Appendix C

Biological Resources Technical Report

Biological Resources Technical Report

Irvine Gateway Village Project

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
amsl	above mean sea level
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CRPR	California Rare Plant Rank
CWA	Clean Water Act
dBA	A-weighted decibel
FESA	federal Endangered Species Act
HCP	Habitat Conservation Plan
JOST	Jeffrey Open Space Trail
MBTA	Migratory Bird Treaty Act
MRLA	Major Land Resource Area
NCCP	Natural Community Conservation Plan
NCCP/HCP	Natural Community Conservation Plan & Habitat Conservation Plan, County of Orange Central & Coastal Subregion
NWW	Non-Wetland Waters
OHWM	ordinary high water mark
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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1 Introduction

The proposed Irvine Gateway Village Project (project) is proposed on approximately 105 acres in the City of Irvine, Orange County, California (referred to herein as the project site). The proposed project includes residential houses, parks, and streets, the Jeffrey Open Space Trail (JOST), and fuel management zones. Focused surveys for least Bell's vireo (*Vireo bellii pusillus*) and coastal California gnatcatcher (*Polioptila californica californica*) covered the project site and included an adjacent 500-foot buffer, referred to herein as the survey area. The purpose of this report is to describe the existing conditions of biological resources associated with the project in terms of vegetation communities, plants, wildlife, wildlife habitats, and wetlands; analyze potential project-related impacts to biological resources considered sensitive under the California Environmental Quality Act (CEQA); and determine the significance of project impacts and provide mitigation measures to reduce impacts to a less-than-significant level. Representative site photographs and figures depicting locations of biological resources on the project site are also included herein.

1.1 Project Location

The project site is generally located along the northern boundary of the City of Irvine (City) in central Orange County, California (Figure 1, Project Location). Specifically, the project site is located east of the intersection of Portola Parkway and Jeffrey Road, bounded by Portola Parkway to the south, Jeffrey Road/Hicks Haul Road to the west, and Bee Canyon Access Road to the east. Hicks Canyon Wash forms the northern boundary of the site. The project site is situated in Sections 20, 21 and 29 of Township 5 South, Range 8 West and can be found on the El Toro U.S. Geological Survey 7.5-minute topographic quadrangle map (USGS 2022). The project site consists of the following parcels: Assessor's Parcel Numbers 104-117-66, 104-117-67, 104-117-68, 104-117-69, 104-117-70, 104-117-12, 104-117-14, 104-117-15, 104-117-17, 104-117-18, 104-117-23, and 104-117-29. Existing land use surrounding the project site consists of residential development to the west, with undeveloped land to the east, south, and north.

1.2 Project Description

The proposed project would include the development of 105 acres into a new residential village consisting of 1,360 two- to three- story homes, including both attached and detached homes. Access to the site will be provided via Jeffrey Road and a right-in/right-out driveway on Portola Parkway.

In addition to the residential development, the project proposes a new park, called South Park, to be established at the northern corner of the project site. This park would include parking, restrooms, and trail staging. A proposed extension of the JOST would form the western boundary of the project site and would connect to the new South Park. A pedestrian bridge would cross over Portola Parkway as part of the JOST extension. The JOST extension would mark the northernmost end of the JOST, which runs through the City. A linear park connecting proposed residential roadways to open spaces overlooking Bee Canyon Access Road would be created as well. The total area of added parks and open space areas would be 15.7 acres.

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2 Regulatory Setting

2.1 Federal

2.1.1 Federal Endangered Species Act

The federal Endangered Species Act (FESA) of 1973, as amended, (16 USC 1531 et seq.) serves as the enacting legislation to list, conserve, and protect threatened and endangered species, and the ecosystems on which they depend, from extinction. In addition, for those wildlife species listed as federally endangered, FESA provides for the ability to designate critical habitat, defined as that habitat considered "essential to the conservation of the species" and that "may require special management considerations or protection." Under FESA Section 7, if a project that would potentially result in adverse impacts to threatened or endangered species includes any action that is authorized, funded, or carried out by a federal agency, that agency must consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any such action is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat for that species. FESA Section 9(a)(1)(B) prohibits the taking, possession, sale, or transport of any endangered fish or wildlife species. "Take" is defined to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1532 (19)). With respect to any endangered species of plant, Sections 9(a)(2)(A) and 9(a)(2)(B) prohibit the possession, sale, and import or export, of any such species, and prohibits any action that would "remove and reduce to possession any such species from areas under federal jurisdiction; maliciously damage or destroy any such species on any such area; or remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law." Pursuant to FESA Section 10(a)(1)(B), USFWS may issue a permit for the take of threatened or endangered species provided that such taking is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50, Section 10.13 of the Code of Federal Regulations. The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country and is enforced in the United States by the U.S. Fish and Wildlife Service. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50, Section 20 of the Code of Federal Regulations. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors). On December 22, 2017, the Department of Interior issued a legal opinion (M-Opinion 37050) that interpreted the above prohibitions as only applying to direct and purposeful actions of which the intent is to kill, take, or harm migratory birds; their eggs; or their active nests. Incidental take of birds, eggs, or nests that are not the purpose of such an action, even if there are direct and foreseeable results, was not prohibited. On January 7, 2021, USFWS published a final rule (the January 7 rule) that codified the previous administration's interpretation, which after further review was determined to be inconsistent with the majority of relevant court decisions and readings of the MBTA's text, purpose, and history. On May 7, 2021, USFWS published a proposed rule to revoke the January 7 rule, which would result in a return to implementing the statute as prohibiting incidental take. On July 19, 2021, USFWS announced the availability of two revised economic analysis documents for public review that evaluate the potential for the proposed rule to impact small entities, including businesses, governmental jurisdictions, and other organizations. The public review period on these documents ended on August

19, 2021. A final rule revoking the January 7 rule was published on October 4, 2021, and went into effect on December 3, 2021. In their summary of the October 4, 2021, final rule, USFWS explained that "the immediate effect of this final rule is to return to implementing the MBTA as prohibiting incidental take and applying enforcement discretion, consistent with judicial precedent and longstanding agency practice prior to 2017" (86 FR 54642).

2.1.3 Wetlands and Waters of the United States

2.1.3.1 Clean Water Act – Section 404

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Under Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) has the authority to regulate activities that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the United States. USACE implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or function.

2.1.3.2 Clean Water Act – Section 401

The State Water Resources Control Board has authority over wetlands through Section 401 of the CWA, as well as the Porter–Cologne Water Quality Control Act (Porter–Cologne Act), California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredge or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the State Water Resources Control Board to the nine regional boards. The Santa Ana Regional Water Quality Control Board has authority for Section 401 compliance in the project area. A request for certification is submitted to the regional board at the same time that an application is filed with USACE.

2.2 State

2.2.1 California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Fish and Game Commission has the responsibility of maintaining a list of threatened and endangered species. CESA prohibits the take of state-listed threatened or endangered animals and plants unless otherwise permitted pursuant to CESA. Take under CESA is defined as any of the following: "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (California Fish and Game Code Section 86). Unlike the federal Endangered Species Act, CESA does not include harassment or harm (e.g., habitat degradation) in its definition of take. Species determined by the State of California to be candidates for listing as threatened or endangered are treated as if listed as threatened or endangered and are, therefore, protected from take. Pursuant to CESA, a state agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species, or candidate species, could be potentially impacted by that project.

2.2.2 CDFW Special-Status Plants

For the purposes of this analysis, special-status plant species are defined as plants that are legally protected or that are otherwise considered sensitive by federal, state, or local resource conservation agencies. These species fall into one or more of the following categories:

- Listed by the federal government under FESA or by the State of California under CESA as endangered, threatened, or rare.
- Plant species that are proposed for listing under FESA.
- A candidate for state listing as endangered or threatened
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation.
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California.
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats).

Taxa considered to be "rare, threatened, or endangered in California" as defined by the California Department of Fish and Wildlife (CDFW) and assigned a California Rare Plant Rank (CRPR). The CDFW system includes six rarity and endangerment ranks for categorizing plant species of concern, as follows:

- CRPR 1A – Plants presumed to be extinct in California
- CRPR 1B – Plants that are rare, threatened, or endangered in California and elsewhere
- CRPR 2A – Plants presumed to be extinct in California, but more common elsewhere
- CRPR 2B – Plants that are rare, threatened, or endangered in California, but more common elsewhere
- CRPR 3 – Plants about which more information is needed (a review list)
- CRPR 4 – Plants of limited distribution (a watch list)

Plants ranked as CRPR 1A, 1B, 2A, or 2B may qualify as endangered, rare, or threatened species within the definition of California Environmental Quality Act (CEQA) Guidelines Section 15380. CDFW recommends that potential impacts to CRPR 1 and 2 species be evaluated in CEQA review documents. In general, CRPR 3 and 4 species do not meet the definition of endangered, rare, or threatened pursuant to CEQA Guidelines Section 15380, but these species may be evaluated on a case-by-case basis.

2.2.3 CDFW Species of Special Concern

CDFW maintains a list of vertebrate animal species considered of "special concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. A Species of Special Concern (SSC) is a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- Is extirpated from the state or, in the case of birds, is in its primary seasonal or breeding role
- Is listed as threatened or endangered federally, but not by the state

- Meets the state definition of threatened or endangered, but has not formally been listed
- Is experiencing, or formerly experienced, serious noncyclical population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for threatened or endangered status by the state
- Has naturally small populations exhibiting high susceptibility to risk from any factor(s) that, if realized, could lead to declines that would qualify it for threatened or endangered status by the state

Impacts to SSC are typically evaluated and mitigated within the context of an environmental impact report or other document prepared pursuant to CEQA.

2.2.4 California Fish and Game Code Section 1600 – Lake and Streambed Alteration Agreement

Under Sections 1600–1616 of the California Fish and Game Code, CDFW regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFW's jurisdiction are defined in the code as the "bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit" (Section 1601). In practice, CDFW usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider.

2.2.5 CDFW – Wetlands Protection Regulations

CDFW derives its authority to oversee activities that affect wetlands from state legislation. This authority includes California Fish and Game Code Sections 1600–1616 (lake and streambed alteration agreements), the CESA (protection of state-listed species and their habitats, which could include wetlands), and the Keene–Nejedly California Wetlands Preservation Act of 1976 (states a need for an affirmative and sustained public policy program directed at wetlands preservation, restoration, and enhancement). In general, CDFW asserts authority over wetlands within the state through any of the following: review and comment on USACE Section 404 permits, review and comment on CEQA documents, preservation of state-listed species, or lake and streambed alteration agreements.

2.2.6 California Fish and Game Code, Section 1940 – Sensitive Natural Communities

California Fish and Game Code Section 1940 requires CDFW to develop and maintain a vegetation mapping standard for the state. More than half of the vegetation communities in the state have been mapped through the Vegetation Classification and Mapping Program.

Natural vegetation communities are evaluated by CDFW and are assigned global (G) and state (S) ranks based on rarity of and threats to these vegetation communities in California. Natural communities with ranks of S1 through S3 (S1: critically imperiled; S2: imperiled; S3: vulnerable) are considered sensitive. Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this assessment, sensitive natural communities include vegetation communities listed in CDFW's California Natural Diversity Database (CNDDB) and communities listed in the Natural Communities List with a rarity rank of S1, S2, or S3 (S1: critically imperiled; S2: imperiled; S3: vulnerable). Additionally, all vegetation associations within the

alliances with ranks of S1 through S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible.

2.2.7 California Fish and Game Code, Sections 3503, 3503.5, 3511, 3513

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 protects all birds of prey (raptors) and their eggs and nests. Section 3511 states that fully protected birds or parts thereof may not be taken or possessed at any time. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the MBTA.

2.2.8 California Fish and Game Code, Section 4150

California Fish and Game Code Section 4150 states that a mammal occurring naturally in California that is not a game mammal, fully protected mammal, or fur-bearing mammal is a non-game mammal. A non-game mammal may not be taken or possessed under this code. All bat species occurring naturally in California are considered non-game mammals and are therefore prohibited from take as stated in California Fish and Game Code Section 4150.

2.2.9 Porter–Cologne Water Quality Control Act

The Porter–Cologne Act established the State Water Resources Control Board and each Regional Water Quality Control Board (RWQCB) as the principal state agencies responsible for the protection of water quality in California. As noted under the discussion of the CWA, the Santa Ana RWQCB has regulatory authority over the project area.

The Porter–Cologne Act provides that "All discharges of waste into the waters of the State are privileges, not rights." Waters of the state are defined in Section 13050(e) of the Porter–Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." All dischargers are subject to regulation under the Porter–Cologne Act, including both point and nonpoint source dischargers. As noted in the discussion of the CWA, the Santa Ana RWQCB is the appointed authority for Section 401 compliance in the project area.

2.2.10 California Environmental Quality Act

CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain criteria. These criteria have been generally modeled after the definition in FESA and Chapter 1.5 of the California Fish and Game Code that addresses rare or endangered plants and animals. Appendix G of the CEQA Guidelines requires a lead agency to determine whether or not a project would "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 Wildlife or U.S. Fish and Wildlife Service." CEQA Guidelines Section 15065 requires that a lead agency find an impact to be significant if a project would "substantially reduce the number or restrict the range of an endangered, rare, or threatened species."

2.3 Regional

2.3.1 County of Orange Central & Coastal Subregion Natural Community Conservation Plan & Habitat Conservation Plan

The proposed project is located in the Central Subarea of the Natural Community Conservation Plan & Habitat Conservation Plan County of Orange Central and Coastal Subregion (NCCP/HCP). The NCCP/HCP, which covers an approximately 208,000-acre planning area in central and coastal Orange County, is a planning and policy document designed to protect and manage habitat supporting a broad range of plant and animal populations within the Central and Coastal Subregion of Orange County and intended to avoid, minimize and mitigate for alterations to coastal sage scrub and other covered habitats constituting 'harm' or 'harass' and therefore take under FESA that are incidental to Planned Activities in the Central and Coastal Subregion. To accomplish this goal, the NCCP/HCP creates a subregional habitat reserve system (Reserve) and implements a coordinated program to manage biological resources within the Reserve (County of Orange 1996). The Implementing Agreement for the NCCP/HCP was reviewed and approved by USFWS and the California Department of Fish and Game (now CDFW) in 1996.

2.4 Local

2.4.1 City of Irvine Municipal Code

Title 5 (Planning), Division 7 (Sustainability in Landscaping), Chapter 4 (Urban Forestry)

Chapter 4: Urban Forestry, Article E, Section 5-7-410 of the City of Irvine Municipal Code requires a tree removal permit from a City Arborist to remove any significant tree on public or private land except when:

- Safety Hazard. Deemed to pose an immediate hazard to life or property.
- Condition. Dead, decayed or diseased beyond correction; or malformed or stunted due to crowding.
- Trees causing damage to structures or deemed to be incompatible with the growing space available.

Trees are defined as any woody plant species that can typically grow with a single trunk with distinguishable crown and a heigh of 15 feet or greater at maturity. Significant trees include public trees in the right-of-way of public streets, public trees located in and around parks and other public facilities, trees in common areas located in village edges and landscape or parking lot setbacks on arterial streets, private trees on nonresidential properties to the extent zoning ordinance requirements are effective, and trees in eucalyptus (*Eucalyptus globulus*) windbreaks and trees in remnant eucalyptus windbreaks of the same ages as known windbreak trees in the City. Removed trees shall be replaced at a 1:1 ratio either on site or in a similar location, in a different location on site, or off site as outlined in the Urban Forestry Guidelines manual based on the determination of the City Arborist.

Title 3 (Community Services), Division 4 (Parks), Chapter 1 (In General)

Section 3-4-132 (Protection of Natural, Cultural, Structural and Archaeological Resources) of Chapter 1 prohibits any person from possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state any of the following: plants, wildlife, artifacts, minerals, landscape structures, improvements, wood, and natural products.

2.4.2 Irvine 2045 General Plan – Conservation and Open Space Element

The Irvine 2045 General Plan (General Plan) Conservation and Open Space Element contains a variety of goals, objectives, and policies related to the protection of biological resources (City of Irvine 2024):

Goal 1. Ensure the permanent protection and preservation of designated conservation and open space areas amidst the development of commercial, industrial, institutional, and residential zones.

Objective COS-1: Continue the implementation of programs that effectively integrate the protection and preservation of conservation and open space areas with the development of designated zones.

Policy (a): Continue to prioritize the identification and delineation of conservation and open space areas within the city's planning framework.

Policy (b): Require developers to conduct comprehensive environmental assessments to identify potential impacts on designated conservation and open space areas during project planning.

Policy (c): Encourage the adoption of land use zoning regulations that incorporate buffer zones around conservation and open space areas to mitigate adverse impacts from adjacent development.

Policy (d): Facilitate partnerships between public agencies, private developers, and conservation organizations to acquire, manage, and maintain designated conservation and open space areas.

Policy (e): Implement incentives such as density bonuses or development credits for projects that contribute to the enhancement or restoration of conservation and open space areas.

Goal 2. Implement the Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) agreement and program to accomplish multi-species and multi-habitat conservation.

Objective COS-2: Continue to effectively implement the Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) agreement and program to achieve comprehensive conservation goals, including the preservation and management of diverse species and habitats across the designated area, ensuring long-term ecological sustainability and biodiversity conservation.

Policy (a): Review project proposals within the reserve system to assure consistency with the NCCP/HCP implementation agreement and program.

Policy (b): Assure that nonparticipating landowners provide evidence of payment of mitigation fees.

Policy (c): Manage all City open space lands enrolled in the NCCP/HCP Reserve System consistent with the terms, conditions and obligations of the NCCP/HCP permit and Implementation Agreement and associated Recreation and Resource Management Plan (RRMPs),

including the City's obligation to restore Coastal Sage Scrub (CSS) habitat in exchange for development of the open space trail system authorized in the RRMP.

Policy (d): Use the NCCP as a Program Environmental Impact Report for purposes of consistency with the California Environmental Quality Act, applying the Coastal Sage Scrub (CSS) mitigation measures applicable to planned activities.

Policy (e): Adopt fuel modification ordinances and standards consistent with the Fuel Modification Zones established in the NCCP/HCP.

Policy (f): Encourage and avoid adverse impacts to viable wildlife movement corridors connecting the Santa Ana Mountains to the coast open space areas of Bommer and Shady Canyons, Laguna Coast Wilderness Park, and Crystal Cove State Park.

Goal 10. Enhanced open space accessibility and utilization, and conservation efforts of resources.

Objective COS-10: The City commits to creating and fostering well-integrated and sustainable open space resources available to City residents and visitors.

Policy (d): Balance access to open space for outdoor passive and active recreation with conservation needs consistent with City's Open Space management obligations and permit conditions such as the NCCP/HCP. Policy

Policy (j): Safeguard and maintain biotic communities and habitats within designated conservation and open space areas in alignment with Environmental Protection and Climate Action Element, NCCP/HCP and Resource Management Plans, including the protection of native flora and fauna, restoration of degraded habitats, and management practices aimed at enhancing biodiversity and ecological resilience.

3 Project Setting

3.1 Regional Setting

The project site is located in the northern portion of Orange County, California. Regionally, the project site occurs south of Santiago Canyon, with undeveloped land and State Route (SR) 241 to the east. Interstate 5 is a major transportation corridor in the region that lies to the south, beyond residential development. Hicks Canyon and its associated wash is located immediately north of the project site.

3.2 Climate

The project site is located within the foothills of the Santa Ana Mountains, west of the Peninsular Range, approximately 19 miles east of the Pacific Ocean. It is in a Mediterranean climate characterized by mild, dry summers and wet winters. Average temperatures in the City range from an annual low of 40°F to an annual high of 85°F, and the area generally receives a yearly rainfall of about 12.86 inches per year (WRCC 2025).

3.3 Soils

According to the Natural Resources Conservation Service Web Soil Survey (USDA 2025), the project site occurs within the Orange County and part of Riverside County California soil survey area (CA678). Ten soil types were found within the project site: Anaheim clay loam, 15% to 30% slopes; Anaheim clay loam, 30% to 50% slopes; Balcom clay loam, 15% to 30% slopes; Calleguas clay loam, 50% to 75% slopes, eroded; Cieneba sandy loam, 15% to 30% slopes; Metz loamy sand; San Emigdio fine sandy loam, 0% to 2% slopes; Soper gravelly loam, 30% to 50% slopes, Major Land Resource Area (MLRA) 20; Sorrento loam, 0% to 2% slopes, warm Mean Annual Air Temperature, MLRA 19; and pits (Figure 2, Soils). A brief description of each soil series is provided below:

- Anaheim soils consist of very deep, well drained soils. They are found on foothills at elevations of 100 to 2,500 feet above mean sea level (amsl) and are formed in material weathered from fine-grained sandstone or shale.
- Balcom soils consist of moderately deep, well drained soils. They are found on rounded hills at elevations of 200 to 2,300 feet amsl and are derived from soft, calcareous shale and sandstone.
- Calleguas soils series consists of very shallow and shallow, well drained soils formed on uplands, hills and mountains in material weathered from sandstone, shale, and mudstone. They are found at elevations of 100 to 2,800 feet amsl.
- Cieneba soils consist of very shallow to shallow, somewhat excessively drained soils that are derived from granitic rock sources. These soils are found on hills and mountains at elevations of 500 to 4,000 feet amsl.
- Metz soils are very deep, somewhat excessively drained soils formed in alluvial material from mixed sedimentary rocks. They are found on floodplains and alluvial fans at elevations of 25 to 2,500 feet amsl. These soils are considered hydric.
- San Emigdio soils consist of very deep, well drained soils that formed in alluvium mostly from sedimentary rocks. They are found on alluvial fans, floodplains, and in narrow valleys at elevations of 100 to 2,000 feet amsl.

- **Soper soils** consist of moderately deep, well drained soils that formed from conglomerate and sandstone. They are found on hills and uplands at elevations of 100 to 2,500 feet amsl.
- **Sorrento soils** consist of moderately deep, well drained soils that formed in alluvium mostly from sedimentary rocks. They are found on alluvial fans and stabilized floodplains.
- **Pits** consist of very deep, poorly drained soils that formed in fine-textured alluvium weathered from extrusive and basic igneous rocks. They are found on floodplains and in basins at elevations between 2,500 and 5,300 feet amsl. These soils are often flooded for brief to long periods from December to May. These soils are considered hydric.

Observed surface soils throughout most of the project site are highly disturbed due to historical agricultural and industrial uses. Two soil types mapped within the project site, Metz loamy sand and pits, are considered hydric by the Natural Resources Conservation Service (USDA 2025); however, these portions of the project site are primarily developed or in an upland setting.

3.4 Terrain

The project site is located in central Orange County and occurs predominantly on flat agricultural fields and facilities, as depicted on the El Toro, California 7.5-minute U.S. Geological Survey topographic quadrangle map (USGS 2022). The site gently slopes from northeast to southwest and has a relatively flat grade, with an elevation ranging between 330 feet amsl and 515 feet amsl.

3.5 Land Uses

3.5.1 On-Site Land Uses

The project site has been subject to agricultural land use dating back to at least 1946 (NETR 2025), consisting of agricultural fields and facilities. As of 2018, agricultural fields in the northeastern section of the project site appear to have been graded and used for soil stockpiling or were left fallow. During surveys in 2024 and 2025, wheat fields were being actively farmed in the southwestern section of the property. The project site is heavily disturbed with non-native plant species, both cultivated as a part of past and current agricultural activities and naturalized via recruitment of invasives onto the site. Most notably, the project site is heavily impacted by stinknet (*Oncosiphon pilulifer*), poison hemlock (*Conium maculatum*), shortpod mustard (*Hirschfeldia incana*), and crowndaisy (*Glebionis coronaria*), which are in the California Invasive Plant Council (Cal-IPC) Inventory (Cal-IPC 2025).

3.5.2 Surrounding Land Uses

Land use surrounding the project site consists of existing residential developments, consisting of the Stonegate neighborhood to the south and the Orchard Hills neighborhood and undeveloped NCCP/HCP reserve lands to the north and east.

4 Methods

Data regarding biological resources present in the project site were obtained through a review of pertinent literature, field reconnaissance, and focused surveys, which are described in detail below.

4.1 Literature Review

Special-status biological resources present or potentially present in the project site were identified through a literature search, conducted in 2024. The following sources were used during the literature review process:

- The CNDDB (CDFW 2025a) was queried to compile a list of potentially occurring flora and fauna tracked by the CNDDB in the El Toro quadrangle and the surrounding eight quadrangles.
- California Native Plant Society's Inventory of Rare and Endangered Plants of California, 9th online edition (CNPS 2025a), was searched to compile a list of potentially occurring special-status plants in the El Toro topographic quadrangle and the surrounding eight quadrangles.
- USFWS's Information for Planning and Consultation tool (IPaC; USFWS 2025) was queried to compile a list of flora and fauna that are listed, candidate, or proposed for listing under FESA within or near the project site.

The County of Orange Central/Coastal NCCP/HCP (County of Orange 1996) was also reviewed with respect to regional reserve planning and conservation.

4.2 Resource Mapping

An initial biological reconnaissance survey was conducted by Dudek biologist Tommy Molioo on July 24, 2024, to identify the existing conditions, map vegetation, and determine potential biological constraints to the project. Focused field surveys conducted by Dudek include an aquatic resources jurisdictional delineation, special-status plant surveys, burrowing owl (*Athene cunicularia*) surveys, coastal California gnatcatcher surveys, least Bell's vireo surveys, western spadefoot (*Spea hammondii*) surveys, and Crotch's bumble bee (*Bombus crotchii*) surveys. Table 1 lists the dates, conditions, and focus for each survey.

Table 1. Schedule of Surveys

Date	Hours	Focus	Personnel	Conditions
07/24/2024	08:00–12:00	General biological reconnaissance	TM	71°F–82°; 10% cloud cover; 1–5 mph winds
07/24/2024	08:00–12:00	Jurisdictional delineation	VG; MSM	71°F–82°F; 10% cloud cover; 1–5 mph winds
11/27/2024	08:00–10:08	Jurisdictional delineation update	MSM; AV	59°F–64°F; 50%–100% cloud cover; 1–3 mph winds
12/19/2024	07:00–09:30	Winter BUOW Pass 1	KN; MDM	51°F–62°F; 10% cloud cover; 0–2 mph winds
01/02/2025	07:11–09:45	Winter BUOW Pass 2	KN; MDM	43°F–59°F; 0% cloud cover; 1–3 mph winds
01/16/2025	07:30–10:57	Winter BUOW Pass 3	MDM; OK	47°F–66°F; 0% cloud cover; 0–3 mph winds

Table 1. Schedule of Surveys

Date	Hours	Focus	Personnel	Conditions
01/27/2025	15:45–20:05	WESP Pass 1	MDM; RS	Air temperature: 48°F–58°F; water temperature: N/A; 30%–50% cloud cover; 0–5 mph winds
01/30/2025	07:30–11:29	Winter BUOW Pass 4	OK; SC	50°F–58°F; 30%–80% cloud cover; 1–3 mph winds
02/17/2025	08:30–10:00	WESP Pass 2	MDM	Air temperature: 53°F–63°F; water temperature: 50°F–54°F; 0% cloud cover; 3–7 mph winds
03/12/2025	17:30–19:00; 20:00–22:00	WESP Pass 3	KN; MSM	Air temperature: 55°F–57°F; water temperature: 60°F; 70%–100% cloud cover; 2–5 mph winds
03/20/2025	07:30–09:32	Breeding BUOW Pass 1	TM; SL	45°F–62°F; 0%–10% cloud cover; 0–2 mph winds
04/01/2025	17:45–19:00	WESP Pass 4	MSM	Air temperature: 60°F; water temperature: N/A; 50% cloud cover; 10 mph winds
04/16/2025	07:00–10:00	Breeding BUOW Pass 2	KN; LB	53°F–58°F; 100% cloud cover; 1–2 mph winds
04/16/2025	06:45–09:34	LBVI Pass 1	MDM	53°F–56°F; 100% cloud cover; 0–4 mph winds
04/29/2025	07:20–10:29	LBVI Pass 2	LB	52°F–66°F; 0% cloud cover; 0–2 mph winds
05/01/2025	10:48–13:25	CBB Pass 1	CA; ES	64°F–74°F; 20%–90% cloud cover; 1–4 mph winds
05/07/2025	09:17–15:30	Special-Status Plant May Pass	TP; LB	62°F–70°F; 0%–100% cloud cover; 0–1 mph wind
05/13/2025	07:07–10:46	LBVI Pass 3	LB	56°F–62°F; 50%–80% cloud cover; 0–5 mph winds
05/15/2025	07:00–10:00	Breeding BUOW Pass 3	PL; KN	60°F–70°F; 0%–70% cloud cover; 1–2 mph winds
05/22/2025	09:41–12:44	CBB Pass 2	LB; SL	70°F–79°F; 10% cloud cover; 0–4 mph winds
05/28/2025	07:55–11:00	LBVI Pass 4	JE	60°F–69°F; 70%–100% cloud cover; 0–5 mph winds
06/06/2025	08:00–12:00	CAGN Pass 1	SC	63°F–74°F; 60%–90% cloud cover; 0–4 mph wind
06/10/2025	07:00–09:00	Breeding BUOW Pass 4	MDM; LB	60°F–62°F; 100% cloud cover; 1–3 mph wind
06/10/2025	09:00–13:00	CBB Pass 3	LB, KN	62°F–71°F; 10%–100% cloud cover, 2–5 mph wind
06/11/2025	07:04–10:00	LBVI Pass 5	LB	60°F–70°F; 70%–100% cloud cover; 0–2 mph wind
06/20/2025	08:15–12:00	CAGN Pass 2	SC	65°F–72°F; 0%–50% cloud cover; 1–9 mph wind

Table 1. Schedule of Surveys

Date	Hours	Focus	Personnel	Conditions
06/24/2025	05:29–09:57	LBVI Pass 6	MSM	59°F–67°F; 70%–100% cloud cover; 0–4 mph wind
06/27/2025	08:00–12:00	CAGN Pass 3	SC	64°F–76°F; 0%–20% cloud cover; 1–8 mph wind
07/08/2025	07:10–10:08	LBVI Pass7	LB	62°F–74°F; 0%–100% cloud cover; 0–2 mph wind
07/15/2025	08:00–11:00	Special-Status Plants July Pass	AV; SZ	64°F–72°F; 30%–100% cloud cover; 1–4 mph wind
07/22/2025	05:35–09:50	LBVI Pass 8	MSM	68°F–88°F; 0%–100% cloud cover; 0 mph wind

Notes: mph = miles per hour; °F = degrees Fahrenheit; N/A = not applicable due to lack of surface water; TBD = to be determined; BUOW = burrowing owl; WESP = western spadefoot; LBVI = least Bell's vireo; CBB = Crotch's bumble bee; CAGN = coastal California gnatcatcher.
Personnel: TM= Tommy Molioo; VG= Valerie Goodwin; MSM = Megan Minter; AV = Aleen Vartivarian; KM = Kim Narel; MDM = Max Murray; OK = Olivia Koziel; RS = Ryan Stanley; SC = Shana Carey; SL = Sony Leming; LB = Luz Badillo; CA = Callie Amoaku; ES = Eilleen Salas; TP = Tracy Park; SZ = Sharon Zarate; PL = Peter Lam; JE = Josh Elson.

4.2.1 Vegetation Communities and Land Covers

Dudek Biologist Tommy Molioo mapped vegetation communities in the field digitally using the Field Maps ArcGIS mobile application, and a GIS coverage was created. Once in ArcGIS, the acreage of each vegetation community and land cover present within the project site was determined. Native plant community classifications used in this report follow the Habitat Classification System for Orange County (Gray and Bramlet 1992) and California Native Plant Society's *A Manual of California Vegetation* (Sawyer et al. 2009) where feasible, with modifications to accommodate the lack of conformity of the observed communities to those listed in the Habitat Classification System for Orange County. The initial mapping of the project site used an approximately 0.25-acre minimum mapping unit for vegetation community polygons, and clusters of particular vegetation types smaller than 0.25 acres were not mapped separately from the surrounding, larger vegetation community.

4.2.2 Flora

All plant species encountered during the field reconnaissance surveys and potential jurisdictional delineations were identified and recorded. Latin and common names for plant species with a California Rare Plant Rank (formerly California Native Plant Society List) follow the California Native Plant Society On-Line Inventory of Rare and Endangered Plants of California (CNPS 2025a). For plant species without a California Rare Plant Rank, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2024) and common names follow the California Natural Community list (CDFW 2025b) or the U.S. Department of Agriculture Natural Resources Conservation Service Plants Database (USDA 2024).

4.2.3 Fauna

Wildlife species detected during field surveys by sight, calls, tracks, scat, or other signs were recorded. Binoculars were used to aid in the identification of observed wildlife. In addition to species actually detected, expected wildlife use of the project site was determined by known habitat preferences of local species and knowledge of their relative distributions in the area. Latin and common names of animals follow Nicholson (2025) for reptiles and amphibians,

American Ornithological Society (AOS 2025) for birds, Mammal Diversity Database (2025) for mammals, North American Butterfly Association (NABA 2025) or SDNHM (2002) for butterflies, and Moyle (2002) for fish. Digital mobile maps on Esri Field Maps were utilized during the surveys to assist in navigating the project site and collecting data.

4.2.4 Special-Status and Regulated Resources

4.2.4.1 Focused Special-Status Plant Survey

Based on the results of the literature review and the reconnaissance-level field surveys conducted in July 2024, twelve special-status plant and/or covered species were preliminarily determined to have potential to occur within the project site based on known species distribution, species-specific habitat preferences, and habitat conditions on site: Catalina mariposa lily (*Calochortus catalinae*), intermediate mariposa-lily (*Calochortus weedii* var. *intermedius*), small-flowered mountain mahogany (*Cercocarpus minutiflorus*), prostrate spineflower (*Chorizanthe procumbens*), summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), many-stemmed dudleya (*Dudleya multicaulis*), Palmer's grapplinghook (*Harpagonella palmeri*), Tecate cypress (*Hesperocyparis forbesii*), decumbent goldenbush (*Isocoma menziesii* var. *decumbens*), Allen's pentachaeta (*Pentachaeta aurea* ssp. *allenii*), white rabbit-tobacco (*Pseudognaphalium leucocephalum*), and Coulter's matilija poppy (*Romneya coulteri*). Therefore, focused surveys were conducted for target species on May 7, 2025, and July 15, 2025, within the blooming period range for these species.

Surveys for special-status species were conducted by walking meandering transects throughout the entire project site, where accessible. The survey dates and biologists for the focused special-status plant surveys within the project site are included in Table 1. Focused special-status plant surveys conformed to the California Native Plant Society's Botanical Survey Guidelines (CNPS 2001), CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and General Rare Plant Survey Guidelines (Cypher 2002). All plant species encountered during the field surveys were identified and recorded to subspecies or variety, if applicable, to determine sensitivity status.

4.2.4.2 Focused Burrowing Owl Surveys

Focused winter and breeding season burrowing owl surveys were conducted in accordance with the March 7, 2012, Staff Report on Burrowing Owl mitigation (CDFW 2012). Dudek biologists conducted four evenly spaced non-breeding season survey passes between December 2024 through January 2025, following the methodology of breeding-season surveys (Table 1). Dudek biologists conducted four breeding season survey passes in March through June of 2025 under suitable weather conditions, between morning civil twilight and 10:00 a.m. (Table 1). Surveys were scheduled at least 3 weeks apart as per CDFW protocol, with the first survey visit between February 15 and April 15, two survey visits between April 15 and June 15, and one survey visit after June 15. The first visit included a habitat assessment concurrent with searching for suitable burrows and burrowing owls.

Dudek biologists conducted the survey on foot by slowly walking 20-meter-wide transects to inspect all vegetation for evidence of burrowing owl within the project site as well as the surrounding 500-foot buffer area. The surveys covered all portions of the site that included suitable burrowing owl habitat (i.e., short, sparse vegetation with few shrubs, level to gentle topography, and well-drained soils). Pauses were taken to scan the area with appropriate binoculars to search for burrowing owls. Any potentially suitable burrows or burrow surrogates (e.g., rock cavities, pipes, culverts, debris piles with crevices) greater than 11 centimeters (4 inches) in diameter were mapped using

a GPS handheld unit with sub-meter accuracy and inspected for burrowing owl sign (e.g., owl pellets, whitewash, abundant insect remains, feathers).

4.2.4.3 Focused Coastal California Gnatcatcher Surveys

Focused protocol surveys for the federally listed threatened coastal California gnatcatcher were conducted in the project site between June 6, 2025, and June 27, 2025. The survey was conducted within weather conditions and time frames appropriate for the detection of gnatcatchers. Weather conditions and survey dates are provided in Table 1. The survey routes focused on areas within the project site and a 500-foot-wide buffer (survey area) that contain typical suitable habitat to support coastal California gnatcatcher (i.e., California sagebrush-dominated scrub) as well as additional vegetation types that would not typically support coastal California gnatcatcher but were included in the survey area due to the observation of foraging and dispersing coastal California gnatcatcher on the project site within these vegetation types.

The survey was conducted following the currently accepted USFWS protocol, Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Protocol (USFWS 1997). The project site is part of the Central/Coastal Subarea within the Orange County Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). Therefore, the coastal California gnatcatcher focused survey included three survey passes at a minimum of 7-day intervals between visits during the breeding season (March 15 through June 30). In accordance with the protocol, no more than 100 acres of suitable habitat were surveyed by a single permitted biologist during each site visit conducted. Survey routes allowed for complete audible and visual coverage of all suitable coastal California gnatcatcher habitat within the project site (Figure 3, Coastal California Gnatcatcher Survey Route). A recording of gnatcatcher vocalizations was played approximately every 50 to 500 feet to induce responses from potentially present gnatcatchers. Vocalization playback would have been terminated immediately upon detection of any gnatcatchers to minimize the potential for harassment.

4.2.4.4 Focused Least Bell's Vireo Surveys

Eight protocol-level presence/absence surveys for the state- and federally listed endangered least Bell's vireo were conducted on the project site between April and July of 2025 (Table 1). Surveys along linear routes were conducted to cover all potential habitat within the survey area. Surveys were originally planned to occur along the drainages on site; however, biologists adjusted their routes to include laurel sumac (*Malosma laurina*) scrub due to observations of atypical least Bell's vireo use of the vegetation community.

The eight surveys for least Bell's vireo followed the USFWS 2001 Least Bell's Vireo Survey Guidelines (USFWS 2001), which state that a minimum of eight survey visits should be made to all riparian areas and any other potential vireo habitats between April 10 and July 31. The site visits are required to be conducted at least 10 days apart to maximize the detection of early and late arrivals, females, non-vocal birds, and nesting pairs. Taped playback of vireo vocalizations was not used during the surveys. Surveys were conducted between dawn and noon and were not conducted during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather. Focused least Bell's vireo survey routes are depicted on Figure 4, Least Bell's Vireo Survey Route.

4.2.4.5 Focused Western Spadefoot Surveys

Focused western spadefoot surveys were conducted in the project site during the wet season between January and April of 2025 (Table 1). This species is designated an SSC by CDFW and it is a covered species in the NCCP/HCP.

The southern distinct population segment (DPS) of this species is federally proposed for listing as threatened under FESA. However, there is no official or standard survey technique for western spadefoot. Dudek biologists conducted surveys for western spadefoot egg clusters and larvae in all suitable aquatic habitat. If observed, an extrapolation of the appropriate occupied upland area was modeled using recorded occupied breeding locations and typical movement buffers. Suitable aquatic features suitable for western spadefoot breeding were identified and their locations were recorded; these features were revisited during subsequent survey visits. Other wildlife species observed incidentally, including all frogs or toads encountered, were recorded.

4.2.4.6 Focused Crotch's Bumble Bee Surveys

Dudek biologists conducted three evenly spaced surveys for Crotch's bumble bee in May and June 2025 (Table 1), coinciding with the Colony Active Period (April through August) to ensure the highest detection probability. The surveys were conducted in accordance with the recommendations described in the CDFW's "Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species" (CDFW 2023). The first survey was conducted by Callie Amoaku, who holds a Memorandum of Understanding (MOU) and Scientific Collecting Permit (SCP) to capture Crotch's bumble bee (S-221820002-22332-001). Surveys occurred at least 1 hour after sunrise, were concluded at least 3 hours before sunset, and were not conducted during wet conditions (e.g., foggy, raining, or drizzling) or windy conditions (i.e., sustained winds greater than 8 miles per hour). The surveys were conducted during optimal conditions when there were sunny to partly sunny skies with temperatures greater than 60°F. Suitable habitat within the project site was visually surveyed for 1 person-hour per 3 acres of potential habitat. Biologists walked meandering transects throughout the vegetated areas with the highest cover of floral resources, with a goal of observing bumble bees in passing and observing bumble bee nest sites associated with small mammal burrows or other appropriate soil cavities.

4.2.4.7 Jurisdictional Aquatic Resources Delineation

Dudek biologists conducted a formal wetlands delineation in accordance with the 1987 USACE Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008a). 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 (OHWM Manual) (USACE 2008b) was used to determine the limits of non-wetland waters. Non-wetland waters were delineated on topographical maps on a mobile device in conjunction with Esri Collector. The widths of each non-wetland water were determined in the field according to the OHWM Manual. Waters of the state regulated by RWQCB were mapped in accordance with the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2021).

CDFW jurisdictional areas were mapped to include the bank of the stream/channel and outer dripline of adjacent riparian vegetation, as set forth under California Fish and Game Code Section 1602. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979).

Current vegetation mapping was reviewed to assess whether the project site supports hydrophytic vegetation and potential wetlands; several areas supporting hydrophytic vegetation were also assessed for the presence of wetland hydrology and hydric soils to determine whether they were three-parameter wetlands. Jurisdictional boundaries were mapped in the field using Esri Collector on a mobile device. Wetland Determination Forms were completed for certain points within drainages or vegetation communities where a predominance of hydrophytic vegetation was

present; hydrology, vegetation, and soils were assessed to determine whether USACE three-parameter wetlands were present. A Streamflow Duration Assessment Method data form was completed for non-wetland features to distinguish between ephemeral, intermittent, and perennial stream flows.

4.3 Survey Limitations

Survey limitations are primarily due to a diurnal bias for most wildlife species and drier than normal conditions, leading to fewer blooming plants.

Surveys were conducted mostly during the daytime to maximize visibility and detection of plants and most animals. As such, birds represent the largest component of vertebrate fauna recorded during the surveys, as they are usually most active during daytime hours. In contrast, daytime surveys usually result in few observations of mammals, many of which may only be active at night, particularly rodent and bat species. Therefore, identification of mammals primarily relied on detection of surface sign such as scat, burrows, and tracks. Many species of reptiles and amphibians are similarly nocturnal and/or secretive in their habits and are difficult to observe using standard meandering transects.

Irvine received approximately 6.68 inches of precipitation from September 2024 to April 2025 (NOAA 2025) as compared with the average annual precipitation of 12.86 inches (WRCC 2025; Tustin Irvine Ranch, California weather station). Thus, the region experienced lower-than-average precipitation totals during the current rain year. This may have led to lower germination rates or, in the case of bulbiferous plants, lower sprouting rates. It is possible that some herbaceous plant species are present within the project site but were not observed during the rare plant surveys. To account for this, the assessment took into account the proximity of locally known occurrences, project site habitat quality, and the species' sensitivity to drought to determine the likelihood of their presence despite being absent during 2025 field surveys.

Despite these limitations, the survey work conducted within the project site provides an adequate overall assessment of floral and faunal resources for purposes of evaluating potential biological constraints in the context of CEQA.

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5 Results

5.1 Vegetation Communities and Land Covers

The project site consists of developed, disturbed, and agricultural lands and a mix of native and non-native vegetation communities (Figure 5, Vegetation and Land Cover Map). Eleven vegetation communities and land cover types were mapped in the approximately 105-acre project site (Table 2). The vegetation communities and land covers listed here were adapted from the Manual of California Vegetation, Online Edition (CNPS 2025b). Representative site photographs are presented in Appendix A, Photo Exhibit.

Vegetation communities and land cover types mapped on the project site include two native vegetation communities, five naturalized vegetation communities, and four non-natural land cover types. These vegetation communities and land covers are described in further detail below and are summarized in Table 2. Vegetation communities with a state rarity rank of S1, S2, or S3, as well as those communities regulated by the resource agencies (USACE, RWQCB, and/or CDFW), such as riparian habitats, are considered sensitive natural communities. No vegetation communities with a state rarity rank of S1, S2, or S3 were mapped on the project site. One riparian vegetation community (mulefat thickets), which is considered sensitive, was mapped in the previously permitted portion of the project site.

Table 2. Vegetation Communities and Land Cover Types Within the Project Site

Vegetation Communities and Land Cover Types	Alliance[a]	Association	Ranking[b]	Project Site (Acres)[c]
Native Vegetation Communities				
Laurel sumac scrub	*Malosma laurina* shrubland alliance	*Malosma laurina* association	G4 S4	5.21
Mulefat thickets	*Baccharis salicifolia* shrubland alliance	*Baccharis salicifolia* association	G5 S5	0.37
		Native Vegetation Communities Subtotal		*5.58*
Naturalized Vegetation Communities				
Upland mustards or star-thistle fields	*Brassica nigra*–*Centaurea* (*solstitialis*, *melitensis*) herbaceous semi-natural alliance	*Hirschfeldia incana* association	GNA SNA	18.68
		Centaurea melitensis association	GNA SNA	1.26
Red brome or mediterranean grass grasslands	*Bromus rubens* - *Schismus* (*arabicus*, *barbatus*) Herbaceous Semi-Natural Alliance	*Bromus rubens*–mixed herbs association	GNA SNA	2.55
Eucalyptus–tree of heaven–black locust groves	*Eucalyptus* spp.–*Ailanthus altissima*–*Robinia pseudoacacia* woodland semi-natural alliance	*Eucalyptus* (*globulus*, *camaldulensis*) association	GNA SNA	2.56
Pepper tree or myoporum groves	*Schinus* (*molle*, *terebinthifolius*)–*Myoporum*	*Schinus molle* association	GNA SNA	0.68

Table 2. Vegetation Communities and Land Cover Types Within the Project Site

Vegetation Communities and Land Cover Types	Alliance[a]	Association	Ranking[b]	Project Site (Acres)[c]
	laetum forest & woodland semi-natural alliance			
			Naturalized Vegetation Communities Subtotal	*25.72*
Non-Natural Land Cover Types				
General agriculture	None	None	None	35.60
Urban/developed	None	None	None	21.33
Disturbed habitat	None	None	None	15.32
Ornamental plantings	None	None	None	0.63
			Non-Natural Land Cover Types Subtotal	*72.88*
			Total	**104.19**

Notes:

[a] The term semi-natural is used in the Manual of California Vegetation to distinguish vegetation types dominated by non-native plants from natural vegetation communities (CNPS 2025b).

[b] The conservation status of a vegetation community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = global, S = subnational/state). The numbers have the following meaning (NatureServe 2025):

1 = critically imperiled
2 = imperiled
3 = vulnerable to extirpation or extinction
4 = apparently secure
5 = demonstrably widespread, abundant, and secure
NA = no applicable ranking

[c] Totals may not sum precisely due to rounding.

5.1.1 Laurel Sumac Scrub

Laurel sumac scrub includes laurel sumac as dominant or co-dominant in the shrub canopy with California sagebrush, bigpod ceanothus (*Ceanothus megacarpus*), bush monkeyflower, coastal buckwheat (*Eriogonum cinereum*), California brittlebush, California buckwheat, chaparral yucca, toyon (*Heteromeles arbutifolia*), hollyleaf redberry, lemonade sumac, sugar sumac, purple sage (*Salvia leucophylla*), black sage, and poison oak. These communities typically occur on steep slopes where soils are shallow and fine textured (CNPS 2025b). Laurel sumac scrub is mapped in the northern portion of the project site in uplands associated with a mapped drainage feature. It is also mapped in the eastern extent of the project site, west of Bee Canyon Access Road. Areas mapped as laurel sumac also include non-native trees, such as river redgum (*Eucalyptus camaldulensis*) and Peruvian peppertree (*Schinus molle*), as well as scattered native riparian trees and shrubs, such as blue elderberry (*Sambucus mexicana*), mulefat (*Baccharis salicifolia*), and Goodding's willow (*Salix gooddingii*), that were too low in cover to be considered dominant. Additionally, these areas contain a high cover of poison hemlock, shortpod mustard, and crowndaisy, which are included in the Cal-IPC Inventory (Cal-IPC 2025).

The laurel sumac scrub alliance has a rank of G4S4, meaning it is globally secure and secure in the state (NatureServe 2025). Therefore, this alliance is not considered a sensitive vegetation community by CDFW (CDFW 2025b). The association within the laurel sumac scrub alliance mapped on site is the *Malosma laurina* association. This association is also ranked as G4S4 and is therefore not considered sensitive by CDFW (2025b).

5.1.2 Mulefat Thickets

Mulefat thickets feature mulefat as the dominant or co-dominant shrub in the canopy. Mulefat thicket communities are characterized by a continuous two-tiered canopy that is less than 16 feet (5 meters) in height, with one tier under 16 feet and the secondary tier under 6.5 feet (2 meters) in height. Mulefat thickets commonly have a sparse herbaceous layer (CNPS 2025b). Species associated with this alliance include California sagebrush, coyote brush (*Baccharis pilularis*), laurel sumac, tree tobacco (*Nicotiana glauca*), arrow weed (*Pluchea sericea*), blackberry (*Rubus* spp.), sandbar willow (*Salix exigua*), arroyo willow (*S. lasiolepis*), blue elderberry, and tamarisk (*Tamarix ramosissima*). Emergent trees present at low covers may include foothill pine (*Pinus sabiniana*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), oak trees (*Quercus* ssp.), and willows (*Salix* spp.) (CNPS 2025b). Mulefat thickets are mapped in the northern corner of the project site, entirely within the previously permitted area.

Mulefat thickets has a rank of G5S4, meaning it is globally secure and apparently secure in California (NatureServe 2025). The association within the mulefat thickets alliance mapped on site is the *Baccharis salicifolia* association. This association is ranked as G5S5, secure both globally and within California, and is therefore not considered sensitive by CDFW (2025b). However, this riparian vegetation community is considered a sensitive vegetation community.

5.1.3 Upland Mustards or Star Thistle Fields

This semi-natural alliance is described by the Manual of California Vegetation as non-native ruderal forbs that are dominant in an open to continuous herbaceous layer, with emergent shrubs or trees that may be present at low cover (CNPS 2025b). Areas dominated by shortpod mustard and Maltese star-thistle (*Centaurea melitensis*) are present throughout the project site. Both species are listed in the Cal-IPC inventory. On the project site, upland mustards and star thistle fields are mapped in former agricultural areas. These areas also include a high cover of other invasives, most notably stinknet and crowndaisy, which are also included in the Cal-IPC Inventory (Cal-IPC 2025).

Upland mustards or star thistle fields semi-natural alliance is ranked by CDFW (2025) as a GNA SNA alliance. This ranking indicates that globally and within California, the alliance is not applicable for a conservation status rank (NatureServe 2025). Two associations within the upland mustards or star thistle fields alliance were mapped on site: *Hirschfeldia incana* and *Centaurea melitensis*. The *Centaurea melitensis* association is also ranked as GNA SNA while the *Hirschfeldia incana* association is provisionally ranked as GNA SNA (CDFW 2025b).

5.1.4 Red Brome or Mediterranean Grass Grasslands

Red brome or Mediterranean grass grasslands communities include red brome (*Bromus rubens*), Mediterranean grass (*Schismus arabicus*), and/or common Mediterranean grass (*S. barbatus*) as dominant or co-dominant species, with other non-natives in the herbaceous layer. This alliance has an open to continuous herbaceous layer that is less than 2.5 feet (75 centimeters) in height. Emergent trees and shrubs may be present at low cover. Red brome or Mediterranean grass grasslands can be found along all topographic settings and soil textures (CNPS 2025b). Red brome or Mediterranean grass grasslands were mapped on uplands in the northern portion of the project site.

The red brome or Mediterranean grass grasslands semi-natural alliance is ranked by CDFW (2025b) as a GNA SNA alliance. This ranking indicates that globally and within California, the alliance is not applicable for a conservation

status rank (NatureServe 2025). The association within the red brome or Mediterranean grass grasslands alliance mapped on site is the *Bromus rubens*–mixed herbs association. This association is not ranked by CDFW (2025b).

5.1.5 Eucalyptus–Tree of Heaven–Black Locust Groves

This semi-natural alliance is described by the Manual of California Vegetation as non-native trees planted as groves and windbreaks. The *Eucalyptus* (*globulus, camaldulensis*) association refers to areas dominated by eucalyptus trees (*Eucalyptus* spp.) with an open to continuous canopy and sparse to intermittent shrub and herb layers (CNPS 2025b). Stands of eucalyptus trees were mapped along the eastern boundary of the project bordering Bee Canyon Access Road.

This semi-natural alliance is ranked as GNA SNA by CDFW (2025b), indicating that globally and within California, the alliance is not applicable for a conservation status rank (NatureServe 2025). The association within the eucalyptus–tree of heaven–black locust groves alliance mapped on site is the *Eucalyptus* (*globulus, camaldulensis*) association. This association is ranked as GNA SNA (CDFW 2025b).

5.1.6 Pepper Tree or Myoporum Groves

This semi-natural alliance is described by the Manual of California Vegetation as non-native trees planted as groves and windbreaks where pepper tree (*Schinus* spp.) or myoporum dominate in an open to continuous canopy less than 59 feet (18 meters) in height, with a simple to diverse herbaceous layer (CNPS 2025b). Small patches of pepper tree groves are present along the eastern boundary bordering Bee Canyon Access Road.

Pepper tree or myoporum groves semi-natural alliance is ranked as GNA SNA by CDFW (2025b), indicating that globally and within California, it is not applicable for a conservation status rank (NatureServe 2025). The association within the pepper tree or myoporum groves alliance mapped on site is the *Schinus molle* association. This association is ranked as GNA SNA (CDFW 2025b).

5.1.7 General Agriculture

General agriculture is not described by the Manual of California Vegetation but is described within the Orange County Habitat Classification System (Gray and Bramlet 1992). Agricultural land refers to non-native anthropogenic habitat including dryland field crops, irrigated row and field crops, vineyards and orchards, dairies, stockyards, stables, and nurseries. The southwestern portion of the project site supports actively maintained agricultural fields.

Agriculture is not a listed vegetation community under the California Natural Community List (CDFW 2025b); as such, this community is not globally or state ranked and is not considered a sensitive natural community under CEQA.

5.1.8 Urban/Developed Land

According to Oberbauer et al. (2008), the urban/developed land mapping unit refers to areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation. Urban and/or developed land on the project site consists of work yards associated with on-site industrial and agricultural facilities and paved access roads. There are stands of non-native ornamental trees within the developed facilities in the central and northeastern portions of the project site.

Urban/developed land is not a listed vegetation community under the California Natural Community List (CDFW 2025b); as such, this community is not globally or state ranked and is not considered a sensitive natural community under CEQA.

5.1.9 Disturbed Habitat

The disturbed habitat mapping unit is not recognized by the Natural Communities List (CDFW 2025b) but is described by Oberbauer et al. (2008). The disturbed habitat mapping unit refers to areas that lack vegetation but still retain a pervious surface, or that are dominated by a sparse cover of non-native grasses and ruderal species, such as wild oat (*Avena fatua*), black mustard (*Brassica nigra*), red brome, and prickly lettuce (*Lactuca serriola*). Disturbed habitat is mapped throughout the project site, associated with dirt access roads, work yards, and areas along Jeffrey Road and Portola Parkway. Human-made features associated with agricultural activities (i.e., basins, ditches) are also mapped as disturbed habitat on the project site. Vegetation within areas mapped as disturbed habitat was limited to Cal-IPC Inventory listed invasives, such as stinknet, shortpod mustard, and crowndaisy (Cal-IPC 2025).

Disturbed habitat is not a listed vegetation community under the California Natural Community List (CDFW 2025b); as such, this community is not globally or state ranked and is not considered a sensitive natural community under CEQA.

5.1.10 Ornamental Plantings

The ornamental plantings mapping unit is not recognized by the Natural Communities List (CDFW 2025b) but is described by Gray and Bramlet (1992). The ornamental plantings mapping unit refers to areas that are consistently managed and planted with decorative tree, shrub, and herbaceous species. Ornamental plantings border urban development on the northern portion of the project site adjacent to the unnamed drainage on site.

Ornamental plantings is not a listed vegetation community under the California Natural Community List (CDFW 2025b); as such, this community is not globally or state ranked and is not considered a sensitive natural community under CEQA.

5.2 Floral Diversity

A total of 135 species of native or naturalized plants, 63 native (47%) and 72 non-native (53%), were recorded on the site. No rare plants were observed on the project site. A list of plant species observed in the project site is presented in Appendix B, Species Compendium.

5.3 Wildlife Diversity

A total of 89 species of wildlife were observed in the project site, consisting of 86 native species and 3 non-native species. A cumulative list of wildlife species observed within the project site is presented in Appendix B, Species Compendium.

Reptiles and Amphibians. Four reptile species were observed during surveys. Species observed include orange-throated whiptail (*Aspidoscelis hyperythra*), gophersnake (*Pituophis catenifer*), western fence lizard (*Sceloporus occidentalis*), and side-blotched lizard (*Uta stansburiana*). One amphibian species, Baja California treefrog (*Pseudacris hypochondriaca*), was observed during the surveys.

Birds. A total of 73 bird species were observed on the project site, representing 31 different families. Common species frequently observed include hooded oriole (*Icterus cucullatus*), bushtit (*Psaltriparus minimus*), lazuli bunting (*Passerina amoena*), house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), black phoebe (*Sayornis nigricans*), red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), Allen's hummingbird (*Selasphorus sasin*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), house sparrow (*Passer domesticus*), mourning dove (*Zenaida macroura*), barn swallow (*Hirundo rustica*), Bewick's wren (*Thryomanes bewickii*), and California towhee (*Melozone crissalis*).

Mammals. A total of five mammal species were observed on the project site, including desert cottontail rabbits (*Sylvilagus audubonii*), coyote (*Canis latrans*), and California ground squirrel (*Otospermophilus beecheyi*).

Invertebrates. Four bee species and two butterfly species were detected on the project site. Common species observed include western honeybee (*Apis mellifera*), Vosnesensky bumble bee (*Bombus vosnesenskii*), yellow bumble bee (*Bombus fervidus*), and cabbage white (*Pieris rapae*). Other common invertebrate species that could forage within suitable floral nectar resources onsite include checkered white (*Pontia protodice*), west coast lady (*Vanessa annabella*), and painted lady (*V. cardui*). Numerous other insects and invertebrates are expected to occur in the native vegetation communities on the project site.

5.4 Sensitive Plants and Wildlife

Endangered, rare, or threatened species, as defined in CEQA Guidelines Section 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status species" in this report and include (1) plant and wildlife species listed or proposed for listing as endangered or threatened under FESA; (2) plant and wildlife species listed, or which are candidates for listing, as endangered or threatened under CESA; (3) plant species with a California Rare Plant Rank of 1 or 2, as designated by the California Native Plant Society (CNPS 2025a); (4) SSC, as designated by CDFW (CDFW 2025c); (5) Fully Protected species, as described in California Fish and Game Code Sections 4700 and 3511; and (6) Birds of Conservation Concern as designated by USFWS (2021). Plant and wildlife species that are "covered" under the NCCP/HCP are also evaluated in this report (County of Orange 1996).

5.4.1 Special-Status and NCCP/HCP Covered Plant Species

A summary of all special-status plant species known to occur in the vicinity of the project site and the surrounding eight topographic quadrangles), and plant species covered under the NCCP/HCP, along with their habitat requirements and potential to occur determination, is provided in Appendix C, Special-Status Plant Species Potential to Occur. Appendix C provides evaluations for each of these species' occurrence in the project vicinity and their potential to occur on site based on known range, habitat associations, preferred soil substrate, life form, elevation, and blooming period. Special-status and covered plant species that have a low potential or are not expected to occur in the project site are not further analyzed in this report because no direct, indirect, or cumulative impacts are expected based on the evaluation that these species do not have a moderate or high potential to occur in the project site.

No special-status plants were observed during focused botanical surveys conducted in May and July 2025. One special-status plant species, intermediate mariposa-lily (*Calochortus weedii* var. *intermedius*), which is also a covered species in the NCCP/HCP, was determined to have a high potential to occur. This evaluation was based on a review of the species' known distribution within the region, their known habitat associations, and the site conditions observed during the biological reconnaissance survey. The species' status, primary habitat associations,

life form, blooming period, elevation range, and potential-to-occur determination are summarized in Table 3. A discussion of the evaluation is detailed further below. Southern California black walnut (*Juglans californica*), a CRPR 4.2 plant, was also observed within the project site. Six individuals were mapped along the drainage in the northern portion of the project site.

Table 3. Special-Status and NCCP/HCP Covered Plant Species with a High Potential to Occur

Scientific Name	Common Name	Status (Federal/ State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (Feet amsl)	Potential to Occur
Calochortus weedii var. *intermedius*	intermediate mariposa-lily	None/None/Yes/1B.2	Chaparral, coastal scrub, and valley and foothill grasslands in rocky substrates/perennial herb/May–July/345–2,805	High potential to occur in limited areas (i.e., road cuts along Bee Canyon Access Road); low potential to occur within the remainder of the project site.

Notes: NCCP/HCP = Natural Community Conservation Plan & Habitat Conservation Plan, County of Orange Central & Coastal; NCCP = NCCP/HCP; CRPR = California Rare Plant Rank; amsl = above mean sea level.
Status: CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere; .2 = Moderately threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat).

Intermediate Mariposa Lily (*Calochortus weedii* var. *intermedius*). This perennial bulbiferous herb is ranked 1B.2 by CRPR. Plants with a 1B ranking are considered rare, threatened, or endangered in California and elsewhere, with the majority endemic to California and rare throughout their entire range. Plants with a 0.2 threat rank are moderately threatened in California, with 20% - 80% of occurrences threatened with a moderate degree/immediacy of threat (CNPS 2025a). This is a covered species under the NCCP/HCP.

Intermediate mariposa lily blooms from May to July at elevations ranging between 345 and 2,805 feet amsl, in chaparral, coastal scrub, and valley and foothill grasslands, preferring rocky substrate. Minimal rocky habitat is present on the project site, limited to road cuts along Bee Canyon Access Road.

Intermediate mariposa lily was not observed during focused botanical surveys, which were conducted within this species' blooming period in May and July 2025. However, there are nearby records for this species, including a 2023 record within the southern boundary of the project site (iNaturalist 2025). Additionally, CNDDB occurrence records for this species are located approximately 0.1 miles from the project site, with numerous observations within 3 miles of the project site in NCCP/HCP reserve lands to the east and north (CDFW 2025c). Intermediate mariposa lily is a bulbiferous herbaceous species that may not have bloomed during the drier than normal conditions during 2025; therefore, due to the potential on-site and numerous nearby observations, the potential for this species to occur is high within the project site where small patches of remnant suitable habitat occurs (i.e., on road cuts along Bee Canyon Access Road). This species has a low potential to occur in the remainder of the project site due to disturbance from historical land use and lack of suitable habitat.

5.4.2 Special-Status and NCCP/HCP Covered Wildlife Species

A summary of all special-status wildlife species known to occur in the vicinity of the project site, wildlife species covered under the NCCP/HCP, habitat requirements, potential to occur in the project site, and survey observations, is provided in Appendix D, Special-Status Wildlife Species Potential to Occur. Six special-status wildlife species were observed on the project site: monarch (*Danaus plexippus*), white-tailed kite (*Elanus leucurus*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Setophaga petechia*), least Bell's vireo, and Crotch's bumble bee. Three special-status wildlife species were determined to have a moderate potential to occur within the project site or the 500-foot buffer: San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), red diamondback rattlesnake (*Crotalus ruber*), and coastal California gnatcatcher. Two non-special-status NCCP/HCP covered species were observed within the project site: red-shouldered hawk (*Buteo lineatus*) and coyote. One non-special-status NCCP/HCP covered species was determined to have a high potential to occur: orange-throated whiptail. Special-status and NCCP/HCP covered species that were observed and determined to have a moderate to high potential to occur are presented in Table 4 and discussed in further detail below. Special-status species with a low potential to occur and species that are not expected to occur are excluded from further discussion in this report, with the exception of burrowing owl and mountain lion (*Puma concolor*), due to their high sensitivity status.

Table 4. Special-Status and NCCP/HCP Covered Wildlife Species Observed or with a Low to High Potential to Occur

Scientific Name	Common Name	Listing Status (Federal/ State/NCCP)	Habitat	Potential to Occur
Birds				
Athene cunicularia (burrow sites & some wintering sites)	burrowing owl	BCC/SSC, SC/No	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Not expected to nest; low potential to overwinter.
Buteo lineatus	red-shouldered hawk	None/None/Yes	Nests in dense riparian areas, especially with adjacent edges, swamps, marshes, and wet meadows for hunting	Observed; low potential to nest.
Elanus leucurus (nesting)	white-tailed kite	None/FP/No	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	Observed; moderate potential to nest.
Icteria virens (nesting)	yellow-breasted chat	None/SSC/No	Nests and forages in thickets of willows, vine tangles, and dense brush	Observed; high potential to nest.
Setophaga petechia (nesting)	yellow warbler	None/SSC/No	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Observed; high potential to nest.

Table 4. Special-Status and NCCP/HCP Covered Wildlife Species Observed or with a Low to High Potential to Occur

Scientific Name	Common Name	Listing Status (Federal/ State/NCCP)	Habitat	Potential to Occur
Polioptila californica californica	coastal California gnatcatcher	FT/SSC/Yes	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet amsl	Not expected to nest within the project site; Moderate potential to forage and nest in coastal sage scrub located in the 500-foot buffer.
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/Yes	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Observed; nesting on site and high potential to nest in future years.
Invertebrates				
Bombus crotchii	Crotch's bumble bee	None/SCE/No	Open grassland and scrub communities supporting suitable floral resources.	Observed; moderate potential to nest.
Danaus plexippus plexippus pop. 1	monarch–California overwintering population	FPT/None/No	Wind-protected tree groves with nectar sources and nearby water sources	Observed; not expected to overwinter.
Mammals				
Canis latrans	coyote	None/None/Yes	Many areas except very highly urbanized areas	Observed; high potential to occur in future years.
Puma concolor	mountain lion–Southern California/Central Coast ESU	None/SC/No	Scrubs, chaparral, riparian, woodland, and forest; rests in rocky areas and on cliffs and ledges that provide cover; most abundant in riparian areas and brushy stages of most habitats throughout California, except deserts	Low potential to occur; natal dens are not expected to occur.
Reptiles				
Aspidoscelis hyperythra	orange-throated whiptail	None/WL/Yes	Low-elevation coastal scrub, chaparral, and valley–foothill hardwood	High potential to occur.
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC/Yes	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	Moderate potential to occur.
Crotalus ruber	red diamondback rattlesnake	None/SSC/Yes	Coastal scrub, chaparral, oak and pine woodlands, rocky	Moderate potential to occur.

Table 4. Special-Status and NCCP/HCP Covered Wildlife Species Observed or with a Low to High Potential to Occur

Scientific Name	Common Name	Listing Status (Federal/ State/NCCP)	Habitat	Potential to Occur
			grasslands, cultivated areas, and desert flats	

Notes: NCCP/HCP = Natural Community Conservation Plan & Habitat Conservation Plan, County of Orange Central & Coastal subregion; NCCP = NCCP/HCP.
Status:
Federal
BCC = U.S. Fish and Wildlife Service Bird of Conservation Concern
FE = federally endangered
FPT = federally proposed for listing as threatened
FT = federally threatened
State
FP = California fully protected species
SC = state candidate for listing as threatened or endangered
SCE = state candidate for listing as endangered
SE = state listed as endangered
SSC = California Department of Fish and Wildlife (CDFW) Species of Special Concern
WL = CDFW Watch List

Burrowing Owl

Burrowing owl is a USFWS Bird of Conservation Concern (BCC), a CDFW SSC, and a state candidate (SC) for listing under CESA. It occurs throughout North and Central America west of the eastern edge of the Great Plains south to Panama. The winter range is much the same as the nesting range, except that most burrowing owls migrate south from the Great Plains and the Great Basin in winter (Poulin et al. 2020). The majority of burrowing owls that breed in Canada and the northern United States are believed to migrate south during September and October and north during March and April and into the first week of May. These individuals winter within the nesting habitat of more southern populations. Thus, winter observations may include migratory individuals and the resident population. The burrowing owls in Northern California are believed to migrate (Coulombe 1971).

In California, burrowing owls are year-round residents of flat, open, dry grassland and desert habitats at lower elevations. They can inhabit annual and perennial grasslands and scrublands characterized by low growing vegetation. They may be found in areas that include trees and shrubs if the cover is less than 30%; however, they prefer treeless grasslands (Bates 2006). Although burrowing owls prefer large, contiguous areas of treeless grasslands, they have also been known to occupy fallow agriculture fields, golf courses, cemeteries, road allowances, airports, vacant lots in residential areas and university campuses, and fairgrounds when nest burrows are present (Bates 2006; County of Riverside 2008). They typically require burrows made by fossorial mammals, such as California ground squirrels. This species also prefers sandy soils with higher bulk density and less silt, clay, and gravel (Lenihan 2007).

Protocol wintering and breeding season surveys for this species were negative. Due to a lack of recent breeding records and breeding season observations in central Orange County, this species is considered to be extirpated as a breeder and is not expected to nest within the project site (CDFW 2025a; iNaturalist 2025; Gervais et al. 2008). However, suitable overwintering habitat (e.g., grassland and agricultural land with small mammal burrows) is present on the project site, with multiple recent winter observations within 3 miles (CDFW 2025a; iNaturalist 2025). Therefore, this species has a low potential to overwinter on site in future years.

Red-Shouldered Hawk

Red-shouldered hawk is an NCCP/HCP covered species and is a year-round resident of coastal California. They nest in riparian and oak woodlands but can also nest in eucalyptus groves or residential areas in southern California (Dykstra et al. 2020). These medium-sized buteo hawks are diurnal hunters, hunting from perches or by flying low to the ground for small mammals, reptiles, amphibians, and occasionally birds and invertebrates. Red-shouldered hawks nest in large trees but have been observed to avoid nesting near red-tailed hawks (Dykstra et al. 2020).

A red-shouldered hawk was incidentally observed flying over the project site during 2025 field surveys. This species has a low potential to nest because riparian habitat within the project site is small in size and degraded. Additionally, red-tailed hawks were observed nesting on site, which likely would deter red-shouldered hawks as noted in Birds of the World (Dykstra et al. 2020).

White-Tailed Kite

White-tailed kite is a state fully protected species that occurs mainly in lowlands of southern and northwestern cismontane California in savannah, open woodland, marshes, cultivated fields, and partially cleared lands (Zeiner et al. 1990). White-tailed kite hunts in the morning and late afternoon for voles and mice, usually near farmlands. It is non-migratory but can be nomadic and dispersive in its movements and often occurs in communal roosts (Dunk 2020). Nests are made of piled sticks and twigs and placed near the tops of oak, willow, or other trees near marshes and foraging areas (Zeiner et al. 1990).

This species was observed during a field survey conducted on March 20, 2025. No nesting was observed on site during several surveys conducted between July 24, 2024, and July 22, 2025, within its breeding season; however, trees suitable for nesting with adjacent foraging habitat occur within the project site and numerous (>10) known CNDDB occurrences are present within 10 miles (CDFW 2025a). Therefore, this species has a moderate potential to nest within the project site in future years.

Yellow-Breasted Chat

Yellow-breasted chat is a CDFW SSC and resident of riparian areas in coastal California and the foothills of the Sierra Nevada (Zeiner et al. 1990). This species inhabits dense thickets and tangles near water (Zeiner et al. 1990).

This species was observed within the northeastern portion of the project site in areas mapped as laurel sumac scrub. Laurel sumac scrub is typically considered an upland habitat; however, during surveys, this vegetation community atypically appeared to stand in as substitute habitat for riparian-associated birds using the site. Mulefat thickets mapped within the project site are located in the previously permitted area associated with adjacent development and were no longer present or providing suitable habitat for the species during 2025 surveys. Therefore, yellow-breasted chat is present on site and has a high potential to nest in laurel sumac scrub within the project site.

Yellow Warbler

Yellow warbler is a CDFW SSC and summer resident of riparian areas in coastal California and the foothills of the Sierra Nevada (Zeiner et al. 1990). This species is most often found in willows and cottonwoods but also inhabits a variety of wooded habitats (Zeiner et al. 1990).

This species was observed in wooded areas throughout the project site. Wooded areas and riparian stand-in habitat, such as laurel sumac scrub, within the project site provide suitable nesting habitat. Therefore, yellow warbler is present and has a high potential to nest within the project site.

Coastal California Gnatcatcher

Coastal California gnatcatcher is federally listed as threatened and is a CDFW SSC. It is also an NCCP/HCP covered species. It is closely associated with coastal sage scrub habitat and typically occurs below 950 feet elevation and on slopes less than 40% (Atwood 1990), but coastal California gnatcatcher have also been observed at elevations greater than 2,000 feet. The species is primarily threatened by loss, degradation, and fragmentation of coastal sage scrub habitat, and is also impacted by brown-headed cowbird nest parasitism (Braden et al. 1997).

Protocol surveys for coastal California gnatcatcher were negative. The project site does not contain suitable coastal sage scrub habitat. However, suitable coastal sage scrub habitat is present off site in the property east of Bee Canyon Access Road where a population of this species has been consistently documented (CDFW 2025a); therefore, this species has a moderate potential to occur and to nest within off-site habitat in future years. The methods and results of the focused coastal California gnatcatcher surveys are provided in Appendix E, Coastal California Gnatcatcher Survey Report.

Least Bell's Vireo

Least Bell's vireo is a federally and state-listed endangered species that is conditionally covered under the NCCP/HCP. It nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams, as well as adjacent shrubland late in the nesting season. Nesting habitats in cismontane and coastal areas include willow (*Salix* spp.) riparian scrub, mulefat scrub, and Fremont cottonwood. In the coastal portions of its Southern California range, it occurs in lower areas of canyons, typically below 2,000 feet amsl.

Least Bell's vireo was observed within laurel sumac scrub on site and in adjacent areas during the 2025 focused surveys. Within the project site, a total of seven territories were observed over the course of the focused surveys, with four confirmed to be occupied by mated pairs, and nesting was confirmed at two territories. One singing individual was only observed once early in the season and was therefore presumed to be a migrant. Six more territories were observed off site within the 500-foot buffer across Bee Canyon Access Road. This species has a high potential to nest within the project site and in suitable habitat within 500 feet of the project site in future years. As mentioned previously, laurel sumac scrub is usually considered an upland vegetation but appeared to stand in as an atypical substitute habitat for riparian-associated birds, including least Bell's vireo, during 2025 field surveys.

Crotch's Bumble Bee

Crotch's bumble bee is a state candidate for listing and, as such, is afforded protection by CESA equivalent to a threatened listing. This species is found in open grassland and scrub habitats and has been found to persist in semi-natural habitats surrounded by intensely modified landscapes. This species is restricted to a very limited climatic range that is much hotter and drier than most bumble bees thrive in. It uses a wide array of flowers; food plants include *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia,* and *Salvia* (Williams et al. 2014).

Crotch's bumble bee was observed on the project site during focused surveys. One transient individual was observed in the eastern portion of the project site, and one foraging worker was observed in the western portion of the project site (Figure 6, Special-Status Species). No nests were detected during surveys. This species may

forage for nectar on the Salvia species (*Salvia mellifera*) and other floral resources within the suitable off-site coastal sage scrub present east of the project site across Bee Canyon Access Road and within vegetation communities on the project site. Hymenoptera (bees) and Lepidoptera (butterflies) were observed on site during the biological surveys, and suitable floral nectar resources and scrub habitat capable of supporting these species can persist year-round on site. In addition, the nearest known CNDDB occurrence record is 4.6 miles east from the project site from 2016. Potential nesting resources, such as small mammal burrows, brush piles, debris piles, rock piles, and bare ground were observed within the project site. Additionally, areas under tree cover with insulating leaf litter within the project site could provide overwintering habitat (CDFW 2023). Therefore, there is a moderate potential for Crotch bumble bee nesting to occur within the project site. The methods and results of the focused Crotch's Bumble Bee surveys are provided in Appendix F, Crotch's Bumble Bee Survey Report.

Monarch Butterfly

Monarch butterfly is a federal candidate for listing under the federal Endangered Species Act. Within the United States, monarch butterflies follow a pattern of seasonal migration, in which spring and summer breeding occurs in New England, the Great Lakes region, and the northern Rocky Mountains from May through late August to mid-September. The Rocky Mountains population migrates to wintering grounds along the California coast (Urquhart 1987). Over-wintering sites in California are usually comprised of roost trees sheltered by a larger grove or windrow of trees (Xerces Society 2016). Native Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*), as well as the non-native Tasmanian blue gum, are tree species most commonly used for winter roosting, though monarch clusters have also been found on other large trees found in coastal areas, such as river redgum, California sycamore (*Platanus racemosa*), coast redwood (*Sequoia sempervirens*), and coast live oak (*Quercus agrifolia*) (Xerces Society 2016, 2017).

Monarch butterfly was observed flying through the project site during 2024-2025 field surveys. However, trees within the project site are not sufficiently sheltered from wind to provide winter roosting habitat. In addition, the nearest known overwintering roost occurrence is 12.4 miles away (CDFW 2025a). Therefore, this species may occur on site as a transient but is not expected overwinter within the project site.

Coyote

Coyote is an NCCP/HCP covered species and a permanent resident throughout the state occurring in almost all habitats with elevations as high as 9,840 feet. They inhabit open brush, scrub, shrub and herbaceous habitats as well as opportunistically associating with croplands. Will dig dens usually on brushy, south-facing slopes and utilize natural cavities in rocky areas, hollow trees and logs, caves and holes. Coyotes are omnivorous opportunists with a diet primarily consisting of rodents and lagomorphs but also occasionally fruits, amphibians, reptiles, fawns, and birds and their eggs (CDFW 2025d).

Coyote individuals, scat, and trails were observed on several occasions during 2024–2025 field surveys. Additionally, open fields with small mammal populations offer ample forage opportunities for the species. The project site also contains dense vegetation and structures that would provide denning habitat. This is a common species that has a high potential to occur on the project site in future years.

Mountain Lion

The southern California and central coast evolutionary significant units of mountain lion are state candidates for listing and, as mentioned previously, afforded protection by CESA equivalent to a threatened listing. Mountain lions

are large predatory mammals that inhabit a wide variety of habitat types, such as deserts, humid coast forests, arid hillsides, scrub, and oak woodlands, but often utilize areas with dense undergrowth and cover (CDFW 2025d).

This species is known to occur in the Santa Ana Mountains and is expected to be present in the open space areas to the northeast of the project site. Access to the project site is constrained by SR-241 and SR-261, Bee Canyon Access Road, and urban development. Therefore, mountain lion has a low potential to occur. Natal dens of the species are not expected due to surrounding disturbance from agricultural and industrial activities.

Orange-Throated Whiptail

Orange-throated whiptail is a state Watch List species and NCCP/HCP covered species occurring on the cismontane side of the Peninsular Ranges in Orange, Riverside and San Diego counties with an elevational range extending from near sea level to 3,410 feet amsl. They inhabit low-elevation coastal scrub, chamise–redshank chaparral, mixed chaparral, and valley–foothill hardwood habitats. They prefer patches of brush and rocks in washes and other sandy areas while utilizing dense vegetation and surface debris to forage for small arthropods. Breeding usually occurs in April and hatchlings emerge from August to early September (CDFW 2025d).

Although orange-throated whiptail was not observed on site during 2024-2025 surveys, suitable chaparral habitat is present within the project site. Additionally, an orange-throated whiptail individual was incidentally observed off site during a focused coastal California gnatcatcher survey of the 500-foot buffer, south of Bee Canyon Access Road (Figure 6). There are numerous known occurrences in the vicinity of the project site, including an iNaturalist observation within the project site in the already permitted area where construction was ongoing at the time of field surveys (CDFW 2025a; iNaturalist 2025).

San Diegan Tiger Whiptail

San Diegan tiger whiptail is a CDFW SSC and NCCP/HCP covered species that occurs in coastal Sothern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges as well as north into Ventura County and south into Baja California. They can primarily be found in hot and dry open areas with sparse foliage in chaparral, woodland and riparian ecosystems. This species forages for small invertebrates and lizards near cover to which they can rapidly escape (Nafis 2025).

Although this species was not observed during 2024–2025 surveys, suitable dry open habitat is present on the project site. In addition, there are known occurrences in the vicinity of the project site (CDFW 2025a; iNaturalist 2025).

Red Diamondback Rattlesnake

Red diamondback rattlesnake is a CDFW SSC and NCCP/HCP covered species that occurs in southwestern California, from the Morongo Valley west to the coast, and south along the peninsular ranges to mid Baja California (Nafis 2025). It inhabits arid scrub, coastal chaparral, oak and pine woodlands, rocky grassland, cultivated areas on the desert slopes of mountains, and rocky desert flats. The breeding period for this species is July through September (Nafis 2025).

Although this species was not observed during 2024–2025 surveys, suitable chaparral, grassland, and cultivated habitat is present on the project site. In addition, there are known occurrences in the vicinity of the project site (CDFW 2025a; iNaturalist 2025).

5.5 Jurisdictional Wetlands and Waters

A formal delineation of potentially jurisdictional waters and wetlands was conducted by Dudek on July 24, 2024. The results of this jurisdictional delineation are provided in Appendix G, Aquatic Resources Delineation Report, which details the methods, results, and all data forms. The project site is located within the Peters Canyon Wash and Lower San Diego Creek watersheds within the larger Newport Bay watershed. Flows from this watershed generally flow toward the southwest and discharge to the Pacific Ocean through Newport Bay.

The results of the jurisdictional delineation determined that one unnamed drainage, Non-Wetland Waters (NWW) 1, is present along the northern boundary of the project site. The drainage is depicted as a blue line on the U.S. Geological Survey 7.5-minute Lake Forest, California quadrangle map (USGS 2022); it begins at the confluence of two drainages approximately 2,500 feet east of the project site and flows west for approximately 3,300 feet before connecting to Hicks Canyon Wash. Hicks Canyon Wash flows into Peters Canyon Wash, which is a direct tributary to San Diego Creek and flows eventually into the Pacific Ocean, a traditional navigable water.

NWW-1 was determined to be ephemeral using the Streamflow Duration Assessment Method. Additionally, no hydrophytic vegetation was observed at this feature. Based on these results, field observations, and best professional judgment, the tributary lacks relatively permanent water (i.e., surface water flows are likely only present in direct response to precipitation).

Three additional features associated with agricultural use within the project site were observed in the southern region, including two agricultural basins and one agricultural irrigation ditch. The basins exhibited wetland hydrology, and hydrophytic vegetation was observed within them, including tamarisk *(Tamarix ramosissima*) and cottonwood trees (*Populus* sp.). Wetland sampling points were taken within each basin, and the basins were determined not to be wetlands due to lack of hydric soils (Appendix G). Examination of historical aerial maps indicates that the two basins were not present prior to 2003, and the irrigation ditch does not show evidence of surface water connectivity with downstream drainages. Therefore, the two basins and irrigation ditch are human-made agricultural features wholly within upland areas and are not jurisdictional.

Because NWW-1 was determined to be ephemeral, and the agricultural irrigation ditch and basins did not exhibit evidence of hydric soils or connectivity, no jurisdictional areas potentially regulated by USACE are present on the project site.

Portions of NWW-1 within the OHWM were identified as non-wetland waters of the state subject to regulation by the RWQCB under the Porter–Cologne Act. Because CDFW regulates from bank to bank, certain portions of NWW-1 where the top of a channel bank extended beyond the OHWM are subject to regulation by CDFW as streambed. Table 5 details the jurisdictional extent and location of NWW-1. Figure 7 and Figure 8 depict the potentially jurisdictional extents regulated by RWQCB and CDFW, respectively.

Within NWW-1, the OHWM was delineated to be potentially regulated by RWQCB. This feature may also be regulated by CDFW beyond the OHWM to the top of bank. In total, 0.07 acres of non-wetland waters (below the OHWM) of RWQCB jurisdiction and 0.26 acres of CDFW streambed (below and above the OHWM, to top of bank) occur in the project site (Appendix G).

Table 5. Aquatic Resources Summary for the Project Site

Feature Name	Location (Latitude/Longitude) (Decimal Degrees)	Acreage
RWQCB Non-Wetland Waters of the State		
NWW-1 (Unnamed Tributary to Hicks Canyon Wash)	33.719625°/−117.730824°	0.07
CDFW Streambed		
NWW-1 (Unnamed Tributary to Hicks Canyon Wash)	33.719625°/−117.730824°	0.26

Notes: RWQCB = Regional Water Quality Control Board; NWW = non-wetland waters; CDFW = California Department of Fish and Wildlife.

5.6 Wildlife Corridors, Habitat Linkages, and Nursery Sites

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for dispersal or migration of animals, as well as dispersal of plants (e.g., via wildlife vectors). Wildlife corridors contribute to population viability in several ways: (1) they assure continual exchange of genes between populations, which helps maintain genetic diversity; (2) they provide access to adjacent habitat areas representing additional territory for foraging and mating; (3) they allow for a greater carrying capacity; and (4) they provide routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes.

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. Although individual animals may not move through a habitat linkage, the linkage is a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as steppingstones for dispersal and movement (especially for birds and flying insects).

The project site primarily consists of agricultural land and associated roads, lots, and buildings. Undeveloped but maintained areas include slopes along the eastern boundary and the drainage along the northern boundary of the project site. The project site is at the northern extent of dense urban areas in the City of Irvine. Development of the Orchard Hills neighborhood was actively ongoing west of the project site during the time of surveys, and dense residential development is present to the south and southwest. Undeveloped land associated with NCCP/HCP reserve lands lies immediately north and east of the project site. The eastern edge of the project site is bounded by Bee Canyon Access Road, which is heavily trafficked by trucks traveling to and from the Frank R. Bowerman Landfill, located approximately 2 miles east of the project site. Movement to/from the project site from open space in the Santa Ana Mountains is also constrained by SR-241 to the east and north and by SR-261 to the west.

The project site has the potential to provide for local wildlife movement of common wildlife species to and/or from open space to the east and may function as a stopover site for avian species moving through the area. However, the project site itself does not function as a wildlife corridor or habitat linkage between two larger blocks of native habitat. The project site does not contain any native wildlife nursery sites.

5.7 City Protected Trees

Trees subject to a City of Irvine Municipal Code tree removal permit are present on the project site. The project site includes several trees that may meet the definition of a significant tree pursuant to the Municipal Code, composed of a broad array of non-native ornamental and naturalized species, including kaffir plum (*Harpephyllum caffrum*), Peruvian pepper tree, blue jacaranda (*Jacaranda mimosifolia*), Jerusalem thorn (*Parkinsonia aculeata*), Chinese banyan (*Ficus macrocarpa*), monkeypod (*Pithecellobium dulce*), eucalyptus, and Italian stone pine (*Pinus pinea*), among many others. Native trees, like coast live oak, Southern California black walnut, Goodding's willow, and Fremont cottonwood, are also present.

5.8 Regional Resource Planning Context

5.8.1 County of Orange Central/Coastal Subregion NCCP/HCP

The project site is located within the boundaries of the NCCP/HCP (Figure 9, Orange County NCCP/HCP). The project site does not overlap with any portion of the NCCP/HCP Reserve System and is not within an Existing Use Area, a Special Linkage Area, or the North Ranch Policy Plan Area, as described in the NCCP/HCP.

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6 Project Impacts

This section addresses direct and indirect impacts to biological resources that would result from implementation of the project. The significance determinations for proposed or potential impacts are described and proposed mitigation is provided in Section 7, Significant Impacts and Mitigation.

Direct impacts refer to complete loss of a biological resource. For purposes of this report, it refers to the area where vegetation clearing, grubbing, or grading replaces biological resources. Direct impacts were quantified by overlaying the proposed impact limits on the biological resources map of the project site. Direct impacts would occur from grading and construction of the proposed project.

Indirect impacts are reasonably foreseeable effects caused by a project's implementation on remaining or adjacent biological resources outside the direct disturbance zone. For purposes of this report, indirect impacts may affect areas outside the development footprint boundary, including native habitats and aquatic resources within the project site. Indirect impacts may be short term and construction-related, or long term and associated with development in proximity to biological resources.

The evaluation of project impacts is organized by the resource potentially affected: special-status plant and wildlife species, riparian and sensitive vegetation communities (special-status vegetation communities), jurisdictional waters and wetlands, wildlife movement, local policies and ordinances, and habitat conservation plans.

6.1 Impacts to Special-Status Plants

One special-status plant species, intermediate mariposa-lily, was determined to have a high potential to occur on sparsely shrubby road cuts along the southeastern boundary of the project site (Table 3, Special-Status and NCCP/HCP Covered Plant Species with a High Potential to Occur). If present, intermediate mariposa-lily individuals would be directly impacted by vegetation clearing and grading for construction of the proposed project. Potential short term indirect impacts include construction-related dust, soil erosion, and water runoff decreasing or permanently altering habitat suitability. Potential long-term impacts are expected to be less than significant due to the already disturbed nature of the project site and surrounding areas, particularly with respect to impacts resulting from noise, dust, and invasives.

The project site and adjacent areas are largely disturbed with past agricultural and industrial use. Therefore, this species is likely to occur only on road cuts where sparsely shrubby habitat is present. These areas consist of less than 0.25 acres, and likely would not be completely occupied. In the surrounding vicinity, similar habitat types are separated from the project site by paved roads or existing facilities. This species has a low potential to occur in the remainder of the project site due to disturbance from historical land use and lack of suitable habitat. Although this species is moderately threatened in California (CRPR 1B.2), removal of potentially occupied habitat and indirect impacts to nearby populations would be adverse, but not significant. The loss of intermediate mariposa-lily individuals as a result of project activities at this scale would not have a significant impact on the species due to the relatively small population this area would likely support compared with the prevalence of the species locally in Orange County (CCH 2025; iNaturalist 2025). Therefore, this impact would not reduce regional populations of the species to below self-sustaining numbers.

6.2 Impacts to Special-Status Wildlife

Six special-status wildlife species were observed on the project site: monarch, white-tailed kite, yellow-breasted chat, yellow warbler, least Bell's vireo, and Crotch's bumble bee. Three special-status wildlife species were determined to have a moderate potential to occur within the project site or the 500-foot buffer: San Diegan tiger whiptail, red diamondback rattlesnake, and coastal California gnatcatcher (Table 4, Special-Status and NCCP/HCP Covered Wildlife Species Observed or with a Low to High Potential to Occur). Additionally, vegetation within the project site would provide suitable nesting habitat for migratory birds and raptors protected under the MBTA and California Fish and Game Code Sections 3503.5, 3503, and 3513. If present at the start of construction, these species would be directly and permanently impacted by vegetation clearing and grading related to construction of the proposed project.

6.2.1 Direct Impacts

Monarch Butterfly

Monarch butterfly was observed flying through the project site; however, this species is not expected to overwinter in trees within the project site. Additionally, no host plants (i.e., milkweed [*Asclepias* spp.]) were observed during numerous field surveys which included focused rare plant and bumble bee surveys. Adult butterflies are highly mobile. As such, minimal direct take of monarch butterfly individuals or eggs is expected as a result of construction activities. Therefore, no impacts are expected to occur to this species.

Non-Listed Special-Status Birds and Regulated Nesting Birds

Yellow-breasted chat, yellow warbler, and white-tailed kite were observed on site and have a moderate to high potential to nest within wooded areas on the project site. The project site also contains nesting opportunities for migratory birds of prey (raptors) and other migratory avian species protected under the MBTA and California Fish and Game Code. Vegetation removal or grading activities conducted during the general nesting bird season (February 1 through August 31) could result in the direct take of a bird (i.e., individuals, active nests, eggs, or young) if nesting occurs within proposed disturbance areas during construction.

Burrowing Owl

Although protocol wintering and breeding season surveys for burrowing owl species were negative, this species has the potential to occupy the project site prior to construction. Because this species is a state candidate for listing, it is afforded protections under CESA and any impacts to this species could be considered significant. If this species is present on site during construction, collapsing of occupied burrows from grading and vegetation removal activities could result in direct take of individuals, active nesting burrows, eggs, or young.

Least Bell's Vireo

Least Bell's vireo was observed on every pass of the 2025 focused surveys. A total of seven territories were observed, with four confirmed to be occupied by mated pairs, two of which were actively observed nesting. Six more territories were observed off site within the 500-foot buffer across Bee Canyon Access Road. Although the site contains minimal riparian habitat, all least Bell's vireo individuals were observed singing, foraging, and nesting, primarily within laurel sumac scrub. Although atypical, this peculiarity is likely due to high site fidelity of these

particular individuals, suitable vegetation density and structure still present in the laurel sumac scrub, and other abiotic factors that contribute to suitable conditions, such as localized humidity.

If construction commences during the nesting season for the species (April 10 through July 31), vegetation removal could result in direct take of individuals, active nests, eggs, or young. In addition, project activities will result in a permanent loss of least Bell's vireo habitat, potentially leading to fewer nesting opportunities for future breeding seasons and thereby reducing population stability. Project impacts would result in direct take of 5.02 acres of occupied laurel sumac scrub habitat. The project site also includes 0.19 acres of laurel sumac scrub and 0.37 acres of mulefat thickets, which have previously been permitted for a different project.

Crotch's Bumble Bee

Crotch's bumble bee was observed within the project site during focused surveys for the species. One transient individual was observed in the southern portion of the project site, and one foraging worker was observed in the northern portion of the project site. Although no Crotch's bumble bee nests were found, this species has a moderate potential to nest within the project site due to presence of potential nesting habitat. If this species is nesting on site during construction, project activities have the potential to result in direct take of a colony.

Special-Status Reptiles

San Diegan tiger whiptail and red diamondback rattlesnake have a moderate potential to occur. These species are cryptic and slow moving on the surface or are otherwise underground; therefore, they are highly vulnerable to mortality or injury if struck by moving vehicles or equipment if present on site during construction.

Mountain Lion

Mountain lion has a low potential to occur on the project site because the project site is constrained by SR-241, SR-261, Bee Canyon Access Road, and urban development. Natal dens of the species are not expected due to surrounding disturbance from agricultural activities and an absence of suitable den sites. This is a mobile species that would be able to move out of harm's way on its own if present on site during construction. Therefore, no direct impacts are expected to occur to this species as a result of construction activities.

6.2.2 Indirect Impacts

During construction activities, indirect effects to sensitive wildlife could include construction-related noise, dust, soil erosion, and water runoff decreasing or permanently altering habitat suitability. In the absence of best management practices (BMPs), construction-related minimization measures to control dust, erosion, and runoff; and compliance with National Pollutant Discharge Elimination System requirements, indirect impacts to on-site riparian resources and adjacent coastal scrub communities could occur. Increased noise, visual disturbances, and ground vibrations from construction activities could result in disruption of nesting activities if Project activities are conducted in proximity to an active nest (300 feet for passerine birds and 500 feet for raptors). Long-term indirect impacts from project implementation include noise, nitrogen deposition, introduction of invasives, trespassing, and light pollution associated with the new residential development. These potential long-term indirect impacts are expected to be less than significant due to existing residential development, active agricultural and industrial uses, and the already ecologically disturbed nature of the project site and surrounding areas.

Coastal California Gnatcatcher

The project site does not contain coastal sage scrub habitat to support coastal California gnatcatcher. Therefore, this species is not expected to occur within the project site. Areas in the 500-foot buffer south of Bee Canyon Access road do support coastal sage scrub. Although focused protocol surveys in this buffer area were negative, a population of this species has been observed frequently in the adjacent property (CDFW 2025a) and has a moderate potential to occur in future years. As such, the proposed project has the potential to indirectly impact these species if the adjacent habitat becomes occupied in future years and project activities occur within 500 feet. Visual disturbance, noise, or vibrations from project activities such as nearby grading, vegetation removal, or construction could disrupt breeding activities and cause nest failure. During construction activities, indirect effects to coastal California gnatcatcher could include construction-related noise, dust, soil erosion, and water runoff decreasing or permanently reducing the quality of nearby habitat where these species may be present.

6.3 Impacts to Sensitive Vegetation Communities

6.3.1 Direct Impacts

Implementation of the proposed project would result in permanent impacts to 104.19 acres of vegetation communities and land covers mapped on the project site (Table 6). Approximately 20.73 acres of these impacts are within an area previously permitted as part of a separate project, were already cleared at the time of the Notice of Preparation (NOP) for the proposed project and are not attributable to the proposed project. Impacts attributable to the proposed project include the permanent loss of approximately 83.46 acres of vegetation communities and land covers. Impacts to vegetation communities and land covers on the project site, including both previously permitted impacts and project impacts, are summarized in Table 6 and depicted on Figure 10, Project Impacts, with impacts attributable to the proposed project depicted as “permanent impacts” on Figure 10.

As discussed in Section 5.1, vegetation communities with CDFW state rankings of S1, S2, or S3, as well as communities regulated by the resources agencies (USACE, RWQCB, and/or CDFW), are considered sensitive natural communities and impacts to these communities could be considered significant absent mitigation. Although none of the vegetation communities mapped on site have a state rarity rank of S1, S2, or S3, one riparian vegetation community (mulefat thickets) was mapped in the northern corner of the project site. Approximately 0.37 acres of mulefat thickets were mapped within the project site during the initial biological reconnaissance survey in 2024. However, these areas are entirely within the previously permitted portion of the site (see Figure 10), and at the time of the NOP for the proposed project had already been removed as a part of a separate and previously permitted project. Therefore, the proposed project would not result in impacts to sensitive vegetation communities.

Table 6. Permanent Impacts to Vegetation Communities and Land Cover Types Within the Project Site

Vegetation Communities and Land Cover Types	Alliance[a]	Association	Ranking[b]	Previously Permitted Impacts (Acres)[c]	Project Impacts (Acres)[c]
Native Vegetation Communities					
Laurel sumac scrub	*Malosma laurina* shrubland alliance	*Malosma laurina* association	G4 S4	0.19	5.02
Mulefat thickets	*Baccharis salicifolia* shrubland alliance	*Baccharis salicifolia* association	G5 S5	0.37	0
		Native Vegetation Communities Subtotal		*0.55*	*5.02*
Naturalized Vegetation Communities					
Upland mustards or star-thistle fields	*Brassica nigra*–*Centaurea* (*solstitialis*, *melitensis*) herbaceous semi-natural alliance	*Hirschfeldia incana* association	GNA SNA	4.29	14.38
		Centaurea melitensis association	GNA SNA	0	1.26
Red brome or mediterranean grass grasslands	*Bromus rubens*–*Schismus* (*arabicus*, *barbatus*) herbaceous semi-natural alliance	*Bromus rubens*–mixed herbs association	GNA SNA	1.35	1.20
Eucalyptus–tree of heaven–black locust groves	*Eucalyptus* spp.–*Ailanthus altissima*–*Robinia pseudoacacia* woodland semi-natural alliance	*Eucalyptus* (*globulus*, *camaldulensis*) association	GNA SNA	0	2.56
Pepper tree or myoporum groves	*Schinus* (*molle*, *terebinthifolius*)–*Myoporum laetum* Forest & Woodland semi-natural alliance	*Schinus molle* association	GNA SNA	0	0.68
		Naturalized Vegetation Communities Subtotal		*5.64*	*20.08*
Non-Natural Land Cover Types					
General agriculture	None	None	None	0.27	35.33
Urban/developed	None	None	None	7.82	13.51
Disturbed habitat	None	None	None	6.40	8.92

Table 6. Permanent Impacts to Vegetation Communities and Land Cover Types Within the Project Site

Vegetation Communities and Land Cover Types	Alliance[a]	Association	Ranking[b]	Previously Permitted Impacts (Acres)[c]	Project Impacts (Acres)[c]
Ornamental plantings	None	None	None	0.04	0.59
			Non-Natural Land Cover Types Subtotal	*14.53*	*58.35*
			Total	**20.73**	**84.08**

[a] The term semi-natural is used in the Manual of California Vegetation to distinguish vegetation types dominated by non-native plants from natural vegetation communities (CNPS 2025a).

[b] The conservation status of a vegetation community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = global, S = subnational/state). The numbers have the following meaning (NatureServe 2025):

1 = critically imperiled
2 = imperiled
3 = vulnerable to extirpation or extinction
4 = apparently secure
5 = demonstrably widespread, abundant, and secure
NA = no applicable ranking

[c] Totals may not sum precisely due to rounding.

6.3.2 Indirect Impacts

Potential indirect impacts to sensitive vegetation communities surrounding the project site would be similar to indirect impacts to special-status plant species and would include short-term construction-related effects and long-term development-related effects. However, no sensitive vegetation communities were mapped on the project site and none are expected to occur in the areas surrounding the site. Areas west and south of the project site are either developed or are under development and lands north and east of the project site are largely disturbed with historical agricultural (i.e., grazing and farming) and industrial use. Therefore, no indirect impacts are expected to occur to sensitive vegetation communities.

6.4 Impacts to Jurisdictional Wetlands and Waters

The project site supports one ephemeral drainage, NWW-1, on the northern boundary of the project site. The project would impact 0.03 acres of non-wetland waters (below the OHWM) of RWQCB jurisdiction and 0.16 acres of CDFW streambed (below and above the OHWM, to top of bank). This drainage was determined to be ephemeral (using the Streamflow Duration Assessment Method) and therefore non-jurisdictional by USACE.

6.4.1 Direct Impacts

The project would result in direct permanent impacts to 0.03 acres of non-wetland waters of RWQCB jurisdiction and 0.16 acres of CDFW jurisdiction. These potential direct impacts to jurisdictional waters would be significant absent mitigation under CEQA.

6.4.2 Indirect Impacts

Construction-related indirect impacts may include inadvertent spillover impacts outside of the construction footprint, chemical spills, stormwater erosion, and sedimentation. Post-construction (long-term) indirect impacts from operations and maintenance activities may include changes in water quality and accidental chemical spills. These indirect impacts to jurisdictional aquatic resources would be considered significant absent mitigation under CEQA.

6.5 Impacts to Wildlife Corridors, Habitat Linkages, and Nursery Sites

The project site does not contain any native wildlife nursery sites; therefore, there would be no impact to native wildlife nursery sites as a result of project implementation.

The project site is at the northern edge of existing development within the City of Irvine. Although it is adjacent to the Santa Ana Mountains and NCCP/HCP reserve lands, the site does not provide connection to open space areas farther east or north due to existing developed lands immediately abutting the project site to the west and south. As discussed in Section 5.6, local and wildlife movement is further constrained by Bee Canyon Access Road to the east, SR-241 to the north, and SR-261 to the west. The site does not provide suitable habitat for nesting rookeries or bat maternity roosts due to lack of perennial aquatic habitat or suitable cavern habitat.

Although the project site does provide opportunities for local wildlife movement, it does not function as a corridor or habitat linkage between two larger blocks of native habitat. Therefore, the proposed project will not result in direct or indirect impacts to wildlife corridors, habitat linkages, or native wildlife nursery sites.

6.6 Impacts Associated with Local Policies and Ordinances

The project has been planned consistent with the relevant goals, objectives, and policies related to biological resources in the Resources Element of the County of Orange General Plan. The project has also been planned consistent with the relevant goals, objectives, and policies related to biological resources in the Conservation and Open Space Element of the Irvine 2045 General Plan. Therefore, the project would not result in direct or indirect impacts associated with these local plans.

The project has the potential to result in the removal of trees subject to a City of Irvine Municipal Code tree removal permit. The site is known to support trees that may be subject to a tree removal permit if removed and if the tree meets the definition of a significant tree pursuant to the Municipal Code and determined necessary by the City Arborist, including kaffir plum, Peruvian pepper tree, blue jacaranda, Jerusalem thorn, Chinese banyan, monkeypod, eucalyptus, Italian stone pine, coast live oak, Goodding's willow, Fremont cottonwood, and Southern California black walnut, among many others. The proposed project has the potential to result in direct and indirect impacts due to a conflict with the City of Irvine Municipal Code due to the removal of City-protected trees.

6.7 Impacts Associated with Habitat Conservation Plans

The NCCP/HCP conservation strategy, which serves as the mitigation basis for incidental take of covered species and covered habitats authorized by the NCCP/HCP, is composed of several key elements, including the establishment of an approximately 37,000-acre habitat Reserve System, implementation of the Adaptive Management Program described in the NCCP/HCP within the Reserve System, and the designation of Special Linkage Areas and Existing Use Areas to enhance biological connectivity within the Reserve System and Central/Coastal Subregion. Activities and uses within these Reserve and non-Reserve components of the NCCP/HCP are restricted and development within them is generally prohibited. Although the project is located within the plan area of the NCCP/HCP, it is not located within the Reserve, nor is it within areas designated in the NCCP/HCP as Special Linkages or Special Use Areas. The project site is also outside of the North Ranch Policy Plan Area, as described in the NCCP/HCP.

Because coastal sage scrub habitat is absent from the project site and take of coastal sage scrub species listed as endangered or threatened under CESA and/or FESA are not expected, payment of the mitigation fee for impacts outside of the Reserve to listed coastal sage scrub species, as described in Section 4.4.2, part 4, and Section 7 of the NCCP/HCP Implementing Agreement, is not required. Construction-related minimization measures described in Section 4.4.2, part 6, of the Implementing Agreement and Section 7.5.3 of the Joint Programmatic EIS/EIR for the NCCP/HCP for development/construction in areas recommended to be authorized for incidental take of coastal sage scrub are also not applicable since the project will not result in impacts to coastal sage scrub habitat. Note, however, that the project will comply with all applicable regulations (e.g., project-specific SWPPP; SCAQMD Rule 403) and will implement standard construction BMP's, which will minimize impacts to nearby off-site coastal sage scrub habitat.

The project will result in impacts to least Bell's vireo as described in Section 6.1. Least Bell's vireo is one of several conditionally covered "identified species" in the NCCP/HCP, which allows for incidental take provided specific conditions are met, Specific conditions related to least Bell's vireo are described in Section 8.3.2, part 3, of the Implementing Agreement and are summarized here:

1) For incidental take of least Bell's vireo to be covered under the NCCP/HCP, the affected habitat supporting migrating or nesting least Bell's vireo must be of lesser long-term conservation value in the subregion. Incidental take resulting from loss of habitat that is of potentially significant long-term conservation value in the subregion is not covered.
2) Planned activities resulting in take of least Bell's vireo shall be consistent with a mitigation plan, to be developed in coordination with the Wildlife Agencies (USFWS and CDFW) and the Natural Communities Coalition (NCC), that:
    a) addresses design modifications and other on-site measures that are consistent with the project's purposes, minimizes impacts, and provides appropriate feasible protections
    b) provides for compensatory habitat restoration/enhancement activities at an appropriate location (which may include the Reserve or other open space) and which may include planting of riparian trees and shrubs and/or cowbird trapping
    c) provides for monitoring and adaptive management of habitat within the Reserve System, including cowbird trapping, consistent with Chapter 5 of the NCCP/HCP.

As is discussed in Section 6.1, occupied least Bell's vireo habitat consists primarily of upland vegetation, mapped as laurel sumac scrub. Vireo typically breed in riparian areas dominated by willow species with a stratified canopy and vegetated understory. Although some mulefat and willows are present, occupied areas on site are considered atypical breeding habitat, forming a patchy network of low-quality habitat that is isolated from areas of higher-quality riparian vegetation. As such, these areas are considered to be of lesser long-term conservation value.

Should take coverage for least Bell's vireo be obtained through the under the NCCP/HCP, special conditions related to the preparation of a mitigation plan would be met, as outlined in MM-BIO-1.

Based on the above analysis, the project is considered consistent with the NCCP/HCP.

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7 Significant Impacts and Mitigation

7.1 Explanation of Findings of Significance

Impacts to special-status vegetation communities, plant and wildlife species, and jurisdictional waters, including wetlands, must be quantified and analyzed to determine whether such impacts are significant under CEQA. CEQA Guidelines Section 15064(b) states that an ironclad definition of "significant" effect is not possible, because the significance of an activity may vary with the setting. Appendix G of the CEQA Guidelines, however, does provide "examples of consequences which may be deemed to be a significant effect on the environment" (14 CCR 15064[e]). These effects include substantial effects on rare or endangered species of animal or plant or the habitat of the species. CEQA Guidelines Section 15065(a) is also helpful in defining whether a project may have a significant effect on the environment. Under that section, a proposed project may have a significant effect on the environment if the project has the potential to (1) substantially degrade the quality of the environment, (2) substantially reduce the habitat of a fish or wildlife species, (3) cause a fish or wildlife population to drop below self-sustaining levels, (4) threaten to eliminate a plant or animal community, (5) reduce the number or restrict the range of a rare or endangered plant or animal, or (6) eliminate important examples of a major period of California history or prehistory.

The significance criteria used to evaluate the project's impacts to biological resources are based on CEQA Guidelines Appendix G. For the purposes of this project, a potentially significant impact to biological resources would occur if the proposed project would:

- Impact BIO-1. Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Impact BIO-2. Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Impact BIO-3. Has 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.
- Impact BIO-4. Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites.
- Impact BIO-5. Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Impact BIO-6. Conflicts with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The evaluation of whether an impact to a particular biological resource is significant must consider both the resource itself and the role of that resource in a regional context. Substantial impacts are those that contribute to, or result in, permanent loss of an important resource, such as a population of a rare plant or wildlife species. Impacts may be important locally, because they result in an adverse alteration of existing site conditions but considered not significant because they do not contribute substantially to the permanent loss of that resource regionally. The severity of an impact is the primary determinant of whether that impact can be mitigated to a level below significance.

The following significance determinations were made based on the impacts of the project.

7.2 Impact BIO-1: Special-Status Species

7.2.1 Impacts to Special-Status Plants

Due to presence of minimal habitat within the project site, project implementation would not reduce regional populations of intermediate mariposa-lily to below self-sustaining numbers. Therefore, impacts to special-status plant species would be less-than-significant absent mitigation.

7.2.2 Impacts to Special-Status Wildlife

Monarch Butterfly

Monarch butterfly is not expected to overwinter in trees within the project site. Therefore, the project would result in a less-than-significant impact on monarch butterfly and no mitigation is required

Non-Listed Special-Status Birds and Regulated Nesting Birds

The proposed project has the potential to directly and indirectly impact non-listed special-status birds, as well as birds protected under the MBTA and California Fish and Game Code, that nest on or adjacent to the project site during construction. Impacts to these species would be potentially significant absent mitigation. MM-BIO-1 (Avian Nesting Avoidance) requires complete avoidance of the avian nesting season, pre-construction nesting bird surveys if the nesting season cannot be avoided, and establishment of no-disturbance buffers around active nests if found. Additionally, MM-BIO-2 (Demarcation of Disturbance Limits) requires installation of temporary fencing and/or staking around the perimeter of the work areas prior to construction activities, installation of silt fencing within 100 feet of aquatic resources, and installation of temporary 6-foot-high chain-link fencing covered with dust cloth within 500 feet of least Bell's vireo habitat, which also often coincides with habitat for yellow warbler, yellow-breasted chat, and other nesting birds. Therefore, implementation of MM-BIO-1 and MM-BIO-2 would reduce direct and indirect impacts to non-listed special-status and nesting birds to less significant.

Burrowing Owl

The proposed project has the potential to result in direct and indirect impacts to burrowing should this species occupy the project site or adjacent areas during construction. Impacts to burrowing owl due to project implementation would be potentially significant absent mitigation. MM-BIO-3 (Pre-Construction Burrowing Owl Survey) requires that preconstruction surveys to determine presence or absence of burrowing owl be conducted immediately prior to start of construction. If burrowing owl is found to have colonized the project site prior to the initiation of ground-disturbing activities, MM-BIO-3 requires preparation of a Burrowing Owl Management Plan, as well as implementation of avoidance measures and monitoring. In the case that take cannot be avoided, MM-BIO-3 outlines the pathway for obtaining an incidental take permit pursuant to California Fish and Game Code Section 2081, which would also include compensatory mitigation of occupied habitat at a minimum of a 1:1 ratio. Additionally, MM-BIO-2 requires installation of temporary fencing and/or staking around the perimeter of the work areas prior to construction activities. Therefore, direct and indirect impacts to burrowing owl would be reduced to less than significant with implementation of MM- BIO- 2 and MM-BIO-3.

Least Bell's Vireo

The proposed project will result in the permanent loss of occupied least Bell's vireo habitat. Should project activities occur during the vireo breeding season, the project could also result in direct and/or indirect impacts to least Bell's vireo individuals, active nests, eggs, or young. Impacts to least Bell's would be potentially significant absent mitigation. MM-BIO-4 (Least Bell's Vireo Mitigation) requires obtaining incidental take authorization for least Bell's vireo under the terms of the NCCP/HCP or instead through consultation and permitting with CDFW and USFWS (i.e., federal Section 7 consultation or federal Section 10 processes, and state 2080.1 consistency determination or 2081 incidental take permit requirements). Obtaining conditional coverage under the NCCP/HCP would require, at minimum, preparation and implementation of a mitigation plan, compensatory mitigation for impacted least Bell's vireo habitat (i.e., 5.02 acres of laurel sumac scrub), monitoring and adaptive management, seasonal avoidance of directly impacting least Bell's vireo habitat, noise monitoring for construction related activities within 500 feet of least Bell's vireo habitat, biological monitoring for construction within 500 feet of least Bell's vireo habitat. Additionally, MM-BIO-2 requires installation of temporary fencing and/or staking around the perimeter of the work areas prior to construction activities, installation of silt fencing within 100 feet of aquatic resources, and installation of temporary 6-foot-high chain-link fencing covered with dust cloth within 500 feet of least Bell's vireo habitat, reducing short-term indirect impacts to less than significant. Compensatory mitigation associated with MM-BIO-4 would reduce long-term indirect impacts to less than significant due to preservation of suitable habitat within the region. Therefore, direct and indirect impacts to least Bell's vireo would be reduced to less than significant with implementation of MM-BIO-2 and MM-BIO-4.

Crotch's Bumble Bee

Should Crotch's bumble nest on the project site during construction, the proposed project has the potential to directly and indirectly impact this species, which would be potentially significant absent mitigation. MM-BIO-5 (Crotch's Bumble Bee Pre-Construction Surveys) requires pre-construction surveys in order to determine presence or absence of Crotch's bumble bee immediately prior to start of construction. If Crotch's bumble bee is identified and nest resources are detected, MM-BIO-5 provides avoidance measures to avoid take. In the case that avoidance of take is not feasible, MM-BIO-5 provides guidance on obtaining incidental take authorization pursuant to Section 2081 of the California Fish and Game Code as well as requirements for compensatory mitigation for the loss of nesting habitat. Therefore, impacts to Crotch's bumble bee would be reduced to less than significant with implementation of MM-BIO-5.

Special-Status Reptiles

Direct impacts to special-status reptiles, should they be present on site during construction, would be potentially significant absent mitigation. MM-BIO-6 (Biological Monitoring) requires environmental training, pre-construction sweeps, regular spot checks during construction, relocation of wildlife out of harm's way, and covering or providing escape routes within steep excavations to ensure avoidance of direct impacts to any special-status reptile species. Additionally, MM-BIO-2 requires installation of temporary fencing and/or staking around the perimeter of the work areas prior to construction activities. Therefore, direct and indirect impacts to special-status reptiles would be reduced to less than significant with implementation of MM-BIO-2 and MM-BIO-6.

Mountain Lion

Mountain lion is not expected to have natal dens on the project site and individual mountain lions would be expected to avoid the area during construction. Therefore, there would be no impact on mountain lion as a result of the proposed project and no mitigation is required.

Coastal California Gnatcatcher

Direct impacts to coastal California gnatcatcher are not expected to occur as a results of project implementation due to lack of suitable habitat within the project site. The proposed project could indirectly impact coastal California gnatcatcher nesting within 500 feet of construction activities, which would be a potentially significant impact absent mitigation. MM-BIO-7 (Coastal California Gnatcatcher Monitoring) requires noise monitoring within coastal sage scrub habitat within the 500-foot buffer and ceasing of activities when project activity noise exceeds 60 A-weighted decibels (dBA). Potential long-term impacts are expected to be less than significant due to the already disturbed nature of the project site and surrounding areas. Therefore, indirect impacts to coastal California gnatcatcher would be reduced to less than significant with implementation of MM-BIO-7.

7.3 Impact BIO-2: Sensitive Vegetation Communities

The proposed project would not result in impacts to sensitive vegetation communities. Therefore, the project would result in a less-than-significant impact on sensitive vegetation communities and no mitigation is required.

7.4 Impact BIO-3: Jurisdictional Waters and Wetlands

7.4.1 Direct Impacts

Direct impacts to jurisdictional waters and wetlands would be potentially significant absent mitigation. For direct impacts to 0.03 acres of non-wetland waters of RWQCB jurisdiction and 0.16 acres of CDFW jurisdiction, permits would be required and typically entail providing compensatory mitigation to offset the impacts. RWQCB regulates waters of the state under California's Porter–Cologne Act. California Fish and Game Code Sections 1600–1616 give CDFW regulatory powers over streams and lakes, as well as vegetation associated with these features. MM- BIO-8 (Waters and Wetland Mitigation) would require the applicant/developer to obtain permits from the regulatory agencies (i.e., RWQCB and CDFW), and to implement the associated compensatory mitigation and habitat mitigation and monitoring plan. Implementation of MM-BIO-8 would reduce direct impacts to jurisdictional aquatic resources to less than significant.

7.4.2 Indirect Impacts

Portions of the drainage outside of the impact footprint would be subject to indirect impacts, which have the potential to be significant absent mitigation. With implementation of MM-BIO-8, permits obtained from the regulatory agencies typically include conditions or measures that would protect adjacent waters or wetlands. MM- BIO-2 would also require installation of temporary fencing and/or staking around the perimeter of the work areas prior to construction activities, installation of silt fencing within 100 feet of aquatic resources, and installation of temporary 6-foot-high chain-link fencing covered with dust cloth within 500 feet of least Bell's vireo habitat, which includes vegetation within drainages. MM-BIO-6 requires a biological monitor to be present during ground disturbance or removal activities and includes dust control monitoring. Therefore, implementation of MM-BIO-2, MM- BIO-6, and MM-BIO-8 would reduce indirect impacts to jurisdictional aquatic resources to less than significant.

7.5 Impact BIO-4: Wildlife Corridors, Habitat Linkages, and Nursery Sites

The project site does not contain any native wildlife nursery sites and the project site does not function as a wildlife corridor or habitat linkage between larger blocks of native habitat. Therefore, there would be no impact to wildlife corridors and habitat linkages and no impact to native wildlife nursery sites as a result of project implementation.

7.6 Impact BIO-5: Local Policies or Ordinances

The project is considered consistent with the goals, objectives, and policies related to biological resources in the County of Orange General Plan and Irvine 2045 General Plan; therefore, there would be no impact due to a conflict with the local policies of these plans as a result of the proposed project.

The project has the potential to result in the removal of tree species subject to a tree removal permit under the City of Irvine Municipal Code, and removal of such trees has the potential to conflict with a local ordinance, which would be considered a significant impact absent mitigation. Implementation of MM-BIO-9 would reduce potential impacts on local ordinances to less than significant with mitigation.

7.7 Impact BIO-6: Habitat Conservation Plans

The project is considered consistent with the NCCP/HCP for the Central/Coastal Subregion; therefore, the project would have no impact as a result of conflict with adopted habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plans.

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8 Mitigation Measures

MM-BIO-1 Avian Nest Avoidance. Construction activities shall avoid the migratory bird nesting season (typically January 1 through October 31 for white-tailed kite, and from February 1 through August 31 for all other species), as feasible, to reduce any potential significant impact to birds that may be nesting within or adjacent to the construction area. If construction activities must occur during the migratory bird nesting season, an avian nesting survey within 500 feet of impact areas must be conducted by a qualified wildlife biologist no more than 72 hours prior to initial ground-disturbing activities, including vegetation removal. If construction activities cease for more than 3 consecutive days, avian nesting surveys must be repeated no more than 3 days prior to resumption of construction activities.

If an active bird nest is found, the nest location shall be added to construction plans and an appropriate no-disturbance buffer shall be established around the nest, the size of which shall be determined by the biologist based on the species' sensitivity to disturbance (typically 300 feet for passerines and 500 feet for raptors and special-status species). The no-disturbance buffer shall be clearly demarcated in the field with highly visible construction fencing or flagging, and construction personnel shall avoid the buffer area until the juveniles have fledged or the nest is no longer considered active, as determined by a qualified biologist. A qualified biologist shall serve as a construction monitor during those periods when construction activities will occur near active nest areas to ensure that no inadvertent impacts to active nests occur. White-tailed kite is a California Department of Fish and Wildlife fully protected species, and a permitting pathway is not available to the project for take of the species. Therefore, the 500-foot buffer cannot be reduced if a white-tailed kite nest is found within the project site.

MM-BIO-2 Demarcation of Disturbance Limits. To prevent inadvertent disturbance to sensitive vegetation and species adjacent to the proposed project area, temporary fencing and/or staking shall be installed prior to construction activities around the perimeter of the work areas, as feasible depending on topography and large vegetation. All construction activities, including equipment staging and maintenance, shall be conducted within the marked disturbance limits to prevent inadvertent disturbance to sensitive biological resources outside the limits of work. The marked disturbance limits shall be maintained throughout vegetation removal and grading, and any windblown trash generated by the project that collects on the fence will be regularly removed. Silt fencing shall be installed at disturbance limits where aquatic resources occur within 100 feet. Temporary 6-foot-high chain-link fencing covered with dust cloth shall be installed at disturbance limits where occupied least Bell's vireo habitat occur within 500 feet.

MM-BIO-3 Pre-Construction Burrowing Owl Survey. A qualified biologist shall conduct a pre-construction survey for burrowing owls prior to initial ground-disturbing activities, including vegetation removal, to assess whether any burrowing owls have colonized the site prior to the start of construction. The pre-construction survey shall be completed no more than 14 days before initiation of site preparation or grading activities, and a second survey shall be completed within 24 hours of the start of site preparation or grading activities. If ground-disturbing activities are delayed or suspended for more than 30 days after the pre-construction surveys, the pre-construction surveys shall be repeated to ensure burrowing owl has not colonized the site since it was last disturbed.

The pre-construction survey will occur within suitable habitat for burrowing owl, as determined by the biologist, and will be conducted in accordance with methods described in the CDFW 2012 Staff Report. If burrowing owls have colonized the project site prior to the initiation of ground-disturbing activities, the applicant/developer shall immediately inform the California Department of Fish and Wildlife (CDFW). Prior to ground disturbance, the applicant/developer shall prepare a Burrowing Owl Management Plan, which shall be submitted to CDFW for review and approval at least 30 days prior to initiation of ground-disturbing activities. If burrowing owls are detected after ground-disturbing activities have been initiated, CDFW shall be notified in writing and a Burrowing Owl Management Plan shall be submitted to CDFW for review and approval within 2 weeks of detection; construction activities shall not occur within 400 feet of an active burrow until CDFW approves the Burrowing Owl Management Plan. The Burrowing Owl Management Plan shall include, at a minimum, the following.

1. An impact assessment that details the number and location of occupied burrow sites and acres of burrowing owl habitat with a qualitative description of the habitat vegetation characteristics that will be impacted.
2. Avoidance measures, including no-disturbance buffers clearly delineated at a 250-foot radius around all occupied burrows located on site or within 250 feet of the disturbance footprint, with posted signs demarcating the avoidance area and by using stakes, flags, and/or rope or cord to minimize the disturbance of burrowing owl habitat. No construction shall occur within the avoidance buffer(s) without the consent of a monitoring biologist. The buffer shall remain in place until it is determined that occupied burrows have been vacated.
3. Monitoring requirements.

No take of burrowing owl shall occur without prior authorization in the form of an Incidental Take Permit (ITP) pursuant to California Fish and Game Code Section 2081. If overwintering or nesting burrowing owls are observed during the survey and impacts to burrowing owl cannot be feasibly avoided through implementation of the Burrowing Owl Management Plan, the applicant/developer will consult with CDFW and obtain appropriate take authorization from through the California Endangered Species Act ITP process. In the event an ITP is needed, occupied habitat that is temporarily impacted shall be restored to its original construction immediately following the completion of construction and compensatory mitigation for the permanent loss of occupied burrowing owl habitat shall be fulfilled through habitat replacement of equal or better functions and values to those impacted by the project at a minimum 1:1 ratio, or as otherwise determined through the ITP process. Mitigation shall be achieved through off-site conservation of habitat and/or purchase of appropriate credits at a CDFW-approved mitigation bank. If mitigation is not purchased through a mitigation bank, and lands are conserved separately, a cost estimate shall be prepared to estimate the initial startup costs and ongoing annual costs of management activities for the management of the conservation easement area(s) in perpetuity. The funding source shall be in the form of an endowment to help the qualified natural lands management entity that is ultimately selected to hold the conservation easement(s). The endowment amount shall be established following the completion of a project-specific Property Analysis Record to calculate the costs of in-perpetuity land management. The Property Analysis Record shall take into account all management activities required in the ITP to fulfill the requirements of the conservation easement(s), which are currently in review and development.

MM-BIO-4 Least Bell's Vireo Mitigation. Prior to initial ground-disturbing activities, including vegetation removal, the applicant/developer shall prepare a mitigation plan in accordance with the requirements for conditional coverage identified in the Implementing Agreement for the Natural Community Conservation Plan & Habitat Conservation Plan, County of Orange Central and Coastal Subregion (NCCP/HCP). The mitigation plan shall be developed in coordination with the Wildlife Agencies (U.S. Fish and Wildlife Service and California Department of Fish and Wildlife) and the Natural Communities Coalition (NCC) and shall include, at a minimum, the following:

1. Compensatory mitigation requirements for impacts to occupied least Bell's vireo habitat, which shall be, at a minimum, 1:1 for low-quality habitat, 2:1 for moderate-quality habitat, and 3:1 for high-quality habitat, or as otherwise determined during coordination with the Wildlife Agencies. Compensatory mitigation shall be met through habitat restoration/enhancement activities at an appropriate location (which may include the reserve or other open space) and which may include planting of riparian trees and shrubs and/or brown-headed cowbird trapping.
2. Requirements for monitoring and adaptive management of least Bell's vireo habitat within the NCCP/HCP Reserve, including brown-headed cowbird trapping, consistent with Chapter 5 of the NCCP/HCP.
3. Design modifications and other on-site measures that are consistent with the project's purposes, and which avoid or minimize impacts and provides appropriate feasible protections for least Bell's vireo. At a minimum, the following measures shall be included:
    a. Seasonal Avoidance. To avoid direct impacts nesting individuals and eggs/young, vegetation-disturbing activities within suitable and occupied least Bell's vireo habitat shall occur from September 16 (or sooner if a Wildlife Agency–approved project biologist demonstrates to the satisfaction of the Wildlife Agencies that all nesting is complete) through March 14 to avoid the least Bell's vireo breeding season. For other project-related construction that cannot be restricted to outside the least Bell's vireo breeding season, construction noise monitoring and reduction will be provided as detailed below.
    b. Noise Monitoring. To minimize potential adverse impacts to least Bell's vireo from construction-related noise and vibration, non-vegetation clearing construction-related activities within 500 feet of occupied and suitable least Bell's vireo habitat would be timed to occur outside of the breeding season to the extent feasible. For construction-related activities within 500 feet (152.40 meters) of occupied or suitable least Bell's vireo habitat, and that must occur within the least Bell's vireo breeding season, on-site noise reduction techniques shall be implemented to limit construction-related noise within the occupied habitat areas to levels that do not exceed 60 A-weighted decibel (dBA) hourly energy equivalent level (L_{eq}) or pre-construction ambient noise levels, whichever is greater. Noise reduction techniques shall be implemented as necessary to ensure that noise thresholds are not exceeded. These techniques may include but are not limited to installation of temporary sound barriers, utilization of quieter equipment, adherence to equipment maintenance schedules, and/or shifting construction work away from occupied areas.

c. **Biological Monitoring.** All construction-related activities within 500 feet of occupied least Bell's vireo habitat shall be monitored by a Wildlife Agency–approved biologist. The biologist shall submit weekly letter reports (including photographs of impact areas) via email to the Wildlife Agencies while construction-related activities within 500 feet of occupied habitat are ongoing. The weekly reports will document that authorized impacts were not exceeded and all avoidance and protection measures were complied with. The reports will also summarize the duration of vireo monitoring, the location of construction activities, the type of construction that occurred, and equipment used. The reports will specify numbers, locations, and sex of vireos (if present); observed vireo behavior (particularly in relation to construction activities); and any remedial measures employed to avoid impacts to vireo individuals. Raw field notes should be available upon request by the Wildlife Agencies. Any unauthorized impacts to vireo or vireo habitat shall be reported to the Wildlife Agencies within 24 hours. A final report shall be submitted to the Wildlife Agencies and the NCC within 60 days of project completion that includes (1) as-built construction drawings with an overlay of occupied habitat that was impacted and avoided, (2) photographs of avoided occupied habitat areas, and (3) other relevant summary information documenting that authorized impacts were not exceeded and that all mitigation plan measures were generally complied with.

Prior to initial ground-disturbing activities, including vegetation removal, the applicant/developer shall obtain concurrence from the Wildlife Agencies that the NCCP/HCP conditions of coverage for least Bell's vireo have been satisfied and that incidental take of least Bell's vireo is authorized under the terms of the NCCP/HCP. If it is determined that incidental take of least Bell's vireo resulting from the project is not conditionally covered under the NCCP/HCP, take authorization shall be obtained authorization shall be obtained through the federal Section 7 Consultation or Section 10 processes and state 2080.1 consistency determination or 2081 Incidental Take Permit requirements.

MM-BIO-5 Crotch's Bumble Bee Pre-Construction Surveys. Pre-construction surveys for Crotch's bumble bee shall be conducted within the construction footprint prior to initial ground-disturbing activities, including vegetation removal, that would occur during the Crotch's bumble bee queen flight season through the gyne (reproductive female) flight season (February 1 through October 31). The pre-construction survey shall be conducted by a qualified biologist familiar with the species' behavior and life history and shall include (1) a habitat assessment and (2) focused surveys, both of which shall be based on recommendations described in the Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species, released by the California Department of Fish and Wildlife (CDFW) on June 6, 2023, or the most current version at the time of construction. If suitable habitat is not completely cleared during the year of the initial habitat assessment and pre-construction surveys, additional pre-construction surveys shall be repeated within remaining suitable habitat each year ground-disturbing construction activities are scheduled to occur within suitable habitat during the queen flight season through the gyne flight season (February 1 through October 31). Additional pre-construction surveys would not be necessary once all suitable habitat is removed.

- The habitat assessment shall, at a minimum, include historical and current species occurrences; document potential habitat on site, including foraging, nesting, and/or overwintering resources; and identify which plant species are in bloom and their percent cover. Incidental observations of potential nest resources shall also be noted. For the purposes of this mitigation measure, nest resources are defined as abandoned small mammal burrows, bunch grasses with a duff layer, thatch, hollow trees, brush piles, and human-made structures that may support bumble bee colonies, such as rock walls, rubble, and furniture. Potential overwintering resources are defined as bare soil, leaf litter, pine needle duff layer, and bunch grasses.
- In each year that a habitat assessment is conducted, if nesting resources are determined to be present in the impact area, focused surveys shall be conducted. Focused surveys shall be performed by a biologist who is in possession of a valid Memorandum of Understanding with CDFW (and a valid Scientific Collecting Permit, if applicable) and include at least three survey passes spaced 2 to 4 weeks apart. The timing of these surveys shall coincide with the Colony Active Period for Crotch's bumble bee (April 1 through August 31) and shall coincide with the presence of floral resources on site. Surveys may occur between 1 hour after sunrise and 2 hours before sunset. Focused surveys shall not be conducted during wet conditions (e.g., foggy, raining, or drizzling) and surveyors shall wait at least 1 hour following cessation of rain to start or resume surveys. Focused surveys shall be conducted when conditions include sunny to partly sunny skies, a temperature greater than 60°F, and sustained wind speeds less than 8 mph, unless other bees or butterflies are flying, in which case focused surveys can be conducted outside of these weather parameters.
- A written survey report shall be submitted to the City and CDFW within 30 days of the completion of pre-construction surveys. The report shall include survey methods, weather conditions, and survey results, including a detailed habitat assessment, floral resources blooming and percent cover, bumble bee species observed, floral species that bumble bees were observed visiting, nesting and overwintering habitat surveyed, and a figure showing the locations of any Crotch's bumble bee nest sites or individuals observed. The survey report shall include the qualifications/resumes of the surveyor(s) and approved taxonomist(s) for identification of photo vouchers. If Crotch's bumble bee nests are observed, the survey report shall also include avoidance measures, and the location information shall be submitted to the California Natural Diversity Database at the time of, or prior to, submittal of the survey report.
- If Crotch's bumble bee is not detected during the focused surveys, no further action or mitigation would be required. If nest resources occupied by Crotch's bumble bee are detected, avoidance measures shall be implemented including, but not limited to, the establishment of no-disturbance zones within 50 feet of the nest, or within a distance determined by a qualified biologist through evaluation of topographic features and/or distribution of floral resources. Construction shall not occur within the no-disturbance zone(s) until the colony is no longer active (i.e., no bees are seen flying in or out of the nest for 3 consecutive days, indicating the colony has completed its nesting season and the next season's queens have dispersed from the colony). If the avoidance of nests is not feasible, or if take of foraging individuals is anticipated, the applicant/developer shall consult with CDFW regarding the need for incidental take authorization pursuant to Section 2081 of the California Fish and Game Code.
- Mitigation for take of Crotch's bumble bee will be fulfilled through compensatory mitigation at a minimum 1:1 nesting habitat replacement of equal or better functions and values to those

impacted by the project, or as otherwise determined through the Incidental Take Permit process. Mitigation shall be accomplished either through off-site conservation or through a CDFW-approved mitigation bank. If mitigation is not purchased through a mitigation bank, and lands are conserved separately, a cost estimate shall be prepared to estimate the initial start-up costs and ongoing annual costs of management activities for the management of the conservation easement area(s) in perpetuity. The funding source shall be in the form of an endowment to help the qualified natural lands management entity that is ultimately selected to hold the conservation easement(s). The endowment amount shall be established following the completion of a project-specific Property Analysis Record to calculate the costs of in-perpetuity land management. The Property Analysis Record shall take into account all management activities required in the Incidental Take Permit to fulfill the requirements of the conservation easement(s), which are currently in review and development.

MM-BIO-6 Biological Monitoring. To prevent impacts to areas outside the limits of disturbance, a qualified biologist shall be present on site to monitor during initial ground disturbance or vegetation removal activities.

Biological monitoring shall include the following tasks and responsibilities:

- **Tailgate Briefings.** Conduct a pre-construction briefing at the tailgate with construction personnel prior to vegetation removal or initial ground disturbance to outline the biological resources present at the subject work location, prohibition of littering, locations of covered trash receptacles, work location specific disturbance limits, procedures/training for minimizing harm to or harassment of wildlife encountered during construction.
- **Pre-Construction Sweeps.** Conduct pre-construction sweeps where construction work is scheduled for the day in areas with suitable habitat to support special-status wildlife or plants. Flush wildlife species from occupied areas immediately prior to vegetation-clearing and earth-moving activities during pre-construction sweeps.
- **Spot Checks.** Supervise and conduct regular spot checks during construction work, focusing on areas determined to have potential to support special-status species (as determined by a qualified biologist), to ensure against direct and indirect impacts to biological resources that are intended to be protected and preserved.
- **Relocating Wildlife.** A qualified biologist shall capture animals that are in immediate harm's way and cannot move out of the work area on their own and relocate them to nearby undisturbed areas with suitable habitat located outside of the construction area but as close to their origin as possible. All wildlife moved during project activities shall be documented by the biologist on site.
- **Dust Control Monitoring.** Periodically monitor the construction site to see that dust is minimized. If the biological monitor determines that dust is adversely affecting special-status species, the monitor will require the construction personnel to implement best available control measures to reduce dust. Examples of such best available control measures include periodic watering of work areas, application of environmentally safe soil stabilization materials, and/or roll compaction.
- **Open-Hole Inspections.** At the end of each workday, any open holes (including large/steep excavations) shall be inspected by the on-site biologist and subsequently fully covered to

prevent entrapment of wildlife species. If fully covering the excavations is impractical, ramps will be used to provide a means of escape for wildlife that enter the excavations, or open holes will be securely fenced with exclusion fencing. If common wildlife species are found in a hole, the biological monitor shall immediately be informed, and the animal(s) shall be removed.

MM-BIO-7 Coastal California Gnatcatcher Monitoring. To minimize potential indirect impacts to coastal California gnatcatcher, construction-related activities within 500 feet of occupied habitat shall be timed to occur outside the coastal California gnatcatcher breeding season (February 15 through August 30). Should construction activities occur within 500 feet of coastal sage scrub habitat east of Bee Canyon Access Road during the breeding season (between February 15 and August 30), pre-construction surveys for coastal California gnatcatcher shall be conducted in all suitable habitat within 500 feet. Pre-construction surveys shall be conducted by a permitted coastal California gnatcatcher biologist and shall include three site visits, conducted 1 week apart, with the final site visit conducted no more than 7 days prior to the start of construction. If coastal California gnatcatcher is not detected, no further mitigation related to this species shall be required. If coastal California gnatcatcher is detected but breeding behaviors are not observed, work may proceed and weekly surveys shall continue until the individual(s) leave the area, breeding behaviors and/or nesting is detected, the breeding season ends, or construction ends. If breeding and/or an active nest is observed, the limits of the occupied habitat and a 500-foot avoidance buffer shall be delineated on construction plans, and all construction personnel working near the nest buffer shall be made aware of the presence of occupied gnatcatcher habitat. To the extent feasible, no construction activities shall occur within the 500-foot avoidance buffer during the breeding season. Should it be necessary for construction activities to occur within 500 feet of occupied habitat during the breeding season, noise monitoring would be required to ensure that project-related activities do not result in noise levels above 60 A-weighted decibels (dBA) equivalent continuous sound level (L_{eq}) (1 hour) or the existing ambient noise level, whichever is higher. If any project activities exceed 60 dBA or the designated existing ambient noise level, construction activities shall be halted until noise reduction measures (such as a sound wall) can be implemented to reduce noise levels to below 60 dBA hourly L_{eq} or ambient noise levels, whichever is higher.

MM-BIO-8 Waters and Wetland Mitigation. Prior to impacts within waters regulated by the Regional Water Quality Control Board (RWQCB), the applicant/developer shall coordinate with the Santa Ana RWQCB (Region 8) to ensure conformance with the requirements of the Porter–Cologne Water Quality Control Act, including applicable requirements to obtain an individual Wastewater Discharge Requirement. Prior to impacts within waters regulated by California Department of Fish and Wildlife (CDFW), the applicant/developer shall coordinate with CDFW (South Coast Region 5) to ensure conformance with California Fish and Game Code Section 1602, including applicable requirements to obtain a Lake and Streambed Alteration Agreement.

Permanent impacts to jurisdictional aquatic resources shall be mitigated through the completion of a restoration program at an applicant/developer-sponsored mitigation site. The total mitigation requirement will be 0.32 acres, providing a 2:1 mitigation-to-impact ratio, of which at least 0.03 acres shall be composed of establishment/re-establishment, ensuring no net loss of waters of the state. The balance of the mitigation requirement shall be met through a combination of creation, re-establishment, and/or enhancement.

A habitat mitigation and monitoring plan shall be prepared in accordance with resource agency guidelines and shall be approved by the Resource Agencies (i.e., RWQCB and CDFW). The habitat mitigation and monitoring plan shall include, but is not limited to, a conceptual planting plan including planting zones, grading, and irrigation, as applicable; a conceptual planting plant palette; a long-term maintenance and monitoring plan; annual reporting requirements; and proposed success criteria. Any applicant-sponsored mitigation shall be conserved and managed in perpetuity via a conservation easement and any entity performing long-term management of the mitigation lands shall be funded in perpetuity.

MM-BIO-9 Tree Ordinance Tree Inventory and Permit. Prior to issuance of a grading permit for the project, a tree inventory shall be conducted within the project development area to identify and map tree species subject to the City tree removal permit. If significant trees subject to a tree removal permit are identified within the project development area, a tree removal permit shall be obtained from the City prior to issuance of the grading permit and conditions of the tree removal permit shall be implemented.

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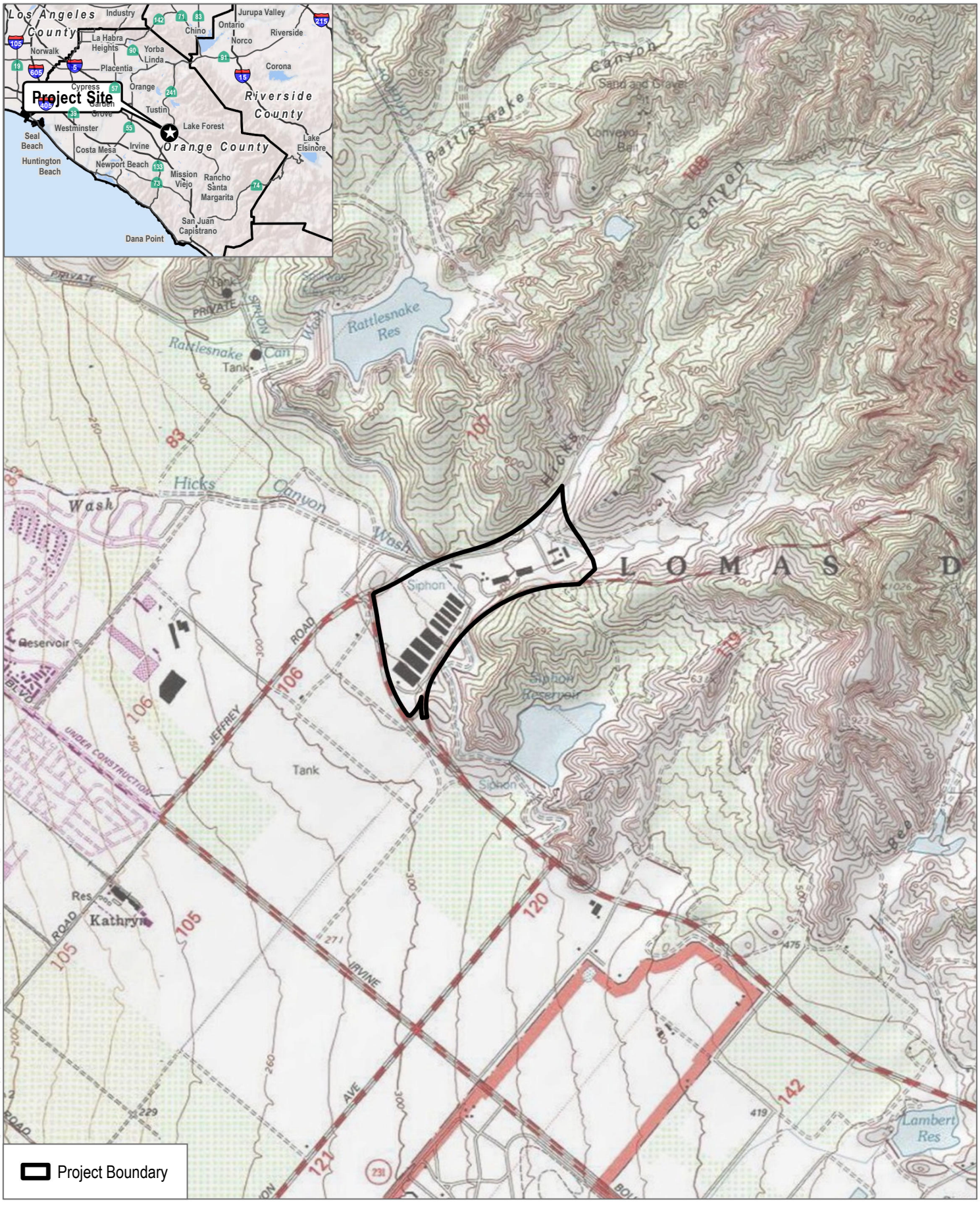
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SOURCE: USGS 7.5 Minute Series

FIGURE 1

Project Location

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SOURCE: ESRI World Imagery; USDA NRCS 2023

DUDEK

0 285 570 Feet

FIGURE 2

Soils

Irvine Gateway Village Project Biological Resources Technical Report

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SOURCE: ESRI World Imagery; Open Street Map 2023

DUDEK

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FIGURE 3

Coastal California Gnatcatcher Survey Route

Irvine Gateway Village Project Biological Resources Technical Report

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SOURCE: ESRI World Imagery; Open Street Map 2023

DUDEK

FIGURE 4

Least Bell's Vireo Survey Route

Irvine Gateway Village Project Biological Resources Technical Report

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SOURCE: ESRI World Imagery; Open Street Map 2023

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FIGURE 5

Vegetation and Land Cover Map

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SOURCE: ESRI World Imagery; Open Street Map 2023

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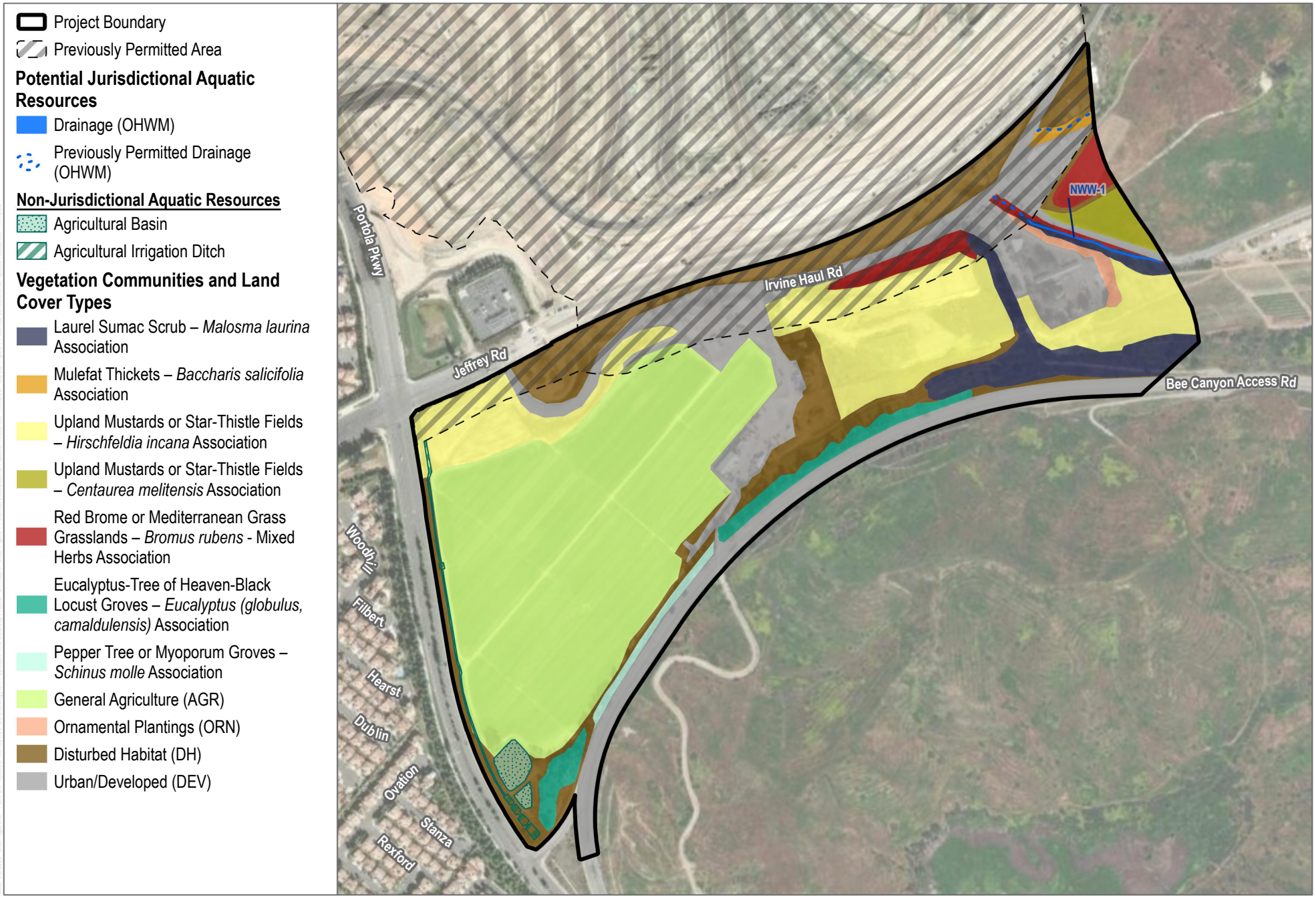
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FIGURE 6

Special-Status Species

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SOURCE: ESRI World Imagery; Open Street Map 2023

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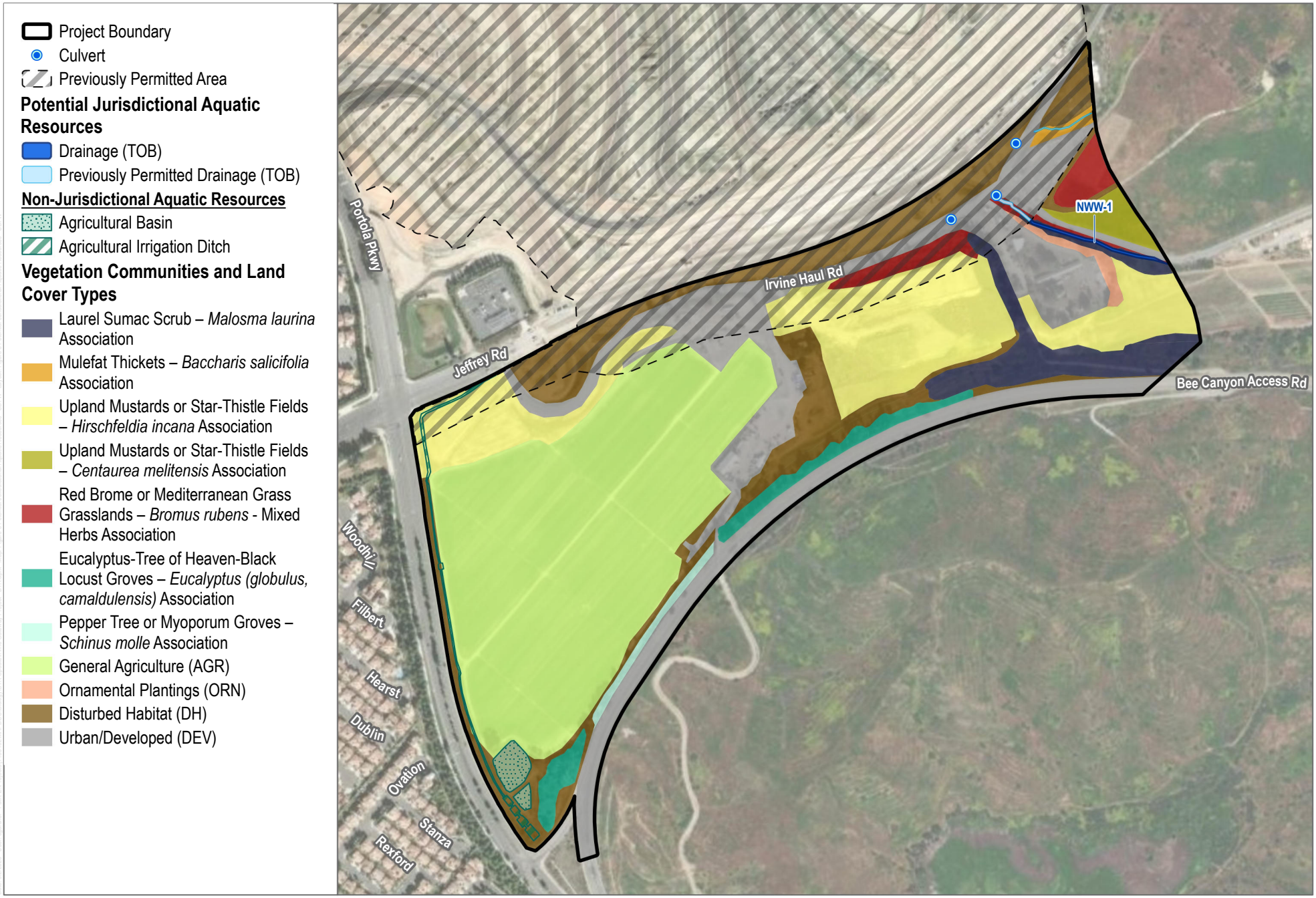
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FIGURE 7

Potential Jurisdictional Aquatic Resources – RWQCB

Irvine Gateway Village Project Biological Resources Technical Report

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SOURCE: ESRI World Imagery 2023; Open Street Map 2023

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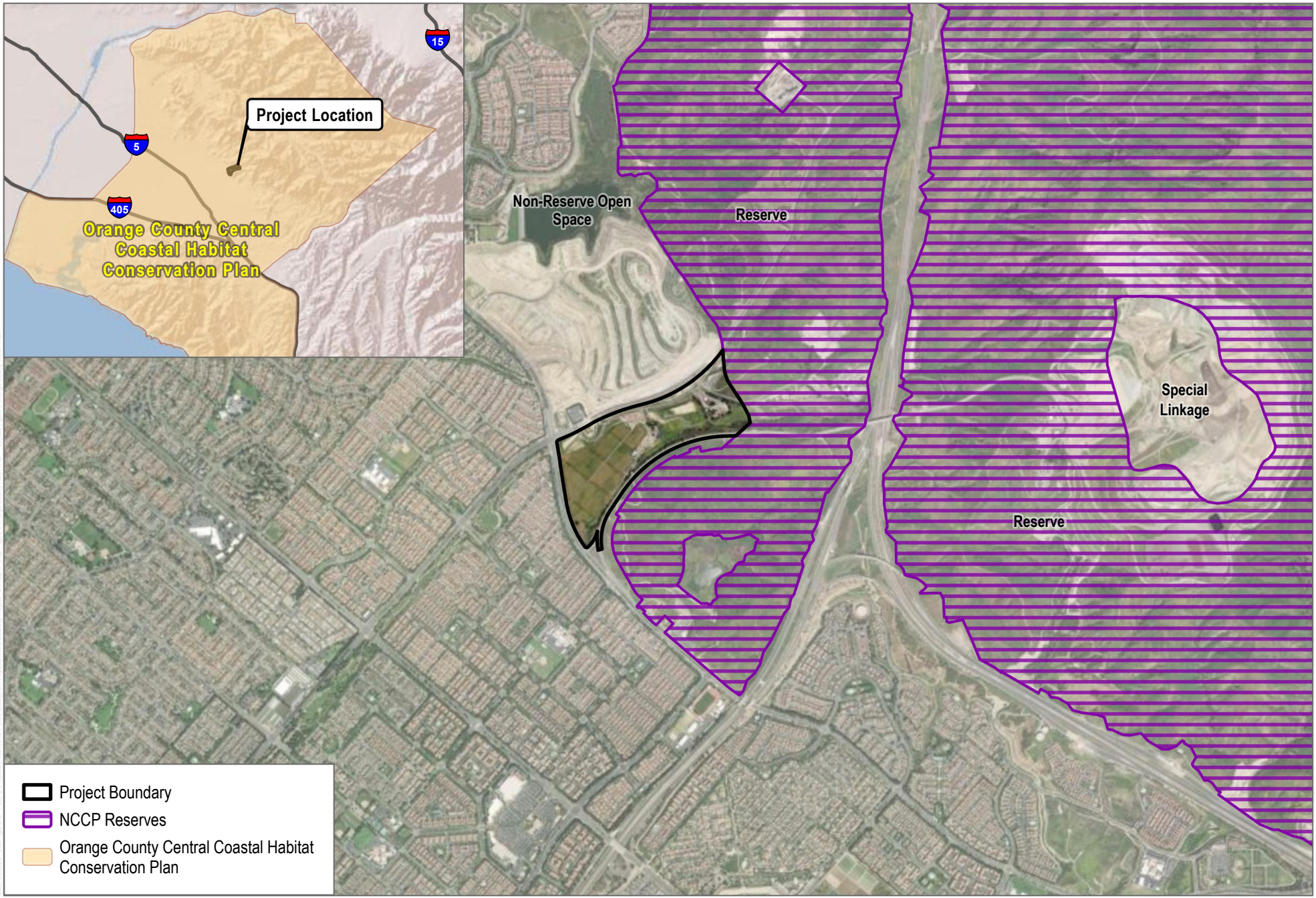
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FIGURE 8

Potential Jurisdictional Aquatic Resources – CDFW

Irvine Gateway Village Project Biological Resources Technical Report

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SOURCE: ESRI World Imagery; USDA NRCS 2023

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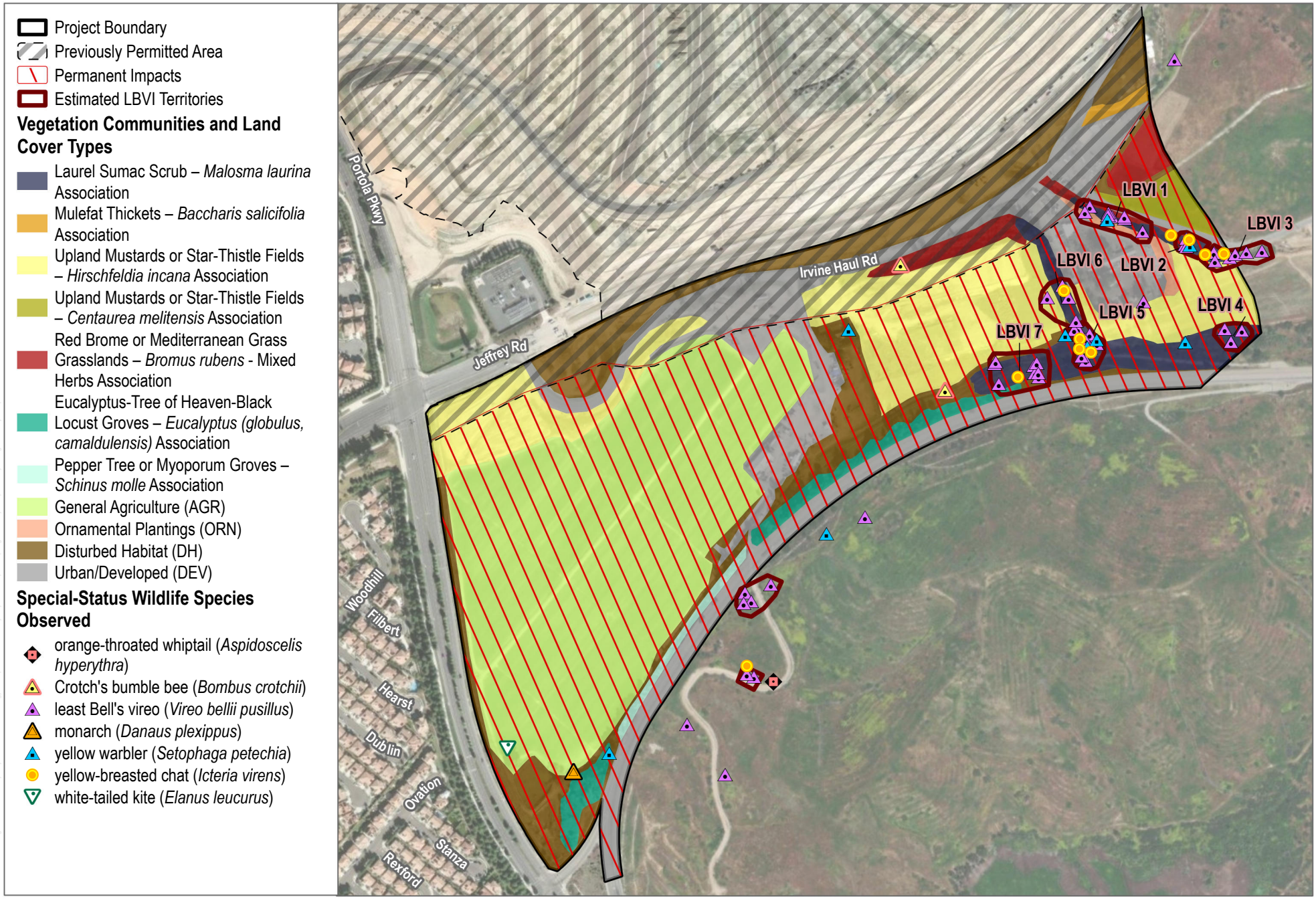
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FIGURE 9

Orange County NCCP/HCP

Irvine Gateway Village Project Biological Resources Technical Report

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SOURCE: ESRI World Imagery; Open Street Map 2023

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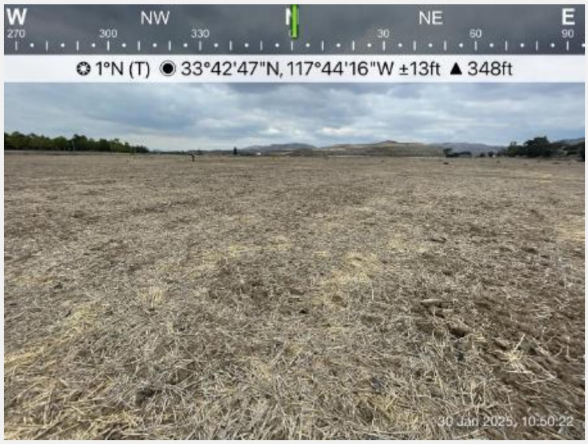
FIGURE 10

Project Impacts

Irvine Gateway Village Project Biological Resources Technical Report

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Appendix A
Photo Exhibit



1. Overview of the project site, facing north



2. Riparian habitat in the northern portion of the project site, facing west



3. Non-native grassland and ornamental plantings on the project site, facing south



4. Drainage basin on the southern portion of the project site



5. Disturbed habitat in the center of the project site



6. Eastern portion of the project site, facing south

Appendix B
Species Compendium

Plant Species

Angiosperms (Dicots)

AMARANTHACEAE—AMARANTH FAMILY

* *Amaranthus albus*—prostrate pigweed

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

* *Harpephyllum caffrum*—kaffir plum
  Malosma laurina—laurel sumac
  Rhus integrifolia—lemonade berry
  Rhus ovata—sugarbush
* *Schinus molle*—Peruvian pepper tree
* *Schinus terebinthifolia*—Brazilian peppertree

APIACEAE—CARROT FAMILY

* *Conium maculatum*—poison hemlock
* *Foeniculum vulgare*—fennel

ASTERACEAE—SUNFLOWER FAMILY

  Ambrosia acanthicarpa—flatspine bur ragweed
  Ambrosia psilostachya—western ragweed
  Artemisia californica—California sagebrush
  Artemisia douglasiana—Douglas' sagewort
  Artemisia dracunculus—wild tarragon
  Baccharis pilularis—coyote brush
  Baccharis salicifolia—mulefat
  Baccharis sarothroides—desertbroom
* *Centaurea melitensis*—Maltese star-thistle
* *Cichorium intybus*—chicory
  Cirsium occidentale—cobwebby thistle
  Deinandra fasciculata—clustered tarweed
* *Dittrichia graveolens*—stinkwort
  Encelia californica—California brittle bush
  Ericameria palmeri var. *pachylepis*—Palmer's rabbitbrush
* *Erigeron bonariensis*—asthmaweed
  Erigeron canadensis—Canadian horseweed
* *Erigeron karvinskianus*—Latin American fleabane
  Eriophyllum confertiflorum—golden-yarrow
* *Glebionis coronaria*—crowndaisy

Gnaphalium palustre—western marsh cudweed
* *Hedypnois rhagadioloides*—Crete weed
Helianthus annuus—common sunflower
Helianthus californicus—California sunflower
* *Helminthotheca echioides*—bristly oxtongue
Heterotheca grandiflora—telegraphweed
Isocoma menziesii var. *vernonioides*—Menzies' goldenbush
* *Lactuca serriola*—prickly lettuce
Lepidospartum squamatum—scale-broom
Malacothrix saxatilis var. *tenuifolia*—cliff desertdandelion
Matricaria discoidea—disc mayweed
* *Oncosiphon pilulifer*—stinknet
Pluchea odorata—sweetscent
Pseudognaphalium californicum—ladies' tobacco
Pseudognaphalium microcephalum—Wright's cudweed
Pseudognaphalium stramineum—cottonbatting plant
* *Pulicaria paludosa*—Spanish false fleabane
* *Sonchus asper*—spiny sowthistle
* *Sonchus oleraceus*—common sowthistle
Stephanomeria diegensis—San Diego wirelettuce
Stephanomeria virgata—rod wirelettuce

BIGNONIACEAE—BIGNONIA FAMILY

* *Jacaranda mimosifolia*—blue jacaranda
* *Tecoma capensis*—Cape honeysuckle

BORAGINACEAE—BORAGE FAMILY

Amsinckia intermedia—common fiddleneck
Heliotropium curassavicum var. oculatum—seaside heliotrope

BRASSICACEAE—MUSTARD FAMILY

* *Brassica nigra*—black mustard
* *Hirschfeldia incana*—short-pod mustard
* *Raphanus sativus*—cultivated radish

CACTACEAE—CACTUS FAMILY

Opuntia basilaris var. *basilaris*—beavertail pricklypear
* *Opuntia ficus-indica*—Barbary fig
Opuntia littoralis—coast prickly pear

CHENOPODIACEAE—GOOSEFOOT FAMILY

* *Atriplex semibaccata*—Australian saltbush

* *Chenopodium album*—lambsquarters
* *Chenopodium murale*—nettleleaf goosefoot
* *Salsola tragus*—prickly Russian thistle

CONVOLVULACEAE—MORNING-GLORY FAMILY

* *Convolvulus arvensis*—field bindweed
  Cuscuta californica—chaparral dodder

CORNACEAE—DOGWOOD FAMILY

  Cornus glabrata—brown dogwood

CUCURBITACEAE—GOURD FAMILY

  Cucurbita foetidissima—Missouri gourd
  Cucurbita palmata—coyote gourd

EUPHORBIACEAE—SPURGE FAMILY

  Croton californicus—California croton
  Croton setiger—dove weed
* *Euphorbia peplus*—petty spurge
* *Ricinus communis*—castorbean

FABACEAE—LEGUME FAMILY

  Acmispon glaber—deerweed
* *Leucaena leucocephala*—white leadtree
  Lupinus succulentus—hollowleaf annual lupine
* *Medicago polymorpha*—burclover
* *Melilotus albus*—yellow sweetclover
* *Melilotus indicus*—annual yellow sweetclover
* *Neltuma velutina*—velvet mesquite
* *Parkinsonia aculeata*—Jerusalem thorn
* *Pithecellobium dulce*—monkeypod

FAGACEAE—OAK FAMILY

  Quercus agrifolia var. agrifolia—coast live oak

GERANIACEAE—GERANIUM FAMILY

* Erodium cicutarium—redstem stork's bill*

HYDROPHYLLACEAE—WATERLEAF FAMILY

  Phacelia distans—distant phacelia

JUGLANDACEAE—WALNUT FAMILY

Juglans californica—Southern California black walnut

LAMIACEAE—MINT FAMILY

* *Marrubium vulgare*—horehound

Salvia mellifera—black sage

MALVACEAE—MALLOW FAMILY

* *Brachychiton populneum*—whiteflower kurrajong

Malacothamnus fasciculatus var. *fasciculatus*—Mendocino bushmallow

* *Malva multiflora*—Cornish mallow
* *Malva parviflora*—cheeseweed mallow

Sidalcea sparsifolia—dwarf checkerbloom

MORACEAE—MULBERRY FAMILY

* *Ficus carica*—edible fig
* *Ficus microcarpa*—Chinese banyan

MYRSINACEAE—MYRSINE FAMILY

* *Lysimachia arvensis*—scarlet pimpernel

MYRTACEAE—MYRTLE FAMILY

* *Eucalyptus camaldulensis*—river redgum
* *Eucalyptus citriodora*—lemonscented gum
* *Eucalyptus polyanthemos*—redbox

OLEACEAE—OLIVE FAMILY

* *Fraxinus uhdei*—evergreen ash

Fraxinus velutina—velvet ash

ONAGRACEAE—EVENING PRIMROSE FAMILY

Oenothera elata—Hooker's evening primrose

OROBANCHACEAE—BROOM-RAPE FAMILY

Castilleja exserta—exserted Indian paintbrush

PAPAVERACEAE—POPPY FAMILY

Eschscholzia californica—California poppy

PHRYMACEAE—LOPSEED FAMILY

Diplacus longiflorus—southern bush monkeyflower

POLYGONACEAE—BUCKWHEAT FAMILY

Eriogonum fasciculatum var. *foliolosum*—California buckwheat

* *Rumex crispus*—curly dock

ROSACEAE—ROSE FAMILY

Heteromeles arbutifolia—toyon

SALICACEAE—WILLOW FAMILY

Populus fremontii ssp. *fremontii*—*Fremont cottonwood*

Salix gooddingii—Goodding's willow

Salix laevigata—red willow

Salix lasiolepis—arroyo willow

SCROPHULARIACEAE—FIGWORT FAMILY

* *Verbascum virgatum*—wand mullein

SOLANACEAE—NIGHTSHADE FAMILY

* *Datura stramonium*—jimsonweed

Datura wrightii—sacred thorn-apple

* *Nicotiana glauca*—tree tobacco

Solanum douglasii—greenspot nightshade

TAMARICACEAE—TAMARISK FAMILY

* *Tamarix ramosissima*—tamarisk

URTICACEAE—NETTLE FAMILY

* *Urtica urens*—dwarf nettle

VIBURNACEAE—MUSKROOT FAMILY

Sambucus mexicana—blue elderberry

Gymnosperms and Gnetophytes

PINACEAE—PINE FAMILY

* *Pinus pinea*—Italian stone pine

Monocots

AGAVACEAE—AGAVE FAMILY

* *Agave americana*—American century plant

ALLIACEAE—ONION FAMILY

* *Allium cepa*—garden onion

ARECACEAE—PALM FAMILY

* *Archontophoenix cunninghamiana*—king palm
* *Washingtonia robusta*—Washington fan palm

POACEAE—GRASS FAMILY

* *Avena barbata*—slender oat
* *Bromus catharticus*—rescuegrass
* *Bromus diandrus*—ripgut brome
* *Bromus madritensis*—compact brome
* *Bromus rubens*—red brome
* *Festuca myuros*—rat-tail fescue
* *Hordeum murinum*—mouse barley
* *Polypogon monspeliensis*—annual rabbitsfoot grass
* *Triticum aestivum*—common wheat

STRELITZIACEAE

* *Strelitzia nicolai*—giant bird of paradise

Wildlife Species

Amphibians

HYLIDAE—TREEFROGS

Pseudacris hypochondriaca—Baja California treefrog

Birds

ACCIPITRIDAE—HAWKS, KITES, EAGLES, AND ALLIES

Accipiter cooperii—Cooper's hawk
Buteo jamaicensis—red-tailed hawk
Buteo lineatus—red-shouldered hawk
Elanus leucurus—white-tailed kite

AEGITHALIDAE—LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus—bushtit

ALAUDIDAE—LARKS

Eremophila alpestris—horned lark

ANATIDAE—DUCKS, GEESE, AND SWANS

Branta canadensis—Canada goose

ARDEIDAE—HERONS, BITTERNS, AND ALLIES

Ardea alba—great egret
Ardea herodias—great blue heron

CARDINALIDAE—CARDINALS AND ALLIES

Passerina amoena—lazuli bunting
Passerina caerulea—blue grosbeak
Pheucticus melanocephalus—black-headed grosbeak
Piranga ludoviciana—western tanager

CATHARTIDAE—NEW WORLD VULTURES

Cathartes aura—turkey vulture

CHARADRIIDAE—LAPWINGS AND PLOVERS

Charadrius vociferus—killdeer

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove

CORVIDAE—JAYS AND CROWS

Corvus brachyrhynchos—American crow

Corvus corax—common raven

CUCULIDAE—CUCKOOS, ROADRUNNERS, AND ANIS

Geococcyx californianus—greater roadrunner

FALCONIDAE—CARACARAS AND FALCONS

Falco sparverius—American kestrel

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus—house finch

Spinus lawrencei—Lawrence's goldfinch

Carduelis psaltria—lesser goldfinch

Spinus tristis—American goldfinch

HIRUNDINIDAE—SWALLOWS

Hirundo rustica—barn swallow

Petrochelidon pyrrhonota—cliff swallow

Stelgidopteryx serripennis—northern rough-winged swallow

ICTERIDAE—BLACKBIRDS

Agelaius phoeniceus—red-winged blackbird

Euphagus cyanocephalus—Brewer's blackbird

Icterus bullockii—Bullock's oriole

Icterus cucullatus—hooded oriole

Sturnella neglecta—western meadowlark

ICTERIIDAE—YELLOW-BREASTED CHAT

Icteria virens—yellow-breasted chat

MIMIDAE—MOCKINGBIRDS AND THRASHERS

Mimus polyglottos—northern mockingbird

Toxostoma redivivum—California thrasher

MOTACILLIDAE—WAGTAILS AND PIPITS

Anthus rubescens—American pipit

ODONTOPHORIDAE—NEW WORLD QUAIL

Callipepla californica—California quail

PARULIDAE—WOOD-WARBLERS

Cardellina pusilla—Wilson's warbler
Geothlypis trichas—common yellowthroat
Setophaga coronata—yellow-rumped warbler
Setophaga nigrescens—black-throated gray warbler
Setophaga petechia—yellow warbler

PASSERELLIDAE—NEW WORLD SPARROWS

Junco hyemalis—dark-eyed junco
Melospiza melodia—song sparrow
Melozone crissalis—California towhee
Passerculus sandwichensis—savannah sparrow
Pipilo maculatus—spotted towhee
Zonotrichia leucophrys—white-crowned sparrow

PASSERIDAE—OLD WORLD SPARROWS

* *Passer domesticus*—house sparrow

PICIDAE—WOODPECKERS AND ALLIES

Colaptes auratus—northern flicker
Dryobates nuttallii—Nuttall's woodpecker
Melanerpes formicivorus—acorn woodpecker

POLIOPTILIDAE—GNATCATCHERS

Polioptila caerulea—blue-gray gnatcatcher

STURNIDAE—STARLINGS

* *Sturnus vulgaris*—European starling

SYLVIIDAE—SYLVIID WARBLERS

Chamaea fasciata—wrentit

TROCHILIDAE—HUMMINGBIRDS

Archilochus alexandri—black-chinned hummingbird
Calypte anna—Anna's hummingbird
Calypte costae—Costa's hummingbird
Selasphorus sasin—Allen's hummingbird

TROGLODYTIDAE—WRENS

Thryomanes bewickii—Bewick's wren
Troglodytes aedon—northern house wren

TURDIDAE—THRUSHES

Catharus ustulatus—Swainson's thrush
Sialia currucoides—mountain bluebird
Turdus migratorius—American robin

TYRANNIDAE—TYRANT FLYCATCHERS

Contopus sordidulus—western wood-pewee
Empidonax difficilis—western flycatcher
Myiarchus cinerascens—ash-throated flycatcher
Sayornis nigricans—black phoebe
Sayornis saya—Say's phoebe
Tyrannus verticalis—western kingbird
Tyrannus vociferans—Cassin's kingbird

TYTONIDAE—BARN OWLS

Tyto furcata—American barn owl

VIREONIDAE—VIREOS

Vireo bellii pusillus—least Bell's vireo

Invertebrates

APIDAE—BEES

Apis mellifera—western honeybee
Bombus fervidus—yellow bumble bee
Bombus vosnesenskii—Vosnesensky bumble bee
Bombus crotchii—Crotch's bumble bee

NYMPHALIDAE—BRUSH-FOOTED BUTTERFLIES

Danaus plexippus—monarch

PIERIDAE—WHITES AND SULFURS

Pieris rapae—cabbage white

Mammals

FELIDAE—CATS

* *Felis catus*—domestic cat

CANIDAE—WOLVES AND FOXES

Canis latrans—coyote

CERVIDAE—DEERS

Odocoileus hemionus—mule deer

LEPORIDAE—HARES AND RABBITS

Sylvilagus audubonii—desert cottontail

SCIURIDAE—SQUIRRELS

Otospermophilus beecheyi—California ground squirrel

Reptiles

COLUBRIDAE—COLUBRID SNAKES

Pituophis catenifer—gophersnake

PHRYNOSOMATIDAE—IGUANID LIZARDS

Sceloporus occidentalis—western fence lizard

Uta stansburiana—common side-blotched lizard

TEIIDAE—WHIPTAIL LIZARDS

Aspidoscelis hyperythra—orange-throated whiptail

* signifies introduced (non-native) species

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Appendix C

Special-Status Plant Species Potential to Occur

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Abronia villosa var. *aurita*	chaparral sand-verbena	None/None/No/1B.1	Chaparral, Coastal scrub, Desert dunes; Sandy/annual herb/(Jan)Mar–Sep/245–5,250	**Not expected to occur.** The project site lacks loose sandy microhabitat suitable for this species (Jepson Flora Project 2025).
Allium marvinii	Yucaipa onion	None/None/No/1B.2	Chaparral (clay, openings)/perennial bulbiferous herb/Apr–May/2495–3495	**Not expected to occur**. The project site is well outside of the known elevation range for this species.
Aphanisma blitoides	aphanisma	None/None/No/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub; Gravelly (sometimes), Sandy (sometimes)/annual herb/Feb–June/5–1,000	**Not expected to occur.** The project site lacks saline sandy microhabitat suitable for this species (Jepson Flora Project 2025).
Astragalus brauntonii	Braunton's milk-vetch	FE/None/No/1B.1	Chaparral, Coastal scrub, Valley and foothill grassland; Burned areas (sometimes), Carbonate, Disturbed areas (sometimes), Sandstone (usually)/perennial herb/Jan–Aug/15–2,100	**Not expected to occur.** Soils on the project site are heavily altered and disturbed. Additionally, the project site lacks carbonate or sandstone soils suitable for this species (Jepson Flora Project 2025).
Atriplex coulteri	Coulter's saltbush	None/None/No/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland; Alkaline (sometimes), Clay (sometimes)/perennial herb/Mar–Oct/10–1,510	**Not expected to occur.** Soils within the project site are heavily altered and disturbed. Additionally, the project site lacks alkaline or clay soils suitable for this species (Jepson Flora Project 2025; CCH 2025).
Atriplex pacifica	south coast saltscale	None/None/No/1B.2	Coastal bluff scrub, Coastal dunes, Coastal playas/annual herb/Mar–Oct/0–460	**Not expected to occur.** The project site lacks suitable coastal bluff scrub or dune habitat for this species.
Atriplex parishii	Parish's brittlescale	None/None/No/1B.1	Chenopod scrub, Playas, Vernal pools; Alkaline/annual herb/June–Oct/80–6,235	**Not expected to occur**. The project site lacks suitable habitat for this species.
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None/No/1B.2	Coastal bluff scrub, Coastal scrub; Alkaline/annual herb/Apr–Oct/35–655	**Not expected to occur.** The project site lacks alkaline soils suitable for this species.

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Baccharis malibuensis	Malibu baccharis	None/None/No/1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland/perennial deciduous shrub/July–Sept/490–1000	**Not expected to occur**. While chaparral habitat is present within the project site, the closest known occurrences are over 5 miles from the project (CDFW 2025; CCH 2025). Additionally, this species was not observed during the focused botanical survey conducted in July 2025, within its blooming and peak vegetative period.
Berberis nevinii	Nevin's barberry	FE/SE/No/1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub; Gravelly (sometimes), Sandy (sometimes)/perennial evergreen shrub/(Feb)Mar–June/230–2,705	**Not expected to occur.** The project site lacks sandy or gravelly soils suitable for this species. Additionally, the only known CNDDB occurrence within 10 miles is from 2004 and is part of the UCI Arboretum living collection (CCH 2025).
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/No/1B.1	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland; Vernal pools, clay (often)/perennial bulbiferous herb/Mar–June/80–3,675	**Not expected to occur.** The project site lacks vernal pool habitat and clay soils suitable for this species.
Calochortus catalinae	Catalina mariposa lily	None/None/Yes/4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial bulbiferous herb/(Feb)Mar–June/50–2295	**Low potential to occur.** Soils within the project site are heavily altered and are not likely to support this species. Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period. There are a few known occurrences within 1 mile from the project site (CCH 2025), and this is a bulbiferous herbaceous species that may not have bloomed during the drier than normal conditions during 2025; therefore, the potential for this species to occur within the project site remains low.
Calochortus weedii var. *intermedius*	intermediate mariposa-lily	None/None/Yes/1B.2	Chaparral, Coastal scrub, Valley and foothill grassland; Rocky/perennial	**High potential to occur.** Although this species was not observed during the focused botanical

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
			bulbiferous herb/May–July/345–2,805	surveys conducted within this species' blooming period in May and July 2025, there is an iNaturalist observation of the species in the southeastern boundary of the project site (iNaturalist 2025). Additionally, there is one CNDDB occurrence 0.1-mile from the project site across Bee Canyon Access Road and numerous observations within 3 miles (CDFW 2025; CCH 2025; iNaturalist 2025). This is a bulbiferous herbaceous species that may not have bloomed during the drier than normal conditions during 2025; therefore, due to on-site and nearby observations, the potential for this species to occur on road cuts along Bee Canyon Access Road, where small patches of remnant suitable habitat occurs within the project site is high. This species has a low potential to occur in the remainder of the project site due to disturbance from historical land use and lack of suitable habitat.
Centromadia parryi ssp. *australis*	southern tarplant	None/None/No/1B.1	Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools/annual herb/May–Nov/0–1575	**Not expected to occur.** The project site lacks suitable habitat for this species.
Cercocarpus minutiflorus	Small-flowered mountain mahogany	None/None/Yes/CBR	Chaparral/perennial evergreen shrub/March-May/115-2,330	**Not expected to occur.** The project site consists of highly disturbed chaparral habitat that is not likely to support this species. Additionally, this species is a conspicuous evergreen shrub that would have been detected during the 2025 botanical surveys if present on site.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None/None/No/1B.1	Coastal bluff scrub (sandy), Coastal dunes/annual herb/Jan–Aug/0–330	**Not expected to occur.** The project site lacks coastal bluff or dune habitat suitable for this species.

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	None/SE/No/1B.1	Coastal scrub (sandy), Valley and foothill grassland/annual herb/Apr–July/490–4005	**Not expected to occur.** The project site is outside of the limited known range of this species.
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	None/None/No/1B.2	Chaparral, Coastal scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Clay (often)/annual herb/Apr–July/100–5,020	**Not expected to occur.** This species is not known to occur in the coastal plain areas of Orange County (Jepson Flora Project 2025; CCH 2025; iNaturalist 2025). Additionally, the nearest known CNDDB occurrence is over 7.8 miles away and recruitment to the site is unlikely (CDFW 2025).
Chorizanthe procumbens	prostrate spineflower	None/None/Yes/CBR	Chaparral, Coastal scrub, Valley and foothill grassland; sand or gravel/annual herb/Apr–June/0–4,265	**Not expected to occur.** Soils within the project site are heavily altered and are not likely to support this species. Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period. Several nearby observations in iNaturalist during May and June 2025 indicate that this species would have been detected during focused surveys if present on site (iNaturalist 2025).
Clinopodium chandleri	San Miguel savory	None/None/No/1B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland; Gabbroic (sometimes), Rocky (sometimes)/perennial shrub/Mar–July/395–3,525	**Not expected to occur.** The project site lacks suitable mountainous, rocky slopes for this species. Additionally, the nearest known occurrence is over 10 miles away (CDFW 2025; CCH 2025; iNaturalist 2025).
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	None/None/No/1B.2	Chaparral, Cismontane woodland/perennial evergreen shrub/Apr–June/100–2590	**Not expected to occur.** The project site consists of highly disturbed chaparral habitat that is not likely to support this species. Additionally, this species is a conspicuous evergreen shrub that would have been detected during the 2025 botanical surveys if present on site. The nearest known CNDDB occurrence is 7.8 miles away (CDFW 2025).

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Dichondra occidentalis	western dichondra	None/None/Yes/4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial rhizomatous herb/(Jan)Mar–July/165–1640	**Not expected to occur.** This species is not known to occur in the coastal plain area of Orange County (CCH 2025; iNaturalist 2025). The nearest known CNDDB occurrence is over 7.8 miles away and recruitment to the site is unlikely (CDFW 2025). Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period.
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	None/None/Yes/1B.1	Chaparral, Coastal bluff scrub, Coastal scrub, Valley and foothill grassland; Clay (often), Rocky, Serpentinite/perennial herb/Apr–June/15–1,475	**Not expected to occur.** The project site lacks rocky habitat with clay or serpentinite soils suitable for this species. Additionally, there are no known nearby occurrences (CCH 2025).
Dudleya chasmophyta	Santiago Canyon dudleya	None/None/No/1B.1	Chaparral, Coastal scrub; Rocky/perennial herb/May–June/1,560–1,690	**Not expected to occur.** The project site is outside of the species' known elevation range.
Dudleya cymosa ssp. *ovatifolia*	Santa Monica dudleya	FT/None/Yes/1B.1	Chaparral, Coastal scrub; Rocky, Volcanic (sometimes)/perennial herb/Mar–June/490–5,495	**Not expected to occur.** The project site lacks rocky outcrops suitable for this species. Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period.
Dudleya multicaulis	many-stemmed dudleya	None/None/No/1B.2	Chaparral, Coastal scrub, Valley and foothill grassland; Clay (often)/perennial herb/Apr–July/50–2,590	**Low potential to occur**. The project site lacks clay soils or sandstone outcrops that are typically associated with this species (Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period.
Dudleya stolonifera	Laguna Beach dudleya	FT/ST/Yes/1B.1	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland; Rocky/perennial	**Not expected to occur.** The project site lacks north-facing cliff or rock outcrop microhabitat suitable for this species (Jepson Flora Project 2025). Additionally, this species was not

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
			stoloniferous herb/May–July/35–855	observed during the focused botanical survey conducted in May 2025, within this species' blooming period.
Dudleya viscida	sticky dudleya	None/None/No/1B.2	Chaparral, Cismontane woodland, Coastal bluff scrub, Coastal scrub; Rocky/perennial herb/May–June/35–1,805	**Not expected to occur.** The project site lacks bluff or rocky cliff microhabitat suitable for this species (Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period. The nearest known CNDDB occurrence is 14.2 miles away (CDFW 2025).
Eriastrum densifolium ssp. *sanctorum*	Santa Ana River woollystar	FE/SE/No/1B.1	Chaparral, Coastal scrub (alluvial fans); Gravelly (sometimes), Sandy (sometimes)/perennial herb/Apr–Sep/300–2,000	**Not expected to occur.** The project site lacks wash, floodplain, sandbar, or alluvial fan microhabitat suitable for this species (Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical survey conducted in July 2025, within this species' blooming period. The nearest known CNDDB occurrence is 8.5 miles away (CDFW 2025).
Euphorbia misera	cliff spurge	None/None/Yes/2B.2	Coastal bluff scrub, Coastal scrub, Mojavean desert scrub; Rocky/perennial shrub/(Oct)Dec–Aug/35–1,640	**Not expected to occur.** The project site lacks rocky slopes or coastal bluff microhabitat suitable for this species (Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical surveys conducted in May and July 2025. This species is a conspicuous shrub that would have been detected if present. The nearest known CNDDB occurrence is 11.3 miles away (CDFW 2025).
Harpagonella palmeri	Palmer's grapplinghook	None/None/Yes/4.2	Chaparral, Coastal scrub, Valley and foothill grassland; Clay, Openings/annual herb/Mar–May/65–3,135	**Low potential to occur.** The project site lacks clay soils suitable for this species (Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical survey

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
				conducted in July 2025, within this species' blooming period.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	None/None/No/1A	Marshes and swamps (freshwater, coastal salt)/perennial rhizomatous herb/Aug–Oct/35–5005	**Not expected to occur.** The project site lacks suitable habitat for this species.
Hesperocyparis forbesii	Tecate cypress	None/None/Yes/1B.1	Chaparral, Closed-cone coniferous forest; Clay, Gabbroic (sometimes)/perennial evergreen tree/N.A./260–4,920	**Not expected to occur.** The project site consists of highly disturbed chaparral habitat that is not likely to support this species. Additionally, this species is a conspicuous evergreen shrub that would have been detected during the 2025 botanical surveys if present on site. The nearest known CNDDB occurrence is 5.8 miles away (CDFW 2025).
Horkelia cuneata var. *puberula*	mesa horkelia	None/None/No/1B.1	Chaparral (maritime), Cismontane woodland, Coastal scrub; Gravelly (sometimes), Sandy (sometimes)/perennial herb/Feb–July(Sep)/230–2,660	**Not expected to occur.** The project site lacks suitable soils for this species. Additionally, the nearest known CNDDB occurrence is 7.1 miles away (CDFW 2025).
Imperata brevifolia	California satintail	None/None/No/2B.1	Chaparral, Coastal scrub, Meadows and seeps (often alkali), Mojavean desert scrub, Riparian scrub; Mesic/perennial rhizomatous herb/Sep–May/0–3,985	**Not expected to occur.** The project site lacks suitable mesic conditions for this species (Jepson Flora Project 2025). The nearest known CNDDB occurrence is 13.9 miles away (CDFW 2025).
Isocoma menziesii var. *decumbens*	decumbent goldenbush	None/None/No/1B.2	Chaparral, Coastal scrub (often disturbed areas, sandy)/perennial shrub/Apr–Nov/35–820	**Not expected to occur.** While suitable chaparral habitat is present within the project site, the nearest known CNDDB occurrence is 9.9 miles away (CDFW 2025). Additionally, this species is a conspicuous evergreen shrub that would have been detected during the 2025 botanical surveys if present on site.
Juglans californica	Southern California black walnut	None/None/No/4.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland/perennial deciduous tree/Mar–Aug/165–2,955	**Observed.** Six individuals were observed along the drainage in the northern portion of the project site.

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	None/None/Yes/1B.2	Valley and foothill grassland (mesic)/annual herb/Mar–May/100–750	**Not expected to occur.** The project site lacks suitable mesic conditions for this species (Jepson Flora Project 2025). Additionally, The project site is outside of the known range of this species, i.e., the Central Valley (Jepson Flora Project 2025).
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/No/1B.1	Marshes and swamps (coastal salt), Playas, Vernal pools/annual herb/Feb–June/5–4005	**Not expected to occur.** The project site lacks suitable habitat for this species.
Lepechinia cardiophylla	heart-leaved pitcher sage	None/None/Yes/1B.2	Chaparral, Cismontane woodland, Closed-cone coniferous forest/perennial shrub/Apr–July/1705–4495	**Not expected to occur**. The project site is outside the known elevation range for this species.
Monardella hypoleuca ssp. *intermedia*	intermediate monardella	None/None/No/1B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest (sometimes)/perennial rhizomatous herb/Apr–Sep/1310–4100	**Not expected to occur**. The project site is outside the known elevation range for this species.
Monardella macrantha ssp. *hallii*	Hall's monardella	None/None/No/1B.3	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland/perennial rhizomatous herb/June–Oct/2395–7200	**Not expected to occur**. The project site is outside the known elevation range for this species.
Nama stenocarpa	mud nama	None/None/No/2B.2	Marshes and swamps (lake margins, riverbanks)/annual/perennial herb/Jan–July/15–1640	**Not expected to occur.** The project site lacks suitable habitat for this species.
Nasturtium gambelii	Gambel's water cress	FE/ST/No/1B.1	Marshes and swamps (brackish, freshwater)/perennial rhizomatous herb/Apr–Oct/15–1085	**Not expected to occur.** The project site lacks suitable habitat for this species.

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Navarretia prostrata	prostrate vernal pool navarretia	None/None/No/1B.2	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools; Mesic/annual herb/Apr–July/10–3,970	**Not expected to occur.** The project site lacks suitable mesic conditions for this species.
Nolina cismontana	chaparral nolina	None/None/No/1B.2	Chaparral, Coastal scrub; Gabbroic (sometimes), Sandstone (sometimes)/perennial evergreen shrub/(Mar)May–July/460–4,185	**Not expected to occur**. This species is limited to chaparral habitat situated in mountainous terrain, which is not present in the project site (Jepson Flora Project 2025).
Penstemon californicus	California beardtongue	None/None/No/1B.2	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland; Sandy/perennial herb/May–June(Aug)/3,840–7,545	**Not expected to occur**. The project site is outside the known elevation range for this species.
Pentachaeta aurea ssp. *allenii*	Allen's pentachaeta	None/None/No/1B.1	Coastal scrub (openings), Valley and foothill grassland/annual herb/Mar–June/245–1705	**Low potential to occur.** The project site contains potentially suitable grassland habitat; however, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period.
Phacelia keckii	Santiago Peak phacelia	None/None/No/1B.3	Chaparral, Closed-cone coniferous forest/annual herb/May–July/1790–5250	**Not expected to occur**. The project site is outside the known elevation range for this species.
Pseudognaphalium leucocephalum	white rabbit-tobacco	None/None/No/2B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; Gravelly, Sandy/perennial herb/(July)Aug–Nov(Dec)/0–6,890	**Not expected to occur.** The project site lacks sandy or gravelly stream bottom microhabitat suitable for this species (Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical survey conducted in July 2025, within this species' peak vegetative period that would have allowed for identification.
Quercus berberidifolia	California scrub oak	None/None/Yes/None	Coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest/tree/Feb–Apr/328–5906	**Not expected to occur.** This species is more typically found in montane settings. Additionally, this species is a conspicuous evergreen shrub

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
				that would have been detected during the 2025 botanical surveys if present on site.
Quercus dumosa	Nuttall's scrub oak	None/None/Yes/1B.1	Chaparral, Closed-cone coniferous forest, Coastal scrub; Clay, Loam, Sandy/perennial evergreen shrub/Feb–Apr(May–Aug)/50–1,310	**Not expected to occur.** Suitable chaparral habitat is present in the project site; however, this species is a conspicuous evergreen shrub that would have been detected during the 2025 botanical surveys if present on site.
Romneya coulteri	Coulter's matilija poppy	None/None/Yes/4.2	Chaparral, Coastal scrub; Burned areas (often)/perennial rhizomatous herb/Mar–July(Aug)/65–3,935	**Not expected to occur.** Suitable chaparral habitat is present in the project site; however, this species is a conspicuous, large perennial herb that would have been in bloom and detected during the 2025 botanical surveys if present on site.
Senecio aphanactis	chaparral ragwort	None/None/No/2B.2	Chaparral, Cismontane woodland, Coastal scrub; Alkaline, rocky/annual herb/Jan–May/50–2,625	**Not expected to occur.** The project site lacks alkaline flats or rocky microhabitat suitable for this species (Jepson Flora Project 2025).
Sidalcea neomexicana	salt spring checkerbloom	None/None/No/2B.2	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas; Alkaline, Mesic/perennial herb/Mar–June/50–5,020	**Not expected to occur.** The project site lacks alkaline springs or marsh microhabitat suitable for this species (Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period.
Suaeda esteroa	estuary seablite	None/None/No/1B.2	Marshes and swamps (coastal salt)/perennial herb/(Jan–May)July–Oct/0–15	**Not expected to occur.** The project site is outside the known elevation range and lacks coastal salt marsh habitat suitable for this species.
Symphyotrichum defoliatum	San Bernardino aster	None/None/No/1B.2	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Marshes and swamps, Meadows and seeps, Valley and foothill grassland (vernally mesic);	**Not expected to occur.** The project site is outside of the known distribution range for this species (Jepson Flora Project 2025).

Scientific Name	Common Name	Status (Federal/State/NCCP/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
			Streambanks/perennial rhizomatous herb/July–Nov/5–6,695	
Verbesina dissita	big-leaved crownbeard	FT/ST/No/1B.1	Chaparral (maritime), Coastal scrub/perennial herb/(Mar)Apr–July/150–675	**Not expected to occur.** In the South Coast region, this species is limited to Laguna Beach and the San Joaquin Hills (CCH 2025; Jepson Flora Project 2025). Additionally, this species was not observed during the focused botanical survey conducted in May 2025, within this species' blooming period.

Notes: NCCP = County of Orange Central/Coastal Natural Community Conservation Plan/Habitat Conservation Plan
Status Legend:
FE: Federally listed as endangered
FT: Federally listed as threatened
SE: State listed as endangered
ST: State listed as threatened
Yes: County of Orange Central Coastal NCCP covered species
No: Not a County of Orange Central Coastal NCCP covered species
CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR 2A: Plants presumed extirpated in California but common elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California but more common elsewhere
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20–80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
CBR: Considered but Rejected

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Appendix D

Special-Status Wildlife Species Potential to Occur

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Amphibians				
Anaxyrus californicus	arroyo toad	FE/SSC/Yes	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	**Not expected to occur.** The project site lacks braided channel and terrace habitat suitable for this species (Nafis 2025).
Aneides lugubris	arboreal salamander	None/None/Yes	Chaparral in Southern California; valley–foothill hardwood, valley–foothill hardwood–conifer, and mixed-conifer habitats, Douglas-fir (Pseudotsuga spp.), and redwood (Sequoia sempervirens) elsewhere	**Not expected to occur.** The project site lacks damp conditions required for this species (Nafis 2025).
Batrachoseps nigriventris	black-bellied slender salamander	None/None/Yes	Swales and drainages in open oak, mixed-conifer forests, and mixed chaparral with abundant rocks, litter, or woody debris	**Not expected to occur.** The project site lacks damp conditions required for this species (Nafis 2025).
Spea hammondii	western spadefoot	FPT/SSC/Yes	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	**Not expected to occur.** Agricultural basins are present in the southern portion of the project site; however, these features do not appear to support surface water under natural conditions sufficient for western spadefoot breeding. Focused surveys during and after rain events, which included evening surveys, were negative for adults, eggs, and larvae. Additionally, no pooling was observed during focused surveys.
Taricha torosa (Monterey Co. south only)	California newt	None/SSC/No	Wet forests, oak forests, chaparral, and rolling grassland	**Not expected to occur.** The project site lacks damp conditions required for this species (Nafis 2025).

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Reptiles				
Actinemys pallida	southwestern pond turtle	FPT/SSC/No	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	**Not expected to occur.** The project site lacks perennial aquatic habitat for this species.
Anniella stebbinsi	southern California legless lizard	None/SSC/No	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and moist sandy or loose, loamy soils	**Not expected to occur.** The project site lacks moist soils or leaf litter suitable for this species (Nafis 2025).
Arizona elegans occidentalis	California glossy snake	None/SSC/No	Arid scrub, rocky washes, grasslands, chaparral, open areas with loose sandy soil	**Not expected to occur**. While chaparral and grassland habitat is present, the project site is largely disturbed and lacks loose sandy soils microhabitat to which these species are restricted in the South Coast (Hansen and Shedd 2025). Additionally, surrounding development likely prevents recruitment to the site.
Aspidoscelis hyperythra	orange-throated whiptail	None/WL/Yes	Low-elevation coastal scrub, chaparral, and valley–foothill hardwood	**High potential to occur.** Suitable chaparral habitat is present within the project site. In addition, there are numerous known occurrences surrounding the project site (CDFW 2025a).
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC/Yes	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	**Moderate potential to occur.** Suitable dry open habitat is present within the project site. There is one known CNDDB occurrence within 2 miles from 1999 (CDFW 2025a).

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Crotalus ruber	red diamondback rattlesnake	None/SSC/Yes	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	**Moderate potential to occur.** Suitable chaparral, grassland, and cultivated habitats are present within the project site. There is one known CNDDB occurrence within 2 miles from 1999 (CDFW 2025a).
Diadophis punctatus modestus	San Bernardino ring-necked snake	None/None/Yes	Moist habitats including wet meadows, rocky hillsides, gardens, farmland grassland, chaparral, mixed-conifer forest, and woodland	**Not expected to occur.** The project site lacks moist habitat suitable for this species.
Lichanura trivirgata	rosy boa	None/None/Yes	Desert and chaparral habitats with rocky soils in coastal canyons and hillsides, desert canyons, washes, and mountains	**Not expected to occur.** The project site is outside of the known geographic range of the species (Nafis 2025; Hansen and Shedd 2025; iNaturalist 2025).
Phrynosoma blainvillii	coast horned lizard	None/SSC/Yes	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats	**Low potential to occur.** There are several CNDDB occurrences and iNaturalist observations within 2 miles (CDFW 2025a; iNaturalist 2025); however, the project site lacks typical sandy soil substrates suitable for this species. Additionally, the project site is unlikely to provide suitable habitat as it is highly disturbed with compacted soils.
Plestiodon skiltonianus interparietalis	Coronado skink	None/WL/Yes	Woodlands, grasslands, pine forests, and chaparral; rocky areas near water	**Not expected to occur.** While chaparral and grassland habitat is present, the project site is largely disturbed and lacks moist microhabitat that is generally preferred by the species (Hansen and Shedd 2025). In addition, all CNDDB occurrences and iNaturalist observations are limited to Rancho Santa Margarita and further south (CDFW 2025a; iNaturalist 2025).

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Salvadora hexalepis virgultea	coast patch-nosed snake	None/SSC/No	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	**Low potential to occur.** Although there is shrubby vegetation is present, the project site is unlikely to provide suitable habitat as it is highly disturbed with compacted soils.
Thamnophis hammondii	two-striped gartersnake	None/SSC/No	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	**Not expected to occur.** The project site lacks perennial aquatic habitat for this species.
Birds				
Accipiter striatus (nesting)	sharp-shinned hawk	None/WL/Yes	Nests in coniferous forests, ponderosa pine, black oak, riparian deciduous, mixed conifer, Jeffrey pine; winters in lowland woodlands and other habitats	**Not expected to nest.** The project site lacks suitable nesting habitat for this species.
Agelaius tricolor (nesting colony)	tricolored blackbird	BCC/SSC, ST/No	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture	**Not expected to nest**. The project site lacks suitable nesting habitat for this species.
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	None/WL/Yes	Nests and forages in open coastal scrub and chaparral on moderate to steep, dry rocky slopes; scattered scrub cover interspersed with patches of grasses and forbs; preference for coastal sage scrub but also may occur in coastal bluff scrub and sparse chaparral	**Low potential to occur.** Although chaparral habitat is present, the project site lacks steep rocky slopes typically used by this species (Collins 2020).
Ammodramus savannarum (nesting)	grasshopper sparrow	None/SSC/No	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	**Low potential to occur.** While suitable open grassland is present, the project site is largely disturbed and likely prevents nesting. Additionally, this species was not detected during 2025 field surveys.

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Aquila chrysaetos (nesting & wintering)	golden eagle	None/FP, WL/Yes	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	**Not expected to occur.** This species requires cliff habitat or larger stands of trees for nesting than what is available within the project site. Additionally, the project site is too close to industrial disturbance and urban development to provide suitable foraging habitat.
Asio otus (nesting)	long-eared owl	BCC/SSC/No	Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats	**Not expected to occur.** The project site lacks suitable nesting habitat for this species.
Athene cunicularia (burrow sites & some wintering sites)	burrowing owl	BCC/SSC, SC/No	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	**Not expected to nest, low potential to overwinter.** Protocol wintering and breeding season surveys for this species were negative. Due to a lack of recent breeding records and breeding season observations in central Orange County, this species is considered to be extirpated as a breeder and is not expected to nest within the project site (CDFW 2025a; iNaturalist 2025; Gervais et al. 2008). However, suitable overwintering habitat (e.g., grassland and agricultural land with small mammal burrows) is present within the project site with multiple recent winter observations within 3 miles (CDFW 2025c; iNaturalist 2025). Therefore, this species has a low potential to overwinter on site in future years.
Buteo lagopus	rough-legged hawk	None/None/Yes	Does not breed in California; occurs regularly at Southern California lakes; hunts in wet meadows, marshes, swamps, and riparian edges	**Not expected to occur.** The project site lacks wet meadow, marsh, and significant riparian woodland habitat and is unlikely to support winter foraging activities for this species.

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Buteo lineatus	red-shouldered hawk	None/None/Yes	Nests in dense riparian areas, especially with adjacent edges, swamps, marshes, and wet meadows for hunting	**Observed, low potential to nest.** This species was observed during 2025 field surveys; however, riparian habitat present on site is not likely to support nesting for this species due to its minimal extent and degraded state. Additionally, this species avoids nesting near red-tailed hawk, which was observed during 2025 field surveys. This is a common species that may pass through or forage on site.
Campylorhynchus brunneicapillus sandiegensis (San Diego & Orange Counties only)	coastal cactus wren	None/SSC/Yes	Southern cactus scrub patches	**Not expected to occur.** The project site lacks significant patches of cactus that would provide suitable habitat for this species.
Circus hudsonius (nesting)	northern harrier	BCC/SSC/Yes	Nests in open wetlands (marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats	**Not expected to nest.** Suitable nesting habitat is not present within the project site.
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT/SE/No	Nests in dense, wide riparian woodlands and forest with well-developed understories	**Not expected to nest**. Suitable nesting habitat is not present within the project site.
Coturnicops noveboracensis	yellow rail	BCC/SSC/No	Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water	**Not expected to occur**. Suitable nesting habitat is not present within the project site.

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Elanus leucurus (nesting)	white-tailed kite	None/FP/No	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	**Observed, moderate potential to nest.** This species was observed during a field survey conducted on March 20, 2025. No nesting was observed on site during several surveys conducted between July 24, 2024 and July 22, 2025. Trees suitable for nesting with adjacent foraging habitat occur within the project site and numerous (>10) known CNDDB occurrences are present within 10 miles (CDFW 2025a).
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE/Yes	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	**Not expected to nest.** No dense riparian habitat suitable for nesting occurs within the project site.
Falco mexicanus (nesting)	prairie falcon	None/WL/Yes	Forages in grassland, savanna, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	**Not expected to nest.** No cliffs or bluffs suitable for nesting occurs within the project site.
Falco peregrinus anatum (nesting)	American peregrine falcon	FD/SD/Yes	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	**Not expected to nest.** No cliffs, bluffs, buildings, or bridges suitable for nesting occurs within the project site.
Haliaeetus leucocephalus (nesting & wintering)	bald eagle	FD/FP, SE/No	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	**Not expected to nest or winter.** Forested areas adjacent to large bodies of water are not present within the project site.
Icteria virens (nesting)	yellow-breasted chat	None/SSC/No	Nests and forages in thickets of willows, vine tangles, and dense brush	**Observed, high potential to nest**. This species was observed within the project site. Within the project site, small riparian thickets and laurel sumac scrub likely provide suitable nesting habitat for the species.

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Laterallus jamaicensis coturniculus	California black rail	None/FP, ST/No	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	**Not expected to occur.** Suitable wetland habitat is not present within the project site.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	BCC/SE/No	Nests and forages in coastal saltmarsh dominated by pickleweed (Salicornia spp.)	**Not expected to occur.** Suitable coastal saltmarsh habitat is not present within the project site.
Polioptila californica californica	coastal California gnatcatcher	FT/SSC/Yes	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	**Not expected to nest within the project site, Moderate potential to forage and nest in coastal sage scrub located in the 500-foot buffer.** Coastal sage scrub habitat is not present within the project site but is located off-site within a 500-foot buffer south of Bee Canyon Access Road. Protocol surveys for this species were negative. However, a known CNDDB occurrence is mapped in the buffer area (CDFW 2025a); therefore, this species has a moderate potential nest within the habitat across Bee Canyon Access Road in future years.
Rallus obsoletus levipes	light-footed Ridgway's rail	FE/FP, SE/No	Coastal wetlands, brackish areas, coastal saline emergent wetlands	**Not expected to occur.** Suitable coastal wetland habitat is not present within the project site.
Setophaga petechia (nesting)	yellow warbler	None/SSC/No	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	**Observed, high potential to nest.** This species was observed within the project site. Wooded areas, small riparian thickets, or laurel sumac scrub on site likely provide suitable nesting habitat for the species.
Sternula antillarum browni (nesting colony)	California least tern	FE/FP, SE/No	Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats	**Not expected to occur.** Suitable estuarine habitat is not present within the project site.

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/Yes	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	**Observed, nesting on site and high potential to nest.** This species was consistently observed visually and auditorily during the 2025 focused surveys. Within the project site, 7 territories were observed over the course of the focused surveys with 4 confirmed to be occupied by mated pairs. Nesting was confirmed at 2 territories. One presumed migrant was only detected once early in the season. Six more territories were observed off-site within a 500-foot buffer. This species has a high potential to nest within the project site and within 500-feet of the project site in future years
Fishes				
Catostomus santaanae	Santa Ana sucker	FT/SSC/No	Small, shallow, cool, clear streams less than 7 meters (23 feet) in width and a few centimeters to more than a meter (1.5 inches to more than 3 feet) in depth; substrates are generally coarse gravel, rubble, and boulder	**Not expected to occur.** Suitable aquatic resources are not present within the project site.
Eucyclogobius newberryi	tidewater goby	FE/SSC/No	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River	**Not expected to occur.** Suitable aquatic resources are not present within the project site.
Gila orcuttii	arroyo chub	None/SSC/No	Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths >40 centimeters (16 inches); substrates of sand or mud	**Not expected to occur.** Suitable aquatic resources are not present within the project site.
Oncorhynchus mykiss irideus pop. 10	southern steelhead - southern California DPS	FE/SCE/No	Clean, clear, cool, well-oxygenated streams; needs relatively deep pools in migration and gravelly substrate to spawn	**Not expected to occur.** Suitable aquatic resources are not present within the project site.

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Rhinichthys gabrielino	Santa Ana speckled dace	FPT/SSC/No	Headwaters of the Santa Ana and San Gabriel Rivers; may be extirpated from the Los Angeles River system	**Not expected to occur.** Suitable aquatic resources are not present within the project site.
Mammals				
Antrozous pallidus	pallid bat	None/SSC/No	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	**Low potential to occur.** While trees and man-made structures suitable for roosting are present within the project site, the project site is largely disturbed and adjacent to ongoing development which likely reduces the likelihood of occurrence.
Canis latrans	coyote	None/None/Yes	Many areas except very highly urbanized areas	**Observed, high potential to occur.** Coyote individuals, sign (e.g., scat, trails), and potential prey animals were observed within project site. This is a common species that has a high potential to use the project site in future years.
Choeronycteris mexicana	Mexican long-tongued bat	None/SSC/No	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon–juniper woodland; roosts in caves, mines, and buildings	**Low potential to occur.** While buildings suitable for roosting are present within the project site, the project site is largely disturbed and adjacent to ongoing development which likely reduces the likelihood of occurrence.
Dasypterus xanthinus	western yellow bat	None/SSC/No	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	**Not expected to occur.** Suitable riparian roosting habitat is not present within the project site. In addition, there are no known CNDDB occurrences within 13 miles (CDFW 2025a).
Dipodomys stephensi	Stephens' kangaroo rat	FT/ST/No	Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas	**Not expected to occur.** While suitable grassland and scrub/sagebrush habitat occurs within the project site, the nearest known CNDDB occurrence is 12.6 miles away (CDFW 2025a). In addition, the project site is outside of the range and areas of predicted habitat for this species (CDFW 2025b).

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Eumops perotis californicus	western mastiff bat	None/SSC/No	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	**Low potential to occur.** While trees and culverts suitable for roosting are present within the project site, the project site is largely disturbed and adjacent to ongoing development which likely reduces the likelihood of occurrence.
Lasiurus frantzii	western red bat	None/SSC/No	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	**Low potential to occur.** While trees are present within the project site, the project site is largely disturbed and adjacent to ongoing development which likely reduces the likelihood of occurrence. In addition, the nearest known occurrence is 35 miles from the project site (CDFW 2025a).
Neotoma lepida intermedia	San Diego desert woodrat	None/SSC/Yes	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	**Low potential to occur**. While suitable scrub and cacti are present within the project site, the project site is largely disturbed and adjacent to ongoing development, likely reducing the likelihood of occurrence. No middens were detected during numerous focused surveys on site.
Nyctinomops femorosaccus	pocketed free-tailed bat	None/SSC/No	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with drop-offs, caverns, and buildings	**Low potential to occur.** While buildings are present within the project site, the project site is largely disturbed and adjacent to ongoing development which likely reduces the likelihood of occurrence. In addition, the nearest known occurrence is 12.6 miles from the project site (CDFW 2025a).
Nyctinomops macrotis	big free-tailed bat	None/SSC/No	Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water	**Not expected to occur.** No cliffs or rocky outcrops with nearby water are present within the project site.

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Onychomys torridus ramona	southern grasshopper mouse	None/SSC/No	Grassland and sparse coastal scrub	**Low potential to occur**. While suitable scrub and grassland habitat are present within the project site, the project site is largely disturbed and adjacent to ongoing development, likely reducing the likelihood of occurrence.
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC/Yes	fine-grained sandy substrates in open coastal strand, coastal dunes, and river alluvium	**Not expected to occur.** Suitable coastal habitat is not present within the project site. In addition, the nearest known occurrence is 9.4 miles away from 1971 (CDFW 2025a).
Puma concolor	mountain lion - Southern California/Central Coast ESU	None/SC/No	Scrubs, chaparral, riparian, woodland, and forest; rests in rocky areas and on cliffs and ledges that provide cover; most abundant in riparian areas and brushy stages of most habitats throughout California, except deserts	**Low potential to occur, natal dens are not expected to occur.** This species is known from the Santa Ana Mountains and is expected to be present in the open space areas to the northeast of the project site. Mountain lion has a low potential to occur on site due to access constraints presented by highways 241 and 261 and the proximity of the site to developed areas to the southwest. Natal dens are not expected due to surrounding disturbance from agricultural and industrial activities.
Sorex ornatus salicornicus	southern California saltmarsh shrew	None/SSC/No	Saltmarsh, saltgrass, dense willow, bulrush	**Not expected to occur.** Suitable saltmarsh habitat is not present within the project site.
Taxidea taxus	American badger	None/SSC/No	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	**Low potential to occur.** While suitable grassland and agricultural habitat are present within the project site, the project site is largely disturbed and adjacent to ongoing development, likely reducing the likelihood of occurrence. In addition, the nearest known CNDDB occurrence is 14.4 miles away (CDFW 2025a).

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Urocyon cinereoargenteus	gray fox	None/None/Yes	Shrublands, brushy and open-canopied forests, interspersed with riparian areas; dens in cavities, in rocky areas, snags, logs, brush, slash piles, old burrows, and under buildings	**Low potential to occur.** Only limited, isolated shrubland is present within the project site.
Invertebrates				
Bombus crotchii	Crotch's bumble bee	None/SCE/No	Open grassland and scrub communities supporting suitable floral resources.	**Observed, moderate potential to nest.** One individual was incidentally observed flying through the southern portion of the project site during a rare plant survey on May 7, 2025. In addition, one was observed foraging on common phacelia (*Phacelia distans*) within the northern portion of the project site. Potential nesting resources, such as small mammal burrows, brush piles, debris piles, rock piles, and bare ground were observed within the project site. Additionally, areas under tree cover with insulating leaf litter within the project site could provide overwintering habitat (CDFW 2023).
Branchinecta sandiegonensis	San Diego fairy shrimp	FE/None/Yes	Vernal pools, non-vegetated ephemeral pools	**Not expected to occur.** Suitable vernal pool habitat is not present within the project site.
Danaus plexippus plexippus pop. 1	monarch - California overwintering population	FPT/None/No	Wind-protected tree groves with nectar sources and nearby water sources	**Observed, not expected to overwinter**. This species was observed flying through the southeastern corner of the project site. However, trees within project site are not of sufficient density to protect from wind. In addition, the nearest known overwintering roost occurrence is 12.4 miles away (CDFW 2025a).

Scientific Name	Common Name	Status (Federal/State/ NCCP)	Habitat	Potential to Occur
Euphydryas editha quino	quino checkerspot butterfly	FE/None/Yes	Annual forblands, grassland, open coastal scrub and chaparral; often soils with cryptogamic crusts and fine-textured clay; host plants include Plantago erecta, P. patagonica, and Antirrhinum coulterianum, among others	**Not expected to occur.** Suitable soils and host plants are not present within the project site. There are two known CNDDB occurrences within 6 miles; however, both are presumed extirpated (CDFW 2025a).
Streptocephalus woottoni	Riverside fairy shrimp	FE/None/Yes	Vernal pools, non-vegetated ephemeral pools	**Not expected to occur.** Suitable vernal pool habitat is not present within the project site.

Notes: NCCP = County of Orange Central/Coastal Natural Community Conservation Plan/Habitat Conservation Plan

Status Abbreviations

FE: Federally listed as endangered
FT: Federally listed as threatened
FPT: Federally proposed for listing as threatened
FD: Federally delisted
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC: California Species of Special Concern
FP: California Fully Protected Species
WL: California Watch List Species
SE: State listed as endangered
ST: State listed as threatened
SC: State candidate for listing as threatened or endangered
SCE: State candidate for listing as endangered
SD: State delisted
Yes: County of Orange Central Coastal NCCP covered species
No: Not a County of Orange Central Coastal NCCP covered species

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Appendix E

Coastal California Gnatcatcher Survey Report

DUDEK
MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 800.450.1818 F 760.632.0164

August 11, 2025 14554

U.S. Fish and Wildlife Service
Attention: Recovery Permit Coordinator
2177 Salk Avenue, No. 250
Carlsbad, California 92008

Subject: 2025 Focused Coastal California Gnatcatcher Survey Report for the Gateway Village Residential Project, City of Irvine, Orange County, California

Dear Recovery Permit Coordinator:

This letter report documents the results of three protocol-level focused surveys for the coastal California gnatcatcher (*Polioptila californica californica*) that were conducted for the approximately 92-acre Gateway Village Residential Project (project). Potentially suitable habitat for coastal California gnatcatcher was surveyed by Dudek biologist Shana Carey between June 6, 2025, and June 27, 2025. The surveys were conducted in all areas where suitable coastal California gnatcatcher habitat was present both within the project site as well as a 500-foot buffer.

The coastal California gnatcatcher is a federally listed threatened species and a California Department of Fish and Wildlife Species of Special Concern. It is closely associated with coastal sage scrub habitat and, therefore, threatened primarily by loss, degradation, and fragmentation of this habitat. Coastal California gnatcatchers typically occur below 820 feet above mean sea level within 22 miles of the coast. Studies have suggested that coastal California gnatcatchers avoid nesting on very steep slopes (greater than 40%) (Bontrager 1991). Coastal California gnatcatchers are also impacted by brown-headed cowbird (*Molothrus ater*) nest parasitism (Braden et al. 1997).

1 Project Location and Existing Conditions

The approximately 92-acre project site is located in Irvine at the southeast corner of Portola Parkway and Jeffrey Road and is bounded by Portola Parkway to the southwest, Jeffrey Road/Hicks Haul Road to the northwest, and Bee Canyon Access Road to the southeast within Orange County (Figure 1, Project Location). The project site is surrounded by several different land uses including residential, industrial, and open space. Existing housing developments are located to the west, and new housing construction is currently ongoing to the north. East of the project site there is a combination of industrial land use and open space, while the area to the south is primarily open space. The City of Irvine is not a participating landowner or in an enrollment agreement but is a signatory to the implementing agreement of the County of Orange Central/Coastal NCCP/HCP. The proposed project is not considered a planned activity as the City is not a participating landowner to the OC NCCP/HCP.

Elevations range from approximately 335 feet above mean sea level to approximately 505 feet above mean sea level. The majority of the project site consists of agricultural land, upland mustards, and developed land. Remnant patches of native vegetation are scattered in the eastern portion of the site. Open spaces containing coastal sage

scrub are found outside of the project site within the 500-foot buffer to the south, located on the other side of Bee Canyon Access Road. Topography of the project consists of mostly flat land with a few rolling hills.

2 Vegetation Communities Suitable for Coastal California Gnatcatcher

Two vegetation communities were identified within the project site as suitable for coastal California gnatcatcher: California sagebrush (*Artemisia Californica)* – purple sage (*Salvia leucophylla*) scrub and laurel sumac (*Malosma laurina*) scrub. Within the project site other dominant vegetation communities included agriculture, upland mustards (*Hirschfeldia incana* association), and developed land.

2.1 California Sagebrush – Purple Sage Scrub

California sagebrush–purple sage scrub communities include California sagebrush and/or purple sage as dominant or co-dominant species in the shrub canopy. This alliance has a continuous or intermittent shrub canopy less than 7 feet (2 meters) in height with a variable, sometimes grassy ground layer. Species associated with the alliance include chamise (*Adenostoma fasciculatum*), coyote brush (*Baccharis pilularis*), bladderpod (*Peritoma arborea*), bush monkeyflower (*Diplacus aurantiacus*), California brittle bush (*Encelia californica*), narrowleaf goldenbush (*Ericameria linearifolia*), California buckwheat (*Eriogonum fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*), Menzies' goldenbush (*Isocoma menziesii*), deerweed (*Acmispon glaber*), laurel sumac, coast prickly pear (*Opuntia littoralis*), hollyleaf redberry (*Rhamnus ilicifolia*), lemonade berry (*Rhus integrifolia*), sugar bush (*Rhus ovata*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), and poison oak (*Toxicodendron diversilobum*). These communities typically occur on steep slopes or rarely flooded terraces along streams in alluvial- or colluvial-derived soils (CNPS 2025).

California sagebrush – purple sage scrub was observed offsite within the 500-foot buffer just outside of the southern border of the project site, south of Bee Canyon Access Road. Roughly 34 acres of this vegetation type occurs within the 500-foot buffer.

2.2 Laurel Sumac Scrub

Laurel sumac scrub includes laurel sumac as dominant or co-dominant in the shrub canopy with California sagebrush, bigpod ceanothus (*Ceanothus megacarpus*), bush monkeyflower, coastal buckwheat (*Eriogonum cinereum*), California brittlebush, California buckwheat, chaparral yucca, toyon (*Heteromeles arbutifolia*), hollyleaf redberry, lemonade berry, sugar bush, purple sage, black sage, and poison oak. These communities typically occur on steep slopes where soils are shallow and fine textured (CNPS 2025).

Scattered stands of laurel sumac scrub, comprising approximately 2.6 acres, were observed within the eastern portion of the project site, predominantly in uplands and partially associated with a drainage feature. A small amount of laurel sumac scrub was also observed offsite within the 500-foot buffer, just outside of the eastern border of the project site, north of Bee Canyon Access Road.

3 Methods

Three focused surveys for coastal California gnatcatcher were performed within suitable habitat, which primarily included the open space south of Bee Canyon Access Road, between June 6, 2025, and June 27, 2025, by permitted biologist Shana Carey (Permit # PER9017308) according to the schedule in Table 1. The surveys were conducted following the currently accepted protocol of the U.S. Fish and Wildlife Service: Coastal California Gnatcatcher *(Polioptila californica californica)* Presence/Absence Survey Protocol (USFWS 1997). Coastal California gnatcatchers were documented, if present, using a variety of features for distinguishing individuals from one another to determine the number of pairs/individuals. Some distinguishing features include male cap color (variation in the darkness of the black cap) and male cap thickness, width, and length. Coastal California gnatcatcher color patterns, unique markings, behaviors, pitch of call, and song variation were used to separate each observation.

Table 1. Survey Details and Conditions

Date	Time	Survey Conditions
06/6/2025	8:00 a.m.–12:00 p.m.	63°F–74°F; 60%-90% cloud cover; 0–4 mph wind
06/20/2025	8:15 a.m.–12:00 p.m.	65°F–72°F; 0%–50% cloud cover; 0–9 mph wind
06/27/2025	8:00 a.m.–12:00 p.m.	64°F–76°F; 0%–20% cloud cover; 1–8 mph wind

Notes: °F = degrees Fahrenheit; mph = miles per hour

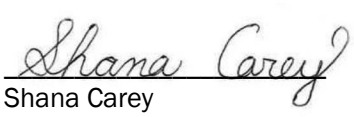
Survey routes for site visits comprehensively covered the areas of suitable coastal California gnatcatcher habitat on site, as shown on Figure 2, Coastal California Gnatcatcher Survey Route. Per protocol, the biologist did not survey more than 100 acres of suitable coastal California gnatcatcher habitat per day. Appropriate binoculars (8 magnification x 42mm) were used to aid in detecting and identifying bird species. Recordings of coastal California gnatcatcher vocalizations were used to elicit a response from the species. The recording was played approximately every 50 to 100 feet. If a coastal California gnatcatcher were to be detected, the playing of the recording would have been ceased to avoid additional harassment. A 100-scale (1 inch = 100 feet) aerial photograph of the study area overlaid with the vegetation and site boundaries was used to map any coastal California gnatcatcher detected. Weather conditions, time of day, and season were within protocol limits and appropriate for the detection of gnatcatchers, as shown in Table 1.

4 Results

During the survey efforts, no individuals and no pairs of coastal California gnatcatcher were detected (Figure 3, Coastal California Gnatcatcher Survey Results). In total, 32 native and 1 non-native wildlife species were recorded during the focused survey efforts and are listed in Attachment A, Wildlife Species Observed.

I, Shana Carey, certify that the information in this survey report and attached exhibits fully and accurately represents the focused survey effort I conducted as a coastal California gnatcatcher-permitted biologist. Please feel free to contact Shana Carey at scarey@dudek.com if you have any questions regarding the contents of this report.

Sincerely,



Shana Carey

Att: *Figure 1 – Project Location*
Figure 2 – Coastal California Gnatcatcher Survey Route
Figure 3 – Coastal California Gnatcatcher Survey Results
A – Wildlife Species Observed

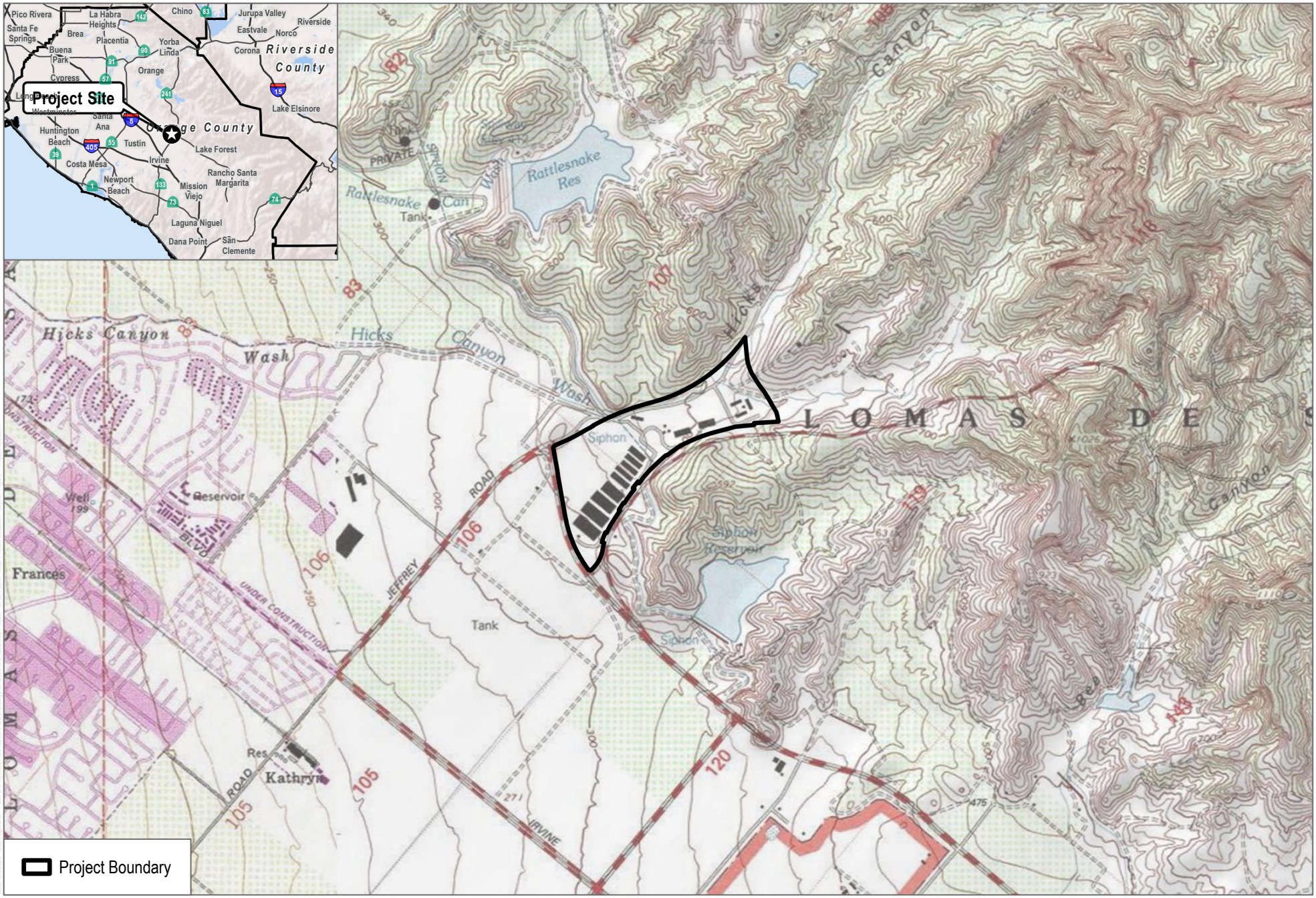
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SOURCE: USGS 7.5 Minute Series 1:24,000

Lake Forest Quadrangle - Township 5S Range 8W Section 20, 21, 28, 29

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Irvine Gateway Village Project EIR



SOURCE: Esri World Imagery; Open Street Map 2023

DUDEK

0 362.5 725 Feet

FIGURE 2

Coastal California Gnatcatcher Survey Route

Irvine Gateway Village Project EIR



SOURCE: Esri World Imagery; Open Street Map 2023

DUDEK

0 362.5 725 Feet

FIGURE 3

Coastal California Gnatcatcher Survey Results

Irvine Gateway Village Project EIR

Attachment A

Wildlife Species Observed

Birds

Blackbirds, Orioles and Allies

ICTERIDAE – BLACKBIRDS

Icteria virens – yellow-breasted chat

Icterus cucullatus – hooded oriole

Bushtits

AEGITHALIDAE – LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus – bushtit

Cardinals, Grosbeaks and Allies

CARDINALIDAE – CARDINALS AND ALLIES

Passerina caerulea – blue grosbeak

Finches

FRINGILLIDAE – FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus – house finch

Spinus psaltria – lesser goldfinch

Flycatchers

TYRANNIDAE – TYRANT FLYCATCHERS

Sayornis nigricans – black phoebe

Sayornis saya – Say's phoebe

Tyrannus vociferans – Cassin's kingbird

Hawks

ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES

Buteo jamaicensis – red-tailed hawk

Hummingbirds

TROCHILIDAE – HUMMINGBIRDS

Calypte anna – Anna's hummingbird

Jays, Magpies and Crows

CORVIDAE – CROWS AND JAYS

Corvus brachyrhynchos – American crow

Corvus corax – common raven

New World Vultures

CATHARTIDAE – NEW WORLD VULTURES

Cathartes aura – turkey vulture

Pigeons and Doves

COLUMBIDAE – PIGEONS AND DOVES

Zenaida macroura – mourning dove

Starlings and Allies

STURNIDAE – STARLINGS

* *Sturnus vulgaris* – European starling

Swallows

HIRUNDINIDAE – SWALLOWS

Petrochelidon pyrrhonota – cliff swallow

Vireos

VIREONIDAE – VIREOS

Vireo bellii pusillus – least Bell's vireo

Wood Warblers and Allies

PARULIDAE – WOOD-WARBLERS

Geothlypis trichas – common yellowthroat

Setophaga petechia – yellow warbler

Woodpeckers

PICIDAE – WOODPECKERS AND ALLIES

Dryobates nuttallii – Nuttall's woodpecker

Wrens

TROGLODYTIDAE – WRENS

Troglodytes aedon – house wren

Thryomanes bewickii – Bewick's wren

New World Sparrows

PASSERELLIDAE – NEW WORLD SPARROWS

Melospiza melodia – song sparrow

Melozone crissalis – California towhee

Pipilo maculatus – spotted towhee

Typical Warblers, Parrotbills, Wrentit

SYLVIIDAE – SYLVIID WARBLERS

Chamaea fasciata – wrentit

Invertebrates

Wasps

POMPILIDAE – SPIDER WASPS

Pepsis mildei – Milde's tarantula-hawk wasp

Mammals

Hares and Rabbits

LEPORIDAE – HARES AND RABBITS

Sylvilagus audubonii – desert cottontail

Squirrels

SCIURIDAE – SQUIRRELS

Otospermophilus beecheyi – California ground squirrel

Reptiles

Lizards

PHRYNOSOMATIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard

Uta stansburiana – common side-blotched lizard

TEIIDAE – LACERTOIDEAN LIZARDS

Aspidoscelis hyperythra beldingi – Belding's orange-throated whiptail

* signifies introduced (non-native) species

Appendix F

Crotch's Bumble Bee Survey Report

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August 15, 2025

Ann Wuu
City of Irvine
1 Civic Center Plaza
Irvine, California 92606

Subject: 2025 Focused Crotch's Bumble Bee Survey Report for the Gateway Village Residential Project

Dear Ann Wuu:

This letter report documents the results of the habitat assessment and focused surveys conducted by Dudek biologists for the California Endangered Species Act (CESA) Candidate Crotch's bumble bee (*Bombus crotchii*) for the Gateway Village Residential Project (project) in Orange County, California (Figure 1, Project Location).

1 Study Area and Existing Conditions

The project site is on approximately 92.1 acres northeast of Interstate 5 and west of State Route 133 (i.e., Laguna Freeway), specifically on the southeast corner of Portola Parkway and Jeffrey Road, and north of Bee Canyon Access Road in Irvine, California. The site is in Sections 20, 21, and 29 of Township 5S; Range 8W of the El Toro, California, U.S. Geological Service 7.5-minute series topographic quadrangle maps.

2 Vegetation Communities

Eleven vegetation communities and land covers were identified and mapped within the project site, which are described below.

2.1 Native or Naturalized Vegetation Communities

Laural Sumac Scrub

Laurel sumac scrub (*Malosma laurina* shrubland alliance) includes laurel sumac (*Malosma laurina*) as dominant or co-dominant in the shrub canopy with California sagebrush (*Artemisia californica*), bigpod ceanothus (*Ceanothus megacarpus*), bush monkeyflower (*Diplacus aurantiacus*), coastal buckwheat (*Eriogonum cinereum*), California brittlebush (*Encelia californica*), California buckwheat (*Eriogonum fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*), toyon (*Heteromeles arbutifolia*), hollyleaf redberry (*Rhamnus ilicifolia*), lemonade sumac (*Rhus integrifolia*), sugar sumac (*Rhus ovata*), purple sage (*Salvia leucophylla*), black sage (*Salvia mellifera*), and poison oak (*Toxicodendron diversilobum*). This alliance has an open to continuous shrub canopy less than 16 feet (5 meters) in height, with a sparse or grassy ground layer. These communities typically occur on steep slopes where soils are shallow and fine textured (CNPS 2025).

The laurel sumac scrub alliance has a rank of G4S4, meaning it is globally secure and secure in the state (NatureServe 2025). Therefore, this alliance is not considered a special-status vegetation community by CDFW (CDFW 2025). The association within the laurel sumac scrub alliance mapped on site is the *Malosma laurina* association. This association is also ranked as G4S4 and is therefore not considered sensitive by CDFW (2025).

Laurel sumac scrub is mapped in the eastern region of the project site in uplands associated with a mapped drainage feature. It is also mapped in the southeast region of the project site, north of Bee Canyon Access Road (Figure 2). Overall, this community makes up approximately 2.6 acres within the project site.

Mulefat Thickets

Mulefat thickets (*Baccharis salicifolia* shrubland alliance) feature mulefat (*Baccharis salicifolia*) as the dominant or co-dominant shrub in the canopy. Mulefat thicket communities are characterized by a continuous two-tiered canopy that is less than 16 feet (5 meters) in height, with one tier under 16 feet and the secondary tier under 6.5 feet (2 meters) in height. Mulefat thickets commonly have a sparse herbaceous layer (CNPS 2025). Species associated with this alliance include California sagebrush, coyote brush (*Baccharis pilularis*), laurel sumac, tree tobacco (*Nicotiana glauca*), arrow weed (*Pluchea sericea*), blackberry (*Rubus* spp.), sandbar willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), blue elderberry (*Sambucus nigra*), and tamarisk (*Tamarix ramosissima*). Emergent trees present at low covers may include foothill pine (*Pinus sabiniana*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), oak trees (*Quercus ssp*.), and willows (*Salix* spp.) (CNPS 2025).

Mulefat thickets have a rank of G5S4, meaning it is globally secure and apparently secure in the state. Therefore, this alliance is not considered a special-status vegetation community by CDFW (CDFW 2025). The association within the mulefat thickets alliance mapped on site is the *Baccharis salicifolia* association. This association is ranked as G5S5, secure both globally and within California, and is therefore not considered sensitive by CDFW (2025).

Mulefat thickets are mapped in the northeast region of the project site and cover approximately 0.4 acres (Figure 2).

Upland Mustards or Star-Thistle Fields

Upland mustards or star-thistle fields (*Brassica nigra* - *Centaurea* (*solstitialis, melitensis*) herbaceous semi-natural alliance) are dominated by ruderal forbs including black mustard (*Brassica nigra*), common mustard (*Brassica rapa*), shortpod mustard (*Hirschfeldia incana*), Italian thistle (*Carduus pycnocephalus*), Maltese star-thistle (*Centaurea melitensis*), yellow starthistle (*Centaurea solstitialis*), Dyer's woad (*Isatis tinctoria*), carnation spurge (*Euphorbia terracina*), or jointed charlock (*Raphanus sativus*). This semi-natural alliance is characterized by an open to continuous herbaceous layer, with emergent shrubs or trees that may be present at low cover (CNPS 2025).

Upland mustards or star-thistle fields semi-natural alliance is ranked by CDFW (2025) as a GNA SNA alliance. This ranking indicates that globally and within California, the alliance is not applicable for a conservation status rank (NatureServe 2025). Two associations within the upland mustards or star-thistle fields alliance were mapped on site: *Hirschfeldia incana* and *Centaurea melitensis*. The *Centaurea melitensis* association is also ranked as GNA SNA while the *Hirschfeldia incana* association is provisionally ranked as GNA SNA (CDFW 2025).

Upland mustards and Maltese star thistle at greater than 50% relative cover in the herbaceous layer, with other non-native plants, are present in the center of the project site, surrounding agricultural land, and on old agricultural

land (Figure 2). Overall, this community covers approximately 20 acres within the project site, made up of 18.7 acres of *Hirschfeldia incana* association and 1.3 acres of *Centaurea melitensis* association

Red Brome or Mediterranean Grass Grasslands

Red brome or Mediterranean grass grasslands (*Bromus rubens* - *Schismus* (*arabicus, barbatus*) Herbaceous Semi-Natural Alliance) communities include red brome (*Bromus rubens*), Mediterranean grass (*Schismus arabicus*), and/or common Mediterranean grass (*Schismus barbatus*) as dominant or co-dominant species, with other non-natives in the herbaceous layer. This alliance has an open to continuous herbaceous layer that is less than 2.5 feet (75 centimeters) in height. Emergent trees and shrubs may be present at low cover. Red brome or Mediterranean grass grasslands can be found along all topographic settings and soil textures (CNPS 2025). This community is relatively low quality because many of the observed species are non-native and associated with prior disturbance.

The red brome or Mediterranean grass grasslands semi-natural alliance is ranked by CDFW (2025) as a GNA SNA alliance. This ranking indicates that globally and within California, the alliance is not applicable for a conservation status rank (NatureServe 2025). The association within the red brome or Mediterranean grass grasslands alliance mapped on site is the *Bromus rubens* - mixed herbs association. This association is not ranked by CDFW (2025).

Red brome or Mediterranean grass grassland is present in uplands on the eastern portion of the project site and covers approximately 2.6 acres (Figure 2). Other scattered herbs and shrubs additionally observed throughout this semi-natural alliance community include golden wattle (*Acacia pycnantha*) interspersed with artichoke thistle (*Cynara cardunculus*) and an understory of white horehound (*Marrubium vulgare*), cheeseweed (*Malva parviflora*), horseweed (*Erigeron canadensis*), scattered hairy vetch (*Vicia villosa*), and London rocket (*Sisymbrium irio*).

Eucalyptus – Tree of Heaven- Black Locust Groves

Eucalyptus – tree of heaven – black locust groves (*Eucalyptus* spp. - *Ailanthus altissima* - *Robinia pseudoacacia* Woodland semi-natural alliance) includes *Acacia* spp., tree of heaven (*Ailanthus altissima*), *Eucalyptus* spp., or black locust (*Robinia pseudoacacia*) as dominant in the tree canopy. These communities of non-native trees are typically planted as groves and windbreaks. Eucalyptus – tree of heaven – black locust groves are characterized by an open to continuous canopy less than 197 feet (60 meters) in height and sparse to intermittent shrub and herb layers (CNPS 2025). The *Eucalyptus* (*globulus, camaldulensis*) association refers to areas dominated by Eucalyptus trees that function as a privacy windrow.

This semi-natural alliance is ranked as GNA SNA by CDFW (2025), indicating that globally and within California, the alliance is not applicable for a conservation status rank (NatureServe 2025). The association within the Eucalyptus – tree of heaven – black locust groves alliance mapped on site is the *Eucalyptus* (*globulus, camaldulensis*) association. This association is ranked as GNA SNA (CDFW 2025).

Eucalyptus – tree of heaven – black locust groves are present along the southern project boundary bordering Bee Canyon Road and cover approximately 1.0 acre (Figure 2).

Pepper Tree or Myoporum Groves

Pepper tree or Myoporum groves (*Schinus* (*molle, terebinthifolius*) - *Myoporum laetum* forest & woodland semi-natural alliance) includes Ngaio tree (*Myoporum laetum)*, Peruvian pepper tree (*Schinus molle*), or Brazilian pepper tree (*Schinus terebinthifolius*) as dominant in the tree canopy. These communities of non-native trees are planted

as groves and windbreaks and are characterized by an open to continuous canopy less than 59 feet (18 meters) in height, with a simple to diverse herbaceous layer (CNPS 2025).

Pepper tree or Myoporum groves semi-natural alliance is ranked as GNA SNA by CDFW (2025), indicating that globally and within California, it is not applicable for a conservation status rank (NatureServe 2025). The association within the Pepper tree or Myoporum groves alliance mapped on site is the *Schinus molle* association. This association is ranked as GNA SNA (CDFW 2025).

Pepper trees are present at greater than 80% relative cover in the tree layer on the project site, making up less than 0.1 acres of the overall project site, functioning as privacy windrows along the southern boundary bordering Bee Canyon Road (Figure 2).

2.2 Non-Natural Land Covers

General Agriculture

General agriculture is not described by the Manual of California Vegetation (CNPS 2025) but is described within the Orange County Habitat Classification System (Gray and Bramlet 1992). Agricultural land refers to non-native anthropogenic habitat, including dryland field crops, irrigated row and field crops, vineyards and orchards, dairies, stockyards, stables, and nurseries.

Agriculture is not a listed vegetation community under the California Natural Community List (CDFW 2025); as such, this community is not globally or state ranked and is not considered a sensitive natural community under the California Environmental Quality Act (CEQA).

The southwestern portion of the project site supports approximately 35.6 acres of formerly maintained row crops (Figure 2).

Urban/Developed

According to Oberbauer et al. (2008), urban/developed lands represent areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation (e.g., ornamental greenbelts). Typically, this land cover type is unvegetated or supports a variety of ornamental plants and landscaping.

Urban/developed land is not a listed vegetation community under the California Natural Community List (CDFW 2025); as such, this community is not globally or state ranked and is not considered a sensitive natural community under CEQA.

Urban and/or developed land on the project site consists of approximately 15.4 acres of mixed commercial development and asphalt-paved access roads. There are stands of exotic or ornamental trees within the commercial developments in the center and eastern portions of the project site (Figure 2).

Disturbed Habitat

According to Oberbauer et al. (2008), disturbed habitat refers to areas that experience or have experienced high levels of human disturbance and, as a result, cannot be identified as a native or naturalized vegetation association. However, these areas do have a recognizable soil substrate. Vegetation in these areas, if present at all, is usually sparse and dominated by non-native weedy herbaceous species, such as Maltese star-thistle, slender oat (*Avena barbata*), and white horehound. There can also be impacts from animal use, grading, or repeated clearing for fuel management that leave the land incapable of providing a suitable or sustainable habitat for native species to persist.

Disturbed habitat is not a listed vegetation community under the California Natural Community List (CDFW 2025); as such, this community is not globally or state ranked and is not considered a sensitive natural community under CEQA.

Wild oat (*Avena fatua*), black mustard, common barley (*Hordeum vulgare*), perennial ryegrass (*Lolium perenne*), and brome species are sporadically interspersed with curly docks (*Rumex crispus*) that border the dirt access road shoulders. Disturbed Habitat is mapped throughout the central portion of the project site, associated with dirt access roads, and bordering Jeffery Road and Portola Parkway along the western and northern project site boundary. Human-made features associated with agricultural activities (i.e., basins, ditches) are also mapped as disturbed habitat on the project site (Figure 2). Overall, disturbed habitat covers approximately 14.0 acres of land within the project site.

Ornamental Plantings

According to Gray and Bramlet (1992), ornamental plantings refer to areas that are consistently managed and planted with decorative trees, shrubs, and herbaceous species.

Ornamental plantings is not a listed vegetation community under the California Natural Community List (CDFW 2025); as such, this community is not globally or state ranked and is not considered a sensitive natural community under CEQA.

Ornamental plantings cover approximately 0.6 acres on the border of urban development on the eastern portion of the project site and adjacent to a drainage ditch (Figure 2).

3 Crotch's Bumble Bee Survey

3.1 Background Information

Crotch's bumble bee is one of several bumble bee species proposed for listing as an endangered species under California's Endangered Species Act (Xerces Society for Invertebrate Conservation et al. 2018). Crotch's bumble bee is generally distributed through wildlands and rural areas in low to middle elevations (sea level to at least 6,000 feet) of California and exploits a wide range of habitats, including native and exotic grasslands, coastal marshes, scrub lands, chaparral, oak-juniper woodlands, pinon woodlands, and desert transition vegetation (on western margins of the Mojave and Colorado Deserts). The range and overall abundance of Crotch's bumble bee is believed to have declined substantially over the last two decades (Hatfield et al. 2015; Xerces Society for Invertebrate Conservation et al. 2018) due to habitat loss from urban and agricultural expansion, as well as the effects of herbicides (Motta et al. 2018) and insecticides (Muth and Leonard 2019; Whitehorn et al. 2012) in agricultural settings, especially in California's Central Valley.

Over recent centuries, competition for floral resources (as well as associated exotic diseases) from the introduced European honeybee (*Apis mellifera*) has likely led to a decline of many bumble bee species (and many other bees) across the western hemisphere. Like most bumble bees, Crotch's bumble bee nest in cavities in the soil and often in abandoned rodent burrows. The adults (queens, workers, and males) are active in the daytime and all visit nectar and pollen resources. Crotch's bumble bees use a diverse range of floral resources, including those among Asclepiadaceae, Asteraceae, Boraginaceae, Brassicaceae, Ericaceae, Fabaceae, Hydrophyllaceae, Lamiaceae, Orobanchaceae, Plumbaginaceae, Polygonaceae, Scrophulariaceae, and Solanaceae families, and exhibit clear contextual preferences associated with flower species availability at any given time and location. Typically, *Asclepias* spp., *Salvia* spp., *Astragalus* spp., *Acmispon* spp., and *Vicia* spp. are among the preferred flowers.

Bumble bees commonly use floral resources 0.2 to 0.3 kilometers from their nests but sometimes forage more than 2 kilometers from their nests (Keyer et al. 2004; Osborne et al. 1999). This allows bumble bees to use disconnected patches of suitable forage resources on a landscape scale to allow populations to exist on habitat patches within a matrix of urban developed areas. The extent and proximity of undeveloped lands with wildland conditions in relation to a given site, even if the site is embedded within an urban matrix, influences the likelihood of occupancy, with larger extents and closer proximities of wildlands associated with higher bumble bee diversity (McFrederick and LeBuhn 2006). Mated gynes (future founding queens) emerge in the early spring in search of nest sites to begin new colonies, provisioning their young with pollen and nectar (CDFW 2023; Xerces Society for Invertebrate Conservation 2025).

As the spring season progresses, workers (small female non-reproductive bees) are produced with increasing numbers and escalate the provisioning of the colony, which continues to grow until early to mid-summer when new males (from unfertilized eggs) are produced, along with the new generation of future queens. Workers and males live for only a few weeks. Thus, overall Crotch's bumble bee numbers are highest (including workers and males) in late spring through mid-summer seasons, very low in fall and early spring (gynes only), and virtually undetectable during the overwintering season (when dormant underground).

3.2 Methods – Habitat Assessment and Bumble Bee Surveys

The project site was surveyed for Crotch's bumble bee by walking meandering transects throughout the vegetated areas with the highest cover of floral resources. Surveys were conducted in accordance with the CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species document (CDFW 2023) and follow the methods described below. The first survey was conducted by Callie Amoaku, who holds a Memorandum of Understanding and Scientific Collecting Permit to capture Crotch's bumble bee.

Dudek biologists conducted three evenly spaced protocol-level surveys for Crotch's bumble bee in May and June 2025 (Table 1). The surveys were conducted by qualified biologists with expertise in surveying for Crotch's bumble bee. Surveys occurred after sunrise and 3 hours before sunset and were not conducted during wet conditions (e.g., foggy, raining, or drizzling) or windy conditions (i.e., sustained winds greater than 8 miles per hour). The surveys were conducted during optimal conditions when there were sunny to partly sunny skies with temperatures greater than 60°F. Suitable habitat within the project site was visually surveyed for 1 person-hour per 3 acres of potential habitat. Biologists walked meandering transects through these resources, with a goal of observing bumble bees in passing and observing bumble bee nest sites associated with small mammal burrows or other appropriate soil cavities.

Table 1. Schedule of Surveys

Date	Survey Type	Hours	Personnel	Conditions (temperature, cloud cover, wind speed)
5/01/2025	Habitat Assessment; Focused Survey Pass 1	10:48 AM–1:25 PM	Callie Amoaku[1] and Eilleen Salas	64–74°F; 20–90% cloud cover; 1–4 mph wind
5/22/2025	Focused Survey Pass 2	9:41 AM–12:44 PM	Luz Badillo and Sony Leming	70–79°F; 10% cloud cover; 0–4 mph wind
6/10/2025	Focused Survey Pass 3	9:00 AM–1:00 PM	Kimberly Narel and Luz Badillo	62–71°F; 10–100% cloud cover, 2–5 mph wind

Note:
[1] Memorandum of Understanding (MOU) and Scientific Collecting Permit (SCP) No. 221820002-22332-001.

3.3 Results – Crotch's Bumble Bee Survey

Three species of bumble bees were observed during the 2025 focused surveys (Figure 2, Survey Results). Two Crotch's bumble bees were observed within the project site during the 2025 field season (Attachment A, Photo Documentation). One worker was observed foraging on common phacelia (*Phacelia distans*) in the northern portion of the project site during pass 3 of the focused surveys on June 10, 2025. A photo of this individual was confirmed by Anna Cassady, who holds a Memorandum of Understanding and Scientific Collecting Permit to capture Crotch's bumble bee. Another individual was incidentally observed flying through the southern portion of the project site on May 7, 2025. Yellow bumble bee (*Bombus fervidus*) and Vosnesensky bumble bee (*Bombus vosnesenskii*) were incidentally observed foraging on blue jacaranda (*Jacaranda mimosifolia*) during a focused least Bell's vireo survey on July 8, 2025. Common invertebrates were also observed during the surveys, including western honeybee (*Apis mellifera*) and cabbage white (*Pieris rapae*). Potential nesting resources, such as small mammal burrows, brush piles, debris piles, rock piles, and bare ground were observed within the project site. Additionally, areas under tree cover with insulating leaf litter within the project site could provide overwintering habitat (CDFW 2023). The results of these surveys are valid until the 2026 active season for Crotch's bumble bee begins (typically early February).

The information in this survey report accurately represents the work conducted by the biologists who conducted these focused surveys. Feel free to contact Tracy Park at tpark@dudek.com if you have any questions regarding the contents of this report.

Sincerely,

Tracy Park
Biologist

Att.: *Figure 1, Project Location*
Figure 2, Survey Results
A: Photo Documentation
cc: *Anna Cassady, Dudek*
Luz Badillo, Dudek

4 References

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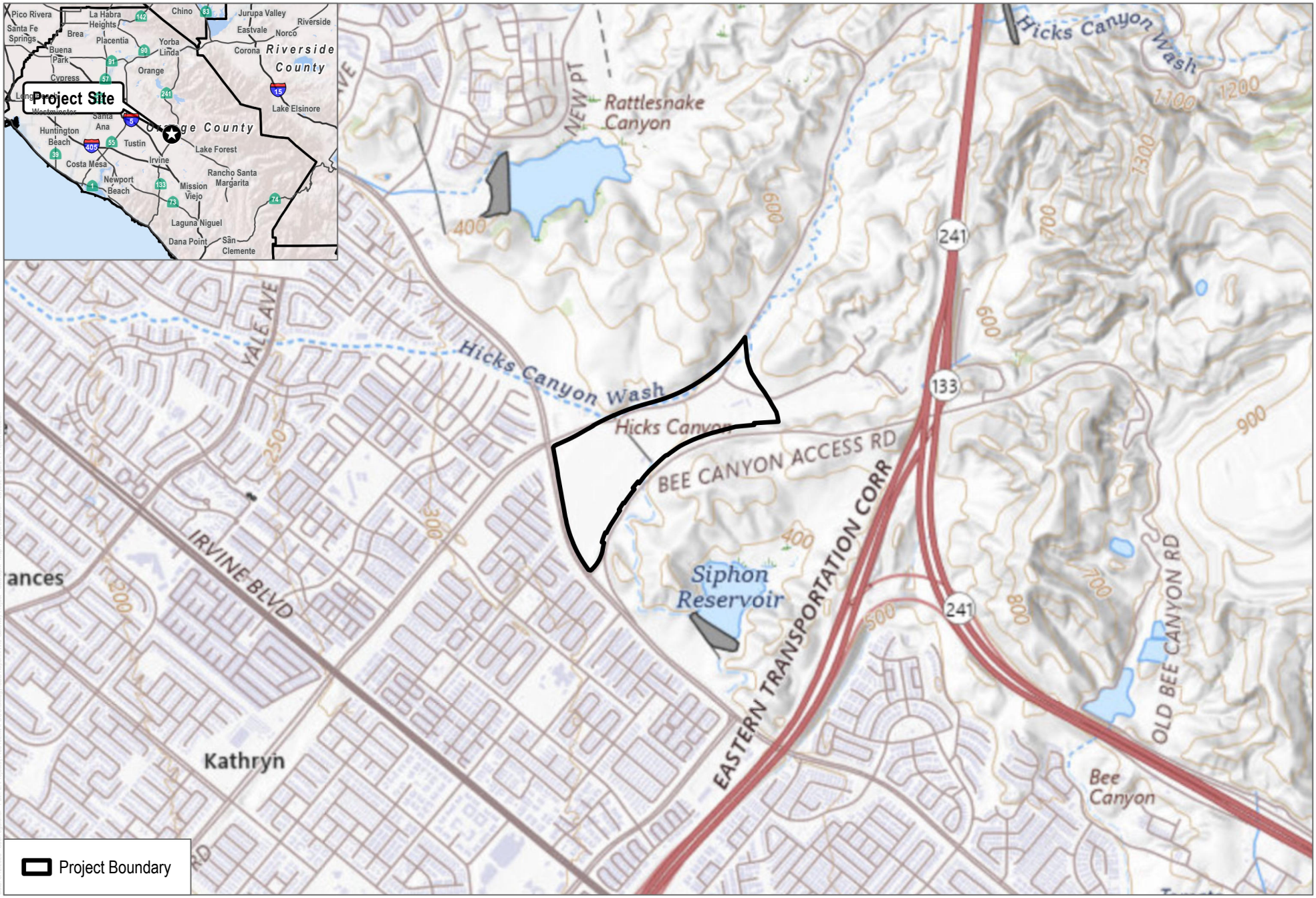
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SOURCE: USGS National Topographic Map

FIGURE 1

Project Location

2025 Focused Crotch's Bumble Bee Survey Report for the Gateway Village Residential Project



SOURCE: Esri World Imagery; Open Street Map 2023

DUDEK

0 280 560 Feet

FIGURE 2

Survey Results

2025 Focused Crotch's Bumble Bee Survey Report for the Gateway Village Residential Project

Attachment A

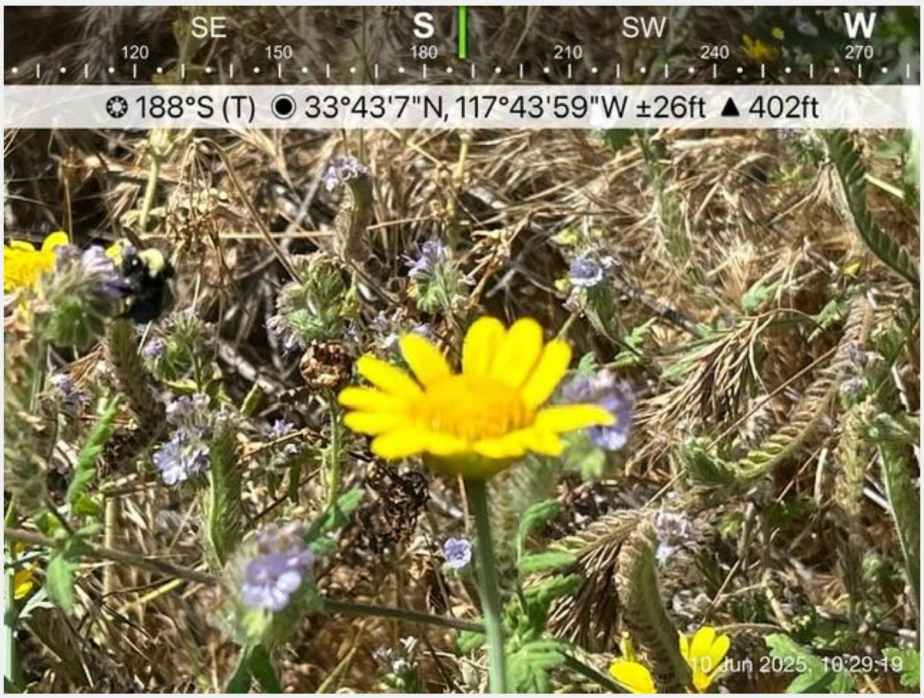
Photo Documentation



Crotch's bumble bee (*Bombus crotchii*) – worker on common phacelia (*Phacelia distans*). Photo taken on June 10, 2025, Bumble Bee 1.



Crotch's bumble bee – worker on common phacelia (*Phacelia distans*). Photo taken on June 10, 2025, Bumble Bee 1.



Crotch's bumble bee – worker on common phacelia (*Phacelia distans*). Photo taken on June 10, 2025, Bumble Bee 1.



Crotch's bumble bee – worker on common phacelia (*Phacelia distans*). Photo taken on June 10, 2025, Bumble Bee 1.



Yellow bumble bee (*Bombus fervidus*) – worker on blue jacaranda (*Jacaranda mimosifolia*). Photo taken on July 8, 2025, Bumble Bee 2.



Yellow bumble bee – worker on blue jacaranda (*Jacaranda mimosifolia*). Photo taken on July 8, 2025, Bumble Bee 2.

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Appendix G

Aquatic Resources Delineation Report

Aquatic Resources Delineation Report

Gateway Village Project

JANUARY 2025

Prepared for:

CITY OF IRVINE
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Irvine, California 92606
Contact: Ann Wuu

Prepared by:

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Printed on 30% post-consumer recycled material.

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
APT	Antecedent Precipitation Tool
ARC	antecedent runoff condition
ARDR	Aquatic Resources Delineation Report
CDFW	California Department of Fish and Wildlife
OHWM	ordinary high-water mark
OHWM Manual	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
PDSI	Palmer Drought Severity Index
project	Gateway Village Project
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers

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1 Introduction

This Aquatic Resources Delineation Report (ARDR) was prepared in accordance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2017). This ARDR and supporting appendices provide the 20 items listed in the Minimum Standards. This report presents the results of the jurisdictional aquatic resource delineation conducted by Dudek staff for the Gateway Village Project (project) in Irvine, Orange County, California. The delineation was conducted to identify and map existing aquatic resources potentially subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (33 USC 1344), waters of the state potentially subject to the regulatory jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the Clean Water Act and the Porter–Cologne Water Quality Control Act, and stream and riparian habitats potentially subject to the jurisdiction of the California Department of Fish and Wildlife (CDFW) pursuant to Section 1602 of the California Fish and Game Code (collectively defined as jurisdictional aquatic resources).

1.1 Disclaimer Statement

This ARDR presents Dudek's best effort to quantify the extent of aquatic resources potentially regulated by USACE, RWQCB, and CDFW (i.e., regulatory agencies) within the identified review area using current regulations, written policies, and guidance from these regulatory agencies. The potential jurisdictional boundaries described in this ARDR are subject to verification by the regulatory agencies. Only the regulatory agencies can make a final determination on whether the features present are subject to USACE, RWQCB, and/or CDFW regulation.

Contact Information

Contact information for the project applicant and agent are provided in Table 1.[1] Access to the review area is not restricted, but if a site visit is requested, the project applicant or agent will accompany regulatory staff to the review area.[2] The City of Irvine is the project applicant and landowner.

1.2 Contact Information

Table 1. Contact Information

Project Applicant	City of Irvine	**Agent**	Dudek
Contact Name	Ann Wuu	**Contact Name**	Tricia Wotipka Priest
Address	1 Civic Center Plaza Irvine, California, 92606	**Address**	2280 Historic Decatur Road, Suite 200, San Diego, California, 92106
Phone	949.724.6362	**Phone**	760.479.4295
Email	awuu@cityofirvine.org	**Email**	twotipka@dudek.com

1 Minimum Standards Item 2 (Contact Information)
2 Minimum Standards Item 3 (Site Access Statement)

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2 Review Area Description and Landscape Setting

The approximately 110-acre review area for the proposed project is in Irvine, California. The review area consists of 18 parcels: Assessor's Parcel Numbers 104-118-06, 104-118-09, 104-118-14, 104-118-28, 104-118-29, 104-118-30, 104-118-32, 104-118-70, 104-118-71, 104-118-72, 104-118-73, 104-118-74, 104-118-78, 104-118-80, 104-118-81, 104-118-82, 104-118-83, and 104-118-84.

The proposed project is located in the City of Irvine in Orange County, California; the review area consists of the entire project boundary (Figure 1, Project Location). The northern portion of the review area was previously delineated as part of the Irvine Company Planning Area 1 project, and proposed construction fill associated with the Jeffrey Road Extension in this area has been permitted by USACE, RWQCB, and CDFW. The review area is centered at approximately 33.716845°N and -117.734457°W (decimal degrees), immediately northeast of the Portola Parkway between Jeffrey Road and Bee Canyon Road. The site is bounded by open land to the north and east and by residential development to the south and west. The project area is in Township 5 South, Range 8 West, and Sections 20, 21, and 29 as shown on the U.S. Geological Survey 7.5-minute Lake Forest, California quadrangle map (USGS 2016) (see Figure 1, Project Location).[3, 4]

The site can be accessed from southbound Interstate 5 by taking Exit 97 for Jeffrey Road, turning right onto Jeffrey Road, and traveling 2.7 miles northeast.[5]

2.1 Geology and Topography

The review area is gently sloping from northeast to southwest and has a relatively flat grade. Elevations across this portion of the site range from 330 feet to 515 feet above mean sea level. The review area is located at the southern end of Hick's Canyon, which is situated within the foothills of the Santa Ana mountains.

2.2 Soils

Nine soil types are mapped within the review area: Anaheim clay loam, Balcom clay loam, Calleguas clay loam, Cieneba sandy loam, Metz loamy sand, pits, San Emigdio fine sandy loam, Soper gravelly loam, and Sorrento loam. Soil types are described below (Table 2; Figure 2, Soils).

2.2.1 Anaheim Clay Loam

Anaheim clay loam occurs within the southeast portion of the review area. The Anaheim soil series consists of very deep, well-drained soils derived from fine-grained sandstone or shale. Anaheim soils are found on foothills at elevations of 100 feet to 2,500 feet. These soils experience rapid to very rapid runoff and have moderately high

3 Minimum Standards Item 10 (Description of Existing Field Conditions)
4 Minimum Standard Item 14 (Site Location Map)
5 Minimum Standards Item 4 (Directions)

permeability. Anaheim soils are used for pasture, range, barley, and watershed. Uncultivated areas contain brush, annual grasses, and forbs. Anaheim soils are not considered hydric (USDA 2024a; USDA 2024b).

2.2.2 Balcom Clay Loam

Balcom clay loam occurs within the northeast portion of the review area. The Balcom soil series consists of moderately deep, well-drained soils derived from soft, calcareous shale and sandstone. Balcom soils are found on rounded hills at elevations of 200 feet to 2,300 feet. These soils experience rapid runoff and have moderately slow permeability. Balcom soils are used for range, wildlife, and watershed. Uncultivated areas contain annual grasses and mustard. Balcom soils are not considered hydric (USDA 2024a; USDA 2024b).

2.2.3 Calleguas Clay Loam

Calleguas clay loam occurs within the northwest portion of the review area. The Calleguas soil series consists of very shallow to shallow well-drained soils derived from sandstone, shale, and mudstone. Calleguas soils are found on exposed south-facing slopes at elevations of 100 feet to 2,800 feet. These soils experience moderate to rapid runoff and have moderate permeability. Calleguas soils are used for grazing and watershed. Uncultivated areas contain annual grasses and forbs with some coastal sagebrush shrubs. Calleguas soils are not considered hydric (USDA 2024a; USDA 2024b).

2.2.4 Cieneba Sandy Loam

Cieneba sandy loam occurs within the southeast portion of the review area. The Cieneba soil series consists of very shallow to shallow somewhat excessively drained soils that are derived from granitic rock. Cieneba soils are found on hills and mountains at elevations of 500 feet to 4,000 feet. These soils experience slow to rapid runoff and have moderately high permeability. Cieneba soils are used for grazing, wildlife, recreation, and watershed. Uncultivated areas consist of chaparral and chemise with sparse foothill pine (*Pinus sabiniana*) or oak tree (*Quercus* sp.). Cieneba soils are not considered hydric (USDA 2024a; USDA 2024b).

2.2.5 Metz Loamy Sand

Metz loamy sand occurs in the northern portion of the review area. The Metz soil series consists of very deep soils formed in alluvial material from mixed sedimentary rocks. Metz soils are on floodplains and alluvial fans, have slopes of 0% to 15%, and are at elevations of 25 feet to 2,500 feet. These soils are somewhat excessively drained and have negligible to low runoff and moderately rapid permeability. Metz soils are usually irrigated and used for growing pasture, field crops, and fruit. Metz soils are considered hydric (USDA 2024a; USDA 2024b).

2.2.6 Pits

Pits soils are present within the northern portion of the review area. The Pits series consists of very deep soils formed in fine-textured alluvium weathered from extrusive and basic igneous rocks. Pits soils are on floodplains and in basins where slopes range from 0% to 5% and elevations are 2,500 feet to 5,300 feet. These soils are poorly drained and have ponded to slow runoff and slow permeability. The soils are often flooded for brief to long periods from December to May. During this time, the water table depth fluctuates 2 feet to 3 feet. These soils are used for

irrigated and non-irrigated wheat and barley and as livestock grazing. Vegetation generally consists of forbs and grasses. Pits soils are considered hydric (USDA 2024a; USDA 2024b).

2.2.7 San Emigdio Fine Sandy Loam

San Emigdio fine sandy loam occurs in the northeast and southwest portions of the review area. The San Emigdio series consists of very deep, well-drained soils that formed in dominantly sedimentary alluvium. San Emigdio soils are on alluvial fans, floodplains, and in narrow valleys at elevations of 100 feet to 2,000 feet. Slopes containing these soils range from 0% to 15%. These soils are considered to be well drained, experience negligible to low runoff, and have moderately rapid permeability. San Emigdio soils are used for growing citrus fruit, alfalfa, truck crops, and dryland grains. Uncultivated areas contain annual grasses and forbs. San Emigdio soils are not considered hydric (USDA 2024a; USDA 2024b).

2.2.8 Soper Gravelly Loam

Soper gravelly loam occurs in the southwest portion of the review area. The Soper series consists of moderately deep, well-drained soils that formed from conglomerate and sandstone. Soper soils are found on hills and uplands at elevations of 100 feet to 2,500 feet. These soils experience rapid runoff and have moderately low permeability. Soper soils are used for pasture, rangeland, watershed, and home sites. Uncultivated areas contain annual grasses and forbs, some native shrubs, and some oak trees. Soper soils are not considered hydric (USDA 2024a; USDA 2024b).

2.2.9 Sorrento Loam

Sorrento loam occurs throughout the central and southern portions of the review area. The Sorrento series consists of very deep, well-drained soils formed in alluvium derived from sedimentary rock. Sorrento soils are found on alluvial fans and stabilized floodplains. These soils experience negligible to moderate runoff and have moderately low permeability. Sorrento soils are primarily used for agriculture. Uncultivated areas contain annual grasses and forbs, with sycamore trees along drainageways. Sorrento soils are not considered hydric (USDA 2024a; USDA 2024b).

Soil types within the review area[6] are shown in Table 2 and Figure 2, Soils.

Table 2. Soils within the Gateway Village Project

Soil Category	Soil Description	Hydric Rating	Hydric (Yes/No)?	Acreage
108	Anaheim clay loam	N/A	No	11.79
112	Balcom clay loam	N/A	No	0.23
134	Calleguas clay loam	N/A	No	0.69
141	Cieneba sandy loam	N/A	No	2.64
163	Metz loamy sand	4	Yes	27.54
185	Pits	2	Yes	0.41
194	San Emigdio fine sandy loam	N/A	No	14.90

6 Minimum Standards Item 13 (Soil Descriptions)

Table 2. Soils within the Gateway Village Project

Soil Category	Soil Description	Hydric Rating	Hydric (Yes/No)?	Acreage
202	Soper gravelly loam	N/A	No	4.02
206	Sorrento loam	N/A	No	47.65
			Total	**109.88**

Sources: USDA 2024a, 2024b.
Note: N/A = not applicable.

2.3 Vegetation

There are 11 vegetation communities and land cover types mapped in the approximately 110-acre review area (Table 3). These vegetation communities and land cover types are described below. The vegetation communities and land covers listed here were adapted from the Manual of California Vegetation, Online Edition (CNPS 2024). Representative site photographs are presented in Appendix A. No vegetation communities were mapped in the review area that are considered sensitive under the California Environmental Quality Act by CDFW (2023).

2.3.1 California Sagebrush–(Purple Sage) Scrub (32.015.00)

California sagebrush–purple sage scrub communities (*Artemesia californica–Salvia leucophylla* alliance) include California sagebrush (*Artemisia californica*) or purple sage (*Salvia leucophylla*) as dominant or co-dominant species in the shrub canopy. This alliance has a continuous or intermittent shrub canopy less than 2 meters (7 feet) in height with a variable, sometimes grassy ground layer. Species associated with the alliance include chamise (*Adenostoma* fasciculatum), coyote brush (*Baccharis pilularis*), bladderpod (*Peritoma arborea*), bush monkeyflower (*Diplacus aurantiacus*), California brittle bush (*Encelia californica*), narrowleaf goldenbush (*Ericameria linearifolia*), California buckwheat (*Eriogonum fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*), Menzies' goldenbush (*Isocoma menziesii*), deerweed (*Acmispon glaber*), laurel sumac (*Malosma laurina*), coast prickly pear (*Opuntia littoralis*), hollyleaf redberry (*Rhamnus ilicifolia*), lemonade sumac (*Rhus integrifolia*), sugar sumac (*Rhus ovata*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), and poison oak (*Toxicodendron diversilobum*). These communities typically occur on steep slopes or rarely flooded terraces along streams in alluvial- or colluvial-derived soils (CNPS 2024). California sagebrush–purple sage scrub is mapped off site along the extent of the southeast border of the review area, south of Bee Canyon Access Road.

The California sagebrush–purple sage scrub alliance has a rank of G5S5, meaning it is globally secure and secure in the state. Therefore, this alliance is not considered a special-status vegetation community by CDFW (2023).

2.3.2 Laurel Sumac Scrub (45.455.00)

Laurel sumac scrub communities (*Malosma laurina* shrubland alliance) include laurel sumac as dominant or co-dominant in the shrub canopy with California sagebrush, bigpod ceanothus (*Ceanothus megacarpus*), bush monkeyflower, coastal buckwheat (*Eriogonum cinereum*), California brittle bush, Eastern Mojave buckwheat (*Eriogonum fasciculatum*), chaparral yucca, toyon (*Heteromeles arbutifolia*), hollyleaf redberry, lemonade sumac, sugar sumac, purple sage, black sage, and Pacific poison oak (*Toxicodendron diversilobum*). These communities typically occur on steep slopes where soils are shallow and fine textured (CNPS 2024). Laurel sumac scrub is mapped in the eastern region of the review area in uplands associated with a mapped drainage feature. It is also mapped in the southeast region of the review area, north of Bee Canyon Access Road.

The laurel sumac scrub alliance has a rank of G4S4, meaning it is globally secure and secure in the state. Therefore, this alliance is not considered a special-status vegetation community by CDFW (2023).

2.3.3 Mulefat Thickets (63.510.00)

Mulefat thickets (*Baccharis salicifolia* alliance) feature mulefat (*Baccharis salicifolia*) as the dominant or co-dominant shrub in the canopy. Mulefat thicket communities are characterized by a continuous two-tiered canopy less than 5 meters (16 feet) in height, with one tier under 5 meters and the secondary tier under 2 meters (6.5 feet) in height. Mulefat thickets commonly have a sparse herbaceous layer (CNPS 2024). Species associated with this alliance include California sagebrush, coyote brush, laurel sumac, tree tobacco (*Nicotiana glauca*), arrow weed (*Pluchea sericea*), blackberry (*Rubus* spp.), sandbar willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), blue elderberry (*Sambucus mexicana*), and tamarisk (*Tamarisk* sp.). Emergent trees present at low covers may include foothill pine, California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), oak trees, and willows (*Salix* sp.) (CNPS 2024). Mulefat thickets are mapped in the northeast region of the review area, associated with a mapped drainage feature located within a portion of the review area that has been covered by previously obtained permits.

California sagebrush scrub alliance has a rank of G5S4, meaning it is globally secure and secure in the state. Therefore, this alliance is not considered a special-status vegetation community by CDFW (2023).

2.3.4 Eucalyptus–Tree of Heaven–Black Locust Groves (79.100.00)

The eucalyptus–tree of heaven–black locust groves alliance includes tree of heaven (*Ailanthus altissima*), eucalyptus trees, or black locust (*Robinia pseudoacacia*) as the dominant or co-dominant species in the tree canopy. Per alliance membership rules, any of these species must make up more than 80% of the relative cover in the tree canopy. Communities within this alliance can have an open to continuous shrub canopy less than 60 meters (197 feet) in height, with a sparse to intermittent herbaceous layer. Eucalyptus–tree of heaven–black locust groves occur at elevations under 1,900 meters (6,234 feet) above mean sea level on human-altered landscapes, where these trees have been planted as ornamental vegetation, groves for harvest, and windbreaks, or where they have naturalized on uplands and bottomlands adjacent to stream courses, lakes, or levees (CNPS 2024). Eucalyptus–tree of heaven–black locust groves are mapped along the southern border of the review area, north of Bee Canyon Access Road.

Eucalyptus–tree of heaven–black locust groves is a semi-natural alliance and is not ranked; therefore, it is not a special-status vegetation community according to CDFW (2023).

2.3.5 Pepper Tree or Myoporum Groves (79.200.00)

Pepper tree or myoporum groves include ngaio tree (*Myoporum laetum*), Brazilian peppertree (*Schinus terebinthifolius*), or Peruvian peppertree (*Schinus molle*) as dominant in the tree canopy (CNPS 2024). This alliance has an open to continuous canopy less than 18 meters (59 feet) in height, with infrequent or common shrubs and a simple to diverse herbaceous layer. This community typically occurs in coastal canyons, washes, slopes, riparian areas, and roadsides (CNPS 2024). Pepper tree or myoporum groves are mapped along the southwest border of the review area north of Bee Canyon Access Road.

Pepper tree or myoporum groves is a semi-natural alliance and is not ranked; therefore, it is not a special-status vegetation community according to CDFW (2023).

2.3.6 Upland Mustards or Star-Thistle Fields (42.013.00)

Upland mustards or star-thistle fields communities feature black mustard (*Brassica nigra*), field mustard (*Brassica rapa*), Italian plumeless thistle (*Carduus pycnocephalus*), Maltese star-thistle (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), cardoon (*Cynara cardunculus*), Geraldton carnation weed (*Euphorbia terracina*), shortpod mustard (*Hirschfeldia incana*), Dyer's woad (*Isatis tinctoria*), or cultivated radish (*Raphanus sativus*), among other similar ruderal forbs, as the dominant species in the herbaceous layer. These communities typically occur in fallow fields, rangelands, grasslands, roadsides, levee slopes, disturbed coastal scrub, disturbed riparian areas, and generally disturbed areas (CNPS 2024). Upland mustards or star-thistle fields are mapped throughout the review area and are associated with previously disturbed and developed areas that have not experienced recent maintenance.

Upland mustards or star-thistle fields is a semi-natural alliance and is not ranked; therefore, it is not a special-status vegetation community according to CDFW (2023).

2.3.7 Wild Oats and Annual Brome Grasslands (42.027.00)

Wild oats and annual brome grasslands (also referred to as non-native grassland in this report) is characterized by a mixture of weedy, introduced annuals, primarily grasses (CNPS 2024; Holland 1986). California annual grassland typically includes wild oats (*Avena fatua*), bromes (*Bromus* sp.), black mustard, stork's bill (*Erodium* spp.), dove weed (*Croton setiger*), Russian thistle (*Salsola tragus*), and Maltese star-thistle. It may occur where disturbance by maintenance (e.g., mowing, scraping, disking, and spraying), grazing, repetitive fire, agriculture, or other mechanical disruption has altered soils and removed native seed sources from areas formerly supporting native vegetation (Holland 1986). Wild oats and annual brome grasslands are mapped in the northeast region of the review area, directly adjacent to a parking lot and disturbed dirt access roads.

Wild oats and annual brome grasslands is a semi-natural alliance and is not ranked; therefore, it is not a special-status vegetation community according to CDFW (2023).

2.3.8 Agriculture

Agricultural lands are an anthropogenic habitat and are not described in CDFW (2023) or CNPS (2024). Agriculture is mapped throughout the majority of the southwest region of the review area and is associated with evidence of formerly maintained row crop areas.

Agriculture is not included in the Natural Community List (CDFW 2023) and therefore is not considered a special-status vegetation community by CDFW.

2.3.9 Disturbed Habitat

Disturbed habitat includes areas that experience or have experienced high levels of human disturbance and as a result are generally lacking vegetation. Areas mapped as disturbed habitat may include unpaved roads, trails, and graded areas. Vegetation in these areas, if present at all, is usually sparse and dominated by non-native weedy

herbaceous species. Within the review area, disturbed habitat includes dirt roads and bare, open areas with less than 5% vegetative cover. Disturbed habitat is found throughout the proposed development area. Disturbed habitat is mapped throughout the review area and is associated with dirt access roads, dirt parking lots, and non-jurisdictional human-made features associated with agricultural activities (i.e., basins, ditches).

Disturbed habitat is not included in the Natural Community List (CDFW 2023) and is therefore not considered a special-status vegetation community by CDFW.

2.3.10 Parks and Ornamental Plantings

Parks and ornamental plantings includes areas that consist of introduced trees, shrubs, flowers, and turf grass. This land cover may include greenbelts, parks, and horticultural plantings. Parks and ornamental plantings are mapped adjacent to laurel sumac scrub associated with the mapped drainage feature in the eastern region of the review area.

The parks and ornamental plantings vegetation community is not included in the Natural Community List (CDFW 2023) and is therefore not considered a special-status vegetation community by CDFW.

2.3.11 Urban/Developed

Urban/developed land refers to areas supporting human-made structures including homes, yards, roadways, sidewalks, and other highly modified lands with constructions associated with dwellings or other permanent structures. Vegetation in these areas, if present at all, is typically associated with development landscaping. Urban/developed habitat is mapped throughout the review area and is associated with asphalt roads (Jeffrey Road), paved parking lots, and residences.

Urban/developed land is not included in the Natural Community List (CDFW 2023) and is therefore not considered a special-status vegetation community by CDFW.

Table 3. Vegetation Communities Observed Within the Review Area

Community Name	Acreage
California Sagebrush– (Purple Sage) Scrub (32.015.00)	10.39
Laurel Sumac Scrub (45.455.00)	6.32
Mulefat Thickets (63.510.00)	0.36
Eucalyptus–Tree of Heaven–Black Locust Groves (79.100.00)	2.34
Pepper Tree or Myoporum Groves (79.200.00)	1.14
Upland Mustards or Star-Thistle Fields (42.013.00)	20.53
Wild Oats and Annual Brome Grasslands (42.027.00)	1.01
Agriculture	36.60
Disturbed Habitat	18.52
Parks and Ornamental Plantings	0.64
Urban/Developed	12.02
Total	109.87

2.4 Watershed

The review area is within the Peters Canyon Wash (Hydrologic Unit Code 180702040101) and Lower San Diego Creek watersheds within the larger Newport Bay watershed (Hydrologic Unit Code 18070204) (Figure 3, Hydrology). Flows from this watershed generally flow toward the southwest and discharge to the Pacific Ocean through Newport Bay. The U.S. Fish and Wildlife Service's National Wetlands Inventory identifies two riverine features in the northeast portion of the review area and one riverine feature within the south-central portion of the review area (Figure 3, Hydrology). The two features identified in the northeast portion of the review area are also depicted on the U.S. Geological Survey 7.5-minute Lake Forest, California quadrangle map (USGS 2016). Flows from the review area generally flow north/northwest and off site into Hicks Canyon Wash. Hicks Canyon Wash is a direct tributary to Peters Canyon Wash, which is a direct tributary to San Diego Creek and eventually the Pacific Ocean.

2.5 Review Area Alterations, Current and Past Land Use

The review area is located on the eastern edge of existing residential development in Hicks Canyon, Irvine, Orange County, California. The review area has been disturbed by past and ongoing agricultural use that appears to have included site clearing, grading, and drainage modifications. The review area itself is bounded on all sides by paved roads and is developed with agricultural and light industrial use. Undeveloped open space is present to the south and east. Residential development is present to the north and west. Interstate 5 is located approximately 2.3 miles west of the review area, and State Highway 241 is located approximately 0.5 miles east of the review area.

3 Precipitation Data and Analysis

The USACE-developed Antecedent Precipitation Tool (APT) was used to assess whether the delineation date and subsequent data collection field visit occurred in a drier, average, or wetter-than-normal period (USACE 2024).[7] To determine what constitutes a "typical year," USACE developed the APT. The information generated from the APT can help to determine whether normal hydrologic and/or climatic conditions were present during the site visit and to assist with completing the Wetland Determination Data Form.

The APT provides three climatological parameters: Palmer Drought Severity Index (PDSI), season, and antecedent precipitation condition. The PDSI is a standardized index calculated monthly, with PDSI value outputs ranging from -4 (extreme drought) to +4 (very wet) (NOAA 2024) to assess drought conditions (i.e., PDSI Class). The APT determines wet vs. dry season based on related procedures provided in the applicable USACE regional supplement for the review area (in this case, the Arid West Supplement [USACE 2008a]). If the antecedent runoff condition (ARC) score is less than 10, the antecedent precipitation condition is classified as drier than normal; if the ARC score is 10 to 14, conditions are normal; if the ARC score is greater than 14, conditions are wetter than normal (USACE 2024).

Table 4 summarizes the key data extrapolated from the APT output: estimated drought conditions (PDSI Class), wet or dry season determination, ARC score, and antecedent precipitation condition. Based on the APT output provided in Appendix B and summarized in Table 4, the precipitation and climatic conditions for the review area were normal (score of 12) during the time of the delineation and drier than normal (score of 9) during the subsequent field visit.

Table 4. Antecedent Precipitation Tool Data for the Review Area

Main Field Survey Date	PDSI Class	Season	ARC Score	Antecedent Precipitation Condition
7/24/2024	Moderate Wetness	Dry	12	Normal
11/27/2024	Mild Drought	Dry	9	Drier than normal

Notes: PDSI = Palmer Drought Severity Index; ARC = antecedent runoff condition.

Additionally, according to the U.S. Department of Agriculture's Agricultural Applied Climate Information System (USDA 2024c), the area around the review area receives an average of 12 inches of precipitation annually.

[7] Minimum Standards Item 11 (Discussion of Hydrology)

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4 Investigation Methods[8]

This chapter describes the investigation methods for the jurisdictional delineation conducted by Dudek biologists Megan Minter and Valerie Goodwin on July 24, 2024, and additional data collection by Megan Minter and Aleen Vartivarian completed on November 27, 2024 (Table 5).[9] Prior to conducting the jurisdictional delineation, U.S. Fish and Wildlife Service's National Wetlands Inventory data (USFWS 2024) was reviewed to determine if the review area contains any features mapped by the U.S. Fish and Wildlife Service. Site-specific topographical data was reviewed in conjunction with aerials, both current and historical, to determine the potential presence of non-wetland waters. Current vegetation mapping was reviewed to assess whether the review area supports hydrophytic vegetation and potential wetlands; several areas supporting hydrophytic vegetation were also assessed for the presence of wetland hydrology and hydric soils to determine whether they were three-parameter wetlands. Jurisdictional boundaries were mapped in the field using Esri Collector on a mobile device. Remote sensing was not used for the delineation.[10]

Table 5. Schedule of the Aquatic Resources Delineation

Date	Hours	Personnel	Conditions (temperature, skies, wind)
7/24/2024	0800–1200	Megan Minter, Valerie Goodwin	Start: 70° F, clear skies, 1–3 mph End: 82° F, clear skies, 3–5 mph
11/27/2024	0800–1008	Megan Minter, Aleen Vartivarian	Start: 59° F, 100% cloud cover, 1–3 mph End: 64° F, 50% cloud cover, 1–3 mph

4.1 U.S. Army Corps of Engineers

The USACE wetlands delineation was conducted in accordance with the 1987 USACE Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008a). 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 (OHWM Manual) (USACE 2008b) was used to determine the limits of non-wetland waters. Non-wetland waters were delineated on topographical maps on a mobile device in conjunction with Esri Collector. The widths of each non-wetland water were determined in the field according to the OHWM Manual.[11]

Wetland Determination Forms were completed for certain points within drainages or vegetation communities where a predominance of hydrophytic vegetation was present; hydrology, vegetation, and soils were assessed to determine whether USACE three-parameter wetlands were present. Rapid OHWM Field Identification Data Sheets (OHWM transects) were completed at representative locations within drainages that exhibited evidence of OHWM. A Streamflow Duration Assessment Method data form was completed for non-wetland features to distinguish between ephemeral, intermittent, and perennial stream flows. All data forms can be found in Appendix C.[12]

8 Minimum Standards Item 19 (Methods)
9 Minimum Standards Item 8 (Dates of Field Work)
10 Minimum Standards Item 12 (Statement Regarding Use of Remote Sensing)
11 Minimum Standards Item 5 (Use of 1987 Manual, Regional Supplement, and OHWM guide)
12 Minimum Standards Item 18 (Data Forms)

4.2 Regional Water Quality Control Board

Waters of the state regulated by RWQCB were mapped in accordance with the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2021). As described in these procedures, wetland waters of the state are mapped based on the procedures in USACE's 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987) and its 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008a). Non-wetland waters are mapped at the OHWM based on the procedures defined in USACE's 2008 OHWM Manual (USACE 2008b).

4.3 California Department of Fish and Wildlife

CDFW jurisdictional areas were mapped to include the bank of the stream/channel and outer dripline of adjacent riparian vegetation, as set forth under California Fish and Game Code Section 1602. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979).

5 Aquatic Resource Narrative

This chapter describes the aquatic resources that occur in the review area.[13] It should be noted that the northern portion of the review area has been previously delineated and permitted. Aquatic resources (Hicks Canyon Wash) were identified in this area but are not described below.

5.1 Waters of the United States (USACE)

One unnamed drainage is present in the northeast portion of the review area along an agricultural access road. The drainage is depicted as a blue line on the U.S. Geological Survey 7.5-minute Lake Forest, California quadrangle map (USGS 2016); it begins at the confluence of two drainages approximately 2,500 feet east of the review area and flows west for approximately 3,300 feet before connecting to Hicks Canyon Wash. Hicks Canyon Wash is a direct tributary to San Diego Creek and eventually the Pacific Ocean, a traditional navigable water.

Within the review area, the unnamed drainage flows approximately 800 feet before entering a culvert that conveys flows north of Jeffrey Road to Hicks Canyon Wash. The channel is incised approximately 5 feet and is approximately 12 feet to 15 feet in width. An OHWM is present that is 2 feet to 4 feet in width and is defined by scour, a break in bank slope, a change in vegetation species, and a change in vegetation cover. Substrates are dominated by sand and gravel. The channel is vegetated with primarily upland vegetation, including laurel sumac, black mustard, mulefat, brome grasses, and tree tobacco.

The unnamed tributary to Hicks Canyon Wash (NWW-1) within the review area was determined to be ephemeral using four wetland sample pits (SP03, SP04, SP05, and SP06), one OHWM transect (OHWM-1), and the Streamflow Duration Assessment Method. All datasheets can be found in Appendix C, and associated photographs can be found in Appendix A. See Figure 4, Potential Jurisdictional Aquatic Resources – RWQCB, and Figure 5, Potential Jurisdictional Aquatic Resources – CDFW, for all sampling locations.

Wetland Sample Pits were taken below the OHWM (SP-03), above TOB (SP05 and SP06), and between the OHWM and TOB (SP04). Hydric soils were not observed at NWW-1 across the four wetland sample pits. Observed soils were consistent with sand, small gravel, and fine particles sorted and deposited during flow events. Indicators of wetland hydrology (sediment deposition and soil cracking) were present at the OHWM within NWW-1. No wetland hydrology indicators were observed outside of the OHWM and no water table or soil saturation was observed. At the time of the November 2024 survey, NWW-1 had been recently mowed, however vegetation composition was evident from past photographs (taken in July 2024) and from mowing debris left in the channel. Based on the results of the Streamflow Duration Assessment Method, indicators of a perennial or intermittent flow regime such as algae, fish, or aquatic macroinvertebrates are not present within the review area. Two individual willow trees (*Salix laevigata*, Facultative Wet) are present within the drainage and contained entirely within the tops of banks. Although willows are present, vegetation is dominated by upland species such as *Rhus ovata, Ricinus communis*, and *Juglans californica*. Based on these results, field observations, and best professional judgement, the tributary lacks relatively permanent water (i.e., surface water flows are likely only present in direct response to precipitation).

Three additional features associated with agricultural use within the review area were observed in the southern region, including two agricultural basins and one agricultural irrigation ditch (concrete-lined V-ditch). The basins

[13] Minimum Standards Item 6 (Aquatic Resource Narrative)

exhibited wetland hydrology, and hydrophytic vegetation was observed within them, including tamarisk (*Tamarisk* sp.) and cottonwood trees (*Populus* sp.). Wetland sampling points were taken within each basin (SP01 and SP02), and the basins were determined not to be wetlands due to lack of hydric soils (Appendix C). One OHWM field data form (OHWM-2) was collected within the irrigation ditch and exhibited evidence of OHWM (water staining) but did not exhibit evidence of surface water connectivity. Examination of historical aerial maps indicates that the two basins were not present prior to 2003, and the irrigation ditch and basins do not show evidence of surface water connectivity with downstream drainages. Therefore, the basins and ditch are human-made agricultural features wholly within upland areas and are not jurisdictional.

Because the drainage observed within the review area was determined to be ephemeral, and the agricultural features did not exhibit evidence of hydric soils or connectivity, no jurisdictional areas potentially regulated by USACE are present.

Photos of the potential aquatic features delineated within the review area and additional areas reviewed for the presence of these resources are provided in Appendix A.[14] The locations of these photos are shown in Figure 4, Potential Jurisdictional Aquatic Resources – RWQCB, and Figure 5, Potential Jurisdictional Aquatic Resources – CDFW.

5.2 Waters of the State (RWQCB)

The unnamed tributary to Hicks Canyon Wash described in Section 5.1 has been identified as a non-wetland water of the state. This feature is subject to regulation by the RWQCB under the Porter–Cologne Water Quality Control Act (Table 6; Figure 5, Potential Jurisdictional Aquatic Resources – CDFW).

The agricultural features described in Section 5.1 were determined to be human-made, non-jurisdictional features due to lack of downstream connectivity and overall absence prior to 2003.

Table 6. RWQCB Aquatic Resource Summary for the Review Area

Feature Name	Location (latitude/longitude; decimal degrees)	Acreage/Linear Feet
Non-Wetland Waters		
NWW-1	33.719625°, -117.730824°	0.05/847
	Grand Total[1]	**0.05/847**

Notes: RWQCB = Regional Water Quality Control Board; NWW = non-wetland water.
1 Totals may not sum due to rounding.

5.3 California Department of Fish and Wildlife Jurisdiction

The unnamed tributary to Hicks Canyon Wash described in Section 5.1 was identified as streambed potentially regulated by CDFW.

Because CDFW regulates from bank to bank, certain portions of the review area where the top of a channel bank extended beyond the OHWM are subject to regulation by CDFW as streambed. These areas are shown in Figure 5,

14 Minimum Standards Item 17 (Ground Photos)

Potential Jurisdictional Aquatic Resources – CDFW. The full extent of CDFW jurisdictional areas is described in Table 7.

The agricultural features described in Section 5.1 were determined to be human-made, non-jurisdictional features due to lack of downstream connectivity and overall absence prior to 2003.

Table 7. CDFW Aquatic Resource Summary for the Review Area

Feature Name	Location (latitude/longitude; decimal degrees)	Acreage/Linear Feet
CDFW Streambed		
NWW-1	33.719625°, -117.730824°	0.28/847
	Grand Total[1]	**0.28/847**

Notes: CDFW = California Department of Fish and Wildlife; NWW = non-wetland water.
[1] Totals may not sum due to rounding.

5.4 National Wetlands Inventory

The delineated extents of NWW-1 occur within mapped riverine, freshwater emergent wetland, and freshwater pond habitat indicated by the U.S. Fish and Wildlife Service's National Wetlands Inventory (Figure 3, Hydrology).

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6 Results and Conclusions

Based on the jurisdictional delineation and review of relevant information provided in this ARDR, 0.05 acres of non-wetland waters of the state, potentially regulated by RWQCB, were delineated within the review area. These features may also be regulated by CDFW beyond the OHWM to the top of bank. In total, 0.05 acres of non-wetland waters (below the OHWM) of RWQCB jurisdiction and 0.28 acres of CDFW streambed (below and above the OHWM, to top of bank) occur in the review area.

This ARDR can be used by the regulatory agencies to determine if they would regulate the features described herein. The geographic information system data for the delineation is provided digitally. [15]

[15] Minimum Standards Item 20 (Digital Data)

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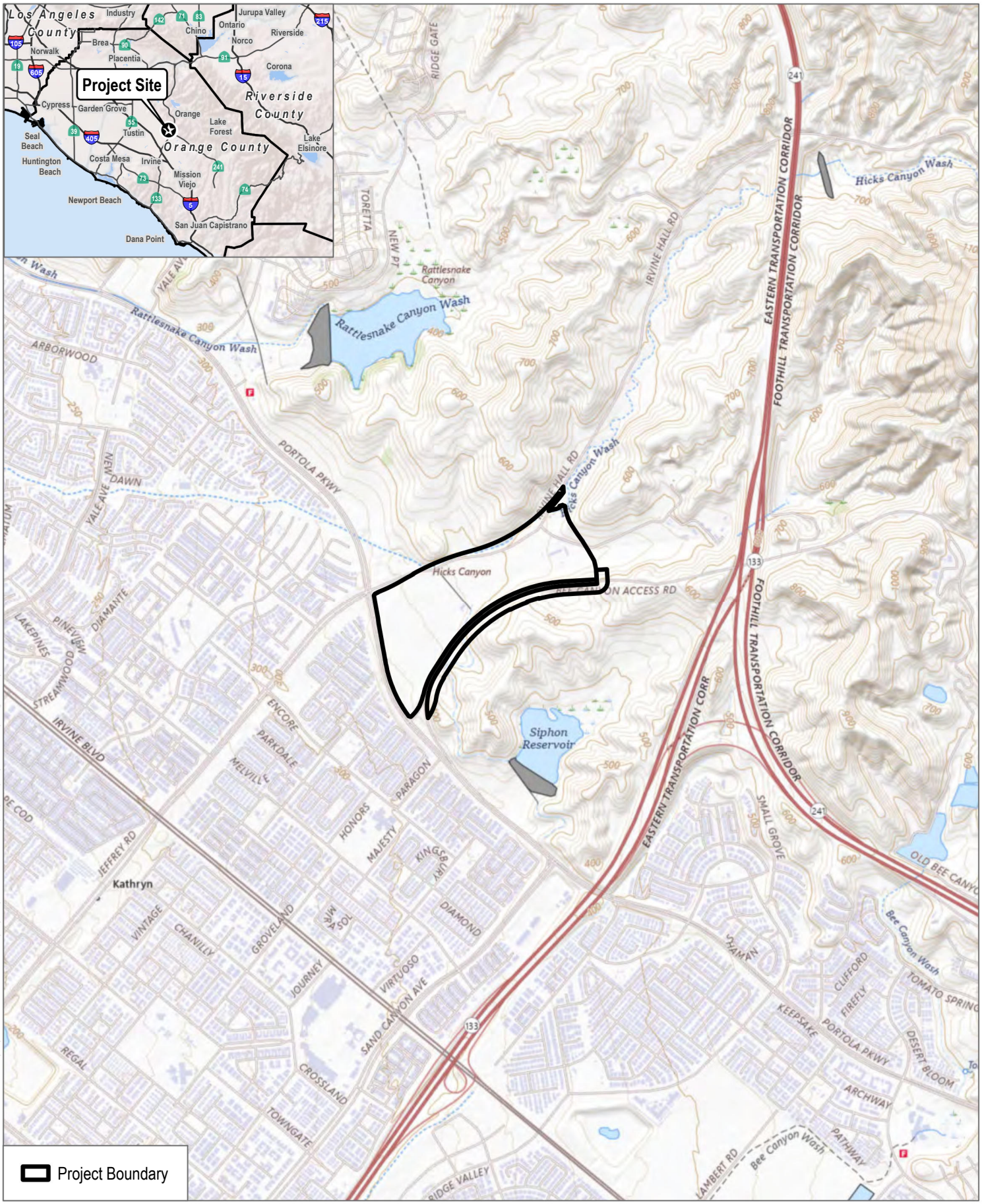
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SOURCE: USGS National Map 2024

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Irvine Gateway Project - Aquatic Resources Delineation Report

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SOURCE: ESRI World Imagery; USDA NRCS 2023

DUDEK

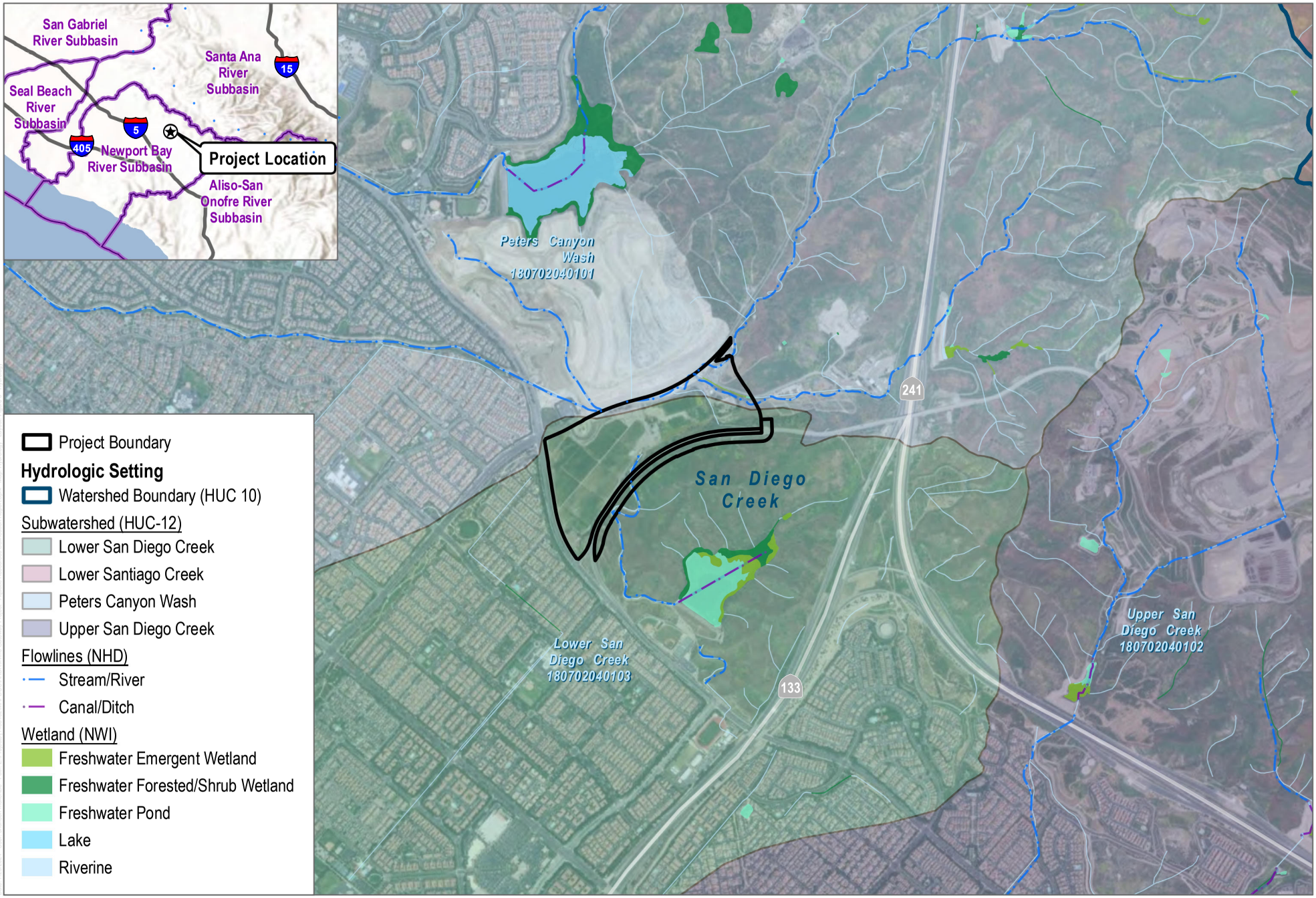
0 287.5 575 Feet

FIGURE 2

Soils

Irvine Gateway Project - Aquatic Resources Delineation Report

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SOURCE: ESRI World Imagery; USFWS 2019; USGS 2019

DUDEK

0 1,000 2,000 Feet

FIGURE 3

Hydrology

Irvine Gateway Project - Aquatic Resources Delineation Report

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SOURCE: ESRI World Imagery 2023;

DUDEK

0 285 570 Feet

FIGURE 4

Potential Jurisdictional Aquatic Resources - RWQCB

Irvine Gateway Project - Aquatic Resources Delineation Report

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SOURCE: ESRI World Imagery 2023;

DUDEK

FIGURE 5

Potential Jurisdictional Aquatic Resources - CDFW

Irvine Gateway Project - Aquatic Resources Delineation Report

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Appendix A
Review Area Photos



Photo 1. Upstream view of previously-permitted Hicks Canyon Wash drainage, photo facing NW.



Photo 2. Central region of previously-permitted Hicks Canyon Wash drainage, photo facing N.



Photo 3. Downstream view of previously-permitted Hicks Canyon Wash, photo facing N.



Photo 4. Upstream view of NWW-1, photo facing E.



Photo 5. Central region of NWW-1, photo facing E.



Photo 6. Downstream view of NWW-1 taken from upland adjacent to drainage, photo facing W.



Photo 7. Representative photograph of western agricultural basin showing hydrophytic vegetation (cottonwood, tamarisk). Photo facing NE.



Photo 8. Representative photograph of sampling point (SP01) taken within western agricultural basin. Photo facing SE.



Photo 9. Representative photograph of eastern agricultural basin. Photo facing S.



Photo 10. Representative photograph of one of three culverts found in northeast region of project boundary. Photo facing NW.



Photo 11. Representative photograph SP03 taken below the OHWM at NWW-1. Photo facing E.



Photo 12. Representative photograph of SP04 taken between OHWM and TOB at NWW-1. Photo facing E.



Photo 13. Representative photograph SP05 taken above TOB on the south bank of NWW-1. Photo facing E.

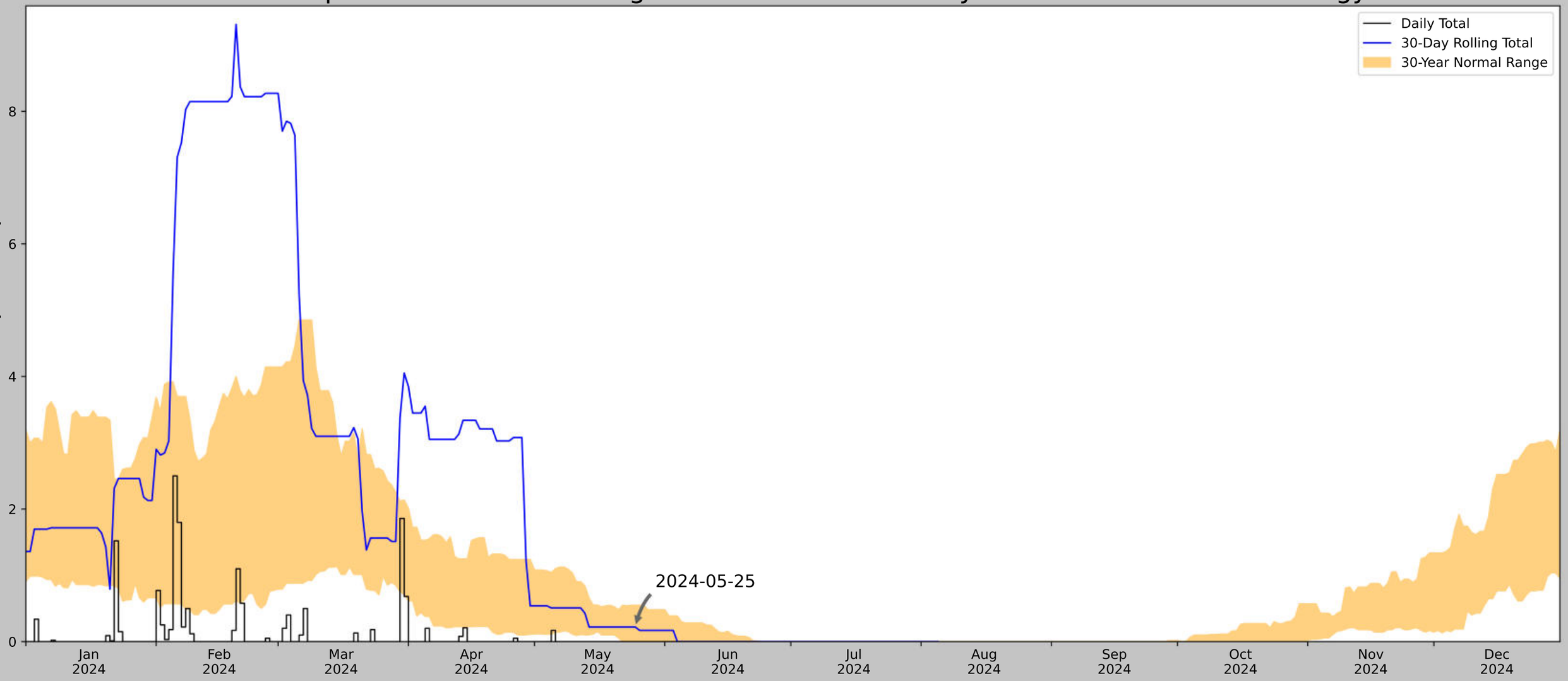


Photo 14. Representative photograph SP06 taken above TOB on the north bank of NWW-1. Photo facing E.

Appendix B

Antecedent Precipitation Tool Output

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.717340, -117.734471
Observation Date	2024-07-24
Elevation (ft)	384.984
Drought Index (PDSI)	Moderate wetness (2024-06)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-07-24	0.0	0.0	0.0	Normal	2	3	6
2024-06-24	0.0	0.0	0.0	Normal	2	2	4
2024-05-25	0.0	0.548819	0.220472	Normal	2	1	2
Result							Normal Conditions - 12

US Army Corps of Engineers

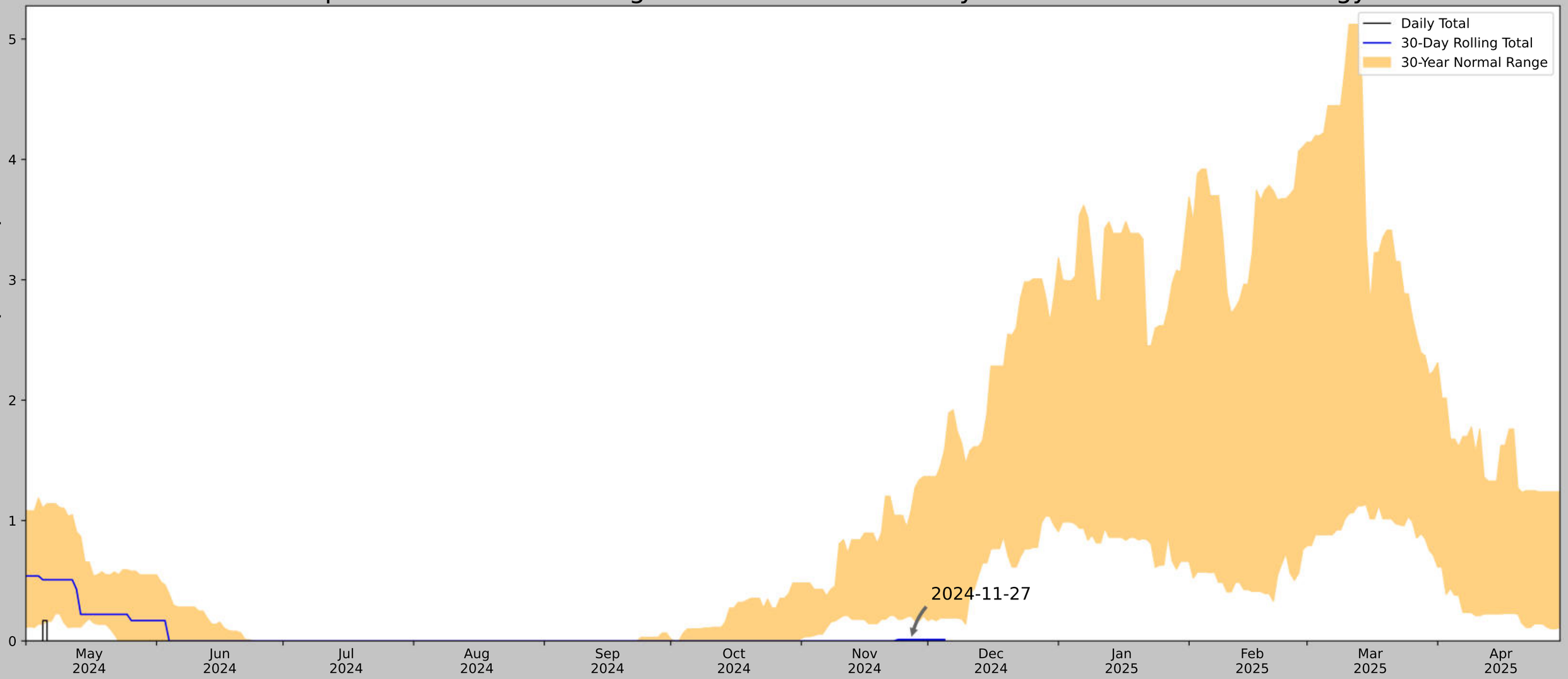
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
IRVINE RCH	33.72, -117.7231	540.026	0.679	155.042	0.411	7171	79
TUSTIN IRVINE RCH	33.7025, -117.7539	234.908	2.144	305.118	1.619	3860	0
EL TORO MCAS	33.6667, -117.7333	380.906	3.729	159.12	2.271	95	0
IRVINE 4.1 NNE	33.7183, -117.7721	151.903	2.818	388.123	2.362	4	11
FOOTHILL RANCH 0.3 NW	33.689, -117.664	1044.948	4.016	504.922	3.835	2	0
ORANGE 3.5 ENE	33.8291, -117.77	811.024	8.005	270.998	5.772	2	0
MISSION VIEJO 1.3 SSE	33.5954, -117.6442	704.068	9.732	164.042	5.976	1	0
SANTA ANA FIRE STN	33.7442, -117.8667	134.843	8.419	405.183	7.2	127	0
SANTA ANA JOHN WAYNE AP	33.6797, -117.8675	42.979	8.755	497.047	8.291	90	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.717340, -117.734471
Observation Date	2024-11-27
Elevation (ft)	384.984
Drought Index (PDSI)	Mild drought (2024-10)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-11-27	0.20748	1.074409	0.011811	Dry	1	3	3
2024-10-28	0.0	0.353937	0.0	Normal	2	2	4
2024-09-28	0.0	0.029528	0.0	Normal	2	1	2
Result							Drier than Normal - 9

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
IRVINE RCH	33.72, -117.7231	540.026	0.679	155.042	0.411	7537	82
TUSTIN IRVINE RCH	33.7025, -117.7539	234.908	2.144	305.118	1.619	3498	0
EL TORO MCAS	33.6667, -117.7333	380.906	3.729	159.12	2.271	92	0
IRVINE 4.1 NNE	33.7183, -117.7721	151.903	2.818	388.123	2.362	4	8
FOOTHILL RANCH 0.3 NW	33.689, -117.664	1044.948	4.016	504.922	3.835	2	0
ORANGE 3.5 ENE	33.8291, -117.77	811.024	8.005	270.998	5.772	2	0
MISSION VIEJO 1.3 SSE	33.5954, -117.6442	704.068	9.732	164.042	5.976	1	0
SANTA ANA FIRE STN	33.7442, -117.8667	134.843	8.419	405.183	7.2	127	0
SANTA ANA JOHN WAYNE AP	33.6797, -117.8675	42.979	8.755	497.047	8.291	90	0

Appendix C
Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Irvine Gateway Project City/County: Irvine, Orange County Sampling Date: 7/24/24

Applicant/Owner: City of Irvine State: CA Sampling Point: SP01

Investigator(s): MM, VG Section, Township, Range: S29 T5S R8W

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 33.712571° Long: -117.738127° Datum: NAD83

Soil Map Unit Name: 206: Sorrento loam, 0 to 2 percent slopes, warm MAAT, MLRA 19 (NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Pit is located within an artificially created catch basin for agriculture runoff

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	15	Y	FACW
2.			
3.			
4.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Tamarix chinensis	20	Y	FAC
2. Baccharis salicifolia	5	Y	FAC
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 10)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

Vegetation within basin is very sparse and consists of a few individuals of tamarisk, mulefat, and willow

SOIL

Sampling Point: SP01

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 3/2	100	-	-	-	-	clay loam	
4-8	10 YR 4/3	100	-	-	-	-	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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 Soils[3]:

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

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

Restrictive Layer (if present):

Type: compacted soil

Depth (inches): 8

Hydric Soil Present? Yes _____ No ✔

Remarks:

unable to excavate below 8 inches due to compacted dry soils. Soils appear to be fill dirt within constructed catch basins

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): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Irvine Gateway Project City/County: Irvine, Orange County Sampling Date: 7/24/24

Applicant/Owner: City of Irvine State: CA Sampling Point: SP02

Investigator(s): MM, VG Section, Township, Range: S29 T5S R8W

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 33.712440° Long: -117.737945° Datum: NAD83

Soil Map Unit Name: 202: Soper gravelly loam, 30 to 50 percent slopes, MLRA 20 (4581 NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

Pit is located within an artificially created catch basin for agriculture runoff

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Baccharis salicifolia	10	Y	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 10)			
1. Pulicaria paludosa	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

Vegetation within basin is very sparse and consists of a few individuals of mulefat and pulicaria

SOIL

Sampling Point: SP02

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 3/2	100	-	-	-	-	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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 Soils[3]:

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

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

Restrictive Layer (if present):

Type: compacted soil

Depth (inches): 6

Hydric Soil Present? Yes _____ No ✔

Remarks:

unable to excavate below 6 inches due to compacted dry soils. Soils appear to be fill dirt within constructed catch basins

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): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Irvine Gateway Project City/County: Irvine, Orange County Sampling Date: 11/27/24

Applicant/Owner: City of Irvine State: CA Sampling Point: SP03

Investigator(s): MM, AV Section, Township, Range: S29 T5S R8W

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 33.719691 Long: -117.730989 Datum: NAD83

Soil Map Unit Name: 163: Metz loamy sand (458064) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

drainage has been recently mowed

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Ricinus communis	10	Y	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 10)			
1. Croton californicus	5	Y	UPL*
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	2 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

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 = _____

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✔

Remarks:

* not listed species assumed to be upland

SOIL

Sampling Point: SP03

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10 YR 5/2	100					Sand	
5-10	10 YR 4/2	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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 Soils[3]:

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

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

Restrictive Layer (if present):

Type: compacted soils

Depth (inches): 10

Hydric Soil Present? Yes _____ No _____

Remarks:

fine grained sand deposited within the OHWM of the drainage

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): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

OHWM and sediment sorting present within a drainage channel

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Irvine Gateway Project City/County: Irvine, Orange County Sampling Date: 11/27/24

Applicant/Owner: City of Irvine State: CA Sampling Point: SP04

Investigator(s): MM, AV Section, Township, Range: S29 T5S R8W

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 33.719703 Long: -117.30989 Datum: NAD83

Soil Map Unit Name: 163: Metz loamy sand (458064) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

drainage has been recently mowed

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Ricinus communis	10	Y	FACU
2. Rhus ovata	15	Y	UPL*
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 10)			
1. Bromus sp.	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

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 = _____

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks:

* not listed species assumed to be upland

SOIL

Sampling Point: SP04

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10 YR 4/2	100					Sandy loa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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 Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

soil consists of deposits of fine fill material on drainage terraces

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): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Irvine Gateway Project City/County: Irvine, Orange County Sampling Date: 11/27/24

Applicant/Owner: City of Irvine State: CA Sampling Point: SP05

Investigator(s): MM, AV Section, Township, Range: S29 T5S R8W

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 33.719585 Long: -117.30907 Datum: NAD83

Soil Map Unit Name: 163: Metz loamy sand (458064) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

located on top of bank of drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans californica	10	Y	FACU
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Baccharis salicifolia	10	Y	FAC
2. Rhus ovata	15	Y	UPL*
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Marrubium vulgare	15	Y	FACU
2. Bromus sp.	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

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 = _____

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks:

* not listed species assumed to be upland

SOIL

Sampling Point: SP05

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-15	10 YR 4/3	100					Sandy loa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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 Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

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): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Irvine Gateway Project City/County: Irvine, Orange County Sampling Date: 11/27/24

Applicant/Owner: City of Irvine State: CA Sampling Point: SP06

Investigator(s): MM, AV Section, Township, Range: S29 T5S R8W

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 33.719567 Long: -117.730658 Datum: NAD83

Soil Map Unit Name: 163: Metz loamy sand (458064) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	10	Y	FACW
2. Nicotiana glauca	5	Y	FAC
3. Juglans californica			
4.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 10)			
1. Brassica nigra	40	Y	UPL*
2. Cynara cardunculus	10	N	UPL*
3. Centaurea solstitialis	10	N	UPL*
4. Pulicaria paludosa	20	Y	FAC
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

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 = _____

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks:

* not listed species assumed to be upland

SOIL

Sampling Point: SP06

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10 YR 3/2						Sandy Cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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 Soils[3]:

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

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

Restrictive Layer (if present):

Type: compacted soils

Depth (inches): 8

Hydric Soil Present? Yes _____ No _____

Remarks:

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): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

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U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX

Approval Expires:

Project ID #: Irvine Gateway	Site Name: OHWM-1 (NWW-1)	Date and Time: 11/27/24 9 am
Location (lat/long): 33.719690, -117.730949	Investigator(s): MM, AV	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [x] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [ ] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

Property is historically light agriculture and industrial use. Drainage dry at the time of survey. No recent rainfall events.

Step 2 Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

A paved roadway is present 3 feet from the to of bank along the north bank. Industrial development is present along the south bank. This development restricts channel movement within the floodplain

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:**
  - [x] *on the bank:* a
  - [x] *undercut bank:* x
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [x] **Shelving:**
  - [x] *shelf at top of bank:* a
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [x] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [x] *unvegetated:* x
  - [ ] *vegetation transition (go to veg. indicators)*
  - [x] *sediment transition (go to sed. indicators)* x
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [ ] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* b
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [ ] **Mudcracks:**
- [x] **Changes in particle-sized distribution:**
  - [x] *transition from* sand to silt
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [ ] **Change in vegetation type and/or density:**

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* forbs
  - [ ] *moss to:*
  - [x] *forbs to:* woody shrubs
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [x] **Exposed roots below intact soil layer:** a

Ancillary indicators

- [x] **Wracking/presence of organic litter:** x
- [ ] **Presence of large wood:**
- [x] **Leaf litter disturbed or washed away:** x
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

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Project ID #: _____

Step 5 Describe rationale for location of OHWM

evidence of the OHWM can be seen along the lower portion of the bank and includes a sediment transition from coarse to finer grain sediment, undercutting, wracking, washed away leaf litter, and exposed roots.

Additional observations or notes

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
01	view upstream from OHWM transect
02	view of channel bottom at OHWM
03	view across OHWM channel
04	view from top of bank at OHWM transect
05	view downstream from OHWM transect

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OHWM Field Identification Datasheet Instructions and Field Procedure

Step 1 **Site overview from remote and online resources** **Complete Step 1 prior to site visit.**

Online Resources: Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

a. gage data
b. aerial photos
c. satellite imagery
d. LiDAR
e. topographic maps
f. geologic maps
g. land use maps
h. climatic data (precipitation and temperature)

Landscape context: Use the online resources to put the site in the context of the surrounding landscape.

a. **Note on the datasheet under Step 1:**
   i. Overall land use and change if known
   ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
b. Consider the following to inform weighting of evidence observed during field visit.
   i. What physical characteristics are likely to be observed in specific environments?
   ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
   iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

Step 2 Site conditions during the field assessment (assemble evidence)

a. Identify the assessment area.
b. Walk up and down the assessment area noting all the potential OHWM indicators.
c. Note broad trends in channel shape, vegetation, and sediment characteristics.
   i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?
   ii. Are there any secondary and/or floodplain channels?
   iii. Are there obvious man-made alterations to the system?
   iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?
d. Look for signs of recurring fluvial action.
   i. Where does the flow converge on the landscape?
   ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?
e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.
f. **In Step 2 of the datasheet** describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.
   i. What land use and flow conditions may be affecting your ability to observe indicators at the site?
   ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?

Step 3a List evidence

Assemble evidence by checking the boxes next to each line of evidence:

a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
b. If using fillable form, then follow the instructions for filling in the fillable form.

Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.

Questions to consider while making observations and listing evidence at a site:

Geomorphic indicators	**Sediment and soil indicators**	**Vegetation Indicators**	**Ancillary indicators**
Where are the breaks in slope?	Where does evidence of soil formation appear?	Where are the significant transitions in vegetation species, density, and age?	Is there organic litter present?
Are there identifiable banks?		Is there vegetation growing on the channel bed?	
Is there an easily identifiable top of bank?	Are there mudcracks present?	If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel?	Is there any leaf litter disturbed or washed away?
Are the banks actively eroding?			
Are the banks undercut?	Is there evidence of sediment sorting by grain size?	Where are the significant transitions in vegetation?	Is there large wood deposition?
Are the banks armored?			
Is the channel confined by the surrounding hillslopes?		Is the vegetation tolerant of flowing water?	Is there evidence of water staining?
Are there natural or man-made berms and levees?		Has any vegetation been flattened by flowing water?	
Are there fluvial terraces?			
Are there channel bars?			

Are the following features of fluvial transport present?
Evidence of erosion: obstacle marks, scour, armoring
Bedforms; riffles, pools, steps, knickpoints/headcuts
Evidence of deposition: imbricated clasts, gravel sheets, etc.

In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.

OHWM Field Identification Datasheet Instructions and Field Procedure

Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

a. Relevance:

i. Is this indicator left by low, high, or extreme flows?

Tips on how to assess the indicator relative to type of flow:

Consider the elevation of the indicator relative to the channel bed. What is the current flow level based on season or nearby gages? Consider the elevation of the indicator relative to the current flow. If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.

***Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

***Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form. Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.
2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

b. Strength:

i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

c. Reliability:

i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

d. Weigh body of evidence:

i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.

ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).

iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and relieability.

e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

i. Annotate photos with descriptions of indicators.

Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.

b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.

c. Attach any remote data and data analysis to the datasheet.

Step 5 Describe rationale for location of OHWM:

a. Why do the combination of indicators represent the OHWM?

b. If there are multiple possibilites for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.

c. If needed, add additional site notes on page 2 of the datasheet under Step 5.











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U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX

Approval Expires:

Project ID #: Irvine Gateway	Site Name: OHWM-2 (agricultural basins)	Date and Time: 11/27/24 10 am
Location (lat/long):	Investigator(s): MM, AV	

Step 1 Site overview from remote and online resources
Check boxes for online resources used to evaluate site:

- ☐ gage data
- ☐ LiDAR
- ☐ geologic maps
- ☒ climatic data
- ☒ satellite imagery
- ☒ land use maps
- ☐ aerial photos
- ☐ topographic maps
- ☐ Other: _____

Describe land use and flow conditions from online resources.
Were there any recent extreme events (floods or drought)?

drainage is a v-ditch that drains adjacent roadway

Step 2 Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- ☐ **Break in slope:**
  - ☐ *on the bank:*
  - ☐ *undercut bank:*
  - ☐ *valley bottom:*
  - ☐ Other: _____
- ☐ **Shelving:**
  - ☐ *shelf at top of bank:*
  - ☐ *natural levee:*
  - ☐ *man-made berms or levees:*
  - ☐ *other berms:* _____
- ☐ **Channel bar:**
  - ☐ *shelving (berms) on bar:*
  - ☐ *unvegetated:*
  - ☐ *vegetation transition (go to veg. indicators)*
  - ☐ *sediment transition (go to sed. indicators)*
  - ☐ *upper limit of deposition on bar:*
- ☐ **Instream bedforms and other bedload transport evidence:**
  - ☐ *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - ☐ *bedforms (e.g., poofs, riffles, steps, etc.):*
  - ☐ *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- ☐ **Secondary channels:**

Sediment indicators

- ☐ **Soil development:**
- ☐ **Changes in character of soil:**
- ☐ **Mudcracks:**
- ☐ **Changes in particle-sized distribution:**
  - ☐ *transition from* _____ to _____
  - ☐ *upper limit of sand-sized particles*
  - ☐ *silt deposits:*

Vegetation Indicators

- ☐ **Change in vegetation type and/or density:**

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - ☒ *vegetation absent to:* graminoids
  - ☐ *moss to:*
  - ☐ *forbs to:*
  - ☒ *graminoids to:*
  - ☐ *woody shrubs to:*
  - ☐ *deciduous trees to:*
  - ☐ *coniferous trees to:*
- ☐ **Vegetation matted down and/or bent:**
- ☐ **Exposed roots below intact soil layer:**

Ancillary indicators

- ☐ **Wracking/presence of organic litter:**
- ☐ **Presence of large wood:**
- ☐ **Leaf litter disturbed or washed away:**
- ☒ **Water staining:** x
- ☐ **Weathered clasts or bedrock:**

Other observed indicators?

Describe:

Step 4 Is additional information needed to support this determination?

☐ Yes ☐ No

If yes, describe and attach information to datasheet:

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Project ID #: _____

Step 5 Describe rationale for location of OHWM

drainage is a concrete lined v-ditch and the OHWM is visible through water staining on the concrete

Additional observations or notes

this v-ditch originates at a culvert at the intersection of Bee Canyon access road and Portola Parkway and appears to drain runoff from the adjacent roadway. Old, un-unused agricultural basins are present on the east side of the v-ditch. According to aerial imagery, the first of these basins were constructed in aproximately 2003 for agricultural purposes. An additional basin was added in 2010. The basins appear to be unused by 2018. Additional basins were dug out in 2020 and separated from the adjacent v-ditch by a berm lined in plastic.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
01	View downstream, facing N
02	View upstream, facing S
03	View across V-ditch at constructed berms, facing E

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OHWM Field Identification Datasheet Instructions and Field Procedure

Step 1 **Site overview from remote and online resources** **Complete Step 1 prior to site visit.**

Online Resources: Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

a. gage data
b. aerial photos
c. satellite imagery
d. LiDAR
e. topographic maps
f. geologic maps
g. land use maps
h. climatic data (precipitation and temperature)

Landscape context: Use the online resources to put the site in the context of the surrounding landscape.

a. **Note on the datasheet under Step 1:**
   i. Overall land use and change if known
   ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
b. Consider the following to inform weighting of evidence observed during field visit.
   i. What physical characteristics are likely to be observed in specific environments?
   ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
   iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

Step 2 Site conditions during the field assessment (assemble evidence)

a. Identify the assessment area.
b. Walk up and down the assessment area noting all the potential OHWM indicators.
c. Note broad trends in channel shape, vegetation, and sediment characteristics.
   i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?
   ii. Are there any secondary and/or floodplain channels?
   iii. Are there obvious man-made alterations to the system?
   iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?
d. Look for signs of recurring fluvial action.
   i. Where does the flow converge on the landscape?
   ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?
e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.
f. **In Step 2 of the datasheet** describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.
   i. What land use and flow conditions may be affecting your ability to observe indicators at the site?
   ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?

Step 3a List evidence

Assemble evidence by checking the boxes next to each line of evidence:

a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
b. If using fillable form, then follow the instructions for filling in the fillable form.

Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.

Questions to consider while making observations and listing evidence at a site:

Geomorphic indicators	**Sediment and soil indicators**	**Vegetation Indicators**	**Ancillary indicators**
Where are the breaks in slope?	Where does evidence of soil formation appear?	Where are the significant transitions in vegetation species, density, and age?	Is there organic litter present?
Are there identifiable banks?		Is there vegetation growing on the channel bed?	
Is there an easily identifiable top of bank?	Are there mudcracks present?	If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel?	Is there any leaf litter disturbed or washed away?
Are the banks actively eroding?			
Are the banks undercut?	Is there evidence of sediment sorting by grain size?	Where are the significant transitions in vegetation?	Is there large wood deposition?
Are the banks armored?			
Is the channel confined by the surrounding hillslopes?		Is the vegetation tolerant of flowing water?	Is there evidence of water staining?
Are there natural or man-made berms and levees?		Has any vegetation been flattened by flowing water?	
Are there fluvial terraces?			
Are there channel bars?			

Are the following features of fluvial transport present?
Evidence of erosion: obstacle marks, scour, armoring
Bedforms; riffles, pools, steps, knickpoints/headcuts
Evidence of deposition: imbricated clasts, gravel sheets, etc.

In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.

OHWM Field Identification Datasheet Instructions and Field Procedure

Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

a. Relevance:

i. Is this indicator left by low, high, or extreme flows?

Tips on how to assess the indicator relative to type of flow:

Consider the elevation of the indicator relative to the channel bed. What is the current flow level based on season or nearby gages? Consider the elevation of the indicator relative to the current flow. If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.

***Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

***Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form. Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.
2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

b. Strength:

i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

c. Reliability:

i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

d. Weigh body of evidence:

i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.

ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).

iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and relieability.

e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

i. Annotate photos with descriptions of indicators.

Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.

b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.

c. Attach any remote data and data analysis to the datasheet.

Step 5 Describe rationale for location of OHWM:

a. Why do the combination of indicators represent the OHWM?

b. If there are multiple possibilites for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.

c. If needed, add additional site notes on page 2 of the datasheet under Step 5.







Beta Arid West Streamflow Duration Assessment Method

General site information

Project name or number: Irvine Gateway Project		
Site code or identifier:	Assessor(s): MM, VG	
Waterway name: UT Peters Canyon Wash		Visit date: 7/24/24

Current weather conditions (check one)
- ☐ Storm/heavy rain
- ☐ Steady rain
- ☐ Intermittent rain
- ☐ Snowing
- ☐ Cloudy (___ % cover)
- ☑ Clear/Sunny

Notes on current or recent weather conditions (e.g., precipitation in previous week):

Coordinates at downstream end (decimal degrees):
Lat (N): 33.719792°
Long (W): -117.731177°
Datum: WGS84

Surrounding land-use within 100 m (check one or two):
- ☑ Urban/industrial/residential
- ☑ Agricultural (farmland, crops, vineyards, pasture)
- ☑ Developed open-space (e.g., golf course)
- ☐ Forested
- ☐ Other natural
- ☐ Other: _____

Describe reach boundaries:
downstream reach boundary is a culvert and upstream boundary is the property boundary

Mean channel width (m)	Reach length (m): 40x width; min 40 m; max 200 m.	Enter photo ID, or check if completed
4	160	Top down: _____ Mid down: _____ Mid up: _____ Bottom up: _____

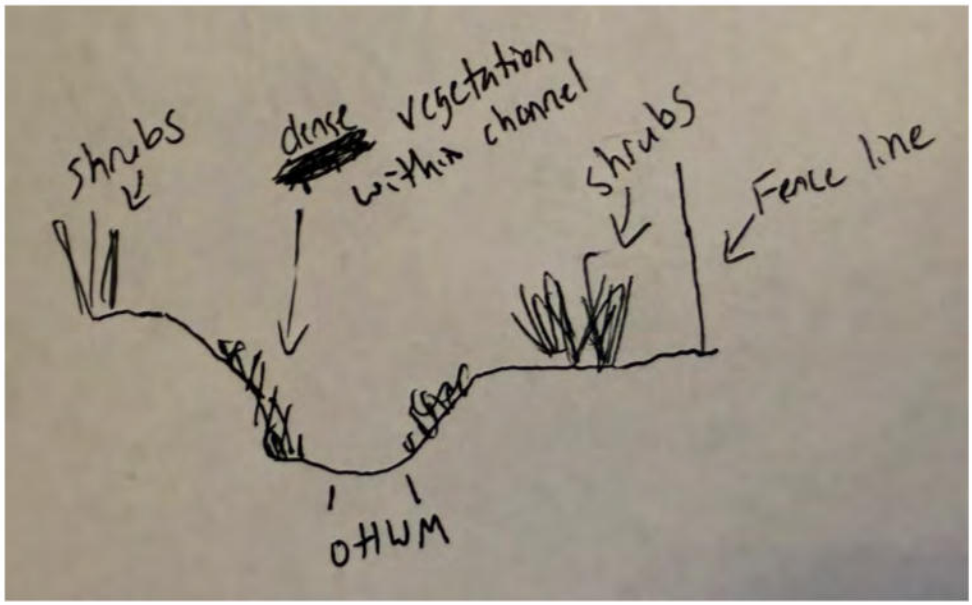
Disturbed or difficult conditions (check all that apply):
- ☐ Recent flood or debris flow
- ☐ Stream modifications (e.g., channelization)
- ☐ Diversions
- ☐ Discharges
- ☐ Drought
- ☐ Vegetation removal/limitations
- ☐ Other (explain in notes)
- ☐ None

Notes on disturbances or difficult site conditions:
stream enters culvert just outside of the northern site boundary

Observed hydrology:
0 _____ % of reach with surface flow
0 _____ % of reach with sub-surface or surface flow
0 _____ # of isolated pools

Comments on observed hydrology:

Site sketch:



1. Hydrophytic plant species

Record up to 5 hydrophytic plant species (FACW or OBL in the **Arid West** regional wetland plant list) within the assessment area: **within the channel or up to one half-channel width**. Explain in notes if species has an odd distribution (e.g., covers less than 2% of assessment area, long-lived species solely represented by seedlings, or long-lived species solely represented by specimens in decline), or if there is uncertainty about the identification. Enter photo ID, or check if photo is taken.

Check if applicable: ☐ No vegetation in assessment area ☐ No hydrophytes in assessment area

Species	Odd distribution?	Notes	Photo ID
Salix lasiolepis	N		

Notes on hydrophytic vegetation:

2 and 3. Aquatic invertebrates

2. How many aquatic invertebrates are quantified in a 15-minute search?

Number of individuals quantified:
☑ None
☐ 1 to 19
☐ 20 +

(Do not count mosquitos)

Photo ID:_____

3. Is there evidence of aquatic stages of EPT (Ephemeroptera, Plecoptera and Trichoptera)?

Yes / No



Ephemeroptera larva
Image credit: Dieter Tracey



Plecoptera larva
Tracey Saxby



Trichoptera larva
Tracey Saxby

Notes on aquatic invertebrates:

4. Algal Cover

Are algae found on the streambed?		Notes on algae cover:	Photo ID:
☐ Check if *all* observed algae appear to be deposited from an upstream source.	☑ Not detected ☐ Yes, < 10% cover ☐ Yes, ≥ 10% (check Yes in single indicator below)		

5. Are single indicators observed?

Indicator	Present	Notes	Photo ID
Fish	☐ Yes ☑ No, no fish ☐ No, only non-native mosquitofish		
Algae cover ≥ 10%	☐ Yes ☑ No		

Supplemental information E.g., aquatic or semi-aquatic amphibians, snakes, or turtles; iron-oxidizing bacteria and fungi; etc.

Photo log

Indicate if any other photos taken during the assessment

Photo ID	Description

Additional notes about the assessment:

Classification: Ephemeral

1. Hydrophytic plant species	2. Aquatic invertebrates	3. EPT taxa	4. Algae	5. Single indicators • fish present • algae cover ≥ 10%	Classification
None	None	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present	Absent	**Need more information**
				Present	**At least intermittent**
	Few (1-19)	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present	Absent	**Need more information**
				Present	**At least intermittent**
		Present			**At least intermittent**
	Many (20+)	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present	Absent	**Need more information**
				Present	**At least intermittent**
		Present			**At least intermittent**
Few (1-2)	None	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present		**At least intermittent**
	Few (1-19)	Absent	Absent		**Intermittent**
			Present		**At least intermittent**
		Present			**At least intermittent**
	Many (20+)	Absent	Absent		**Intermittent**
			Present		**At least intermittent**
		Present	Absent		**At least intermittent**
			Present		**Intermittent**
Many (3+)	None	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present		**At least intermittent**
	Few (1-19)	Absent			**At least intermittent**
		Present			**Perennial**
	Many (20+)	Absent			**At least intermittent**
		Present			**Perennial**

Shading provided to enhance readability by increasing the contrast between neighboring cells; empty cells indicate the classification will not change with additional information however it is recommended that all five indicators be measured and recorded during every assessment.