Upstream Reach) is located on the right/northwest bank of the Santa Ana River in the cities of Anaheim and Orange. The SAR1 Levee System (Upstream Reach) extends from upstream of Yorba Linda Boulevard/Weir Canyon Road to upstream of the I-5 Freeway, a distance of approximately 11.04 miles. The SAR1 Levee System (Upstream Reach) has a levee embankment with a riverward slope lined with either riprap, grouted stone, reinforced concrete, or shotcrete reinforced with welded wire fabric. Other structures in the SAR1 Levee System (Upstream Reach) include wing walls, retaining walls, a floodwall, drop structures, grade stabilizers, 74 conduits associated with the side-drainage/diversion structures, numerous utility crossings, 16 bridge crossings, and 25 access ramps. The SAR1 Levee System (Upstream Reach) was federally authorized and subsequently constructed by the USACE, Los Angeles District. Construction of the SAR1 Levee System (Upstream Reach) was completed in 1999 and is now entirely operated and maintained by Orange County Flood Control District, which is administered by Orange County Public Works staff (USACE 2015).

Santa Ana River Flood Control was observed operating heavy construction equipment to actively move sediment in the bottom of the Santa Ana River during the 2023 aquatic resources delineation field survey. The northern portion of the survey area contains the OCWD pump house and associated water detention basins (OCWD Basins 1 and 2). The OCWD Basins 1 and 2, while artificially constructed, are earthen bottomed and support riparian and wetland vegetation.

The urban development in and surrounding the survey area, including the construction and maintenance of the SAR1 Levee System and other flood control infrastructure, has both disturbed and altered the natural flows through the survey area. These alterations include diverting and directing stormwater flows through detention basins and concrete-lined channels and culverts into the concrete- and riprap-lined Santa Ana River, which makes up the majority of the survey area.

B.1 Topography and Soils

The survey area is in a relatively flat urban setting, with the greatest elevation decreases occurring in the Santa Ana River corridor and the OCWD Basins 1 and 2 (Figure 2 and Figure 3, USGS Topographic Map). The survey area is depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim quadrangle in Township 4 South, Range 10 West, Sections 13, 24, and 25 and the 7.5-minute Orange quadrangle in Township 4 South, Range 9 West, Sections 18 and 19 (Figure 3).

The on-site elevation ranges from approximately 133 to 190 feet above mean sea level. The topographical lines on Figure 3 represent the elevations that occur in the survey area.

The survey area is underlain by three soil types: Metz loamy sand (zero to 2 percent slopes), Pits (zero to 5 percent slopes), and Riverwash (Figure 4, Soils). The northeastern corner of the survey area that cannot be characterized by soil type is water. Metz loamy sand occurs along the eastern edge of the survey area and consists of somewhat excessively drained soils that formed in alluvial material from mixed but dominantly sedimentary rocks, typically found in alluvial fans and floodplains. Pits constitutes a small portion in the northwestern corner of the survey area and consists of poorly drained soils that formed in fine-textured alluvium weathered from igneous rocks that are found on flood plains and in basins. Riverwash represents the majority of the survey area and consists of very recent depositions of gravel, sand, and silt alluvium along major streams and their tributaries (USDA 2019). The Riverwash and Pits soil types that occur in the survey area are classified as hydric (wetland) soils and have the potential to contain hydric inclusions (USDA 2019).

B.2 Hydrology

The project site is in the Santa Ana River Watershed (Hydrologic Unit 18070203) (USGS 2023). The Santa Ana River Watershed is the largest in Southern California and encompasses 2,840 square miles within portions of Riverside and Orange Counties, and a small part of eastern Los Angeles County (USGS 2023). Santa Ana River Watershed supports a population of over 6 million people across these counties. The total length of the Santa Ana River and the streams that drain into it is approximately 700 miles, starting from its northernmost reaches at the crest of the San Bernardino Mountains out to the coast near Huntington Beach. This network of waterways includes features that are both natural and channelized in concrete. The Santa Ana River is defined by the USACE as a traditional navigable water (TNW) (USACE 2023a). Portions of the Santa Ana River are on the Clean Water Act Section 303(d) List for impaired waters, however, the reach in the survey area is not listed as impaired (SWRCB 2023).

The National Wetlands Inventory (NWI) results identify several mapped aquatic features in the survey area (Figure 5, National Wetlands Inventory Results) (USFWS 2021). The Santa Ana River is identified as a lake, as is also OCWD Basin 1 in the northwestern portion of the survey area. The OCWD Basin 2, west of the Santa Ana River and south of the OCWD Basin 1, is identified on the NWI results as both freshwater emergent wetland and freshwater pond. One riverine feature (Collin's Channel) is identified connecting to the east side of the Santa Ana River in the central portion of the survey area. No other aquatic features are identified in the survey area by the NWI results.

Based on a review of the USGS National Hydrography Dataset (NHD), the survey area contains several mapped aquatic resources, including those that have hydrologic connections to the Santa Ana River (USGS 2023). The Santa Ana River is identified as a stream/river with an artificial path, likely because of the concrete channelization of the river and construction of the SAR1 Levee System

(Upstream Reach). Both OCWD Basins 1 and 2 are identified as reservoirs with intermittent connections to each other and the Santa Ana River. Collin's Channel is identified as a canal/ditch that is connected to the Santa Ana River from the east. No other aquatic features are identified in the survey area by the USGS NHD results. The aquatic resources that occur in the survey area are discussed in Section E, Aquatic Resources Descriptions.

As previously discussed at the beginning of Section B, the aquatic resources and drainage patterns on and adjacent to the survey area are highly altered from urban development and stormwater control infrastructure, especially within the Santa Ana River corridor.

B.3 Vegetation Communities and Land Cover Types

A total of nine vegetation communities and land cover types were observed in the survey area: fresh water, emergent wetland, non-vegetated channel, Diegan coastal sage scrub, mulefat scrub (disturbed), southern willow scrub, non-native woodland, disturbed habitat, and developed land (Figure 6, Vegetation Communities and Land Cover Types). Four vegetation communities associated with aquatic resources in the survey area, fresh water, emergent wetland, non-vegetated channel, and southern willow scrub, are described in the following subsections. The aquatic resources associated with these vegetation communities are discussed further in Section E.

B.3.1 Fresh Water

Fresh water includes year-round bodies of fresh water in the form of lakes, streams, ponds, or rivers. Fresh water includes those portions of water bodies that are usually covered by water and contain less than 10 percent vegetated cover (Holland 1986).

A total of approximately 6.63 acres of fresh water was documented, with 3.48 acres occurring on the project site and the remaining 3.15 acres in the survey buffer (Figure 6). The fresh water in the survey area occurs within OCWD Basins 1 and 2, as well as the Islands Golf Center and the OCWD owned and operated water distribution plant in the northwestern portion of the survey area. OCWD Basins 1 and 2 have direct surface water connectivity to the Santa Ana River, directly east of the basins.

B.3.2 Emergent Wetland

Emergent wetlands are dominated by low growing, perennial wetland species. These can be found in channels, seeps and springs, floodplains, margins of lakes and rivers, and various basins such as pools and ponds, palustrine lakes, montane meadows, and dune swales. Characteristic species include sedges (*Carex* sp.), spikerushes (*Eleocharis* sp.), rushes (*Juncus* sp.), docks and sorrels (*Rumex* sp.), and giant bur-reed (*Sparganium eurycarpum*), and many others (Holland 1986).

A total of approximately 0.97 acre of emergent wetland was documented within OCWD Basin 2 in the western edge of the survey buffer, outside the project site (Figure 6). The emergent wetland within OCWD Basin 2 appears to receive water from OCWD Basin 1 through a large concrete box culvert

under Ball Road from the northwest. Saturated soils and surface water were observed in the emergent wetland during the May 2023 survey, and dominant plant species included curly dock (*Rumex crispus*), tall flatsedge (*Cyperus eragrostis*), Goodding's willow (*Salix gooddingii*), mulefat (*Baccharis salicifolia*), and arundo (*Arundo donax*).

B.3.3 Non-Vegetated Channel

Non-vegetated channel consists of predominantly sandy, gravelly, or rocky channels lacking or with reduced vegetation. Variable water lines inhibit the growth of vegetation, although some weedy species of grasses may grow along the outer edges of the channel. Vegetation may exist there but is usually less than 10 percent of the total cover (Holland 1986).

Non-vegetated channel comprises the majority of the survey area. A total of approximately 76.28 acres of non-vegetated channel was documented, with 74.33 acres occurring on the project site and the remaining 1.95 acres in the survey buffer (Figure 6). The Santa Ana River and Collin's Channel are both defined as non-vegetated channels. The extent of the Santa Ana River that runs northeast to southwest through the majority of the survey area is a fully concrete- and riprap-lined channel and does not support any vegetation. Collin's Channel is a riprap- and concrete-lined channel that enters the eastern edge of the survey area and connects to the eastern side of the Santa Ana River. Sparse grasses and weeds were observed growing through the rock riprap in Collin's Channel, however, no substantial vegetation community was observed in the channel.

B.3.4 Southern Willow Scrub

Southern willow scrub consists of dense, broad-leaved, winter-deciduous stands of trees dominated by shrubby willows (*Salix* sp.) in association with mulefat. This vegetation community typically occurs on loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows (Holland 1986).

A total of approximately 1.63 acre of southern willow scrub was documented, with 0.66 acre occurring in the northwestern portion of the project site and 0.97 acre in the western edge of the survey buffer (Figure 6). The 0.66 acre of southern willow scrub on the project site is within and along the western shore of OCWD Basin 1. This area is dominated by Goodding's willow, with mulefat and a small stand of bulrush (*Typha* sp.) in the understory. The 0.97 acre of southern willow scrub along the western edge of the survey buffer within OCWD Basin 2 is densely vegetated with Goodding's willow with mulefat and black mustard (*Brassica nigra*) in the understory and outer edges.

Section C Precipitation Data and Analysis

C.1 Climate and Growing Season

On a regional level, Orange County has a Mediterranean climate, which is characterized by wet winters and dry summers. This is largely because of a semi-permanent high-pressure zone that sits over the Pacific Ocean during much of the year and forms a fog belt (marine layer). Generalized climate in the region is regarded as dry, subhumid mesothermal, with warm dry summers and cold moist winters, which pushes the growing season to the wet months of the year (late winter to early spring). Annual vegetation often goes dormant (senescent) during the later summer months until initial rainfall starts in the fall. The rainy season typically lasts from late October through April.

The closest weather station to the survey area is Anaheim Lake, approximately 3 miles northeast of the survey area. Between 2003 and 2023, the average maximum temperature was 72 degrees Fahrenheit (°F), and the average minimum temperature was 52°F. The average annual precipitation during this time period was 13.2 inches. In 2022, the total rainfall was 6.35 inches, approximately 1.7 inches less than 2021 (NRCS 2023). As of May 2023, when the aquatic resources delineation fieldwork was conducted, total precipitation in the area was 19.4 inches, approximately 18 inches more than May 2022.

C.2 Antecedent Precipitation Tool and Natural Resources Conservation Service Wetlands Climate Table Results Summary

A typical rainfall year in the City of Orange has historically been expressed by 13 inches of annual precipitation. To calculate if the aquatic resources delineation fell into a wet, dry, or typical rainfall year, the Antecedent Precipitation Tool, Version 2 (USACE 2023b) was used, and the National Integrated Drought Information System (NIDIS) was reviewed (NOAA 2023). The Antecedent Precipitation Tool and NIDIS results determined that the aquatic resources delineation was conducted in wetter than normal conditions for precipitation in the dry season during non-drought conditions (Attachment C, Antecedent Precipitation Tool and NRCS WETS Table Results). Further, according to NIDIS for Orange County, May 2023 was the wettest May on record in the past 129 years, with the period of January to May 2023 receiving approximately 8.6 inches more precipitation than the average (NOAA 2023).

Attachment C includes the Natural Resources Conservation Service (NRCS) Wetland Climate Table for 2003–2023 at Anaheim Lake, California. Average annual precipitation in the area surrounding the survey area over the past 20 years was approximately 13.2 inches.

C.3 Wetland Hydrology and Analysis

Historical and current aerial imagery, topographic maps, and NWI and USGS hydrology maps were reviewed to provide wetland hydrology and analysis. The NWI results are presented on Figure 5. Both the NWI and USGS NHD maps identify the Santa Ana River, the OCWD Basins 1 and 2, and Collin's Channel in the survey area (USFWS 2021; USGS 2023). No other aquatic features are identified in the survey area by the NWI or the USGS NHD results. Historical aerial imagery depicts what may have been the natural course of the Santa Ana River since at least 1952 and the subsequent channelization of the river between that time and 1963 when urban development increased in the surrounding area (Historic Aerials 2023). All aquatic resources observed in the survey area during the aquatic resources delineation fieldwork on May 16, 2023, are documented in the NWI and USGS NHD mapping results (Figure 5).

Section D Methods

D.1 Pre-Field Review

Prior to conducting fieldwork, the following materials were reviewed:

- Topographic maps
- Aerial imagery (Google Earth 1985–2022)
- Historical aerial imagery (Historic Aerials 2023)
- U.S. Fish and Wildlife Service NWI Wetlands Mapper maps (USFWS 2021)
- USGS NHD maps (USGS 2023)
- U.S. Department of Agriculture NRCS Web Soil Survey for the project site, which lists hydric soils found in Orange County (USDA 2019)

D.2 On-Site Aquatic Resources Delineation

The aquatic resources delineation was conducted using the routine on-site determination method described in the USACE Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (USACE 2008a). A Harris aquatic resources specialist conducted the aquatic resources delineation fieldwork on May 16, 2023, to identify aquatic resources on the project site and within a 100-foot survey buffer surrounding the project site (together referred to as the survey area). An Arid West Region Ordinary High Water Mark (OHWM) datasheet and a USACE three-parameter wetland determination datasheet for the Arid West Region (wetland determination datasheet) were completed at each sampling point (non-wetland sampling points NW-1-1, NW-1-2, NW-2-1, and NW-2-2; wetland sampling points W-1-1, W-1-2, W-2-1, and W-2-2) for each unique aquatic resource feature (Attachment D, Arid West Ordinary High Water Mark and Wetland Determination Datasheets). Each sampling point was collected to investigate the presence and extent of potential wetland and non-wetland waters.

Because the two non-wetland waters documented in the survey area, the Santa Ana River and Collin's Channel, are completely channelized with concrete and riprap, the channel dimensions do not change and are uniform throughout their reaches within the survey area. Therefore, only one non-wetland sampling point was collected for each feature. The OCWD Basins 1 and 2 are on private property, and while direct access to these areas was not provided, binoculars were used to collect data to complete the wetland determination datasheets to the extent feasible. The representative photographs of the aquatic resources that occur in the survey area are provided in Attachment E, Photographic Log. The delineation methods applied at each sampling point are described below.

Sampling point NW-1-1 was collected in the center of the Santa Ana River where the concrete-lined channel enters the northern portion of the survey area (Figure 7, Aquatic Resources; Photographs 1 through 3). Sampling point NW-1-1 documents where an OHWM was observed to determine the extent of the non-wetland feature. The delineation results for sampling point NW-1-1 are presented in Section E.

Sampling point NW-1-2 was collected in the center of the Santa Ana River at the southern end of the survey area to document the southern limits of the Santa Ana River in the survey area (Figure 7; Photograph 8). The delineation results for sampling point NW-1-2 are presented in Section E.

Sampling point NW-2-1 was collected in the center of Collin's Channel where the riprap-lined channel enters the northeastern edge of the survey area (Figure 7; Photograph 9). Sampling point NW-2-1 documents where an OHWM was observed and was used to determine the extent of the non-wetland feature. The delineation results for sampling point NW-2-1 are presented in Section E.

Sampling point NW-2-2 was collected in the center of Collin's Channel where the concrete-lined channel connects to the Santa Ana River through a concrete box culvert (Figure 7; Photograph 10). Sampling point NW-2-2 documents the southwestern limit of Collin's Channel in the survey area. The delineation results for sampling point NW-2-2 are presented in Section E.

Sampling point W-1-1 was collected in the eastern portion of the OCWD Basin 1 approximately 1 foot below the observed OHWM (Figure 7; Photographs 12 and 16). A wetland determination datasheet was completed at sampling point W-1-1 to determine the presence of wetland indicators in this portion of the survey area. The delineation results for sampling point W-1-1 are presented in Section E.

Sampling point W-1-2 was collected in the eastern portion of the OCWD Basin 1 approximately 5 feet above the observed OHWM (Figure 7; Photograph 13). A wetland determination datasheet was completed at sampling point W-1-2 to determine the presence of wetland indicators in this portion of the survey area. The delineation results for sampling point W-1-2 are presented in Section E.

Sampling point W-2-1 was collected in the eastern portion of the OCWD Basin 2 approximately 1 foot below the observed OHWM (Figure 7; Photographs 18 and 19). A wetland determination datasheet was completed at sampling point W-2-1 to determine the presence of wetland indicators in this portion of the survey area. The delineation results for sampling point W-2-1 are presented in Section E.

Sampling point W-2-2 was collected in the eastern portion of the OCWD Basin 2 approximately 5 feet above the observed OHWM (Figure 7; Photographs 18 through 22). A wetland determination datasheet was completed at sampling point W-2-2 to determine the presence of wetland indicators in this portion of the survey area. The delineation results for sampling point W-2-2 are presented in Section E.

D.3 On-Site Ordinary High Water Mark Investigation

The aquatic resources delineation was conducted using the routine on-site determination method described in A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b). As described in Section B, the survey area consists of a primarily urban developed land in the eastern portion of the City of Orange, adjacent to the City of Anaheim.

Data on vegetation, soil, and hydrologic characteristics was collected and recorded following the guidance in A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b). An OHWM datasheet was completed for locations of non-wetland waters in the survey area, the Santa Ana River and Collin's Channel, (Attachment D). The OHWMs in the Santa Ana River (sampling point NW-1-1) and Collin's Channel (sampling point NW-2-1) were identified based on field observations of presence of OHWM (USACE 2008b). Because both of these non-wetland waters are completely channelized in concrete and riprap, other defined non-wetland water indicators, including changes in sediment texture, vegetation species or cover, break in bank slope, and floodplain contours, were not present and could not be documented per the field guide. Results of the OHWM identifications conducted for sampling points NW-1-1 and NW-2-1 are in Section E.

D.4 Streamflow Duration Assessment

The Streamflow Duration Assessment Method (SDAM) for the Arid West was completed for Channels 1 and 2 (USEPA 2023) (Attachment F, SDAM for the Arid West Forms). SDAMs are rapid field assessment methods that use hydrological, geomorphological, and/or biological indicators, observable in a single site visit, to classify streamflow duration as perennial, intermittent, or ephemeral at the reach scale. The SDAM results for the Santa Ana River and Collin's Channel are presented in Section E.

This page intentionally left blank.

Section E Aquatic Resources Descriptions

E.1 Non-Wetland Waters

The Santa Ana River, Collin's Channel, and OCWD Basins 1 and 2 observed in the survey area were determined to be non-wetland waters. The non-wetland waters observed in the survey area are summarized in Table 1, Non-Wetland Waters in the Survey Area, and described in the following subsections.

Table 1. Non-Wetland Waters in the Survey Area

Feature	Non-Wetland Waters (acres)	Linear Feet
Santa Ana River	75.96	8,953
Collin's Channel	0.32	248
OCWD Basin 1	6.63	—
OCWD Basin 1 Southern Willow Scrub	0.66	—
OCWD Basin 2 (Including Emergent Wetland)	0.97	—
Total ¹	84.54	9,201

Notes:

¹ Total rounded to one-hundredth of an acre.

The completed OHWM datasheets for the Santa Ana River and Collin's Channel (sampling points NW-1-1, NW-1-2, NW-2-1, and NW-2-2) and the wetland datasheets for OCWD Basins 1 and 2 (sampling points W-1-1, W-1-2, W-2-1, and W-2-2) are in Attachment D. Representative photographs of the aquatic resources and sampling points taken in the survey area are in Attachment E. Electronic spatial data of the aquatic resources in the survey area is in Attachment F, Geographic Information Systems Data. The USACE ORM Bulk Upload Aquatic Resources Spreadsheet for the aquatic resources observed in the survey area is in Attachment G, ORM Bulk Upload Aquatic Resources Spreadsheet.

E.1.1 Santa Ana River

The Santa Ana River is a concrete- and riprap-lined channel that enters the northeastern portion of the survey area and extends approximately 8,953 linear feet south through the center of the survey area (Figure 7). The Santa Ana River exits the southern end of the survey area and continues south. The entire length of the Santa Ana River within the survey area is defined by an OHWM with a width of approximately 315 feet. The SDAM conducted for the Santa Ana River determined that it is at least an intermittent feature, but likely perennial (Attachment F).

E.1.1.1 Ordinary High Water Mark Analysis

The Santa Ana River is an approximately 75.96-acre (8,953-linear-foot) non-wetland water that extends through the center of the majority of the survey area (Table 1; Figure 7). Figure 7 shows

where sampling points NW-1-1 and NW-1-2 were collected in the OHWM of the Santa Ana River to document the extent of this aquatic feature within the survey area. Photographs 1 through 8 in Attachment E provide representative views of the extent of the Santa Ana River in the survey area. The OHWM indicators investigated at sampling points NW-1-1 and NW-1-2 are described below.

Sampling Point NW-1-1: The OHWM is approximately 315 feet wide and 1.5 feet deep. Other OHWM indicators observed at sampling point NW-1-1 include a break in bank slope and the presence of a defined bed and bank. The Santa Ana River is completely concrete lined with rock riprap lining the channel banks (Photographs 1 through 3). No vegetation or soils were observed within the limits of the Santa Ana River channel. At sampling point NW-1-1, the Santa Ana River is surrounded by developed land, with the OCWD Basins 1 and 2 approximately 460 feet northwest and 340 feet west, respectively. The Santa Ana River is significantly lower in elevation than the surrounding survey area.

Sampling Point NW-1-2: The OHWM is approximately 315 feet wide and 1.5 feet deep. Other OHWM indicators observed at sampling point NW-1-2 include a break in bank slope and the presence of a defined bed and bank. The Santa Ana River is completely concrete lined with rock riprap lining the channel banks (Photograph 8). No vegetation or soils were observed within the limits of the Santa Ana River channel. At sampling point NW-1-2, the Santa Ana River is surrounded by developed land, with the channelized river continuing to the south. The Santa Ana River is significantly lower in elevation than the surrounding survey area.

E.1.2 Collin's Channel

Collin's Channel is a riprap- and concrete-lined channel that enters the eastern edge of the survey area and connects to the eastern side of the Santa Ana River through a large box culvert (Figure 7; Photographs 9 through 11). The entire length of Collin's Channel is defined by an OHWM with a width of approximately 5 feet. The SDAM conducted for Collin's Channel determined that it is at least an intermittent feature (Attachment F).

E.1.2.1 Ordinary High Water Mark Analysis

Collin's Channel is an approximately 0.32-acre (248-linear-foot) non-wetland water that occurs in the eastern portion of the survey area (Table 1; Figure 7). Figure 7 shows where sampling points NW-2-1 and NW-2-2 were collected in the OHWM of Collin's Channel. Photographs 9 through 11 in Attachment E provide representative views of the extent of Collin's Channel in the survey area. The OHWM indicators investigated at sampling points NW-2-1 and NW-2-2 are described below.

Sampling Point NW-2-1: The OHWM is approximately 5 feet wide and 0.5 foot deep. Other OHWM indicators observed at sampling point NW-2-1 include a break in bank slope and the presence of a defined bed and bank. Collin's Channel is completely lined with rock riprap and no soils were

visible. Sparse grasses and weeds were observed growing through the rock riprap outside the OHWM at sampling point NW-2-1 (Photograph 9). At sampling point NW-2-1, Collin's Channel is surrounded by developed land, with the Santa Ana River corridor directly to the west. Collin's Channel is lower in elevation than the surrounding survey area loam.

Sampling Point NW-2-2: The OHWM is approximately 5 feet wide and 0.5 foot deep. Other OHWM indicators observed at sampling point NW-2-2 include a break in bank slope and the presence of a defined bed and bank. Collin's Channel is completely concrete lined at sampling point NW-2-2 (Photograph 10). No vegetation or soils were observed within Collin's Channel at sampling point NW-2-2. Collin's Channel is surrounded by developed land, with the Santa Ana River corridor directly to the west. Collin's Channel is lower in elevation than the surrounding survey area loam.

E.1.3 Orange County Water District Basin 1

OCWD Basin 1 occurs in the northwestern portion of the survey area (Figure 7; Photographs 12 through 17). This area is characterized as a large, depressed basin with a predominantly unvegetated slope that decreases in elevation until it reaches what appeared to be the OHWM of the basin. Ponded fresh water was observed within OCWD Basin 1 up to the OHWM. The majority of OCWD Basin 1 is unvegetated, however, the west-central edge of the basin is vegetated with a stand of southern willow scrub, including Goodding's willow, mulefat, and bulrush (*Typha* sp.) which appear to be growing along and just under the OHWM. OCWD Basin 1 was determined to be a non-wetland water containing both non-wetland (fresh water) and an emergent wetland within the limits of the OHWM. OCWD Basin 1 has a minimum depth of 1 foot along the edges. The maximum depth of OCWD Basin 1 could not be determined because there was no direct access to the basin. OCWD Basin 1 is connected to OCWD Basin 2 through a concrete box culvert in the southwestern corner that runs under Ball Road.

E.1.3.1 Aquatic Resources Delineation Results

OCWD Basin 1 is an approximately 7.29-acre non-wetland water in the northwestern portion of the survey area (Table 1; Figure 7). As previously discussed in Section B, OCWD Basin 1 is a managed water detention basin owned and operated by the OCWD. The OHWM of the basin was documented based on observed indicators, including abrupt shifts in vegetative cover and water staining along the shoreline. Sampling points W-1-1 and W-1-2 described below were collected in the western portion of the basin to document the presence of wetland indicators (Figure 7). Photographs 12 through 17 in Attachment E provide representative views of the extent of OCWD Basin 1 in the survey area. The completed wetland determination datasheets for sampling points W-1-1 and W-1-2 are in Attachment D. Wetland indicators investigated at sampling points W-1-2 and W-1-2 are described below.

Sampling Point W-1-1: Sampling point W-1-1 was collected approximately 1 foot below the observed OHWM in the western portion of OCWD Basin 1 (Figure 7; Photographs 12 and 16). The data

collected at sampling point W-1-1 determined that wetland hydrology, hydric soils, and hydrophytic vegetation were present or assumed to be present, based on specific factors. Two facultative wetland plants, Goodding's willow and mulefat, and one upland plant, black mustard, were the dominant plant species at sampling point W-1-1. Therefore, hydrophytic vegetation was determined to be present. No soil pit could be dug at sampling point W-1-1 because there was no direct access to the basin. However, hydric soil was assumed present based on long-term inundation and saturation as well as the persistence of hydrophytic vegetation in the water detention basin (Historic Aerials 2023). The presence of surface water and soil saturation observed at sampling point W-1-1 determined that wetland hydrology is present. While all three wetland indicators were determined to be present, these indicators occur below the OHWM of OCWD Basin 1. Therefore, OCWD Basin 1 is considered a non-wetland water with a three-parameter emergent wetland within the limits of the feature.

Sampling Point W-1-2: Sampling point W-1-2 was collected approximately 5 feet above the observed OHWM in the western portion of OCWD Basin 1 (Figure 7; Photograph 13). The data collected at sampling point W-1-2 determined that wetland hydrology, hydric soils, and hydrophytic vegetation were not present. Two upland plant species, black mustard and star thistle (*Centaurea calcitrapa*), were documented at sampling point W-1-2. Therefore, hydrophytic vegetation was determined not to be present. No soil pit could be dug at sampling point W-1-2 because there was no direct access to the basin. However, hydric soils were assumed not to be present based on the location of the sampling point above the observed OHWM of the managed water detention basin and the lack of wetland plant species supported by the soil (Historic Aerials 2023). None of the three wetland indicators were observed at sampling point W-1-2, and this area was determined to be upland. Sampling point W-1-2 functions as an upland sampling point paired with sampling point W-1-1, delineating the limits of the non-wetland water OCWD Basin 1 and the in-feature three-parameter wetland.

E.1.4 Orange County Water District Basin 2

The eastern half of OCWD Basin 2 occurs in the northwestern portion of the survey area, south of OCWD Basin 1 (Figure 7). This area is characterized as a large, depressed basin with a densely vegetated slope that decreases in elevation until it reaches the bottom of the basin, which is also densely vegetated with predominantly arundo, curly dock, and Goodding's willow. OCWD Basin 2 was determined to be a non-wetland water that contains an emergent wetland within the limits of the OHWM. OCWD Basin 2 is connected to OCWD Basin 1 to the north through a concrete box culvert that runs under Ball Road. A concrete box culvert in the southeastern corner of OCWD Basin 2 connects it to the Santa Ana River channel to the southeast.

E.1.4.1 Aquatic Resources Delineation Results

OCWD Basin 2 is an approximately 1.94-acre non-wetland water in the northwestern portion of the survey area (Table 1; Figure 7). As previously discussed in Section B, OCWD Basin 2 is a managed water detention basin owned and operated by the OCWD. The OHWM of the basin was documented based on observed indicators, including abrupt shifts in vegetative species and cover and water staining along the shoreline. Sampling points W-2-1 and W-2-2 described below were collected in the eastern portion of the basin to document the presence of wetland indicators (Figure 7). The completed wetland determination datasheets for sampling points W-2-1 and W-2-2 are in Attachment D. Wetland indicators investigated at sampling points W-2-1 and W-2-2 are described below.

Sampling Point W-2-1: Sampling point W-2-1 was collected approximately 1 foot below the observed OHWM in the eastern portion of OCWD Basin 2. The data collected at sampling point W-2-1 determined that wetland hydrology, hydric soils, and hydrophytic vegetation were present (Figure 7; Photographs 18 and 19). Two facultative wetland plants, Goodding's willow and arundo, and one facultative plant, curly dock, were the dominant plant species at sampling point W-2-1. Therefore, hydrophytic vegetation was determined to be present. No soil pit could be dug at sampling point W-2-1 because there was no direct access to the basin. However, hydric soil was assumed present based on long-term inundation and saturation as well as the presence of hydrophytic vegetation in the water detention basin (Historic Aerials 2023). The presence of surface water and soil saturation observed at sampling point W-2-1 determined that wetland hydrology is present. While all three wetland indicators were determined to be present, these indicators occur below the OHWM of OCWD Basin 2. Therefore, OCWD Basin 2 is considered a non-wetland water with a three-parameter emergent wetland within the limits of the feature.

Sampling Point W-2-2: Sampling point W-2-2 was collected approximately 5 feet above the observed OHWM in the eastern portion of OCWD Basin 2. The data collected at sampling point W-2-2 determined that wetland hydrology, hydric soils, and hydrophytic vegetation were not present (Figure 7; Photographs 18 through 22). The only plants that occur at sampling point W-2-2 are two upland plant species, black mustard and star thistle. Therefore, hydrophytic vegetation was determined not to be present. No soil pit could be dug at sampling point W-2-2 because there was no direct access to the basin. However, hydric soils were assumed not to be present based on the location of the sampling point above the observed OHWM of the managed water detention basin and the lack of wetland plant species supported by the soil (Historic Aerials 2023). None of the three wetland indicators were observed at sampling point W-2-2, and this area was determined to be upland. Sampling point W-2-2 functions as an upland sampling point paired with sampling point W-2-1, delineating the limits of the non-wetland water OCWD Basin 2.

This page intentionally left blank.

Section F Deviation from Local Wetlands Inventory or National Wetlands Inventory

The NWI and USGS NHD mapping results identify all four of the aquatic resources observed in the survey area during the aquatic resources delineation fieldwork. No other aquatic resources were identified in the survey area by the NWI and USGS NHD results or observed during the aquatic resources delineation fieldwork.

This page intentionally left blank.

Section G Mapping Method

Limits of the wetland and non-wetland, non-tidal waters were digitally mapped at the OHWM and top of bank using an ISXBlue II sub-meter Global Positioning System (GPS) unit. Electronic spatial data collected in the field is in Attachment G.

This page intentionally left blank.

Section H Conclusions

Based on the investigation of wetland and non-wetland water indicators, the following four non-wetland waters and two in-feature emergent wetlands occur in the survey area:

1. One non-wetland water (Santa Ana River) was observed entering the northeastern portion of the survey area and continuing south through center of the majority of the survey area. The Santa Ana River is a non-vegetated concrete- and riprap-lined channel that accounts for approximately 75.96 acres (8,953 linear feet) of non-wetland water in the survey area. The Santa Ana River exits the southern end of the survey area and continues south. The SDAM conducted for the Santa Ana River determined that it is at least an intermittent feature, but likely perennial.
2. One non-wetland water (Collin's Channel) was observed entering the eastern edge of the survey area and ending where it connects to the eastern side of the Santa Ana River through a large box culvert. Collin's Channel is a riprap- and concrete-lined channel that accounts for approximately 0.32 acre (248 linear feet) of non-wetland water in the survey area. The SDAM conducted for Collin's Channel determined that it is at least an intermittent feature.
3. One non-wetland (OCWD Basin 1) was observed in the northwestern survey area. OCWD Basin 1 accounts for approximately 7.29 acres of non-wetland water, including approximately 6.63 acres of open water and 0.66 acre of southern willow scrub (in-feature emergent wetland) in the survey area.
4. One non-wetland (OCWD Basin 2) was observed in the northwestern survey area. OCWD Basin 2 accounts for approximately 1.94 acre of non-wetland water, including approximately 0.97 acre of emergent wetland and 0.97 acre of southern willow scrub (both in-feature emergent wetlands) in the survey area.

Summaries of the aquatic resources delineated in the survey area are provided in Table 2, Summary of Non-Wetland Waters in the Survey Area. Additional information can be provided upon request.

Table 2. Summary of Non-Wetland Waters in the Survey Area

Feature	Cowardin Type ¹	Acres	Linear Feet	Coordinates	Vegetation/ Land Cover Type	Summary
Santa Ana River	R2	75.96	8,953	33.816217 N, - 117.869850 W; 33.795948 N, - 117.879276 W	Non-vegetated channel	Concrete- and riprap-lined non-wetland water with OHWM indicators present. The OHWM is approximately 315 feet wide and 1.5 feet deep.
Collin's Channel	R6	0.32	248	33.804223 N, - 117.873957 W; 33.803637 N, - 117.875120 W	Non-vegetated channel	Concrete- and riprap-lined non-wetland water with OHWM indicators present. The OHWM is approximately 5 feet wide and 0.5 foot deep. Connected to the Santa Ana River to the west.

Table 2. Summary of Non-Wetland Waters in the Survey Area

Feature	Cowardin Type ¹	Acres	Linear Feet	Coordinates	Vegetation/ Land Cover Type	Summary
OCWD Basin 1	L2OW/ RP2EM	7.29	—	32.819225 N, -117.871173 W	Fresh water to OHWM and southern willow scrub	Non-wetland water with OHWM indicators present. Open water within and up to the OHWM (includes 0.66 acre of southern willow scrub). Connected to OCWD Basin 2 to the south.
OCWD Basin 2	L2UB/ RP2EM	1.94	—	32.815055 N, -117.871481 W	Emergent wetland and southern willow scrub	Non-wetland water with OHWM indicators present. Includes 0.97 acre of emergent wetland and 0.97 acre of southern willow scrub up to the OHWM. Connected to the Santa Ana River to the southeast.
Non-Wetland Total ²		83.88	9,201	—		

Notes: OCWD = Orange County Water District; OHWM = ordinary high water mark

¹ Cowardin Type: L2OW = Open water/unknown bottom, littoral, lacustrine; L2UB = Unconsolidated bottom, littoral, lacustrine; R2 = Lower perennial, riverine; R6 = A wetland, spring, stream, river, pond, or lake that only exists for a short period of time; RP2EM = Emergent, lentic riparian.

² Total rounded to one-hundredth of an acre.

Section I Preliminary Jurisdictional Determinations

The aquatic resources observed in the survey area include the Santa Ana River, Collin's Channel, and OCWD Basins 1 and 2. Table 3, Potential Jurisdiction of Aquatic Resources in the Survey Area, provides a summary of the aquatic resources and potential jurisdiction of these features. It should be noted that only the resource agencies, USACE, Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Wildlife (CDFW), can make a final determination of jurisdictional boundaries.

The Santa Ana River is defined by the USACE as a TNW and has direct downstream connectivity to the Pacific Ocean (USACE 2023a). Therefore, the Santa Ana River is potentially under the jurisdiction of the USACE pursuant to the Clean Water Act, Section 404 (Figure 8, Potential Jurisdictional Waters of the U.S. for the OC River Walk Project). Further, the reach of the Santa Ana River in the survey area contains the SAR1 Levee System (Upstream Reach) and therefore is potentially under the jurisdiction of the USACE pursuant to the Rivers and Harbors Act Section 408. Although the Santa Ana River is completely channelized with concrete and riprap lining, it conveys natural flows as well as urban stormwater through the primarily developed Orange County, providing water quality and habitat functions for the Santa Ana River Watershed, and, therefore, is potentially under the jurisdiction of the RWQCB and CDFW, pursuant to the Clean Water Act, Section 401, and California Fish and Game Code, Section 1602, respectively (Figure 9, Potential Jurisdictional Waters of the State for the OC River Walk Project).

Collin's Channel was determined to be an intermittent non-wetland water with direct connectivity to the nearest TNW, the Santa Ana River. Therefore, Collin's Channel is potentially under the jurisdiction of the USACE pursuant to the Clean Water Act, Section 404 (Figure 8). Although Collin's Channel is completely channelized with concrete and riprap lining, it conveys natural flows as well as urban stormwater through the primarily developed City of Orange, providing water quality functions for the Santa Ana River Watershed, and, therefore, is potentially under the jurisdiction of the RWQCB and CDFW, pursuant to the Clean Water Act, Section 401, and California Fish and Game Code, Section 1602, respectively (Figure 9).

OCWD Basins 1 and 2 were determined to be non-wetland waters that contain in-feature wetlands and are hydrologically connected to the nearest TNW, the Santa Ana River. Therefore, OCWD Basins 1 and 2 are potentially under the jurisdiction of the USACE pursuant to the Clean Water Act, Section 404 (Figure 8). Although OCWD Basins 1 and 2 are artificially maintained water detention facilities, these basins store fresh water and direct it into the Santa Ana River, providing water quality and habitat functions for the Santa Ana River Watershed, and, therefore, are potentially under the jurisdiction of the RWQCB and the CDFW, pursuant to the Clean Water Act, Section 401, and California Fish and Game Code, Section 1602, respectively (Figure 9).

Table 3. Potential Jurisdiction of Aquatic Resources in the Survey Area

Feature	Feature Type	Vegetation/ Land Cover Type	Cowardin Type ¹	Agency Jurisdiction				Description
				USACE		RWQCB	CDFW	
				404	408			
Santa Ana River	Non-wetland water	Non-vegetated channel	R2	X	X	X	X	Perennial concrete- and riprap-lined channel that flows north from to south through the center of the survey area. The Santa Ana River is defined by the USACE as a TNW and has direct downstream connectivity to the Pacific Ocean.
Collin's Channel	Non-wetland water	Non-vegetated channel	R6	X	—	X	X	Intermittent concrete- and riprap-lined channel that flows from northeast to southwest in the eastern portion of the survey area. The channel connects to the eastern side of the Santa Ana River through a large box culvert.
OCWD Basin 1	Non-wetland water	Fresh water to OHWM and willow riparian woodland	L2OW/ RP2EM	X	—	X	X	Artificial water detention basin, owned and operated by the OCWD, in the northwest portion of the survey area. The basin connects to OCWD Basin 2 through a concrete box culvert in the southwestern corner that runs under Ball Road.
OCWD Basin 2	Non-wetland water	Freshwater marsh and willow riparian woodland	L2UB/ RP2EM	X	—	X	X	Artificial water detention basin, owned and operated by the OCWD, in the northwest portion of the survey area. The basin connects to the Santa Ana River through a concrete box culvert in the southeastern corner.

Notes: 404 = Clean Water Act Section 404; 408 = Rivers and Harbors Act Section 408; CDFW = California Department of Fish and Wildlife; RWQCB = Regional Water Quality Control Board; TNW = traditional navigable water; USACE = U.S. Army Corps of Engineers

¹ Cowardin Type: R2 = Lower perennial, riverine; R6 = A wetland, spring, stream, river, pond, or lake that only exists for a short period of time; L2OW = Open water/unknown bottom, littoral, lacustrine; L2UB = Unconsolidated bottom, littoral, lacustrine; RP2EM = Emergent, lentic riparian.

Section J Disclaimer Statement

The aquatic resources delineation and preliminary jurisdictional determinations are subject to verification by the USACE, RWQCB, and CDFW. Harris advises all parties to treat the information in this Aquatic Resources Delineation Report as preliminary until the agencies provide written verification of their respective jurisdictional boundaries.

This page intentionally left blank.

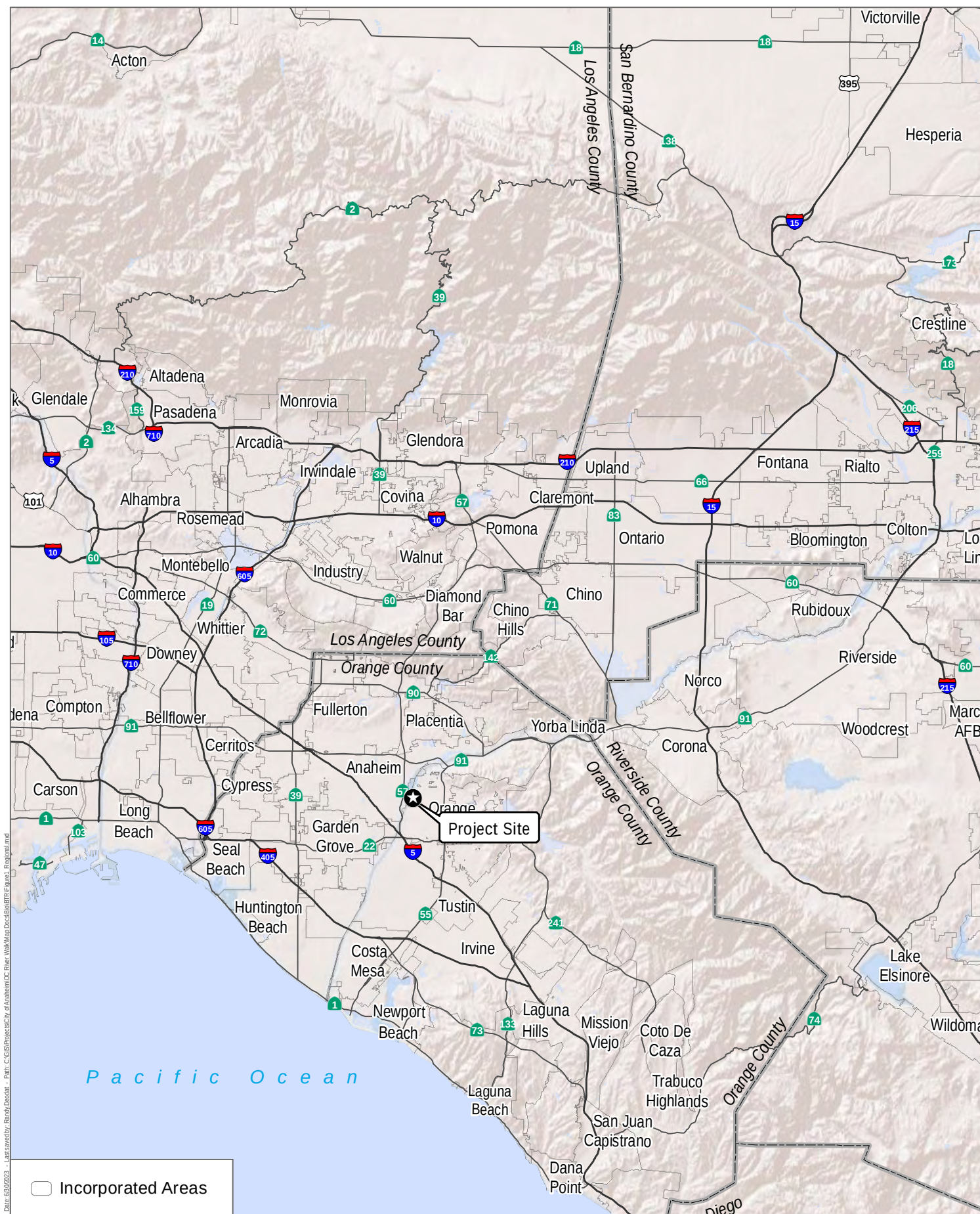
Section K **References**

- Google Earth. 2023. Accessed July 2023. <https://earth.google.com/web/>.
- Historic Aerials. 2023. "Historic Aerials." Accessed July 2023. <https://www.historicaerials.com/location/32.706548675246815/-117.16177568660387/1988/16>.
- Holland, Robert F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game. October. NOAA. 2023. National Integrated Drought Information System. Drought Conditions in Orange County. Accessed July 2023. <https://www.drought.gov/states/california/county/Orange>.
- NRCS. 2023. National Water and Climate Center: WETS Table. Accessed July 2023. https://www.wcc.nrcs.usda.gov/climate/navigate_wets.html.
- State Water Resources Control Board (SWRCB). 2023. 2018 California Integrated Report (Clean Water Act Section 303(d) List and 305(b) Report). Accessed July 2023. https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html.
- USACE (U.S. Army Corps of Engineers). 1987. Corps of Engineers Wetlands Delineation Manual. Final report. Wetlands Research Program Technical Report Y-87-1 (online edition). Prepared by Environmental Laboratory, U.S. Army Corps of Engineers, Waterways Experiment Station. Wetlands Research Program. January. Accessed July 2023. <http://www.cpe.rutgers.edu/Wetlands/1987-Army-Corps-Wetlands-Delineation-Manual.pdf>.
- USACE. 2008a. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0). Final report. ERDC/EL TR-08-28. Prepared by Environmental Laboratory, U.S. Army Engineer Research and Development Center. Wetlands Regulatory Assistance Program. September. Accessed July 2023. <https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7627>.
- USACE. 2008b. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual. ERDC/CRREL TR-08-12. Prepared by Robert W. Lichvar and Shawn M. McColley. Cold Regions Research and Engineering Laboratory, U.S. Army Engineer Research and Development Center. August. Accessed July 2023. https://www.spl.usace.army.mil/Portals/17/docs/regulatory/JD/FinalOHWMManual_2008.pdf.
- USACE. 2015. Santa Ana River 1 Levee System. August 2015. Accessed July 2023. https://www.spl.usace.army.mil/Portals/17/docs/LeveeSafetyProgram/San_Ana_River_1_Levee_System_PI_Report_No-01_ES_M_20151023.pdf.
- USACE. 2023a. "TNWs & Navigable Waters in Los Angeles District." Accessed July 2023. <https://www.spl.usace.army.mil/Missions/Regulatory/Jurisdictional-Determination/Navigable-Waterways/>.
- USACE. 2023b. Antecedent Precipitation Tool. Accessed July 2023. <https://github.com/jDeters-ACOE/Antecedent-Precipitation-Tool>.

- USDA (U.S. Department of Agriculture). 2019. Web Soil Survey. Natural Resources Conservation Service, Soil Survey Staff. Last modified July 31. Accessed July 2023. <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
- USEPA (U.S. Environmental Protection Agency). 2023. Beta Streamflow Duration Assessment Method for the Arid West (Beta SDAM AW). Version 1.0. March 1. Accessed December 2023. <https://betasdamaw-sccwrp.hub.arcgis.com/>.
- USFWS (U.S. Fish and Wildlife Service). 2021. National Wetlands Inventory Wetlands Mapper. Last updated November 30. Accessed July 2023. <https://www.fws.gov/wetlands/Data/Mapper.html>.
- USGS (U.S. Geological Survey). 2023. National Hydrography Data. Accessed July 2023. <https://www.arcgis.com/home/webmap/viewer.html?url=https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer&source=sd>.

Attachment A. Figures

This page intentionally left blank.



Source: ESRI 2020.

Figure 1

Regional Location

OC River Walk Project



Harris & Associates



0

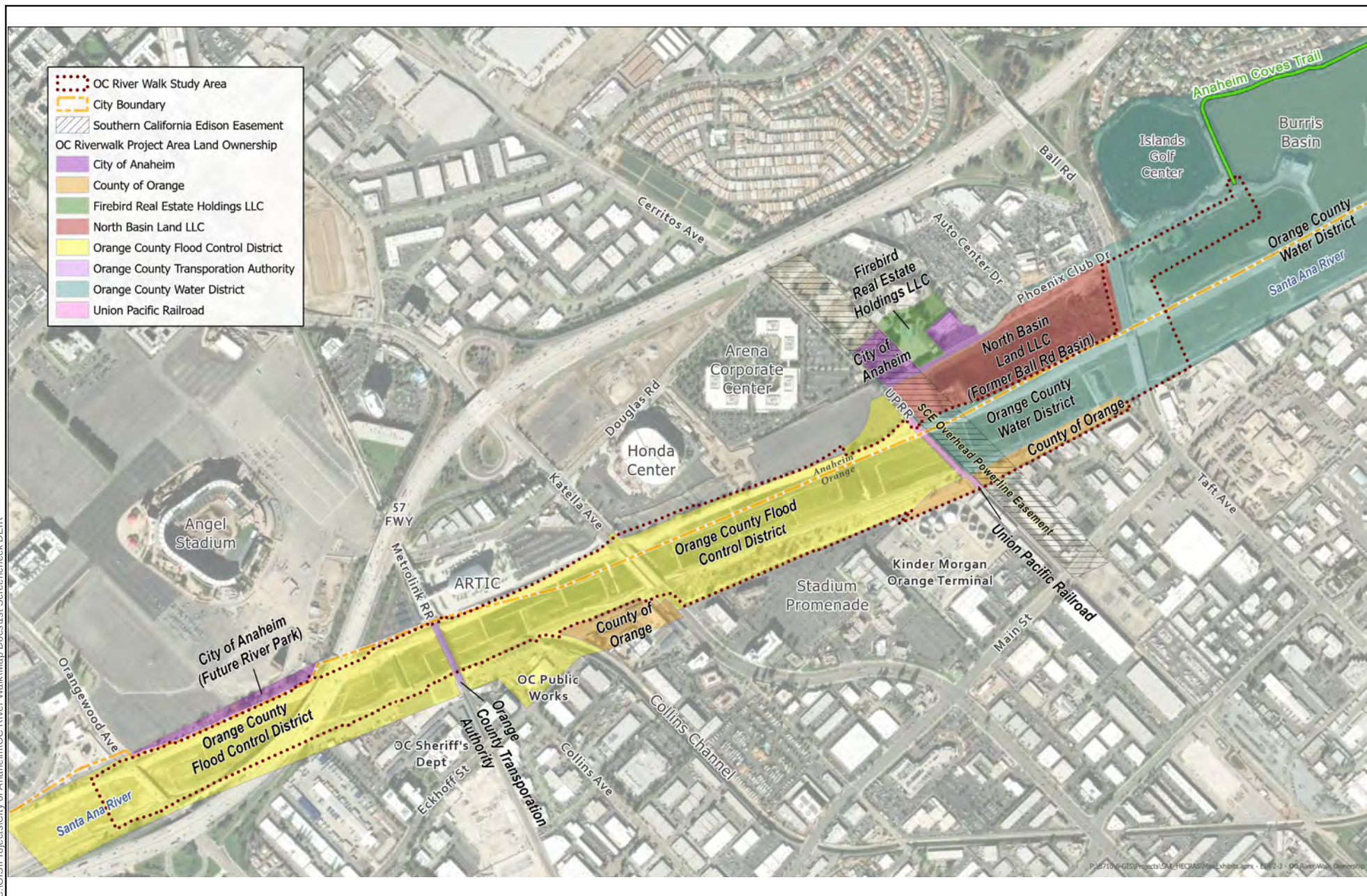
0

5

10



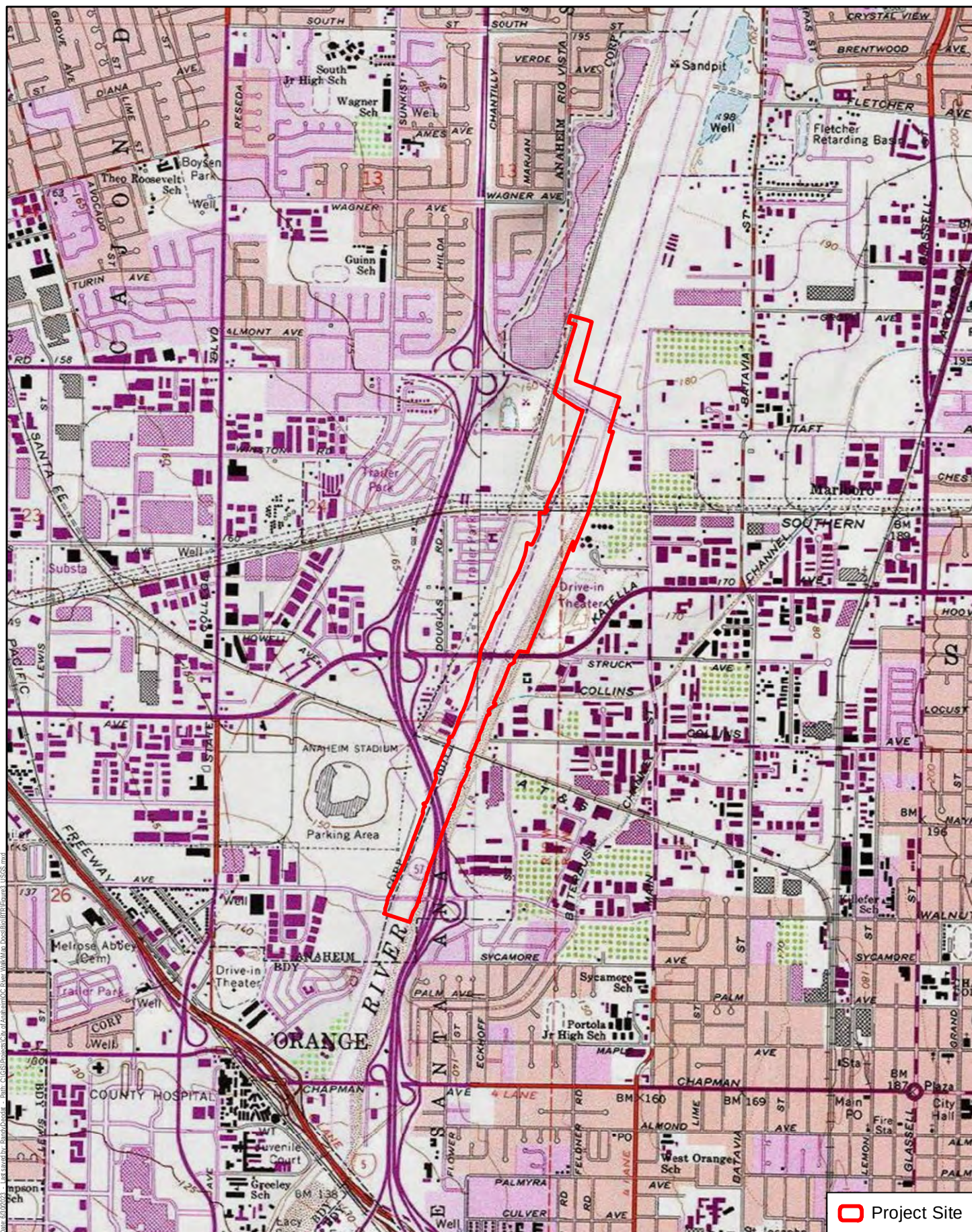
Miles



Source: PACE Advanced Water Engineering 2024.



Figure 2
Local Vicinity
OC RiverWalk Project



Source: USGS 7.5 Minute Anaheim and Orange Quadrangles 1974.



Harris & Associates

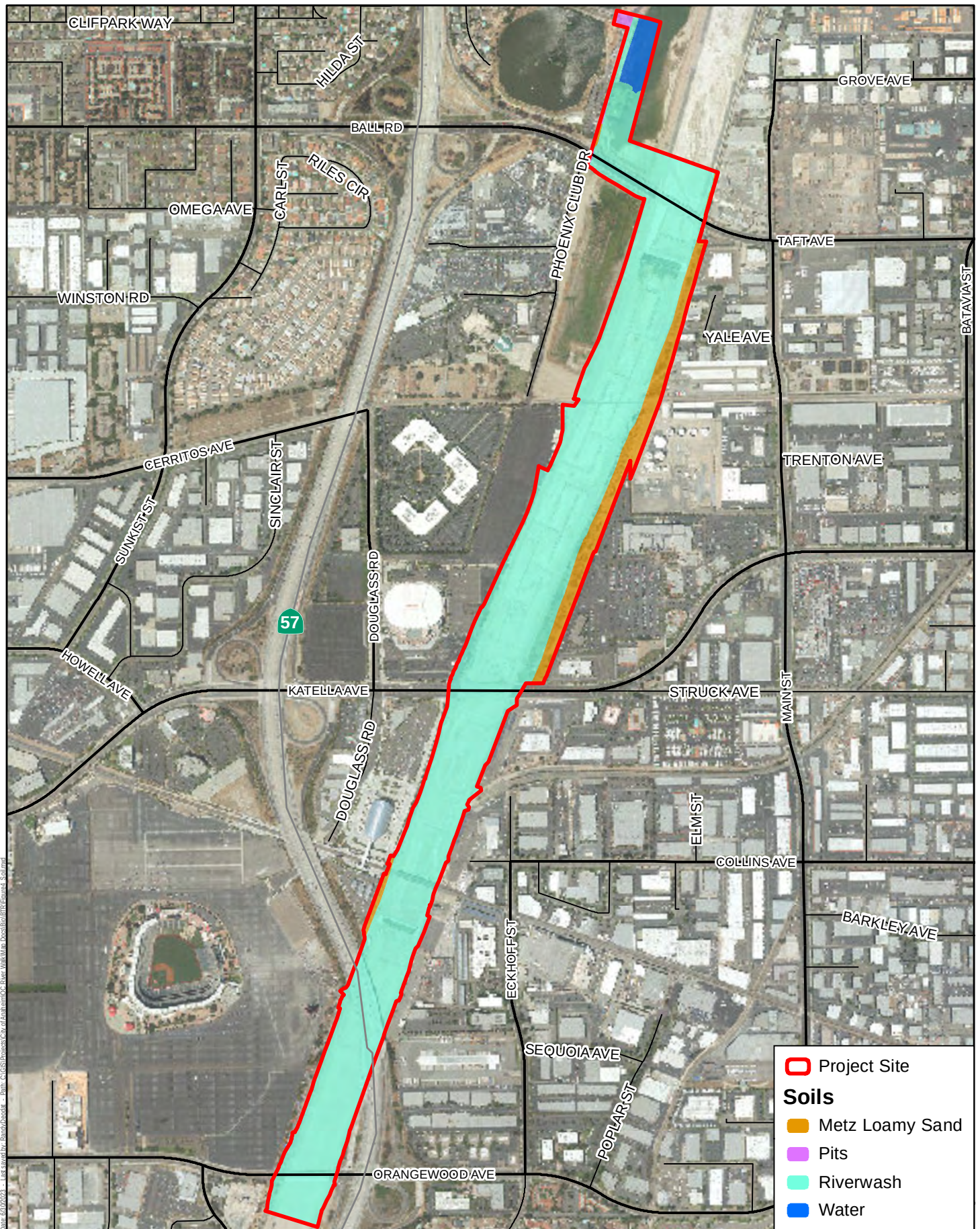


0 1,000 2,000
Feet

Figure 3

USGS Topographic Map

OC River Walk Project



Source: Eagle Imagery 2017.



Harris & Associates



0 500 1,000
Feet

Figure 4

Soils

OC River Walk Project



Source: USFWS 2023; Maxar Imagery 2021.

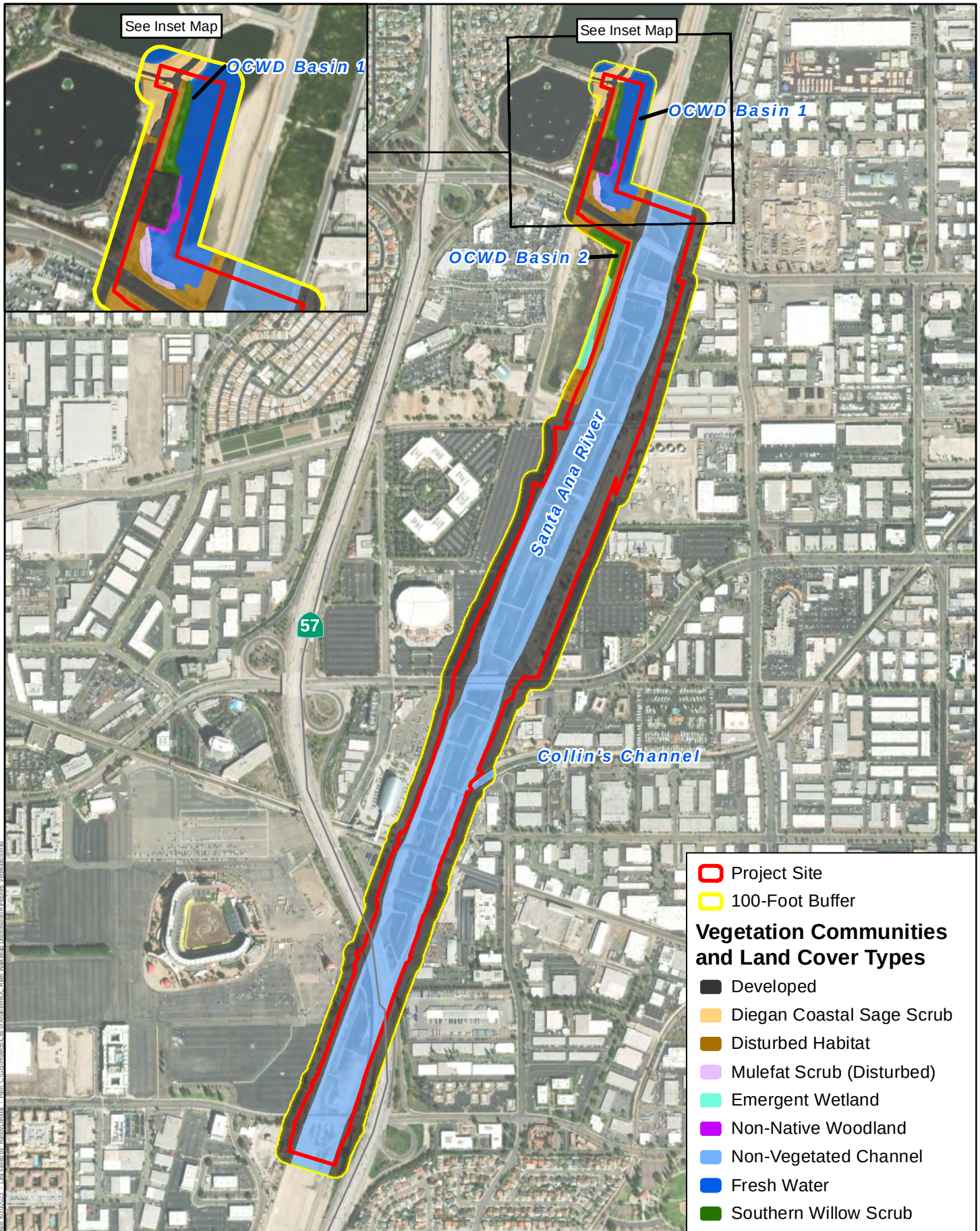


Harris & Associates



0 1,000 2,000
Feet

Figure 5
National Wetlands Inventory Results
OC River Walk Project



Source: Maxar Imagery 2021.



Harris & Associates



0 500 1,000
Feet

Figure 6

Vegetation Communities and Land Cover Types

OC River Walk Project



Source: Maxar Imagery 2021.



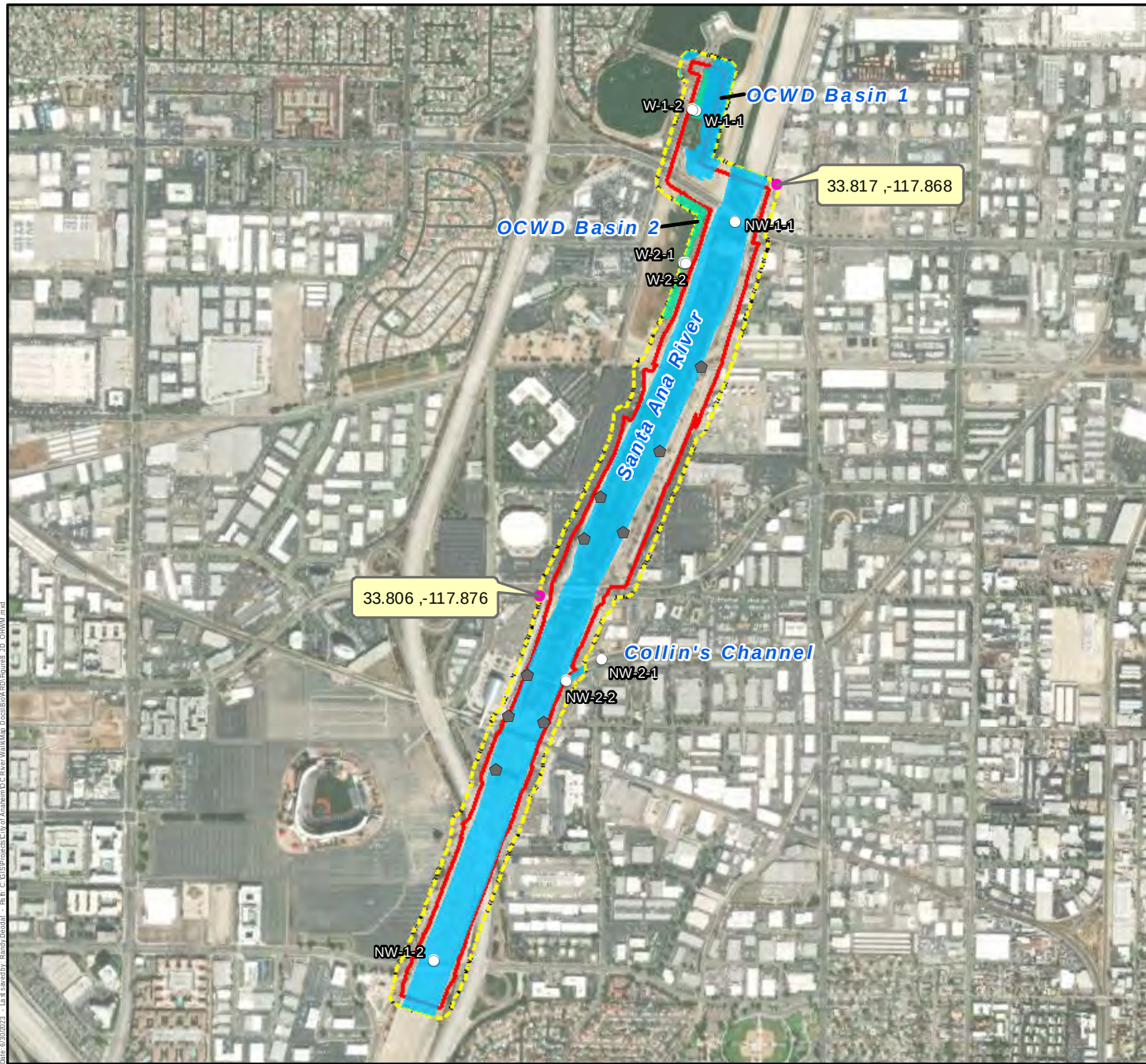
Harris & Associates



0 500 1,000
Feet

Figure 7
Aquatic Resources
OC River Walk Project

Date: 6/10/2023 - 10:41:54 AM by: Randy Doudell - R.N. C. GIS Projects City of Anaheim OC River Walkway Docu(BVA-RD) Figure 8 JD_OAWM.mxd



Harris & Associates

Figure 8

Potential Jurisdictional Waters
of the U.S. for the
OC River Walk Project

Legend

- Project Site
- 100-Foot Survey Buffer
- Reference Points
- Culverts
- Sampling Points

Aquatic Resources

- Emergent Wetland
- Non-Wetland Waters



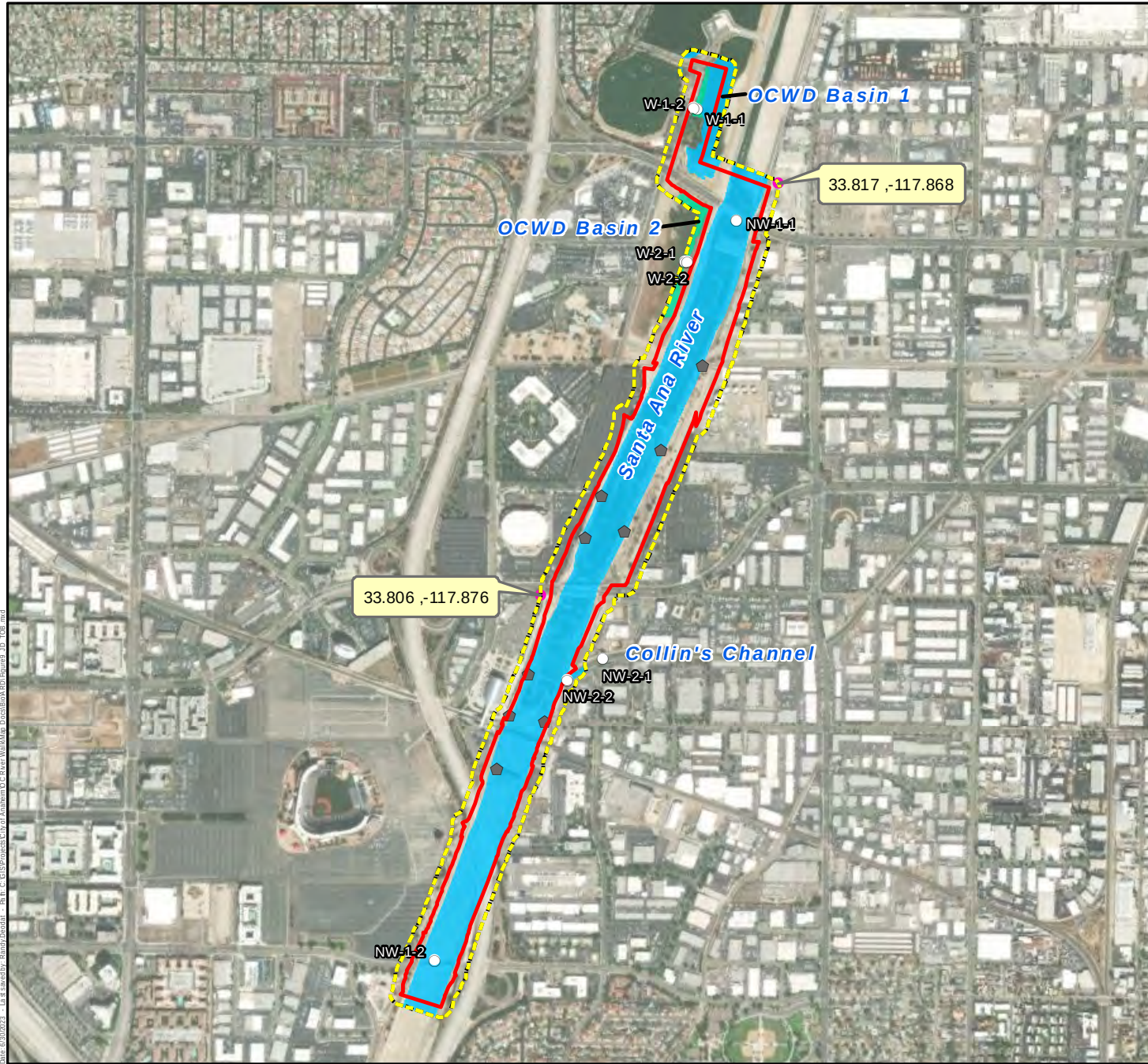
0 500 1,000
Feet

Coordinate System: NAD 1983 California State Plane Zone 6
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: No Coordinate System
1 inch = 1,050 feet

Created on June 8th, 2023
Revised on June 9th, 2023

Made in accordance with the Updated Map and Drawing Standards
for the South Pacific Division Regulatory Program, as amended on
February 10, 2016, by: Jason Deters, Project Manager Enforcement and
Special Projects Unit U.S. Army Corps of Engineers South Pacific Division
Sacramento District, Regulatory Division
1325 J Street, Room 1350
Sacramento, California 95814-2922

Date: 6/10/2023 - 1:14 PM by: Randy Doud - R:\N:\C:\GIS\Projects\City of Anaheim\OC River Walk\Map Documents\AVA-001\Figure_3D_T08.mxd



Harris & Associates

Figure 9

Potential Jurisdictional Waters
of the State for the
OC River Walk Project

Legend

- Project Site
- 100-Foot Survey Buffer
- Reference Points
- Culverts
- Sampling Points

Aquatic Resources

- Emergent Wetland
- Non-Wetland Waters



0 500 1,000
Feet

Coordinate System: NAD 1983 California State Plane Zone 6
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: No Coordinate System
1 inch = 1,050 feet

Created on June 8th, 2023
Revised on June 9th, 2023

Made in accordance with the Updated Map and Drawing Standards
for the South Pacific Division Regulatory Program, as amended on
February 10, 2016, by: Jason Deters, Project Manager Enforcement and
Special Projects Unit U.S. Army Corps of Engineers South Pacific Division
Sacramento District, Regulatory Division
1325 J Street, Room 1350
Sacramento, California 95814-2922

This page intentionally left blank.

Attachment B. Statement of Access

This page intentionally left blank.

Statement of Access

The majority of the project site is publicly accessible on public roadways and the Santa Ana River Trail (see Section A.2, Project Site Access, in the Aquatic Resources Delineation Report), and therefore, U.S. Army Corps of Engineers personnel will not need permission from the property owners to access the project site.

Starting from Interstate 5 north, take Exit 107A toward Pomona onto State Route 57 north, and after 2 miles take Exit 3 for Ball Road, turn right, then turn left into the Islands Golf Center to access the northern portion of the project site. The remainder of the project site to the south includes the Santa Ana River corridor and can be accessed via the Santa Ana River Trail. The geographic coordinates for the northern and southern limits of the project site are approximately 33.821440°N, -117.870396°W, 33.795975°N, -117.878083°W, respectively.

This page intentionally left blank.

**Attachment C. Antecedent Precipitation Tool and
NRCS WETS Table Results**

This page intentionally left blank.

WETS Table

WETS Station: ANAHEIM, CA								
Requested years: 2003 - 2023								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	71.7	49.4	60.5	3.13	0.62	3.28	4	-
Feb	71.7	49.4	60.6	2.37	0.86	2.74	4	-
Mar	74.4	51.9	63.1	1.67	0.52	1.89	3	-
Apr	76.8	54.5	65.7	0.79	0.17	0.71	2	-
May	78.0	58.3	68.2	0.84	0.28	0.81	1	-
Jun	82.1	62.1	72.1	0.04	0.00	0.02	0	-
Jul	87.7	66.2	77.0	0.15	0.00	0.10	0	-
Aug	89.0	66.5	77.8	0.01	0.00	0.00	0	-
Sep	88.5	64.8	76.7	0.21	0.00	0.19	0	-
Oct	-	-	-	-	-	-	-	-
Nov	77.2	53.6	65.4	0.95	0.26	0.92	2	-
Dec	69.8	48.6	59.2	2.84	1.18	3.46	4	-
Annual:					-	-		
Average	-	-	-	-	-	-	-	-
Total	-	-	-	-			-	-

GROWING SEASON DATES

Years with missing data:	24 deg = 1	28 deg = 1	32 deg = 1
Years with no occurrence:	24 deg = 20	28 deg = 20	32 deg = 20
Data years used:	24 deg = 20	28 deg = 20	32 deg = 20
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	No occurrence	No occurrence	No occurrence
70 percent *	No occurrence	No occurrence	No occurrence

* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1989								0.00	0.49	0.42	0.46	T	1.37
1990	2.33	3.85	0.15	0.75	0.64	0.02	0.00	0.00	0.00	0.00	0.28	0.02	8.04
1991	1.75	3.15	5.36	0.00	0.00	0.00	0.03	0.00	0.01	0.32	0.02	1.32	11.96
1992	1.45	6.49	4.75	0.21	0.00	0.00	0.26	0.00	0.00	0.93	0.00	5.88	19.97
1993	9.17	4.33	2.23	0.00	0.00	1.23	0.00	0.00	0.00	0.05	0.99	0.86	18.86
1994	0.51	2.61	1.92	1.14	0.23	0.00	0.00	0.00	0.00	0.10	0.93	0.71	8.15
1995	10.49	1.39	5.94	0.55	0.24	1.21	0.03	0.00	0.00	0.00	0.00	1.02	20.87
1996	1.96	4.47	2.37	0.64	0.00	0.00	0.00	0.00	0.00	1.14	3.18	3.63	17.39
1997	4.84	0.24	0.00	0.00	0.00	0.05	T	0.00	0.47	0.00	2.48	3.42	11.50
1998	2.65	11.54	2.82	1.07	2.68	0.05	0.00	T	0.10	0.00	1.17	0.82	22.90

1999	1.38	0.14	1.29	1.44	0.00	0.10	0.10	0.00	0.00	0.00	0.34	0.07	4.86	
2000	0.96	4.50	1.10	1.79	0.00	0.00	T	0.00	0.12	1.71	0.00	0.02	10.20	
2001	2.26	4.62	0.59	0.69	0.00	0.02	0.00	0.00	0.00	0.00	1.12	1.45	10.75	
2002	0.34	0.15	0.31	0.22	0.23	0.00	0.00	0.00	0.00	0.08	1.91	2.54	5.78	
2003	0.04	3.99	3.27	1.96	0.72	0.01	0.15	0.00	0.00	0.00	0.62	1.11	11.87	
2004	0.29	5.26	0.61	0.93	0.00	0.00	0.00	0.00	0.00	6.85	1.17	3.19	18.30	
2005	8.18	8.66	1.24	1.11	0.24	0.01	M0.00	0.00	0.33	M0.80	0.08	0.80	21.45	
2006	1.00	1.78	M0.63	2.00	1.12	0.02	0.08	0.11	0.00	0.07	0.00	0.68	7.49	
2007	0.12	1.20	0.00	0.36	0.00	0.00	0.00	M0.00	0.26	0.40	0.00	1.02	3.36	
2008	4.45	1.25	0.04	0.00	1.15	0.00	0.00	0.00	0.00	0.00	1.62	3.05	11.56	
2009	M0.68	M2.02	M0.12	0.00	0.00	0.05	0.28	0.00	0.00	0.58	0.00	4.65	8.38	
2010	17.75	3.94	0.18	0.98	0.00	0.14	0.00	0.00	0.00	2.27	5.86	10.11	41.23	
2011	M0.57	2.10	2.67	M0.02	M4.44	0.38	M0.05	0.00	0.54	M1.00	M0.46	0.06	12.29	
2012	1.08	0.72	2.16	M3.20	M3.01	0.00	0.57	0.00	0.02	0.04	1.13	4.50	16.43	
2013	M1.08	0.62	M1.25	0.00	0.39	0.00	0.04	0.00	0.08	0.25	0.46	0.59	4.76	
2014	0.00	1.95	0.71	1.02	2.00	0.00	1.09	0.07	0.50	0.00	1.01	4.38	12.73	
2015	1.31	2.21	0.60	0.42	1.10	0.01	0.78	0.00	1.77	1.03	0.05	1.13	10.41	
2016	2.84	0.52	1.02	0.20	0.08	0.09	0.00	0.00	0.00	1.07	1.06	6.35	13.23	
2017	10.02	3.01	0.08	0.04	0.40	0.00	0.00	0.00	0.23	0.00	0.05	0.50	14.33	
2018	1.36	0.46	2.07	0.01	0.05	0.00	0.00	0.00	0.00	0.66	1.33	2.26	8.20	
2019	6.10	6.10	4.36	1.67	0.96	0.00	0.00	0.00	0.00	0.00	2.06	4.10	25.35	
2020	0.30	0.06	3.41	2.28	0.28	0.01	0.00	0.00	0.05	0.00	0.10	1.46	7.95	
2021	1.65	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.22	0.42	0.00	4.50	8.04	
2022	0.08	0.13	0.94	0.23	0.00	0.00	0.02	0.00	0.29	0.22	1.99	2.45	6.35	
2023	6.82	3.52	7.41	0.07	1.61	M0.00								19.43

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

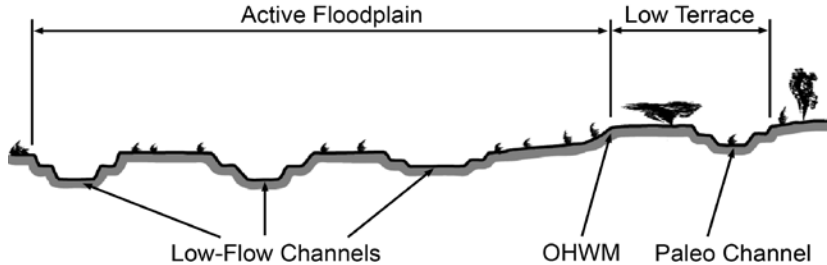
Data missing for all days in a month or year is blank.

Creation date: 2023-06-05

Attachment D. Arid West Ordinary High Water Mark Datasheets

This page intentionally left blank.

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: OC River Walk Project Project Number: Stream: Santa Ana River Investigator(s): Katie Laybourn	Date: 05/16/2023 Town: City of Orange Photo begin file#:	Time: 0945 State: CA Photo end file#:
Y ☒ / N ☐ Do normal circumstances exist on the site? Y ☒ / N ☐ Is the site significantly disturbed?	Location Details: Concrete-lined Santa Ana River surrounded by urban development Projection: 33.816217 N, -117.869850 W; Datum: NAD83 Coordinates: 33.795948 N, -117.879276 W	
Potential anthropogenic influences on the channel system: The Santa Ana River corridor is entirely concrete-lined and has concrete rip rap lining the riverbanks. Heavy construction equipment was observed being used to actively move sediment in the bottom of the Santa Ana River.		
Brief site description: The majority of the project site includes the concrete-lined Santa Ana River corridor surrounded by urban development, including commercial, industrial, and residential uses, within the City of Orange. The northern portion of the project site includes the Orange County Water District (OCWD) pump house, associated water detention basins, and the eastern portion of the Islands Golf Center.		
Checklist of resources (if available): ☒ Aerial photography Dates: ☒ Topographic maps ☐ Geologic maps ☐ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☒ Global positioning system (GPS) ☐ Other studies ☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event		
Hydrogeomorphic Floodplain Units 		
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM: 1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OHWM and record the indicators. Record the OHWM position via: ☐ Mapping on aerial photograph ☐ Digitized on computer ☒ GPS ☐ Other:		

Project ID: OC River
Walk Project

Cross section ID: Santa Ana River
(NW-1-1)

Date: 05/16/2023

Time: 0945

Cross section drawing:

TOB width: 420 feet

TOB depth: 50 feet

OHWL depth: 1.5 foot

OHWL width: 315 feet

OHWL

GPS point: NW-1-1

Indicators:

- ☐ Change in average sediment texture
☐ Change in vegetation species
☐ Change in vegetation cover

- ☒ Break in bank slope
☒ Other: concrete-lined channel
☒ Other: rip rap-lined banks

Comments:

The Santa Ana River corridor is entirely concrete-lined and has concrete rip rap lining the riverbanks

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: NW-1-1

Characteristics of the floodplain unit:

Average sediment texture: NA (concrete-lined)

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☒ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks ☐ Soil development
☐ Ripples ☐ Surface relief
☐ Drift and/or debris ☒ Other: surface water
☒ Presence of bed and bank ☒ Other: accumulated sediment
☐ Benches ☐ Other:

Comments:

Heavy construction equipment was observed being used to actively move sediment in the bottom of the Santa Ana River

Project ID: OC River
Walk Project

Cross section ID: Santa Ana River
(NW-1-2)

Date: 05/16/2023

Time: 1210

Cross section drawing:

TOB width: 420 feet

TOB depth: 50 feet

OHWM depth: 1.5 foot

OHWM width: 315 feet

OHWM

GPS point: NW-1-2

Indicators:

- ☐ Change in average sediment texture
☐ Change in vegetation species
☐ Change in vegetation cover

- ☒ Break in bank slope
☒ Other: concrete-lined channel
☒ Other: rip rap-lined banks

Comments:

The Santa Ana River corridor is entirely concrete-lined and has concrete rip rap lining the riverbanks

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: NW-1-2

Characteristics of the floodplain unit:

Average sediment texture: NA (concrete-lined)

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☒ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

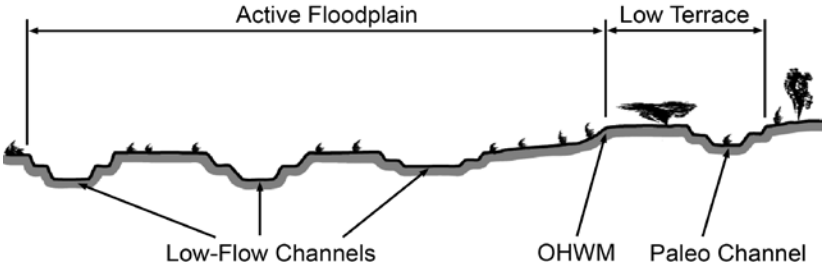
Indicators:

- ☐ Mudcracks ☐ Soil development
☐ Ripples ☐ Surface relief
☐ Drift and/or debris ☒ Other: surface water
☒ Presence of bed and bank ☒ Other: accumulated sediment
☐ Benches ☐ Other:

Comments:

Heavy construction equipment was observed being used to actively move sediment in the bottom of the Santa Ana River

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: OC River Walk Project Project Number: Stream: Collin's Creek Investigator(s): Katie Laybourn	Date: 05/16/2023 Town: City of Orange Photo begin file#: Time: 1100 State: CA Photo end file#:
Y ☒ / N ☐ Do normal circumstances exist on the site? Y ☒ / N ☐ Is the site significantly disturbed?	Location Details: Concrete- and rip rap-lined channel surrounded by urban development Projection: 33.804223 N, -117.873957 W; Datum: NAD83 Coordinates: 33.803637 N, -117.875120 W
Potential anthropogenic influences on the channel system: Collin's Creek is an entirely concrete- and rip rap lined channel surrounded by commercial and industrial land uses; stormwater flows from the creek are directed into the Santa Ana River through a large box culvert at the downstream/southwest end of the channel	
Brief site description: The site surrounding Collin's Creek is urban, primarily commercial and industrial land uses; the creek connects to the Santa Ana River to the southwest via a large box culvert	
Checklist of resources (if available): ☒ Aerial photography Dates: ☒ Topographic maps ☐ Geologic maps ☐ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☒ Global positioning system (GPS) ☐ Other studies ☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event	
Hydrogeomorphic Floodplain Units 	
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHW M: 1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OHW M and record the indicators. Record the OHW M position via: ☐ Mapping on aerial photograph ☐ Digitized on computer ☒ GPS ☐ Other:	

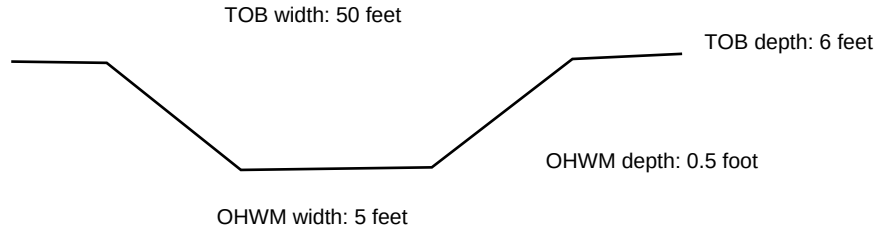
Project ID: OC River
Walk Project

Cross section ID: Collin's Creek
(NW-2-1)

Date: 05/16/2023

Time: 1100

Cross section drawing:



OHWM

GPS point: NW-2-1

Indicators:

- | | |
|---|---|
| ☐ Change in average sediment texture | ☒ Break in bank slope |
| ☐ Change in vegetation species | ☒ Other: <u>rip rap-lined channel</u> |
| ☐ Change in vegetation cover | ☐ Other: _____ |

Comments:

The Collin's Creek is entirely concrete- and rip rap-lined

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: NW-2-1

Characteristics of the floodplain unit:

Average sediment texture: NA (concrete- and rip rap-lined)

Total veg cover: 10 % Tree: 0 % Shrub: 0 % Herb: 10 %

Community successional stage:

- | | |
|---|--|
| ☒ NA | ☐ Mid (herbaceous, shrubs, saplings) |
| ☐ Early (herbaceous & seedlings) | ☐ Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|--|---|
| ☐ Mudcracks | ☐ Soil development |
| ☐ Ripples | ☐ Surface relief |
| ☐ Drift and/or debris | ☒ Other: <u>surface water</u> |
| ☒ Presence of bed and bank | ☐ Other: _____ |
| ☐ Benches | ☐ Other: _____ |

Comments:

Sparse herbs (primarily grasses and weeds) growing through rip-rap in the northern portion of the channel; surface water flowing through channel

Project ID: OC River
Walk Project

Cross section ID: Collin's Creek
(NW-2-2)

Date: 05/16/2023

Time: 1120

Cross section drawing:

TOB width: 50 feet

TOB depth: 6 feet

OHWM depth: 0.5 foot

OHWM width: 5 feet

OHWM

GPS point: NW-2-2

Indicators:

- ☐ Change in average sediment texture
☐ Change in vegetation species
☐ Change in vegetation cover

- ☒ Break in bank slope
☒ Other: concrete-lined channel
☐ Other: _____

Comments:

The Collin's Creek is entirely concrete- and rip rap-lined

Floodplain unit:

- ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: NW-2-2

Characteristics of the floodplain unit:

Average sediment texture: NA (concrete-lined)

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☒ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks ☐ Soil development
☐ Ripples ☐ Surface relief
☐ Drift and/or debris ☒ Other: surface water
☒ Presence of bed and bank ☐ Other: _____
☐ Benches ☐ Other: _____

Comments:

Surface water flowing through channel; channel connects to Santa Ana River to the southwest via a large concrete box culvert

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: OC River Walk Project City/County: City of Orange Sampling Date: 05/16/2023
 Applicant/Owner: City of Orange State: CA Sampling Point: W-1-1 (Basin 1)
 Investigator(s): Katie Laybourn Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depressed basin Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): Mediterranean California (LRR C) Lat: 33.819225 N Long: -117.871173 W Datum: NAD83
 Soil Map Unit Name: U.S. Department of Agriculture Web Soil Survey NWI classification: Lake

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: Greater than average precipitation for the region in the winter/spring of 2023; Basin 1 was not directly accessible because it is on private property - no soil pit could be dug - visual observations and data taken using binoculars Vegetation significantly disturbed from mowing and fluctuations in water level; dominated by non-natives/invasive species Hydrology naturally problematic and significantly disturbed because it is a maintained artificial water detention basin with managed water volumes	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.66</u> (A/B)
1. <u>Goodding's willow (Salix gooddingii)</u>	<u>80</u>	<u>Y</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
<u>80</u> = Total Cover Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Mulefat (Baccharis salicifolia)</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Bulrush (Typha sp.)</u>	<u>10</u>	<u>N</u>	<u>OBL</u>	
3. _____	_____	_____	_____	
<u>50</u> = Total Cover Herb Stratum (Plot size: <u>5 ft</u>)				Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Black mustard (Brassica nigra)</u>	<u>10</u>	<u>Y</u>	<u>None/UPL</u>	
2. <u>Deerweed (Acmispon glaber)</u>	<u>5</u>	<u>N</u>	<u>None/UPL</u>	
3. _____	_____	_____	_____	
<u>15</u> = Total Cover Woody Vine Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust <u>0</u>				

Remarks:

Western edge of semi-permanent, artificial Orange County Water District water detention Basin 1; sparse vegetation growing on slope, willow riparian woodland growing along and just under the OHWM; no vegetation growing in the ponded water away from the shore

SOIL

Sampling Point: W-1-1

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) (Riverine)	
☐ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) (Riverine)	
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) (Riverine)	
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)	
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)	
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Saturation Visible on Aerial Imagery (C9)	
☒ Inundation Visible on Aerial Imagery (B7)	☐ Thin Muck Surface (C7)	☐ Shallow Aquitard (D3)	
☐ Water-Stained Leaves (B9)	☐ Other (Explain in Remarks)	☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes ☒ No ☐ Depth (inches): <u>>2 feet</u>	Wetland Hydrology Present? Yes ☒ No ☐	
Water Table Present?	Yes ☐ No ☒ Depth (inches): <u> </u>		
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐ Depth (inches): <u>>2 feet</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			
Ponded surface water observed, inundation presumed due to long-term existence of the water basin (aerial imagery); artificial and managed Orange County Water District water detention pond			

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: OC River Walk Project City/County: City of Orange Sampling Date: 05/16/2023
 Applicant/Owner: City of Orange State: CA Sampling Point: W-1-2
 Investigator(s): Katie Laybourn Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depressed basin Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): Mediterranean California (LRR C) Lat: 33.819268 N Long: -117.871278 W Datum: NAD83
 Soil Map Unit Name: U.S. Department of Agriculture Web Soil Survey NWI classification: Lake
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: Greater than average precipitation for the region in the winter/spring of 2023; Basin 1 was not directly accessible because it is on private property - no soil pit could be dug - visual observations and data taken using binoculars Vegetation significantly disturbed from mowing; dominated by non-natives/invasive species Hydrology naturally problematic because it is a maintained artificial water detention basin with managed water volumes	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
1. <u>None</u>																		
2. _____																		
3. _____																		
4. _____																		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>60</u></td> <td>x 5 = <u>300</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>300</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>60</u>	x 5 = <u>300</u>	Column Totals: <u>60</u> (A)	<u>300</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>60</u>	x 5 = <u>300</u>																	
Column Totals: <u>60</u> (A)	<u>300</u> (B)																	
1. <u>None</u>																		
2. _____																		
3. _____																		
4. _____																		
5. _____																		
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)				Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Black mustard (<i>Brassica nigra</i>)</u>	<u>40</u>	<u>Y</u>	<u>None/UPL</u>															
2. <u>Star thistle (<i>Centaurea calcitrapa</i>)</u>	<u>20</u>	<u>N</u>	<u>None/UPL</u>															
3. _____																		
4. _____																		
5. _____				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														
6. _____																		
7. _____																		
8. _____																		
<u>Woody Vine Stratum</u> (Plot size: <u>5 ft</u>)																		
1. <u>None</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____																		
% Bare Ground in Herb Stratum <u>60</u> % Cover of Biotic Crust <u>0</u>																		

Remarks:

Western slope of semi-permanent, artificial Orange County Water District water detention pond; sparse vegetation growing on slope, primarily non-natives and invasive species - characterized as significantly disturbed from mowing/management of the basin

SOIL

Sampling Point: W-1-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
NA								See remarks at bottom of section

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: NA
 Depth (inches):

Hydric Soil Present? Yes _____ No X

Remarks:

No soil pit could be dug because it is on private property; Hydric soils presumed not to be present because upslope of the OHWM, long-term inundation required to form hydric soils unlikely, no hydrophytic plant species occur; artificial and managed Orange County Water District water detention pond

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):
 Water Table Present? Yes _____ No X Depth (inches):
 Saturation Present? Yes _____ No X Depth (inches):
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed, upslope of the OHWM

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: OC River Walk Project City/County: City of Orange Sampling Date: 05/16/2023
 Applicant/Owner: City of Orange State: CA Sampling Point: W-2-1 (Basin 2)
 Investigator(s): Katie Laybourn Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depressed basin Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR): Mediterranean California (LRR C) Lat: 33.815055 N Long: -117.871481 W Datum: NAD83
 Soil Map Unit Name: U.S. Department of Agriculture Web Soil Survey NWI classification: freshwater emergent wetland/freshwater pond
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: Greater than average precipitation for the region in the winter/spring of 2023; Basin 2 was not directly accessible because it is on private property - no soil pit could be dug - visual observations and data taken using binoculars Vegetation and hydrology significantly disturbed from unhusd population and fluctuations in water level Hydrology naturally problematic because it is a maintained artificial water detention basin with managed water volumes	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Goodding's willow (Salix gooddingii)</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
2. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	<u>10</u> = Total Cover	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	_____	_____	_____	Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Arundo (Arundo donax)</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Mulefat (Baccharis salicifolia)</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____	<u>30</u> = Total Cover	_____	_____	
Herb Stratum (Plot size: <u>5 ft</u>)	_____	_____	_____	
1. <u>Curly dock (Rumex crispus)</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Tall flatsedge (Cyperus eragrostis)</u>	<u>20</u>	<u>N</u>	<u>FACW</u>	
3. <u>Broad-leaf cattail (Typha latifolia)</u>	<u>10</u>	<u>N</u>	<u>OBL</u>	
4. <u>Black mustard (Brassica nigra)</u>	<u>20</u>	<u>N</u>	<u>None/UPL</u>	
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____	<u>80</u> = Total Cover	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
Woody Vine Stratum (Plot size: <u>5 ft</u>)	_____	_____	_____	
1. <u>None</u>	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
_____	_____ = Total Cover	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>	_____	_____	_____	

Remarks:

Eastern edge of semi-permanent, artificial Orange County Water District water detention Basin 2; dense vegetation growing in bottom of basin below the OHWM

SOIL

Sampling Point: W-2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
NA								See remarks at bottom of section

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR C**)
☐ 1 cm Muck (A9) (**LRR D**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: NA

Depth (inches):

Hydric Soil Present? Yes ☒ No ☐**Remarks:**

No soil pit could be dug because it is on private property; Hydric soils presumed because of the long-term soil inundation from surface waters below the OHWM; artificial and managed Orange County Water District water detention Basin 2

HYDROLOGY

Wetland Hydrology Indicators:**Primary Indicators (minimum of one required; check all that apply)**

☒ Surface Water (A1)
☐ High Water Table (A2)
☒ Saturation (A3)
☐ Water Marks (B1) (**Nonriverine**)
☐ Sediment Deposits (B2) (**Nonriverine**)
☐ Drift Deposits (B3) (**Nonriverine**)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)

☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

☐ Water Marks (B1) (**Riverine**)
☐ Sediment Deposits (B2) (**Riverine**)
☐ Drift Deposits (B3) (**Riverine**)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes ☒ No ☐ Depth (inches): approx. 1 ftWater Table Present? Yes ☐ No ☒ Depth (inches):Saturation Present? Yes ☒ No ☐ Depth (inches): unknown
(includes capillary fringe)**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ponded surface water observed, inundation presumed due to long-term existence of the water basin (aerial imagery); artificial and managed Orange County Water District water detention Basin 2

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: OC River Walk Project City/County: City of Orange Sampling Date: 05/16/2023
 Applicant/Owner: City of Orange State: CA Sampling Point: W-2-2
 Investigator(s): Katie Laybourn Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depressed basin Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): Mediterranean California (LRR C) Lat: 33.815066 N Long: -117.871406 W Datum: NAD83
 Soil Map Unit Name: U.S. Department of Agriculture Web Soil Survey NWI classification: freshwater emergent wetland/freshwater pond
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: Greater than average precipitation for the region in the winter/spring of 2023; Basin 1 was not directly accessible because it is on private property - no soil pit could be dug - visual observations and data taken using binoculars Vegetation significantly disturbed from mowing; dominated by non-natives/invasive species	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
1. <u>None</u>																		
2. _____																		
3. _____																		
4. _____																		
_____ = Total Cover				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>80</u></td> <td>x 5 = <u>400</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>400</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>5</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>80</u>	x 5 = <u>400</u>	Column Totals: <u>80</u> (A)	<u>400</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>80</u>	x 5 = <u>400</u>																	
Column Totals: <u>80</u> (A)	<u>400</u> (B)																	
_____ = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>None</u>																		
2. _____																		
3. _____																		
4. _____																		
5. _____																		
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Black mustard (Brassica nigra)</u>	<u>60</u>	<u>Y</u>	<u>None/UPL</u>															
2. <u>Star thistle (Centaurea calcitrapa)</u>	<u>20</u>	<u>N</u>	<u>None/UPL</u>															
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
8. _____																		
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>5 ft</u>)																		
1. <u>None</u>																		
2. _____																		
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust <u>0</u>																		
Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)																		
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>																		
Remarks: Eastern slope of semi-permanent, artificial Orange County Water District water detention Basin 2; sparse vegetation growing on slope, primarily non-natives and invasive species - characterized as significantly disturbed from mowing/management of the basin																		

SOIL

Sampling Point: W-2-2

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
☐ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) (Riverine)
☐ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) (Riverine)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) (Riverine)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Thin Muck Surface (C7)	☐ Shallow Aquitard (D3)
☐ Water-Stained Leaves (B9)	☐ Other (Explain in Remarks)	☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		
No hydrologic indicators observed, upslope of the OHWM		

Attachment E. Photographic Log

This page intentionally left blank.



Source: Maxar Imagery 2021.



Harris & Associates



0 500 1,000
Feet

Attachment E
Photographic Log

OC River Walk

This page intentionally left blank.

Santa Ana River



Photograph 1: (Location: 33.817237 N, -117.870209 W) Northeast-facing view of the northern extent of the Santa Ana River where the concrete- and riprap-lined channel enters the northeastern portion of the survey area. This photograph shows the concrete-lined channel and riprap-lined banks of the river. Surface water is also visible in the bottom of the river channel.



Photograph 2: Location: 33.817237 N, -117.870209 W) Southeast-facing view of the northern extent of the Santa Ana River in the survey area. This photograph shows the flowing water through the center of the concrete- and riprap-lined channel. Also shown in the right-hand side background of the photograph is the consolidated deposited sediments in the center of the channel.



Photograph 3: (Location: 33.815586 N, -117.869401 W) Northwest-facing view of the Santa Ana River in the northwestern portion of the survey area where sampling point NW-1-1 was collected. Flowing water and deposited soils in the bottom of the channel are visible in the center of the photograph.



Photograph 4: (Location: 33.815586 N, -117.869401 W) Southwest-facing view of the Santa Ana River downstream of where sampling point NW-1-1 was collected. A concrete spillway and riprap that occur across the center of the concrete-lined channel are visible in the center of the photograph.



Photograph 5: (Location: 33.815202 N, -117.869595 W) Southwest-facing view of the Santa Ana River south of a spillway in the northern portion of the survey area. This photograph shows the heavy equipment being used to move deposited sediment in the bottom of the concrete- and riprap-lined channel.



Photograph 6: (Location: 33.805756 N, -117.874260 W) Southwest-facing view of the Santa Ana River in the south-central portion of the survey area. Surface water and deposited saturated soils are visible in the bottom of the concrete- and riprap-lined channel.



Photograph 7: (Location: 33.802343 N, -117.875882 W) Southwest-facing view of the Santa Ana River in the south-central portion of the survey area. One of the many railroad bridges that cross the river corridor is shown in the background of the photograph.



Photograph 8: (Location: 33.795948 N, -117.879276 W) Southwest-facing view of the Santa Ana River in the southern portion of the survey area. This photograph shows where sampling point NW-1-2 was collected to document the presence of OHWM indicators. The concrete- and riprap-lined river channel continues south of the southern end of the survey area, shown in the background of the photograph. Also visible in this photograph is where the surface water in the bottom of the river channel ends, potentially due to buildup of sediment south of the bridge.

Collin's Channel



Photograph 9: (Location: 33.803901 N, -117.874955 W) Northeast-facing view of Collin's Channel showing where sampling point NW-2-1 was collected to document the presence of OHWM indicators. This photograph shows the riprap and concrete lining the channel. The sparse weeds and grasses growing through the riprap and surface water in the center of the channel are also shown in the center and background of the photograph.



Photograph 10: (Location: 33.803901 N, -117.874955 W) Southwest-facing view of Collin's Channel showing where sampling point NW-2-2 was collected to document the presence of OHWM indicators. This photograph shows the concrete-lined channel, surface water flowing through the center, and the box culvert through which Collin's Channel connects to the Santa Ana River channel.



Photograph 11: (Location: 33.803491 N, -117.875346 W) This photograph shows where Collin's Channel connects to the Santa Ana River channel through a concrete box culvert. The surface water flowing from Collin's Channel into the Santa Ana River channel is shown in the center of the photograph.

Orange County Water District (OCWD) Basin 1



Photograph 12: (Location: 33.819516 N, -117.871226 W) Southeast-facing view of OCWD Basin 1 where sampling point W-1-1 was collected to determine the presence of wetland and OHWM indicators. This photograph shows the ponded surface water of the basin in the background. The riparian woodland fringe at and below the observed OHWM, dominated by Goodding's willow (*Salix gooddingii*) and mulefat (*Baccharis salicifolia*), surrounding sampling point W-1-1 is visible in the foreground.



Photograph 13: (Location: 33.819516 N, -117.871226 W) Northeast-facing view of OCWD Basin 1 where sampling point W-1-2 was collected on the western shoreline to determine the presence of wetland and OHWM indicators. The two dominant upland plant species, black mustard (*Brassica nigra*) and star thistle (*Centaurea calcitrapa*), are visible growing around the sampling point in the foreground of the photograph. The ponded surface water of the basin and riparian woodland fringe at and below the observed OHWM are visible in the background of the photograph.



Photograph 14: (Location: 33.818153 N, -117.871780 W) Northeast-facing view of the western shore and central portion of OCWD Basin 1. The disturbed habitat and disturbed mulefat scrub on the basin shoreline and upland are visible in the foreground of the photograph. The ponded surface water of the basin is visible in the background of the photograph. Also visible in the left-hand background of the photograph is the riparian woodland fringe at and below the observed OHWM of the basin.



Photograph 15: (Location: 33.818153 N, -117.871780 W) Southeast-facing view of the western shore and southern portion of OCWD Basin 1. The disturbed habitat and disturbed mulefat scrub on the basin shoreline and upland are visible in the foreground of the photograph. The ponded surface water of the basin is visible in the background of the photograph. Also visible in the background of the photograph is the heavy equipment being used to move deposited sediments in the Santa Ana River channel.



Photograph 16: (Location: 33.818138N, -117.869903 W) Southwest-facing view of the eastern shore and center of OCWD Basin 1 in the northwestern survey area. The disturbed shoreline and ponded surface water of the basin are visible in the foreground of the photograph. Also visible in the center-background of the photograph is the riparian woodland fringe at and below the observed OHWM of the basin where wetland sampling point W-1-1 was collected.



Photograph 17: (Location: 33.818138N, -117.869903 W) Northwest-facing view of the eastern shore and center of OCWD Basin 1 in the northwestern survey area. The OCWD pump house northwest of the survey area and OCWD Basin 1 are visible in the left-hand background of this photograph.

OCWD Basin 2



Photograph 18: (Location: 33.815653 N, -117.870881 W) Northwest-facing view of the northern end of OCWD Basin 2, south of OCWD Basin 1 in the northwestern portion of the survey area. This photograph shows where sampling point W-2-1 was collected to document the presence of wetland indicators. The densely vegetated emergent wetland, dominated by Goodding's willow (*Salix gooddingii*), arundo (*Arundo donax*), and curly dock (*Rumex crispus*), at and below the OHWM of the basin is visible in the center and background of the photograph. Sampling point W-2-2 is shown in the foreground and was collected to document the presence of wetland indicators. The disturbed habitat in the upland surrounding sampling point W-2-2 is shown in the foreground of the photograph.



Photograph 19: (Location: 33.815653 N, -117.870881 W) Northwest-facing view of the center of OCWD Basin 2, south of where sampling points W-2-1 and W-2-2 were collected. The emergent wetland and southern willow scrub in the center of the basin and the disturbed upland outside of the OHWM of the basin are visible in this photograph. Not visible in the background of the photograph, due to dense riparian vegetation, is the concrete box culvert connecting OCWD Basin 1 to OCWD Basin 2.



Photograph 20: (Location: 33.813611 N, -117.871835 W) Southwest-facing view of the center of OCWD Basin 2. The emergent wetland in the center of the basin and the disturbed upland outside the OHWM of the basin are visible in this photograph.



Photograph 21: (Location: 33.813611 N, -117.871835 W) Southwest-facing view of the southern portion of OCWD Basin 2. The southern end of the emergent wetland, dominated by curly dock (*Rumex crispus*) and tall flats edge (*Cyperus eragrostis*), is visible in the center of the photograph. A topographic rise (likely a pile of deposited sediment) in the southern end of the basin is also visible in the left-hand background of the photograph.



Photograph 22: (Location: 33.812913 N, -117.871977 W) West-facing view of southern end of OCWD Basin 2. The background of the photograph shows a concrete spillway in the basin with the disturbed habitat (primarily bare ground) to the east of the structure. The left-hand foreground of the photograph shows the entrance to a concrete box culvert connecting OCWD Basin 2 to the Santa Ana River channel.

This page intentionally left blank.

Attachment F. Geographic Information Systems Data

Available Upon Request.

This page intentionally left blank.

Attachment G. ORM Bulk Upload Aquatic Resources Spreadsheet

This page intentionally left blank.

											Similarity_Situated Sim_Situated_Aggregated_SPOE OHWM_Adjacent_Waters_Sbjct_33USC1344 OHWM_Chg_In_Plant_Community OHWM_Break_And_Banks OHWM_Chg_In_Slope OHWM_Chg_In_Veg_Density OHWM_Chg_In_Soil OHWM_Line_In_Sediment_Texture OHWM_Deer_Of_Impressed_On_Bank OHWM_Load_Of_Terrestrial_Veg OHWM_Multiple_Flow_Disturbed OHWM_Scour OHWM_Sediment_Deposition OHWM_Sediment_Sorting OHWM_Litter_and_Debris_Present OHWM_Wrack_Line_Present OHWM_Veg_Matted_Bent_Or_Absent OHWM_Water_Staining OHWM_Other																														
Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway	Sim_Situated	Sim_Situated_Aggregated_SPOE	OHWM_Adjacent_Waters_Sbjct_33USC1344	OHWM_Chg_In_Plant_Community	OHWM_Break_And_Banks	OHWM_Chg_In_Slope	OHWM_Chg_In_Veg_Density	OHWM_Chg_In_Soil	OHWM_Line_In_Sediment_Texture	OHWM_Deer_Of_Impressed_On_Bank	OHWM_Load_Of_Terrestrial_Veg	OHWM_Multiple_Flow_Disturbed	OHWM_Scour	OHWM_Sediment_Deposition	OHWM_Sediment_Sorting	OHWM_Litter_and_Debris_Present	OHWM_Wrack_Line_Present	OHWM_Veg_Matted_Bent_Or_Absent	OHWM_Water_Staining	OHWM_Other	Other_Text	Func_I_Sediment_Trapping	Func_II_Nutrient_Recycling	Func_III_Pollutant_Management	Func_IV_Retenn_Atemu_Fld_Wlrs	Func_V_Runoff_Storage	Func_VI_Contribution_of_Flow	Func_VII_Export_Organic_Matter	Func_VIII_Export_Food_Resources	Func_IX_Prov_Life_Cycle_Dpptnt	
Santa Ana River	California	R2	RIVERINE	Area	75.96	ACRE	A1	33.816217 N	117.869850 W	Santa Ana River	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO
Collin's Channel	California	R6	RIVERINE	Area	0.32	ACRE	A5	33.804223 N	117.873957 W	Santa Ana River	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
OCWD Basin 1*	California	L2OW	LACUSTRINF	Area	6.63	ACRE	A4	32.819225 N	117.871173 W	Santa Ana River	NO	NO	NO	NO	YES	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
OCWD Basin 2**	California	L2UB	LACUSTRINF	Area	0.97	ACRE	A4	32.815055 N	117.871481 W	Santa Ana River	NO	NO	NO	NO	YES	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
*In-feature wetland	CALIFORNIA	RP2EM	LACUSTRINF	Area	0.66	ACRE	A4	33.819225 N	117.871173 W	Santa Ana River	NO	NO	NO	NO	YES	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
**In-feature wetland	CALIFORNIA	RP2EM	LACUSTRINF	Area	0.97	ACRE	A4	33.815055 N	117.871481 W	Santa Ana River	NO	NO	NO	NO	YES	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

This page intentionally left blank.