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Biological Resources Technical Report

City of Vista Roman Creek Mitigation and Habitat Restoration Project

San Diego, California

May 2020

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Acronyms

BMP	best management practices
BPO	Biological Preserve Overlay
CAGN	coastal California gnatcatcher
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESA	environmentally sensitive area
LBVI	Least Bell's vireo
MBTA	Migratory Bird Treaty Act
MHCP	Multiple Habitat Conservation Program
MM	Mitigation Measure
NRCS	National Resources Conservation Service
OHWM	ordinary high water mark
RCS	Resource Conservation Sustainability
RWQCB	Regional Water Quality Control Board
SDG&E	San Diego Gas and Electric
SWFL	Southwestern willow flycatcher
SWRCB	State Water Resources Control Board
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WOUS	waters of the United States

1 Introduction

At the request of the City of Vista (City), HDR Engineering, Inc. (HDR) conducted a general biological survey, vegetation mapping, habitat assessment, focused surveys, and jurisdictional delineation for the proposed Roman Creek Mitigation and Habitat Restoration Project (Project). The Project is a combined habitat restoration and hydromodification improvement project that includes multiple improvements to the City's existing Buena Vista Park to support the establishment of the compensatory Roman Creek Mitigation Site and restrict recreational access and use in support thereof. The purpose of this report is to document the existing biological conditions within the Project study area, which includes the Project footprint and adjacent areas, pursuant to federal, state, and local regulatory requirements, including the federal and state endangered species acts, Clean Water Act (CWA), Migratory Bird Treaty Act (MBTA), California Fish and Game Code, California Environmental Quality Act (CEQA), the Multiple Habitat Conservation Program (MHCP), and the City of Vista General Plan.

2 Project Overview, Location, and Description

2.1 Project Overview

The City is proposing the Project, which is a combined hydromodification and habitat restoration improvement project within Buena Vista Park (Park), located in the City of Vista, California (Figure 2-1). Buena Vista Park is owned by the City and managed by the City's Parks and Recreation Department. According to the City's General Plan (2030), Buena Vista Park contains both active use areas and areas intended for the permanent conservation of natural resources. In conjunction with the City's 2030 General Plan Update, the City adopted a Biological Preserve Overlay (BPO) with the primary purpose of conserving the City's biological resources. The BPO was adopted to restrict land uses to only limited passive recreational uses where protection of those resources is ensured, or those uses that are required to protect public health and safety. As shown on Figure 2-2, the BPO covers most of the land areas within Buena Vista Park, and the proposed Roman Creek Mitigation Site (Mitigation Site).

2.2 Project Location

As shown on Figure 2-2 and Figure 2-3, the Project is located within the proposed 16.7-acre Mitigation Site, which is generally located along Roman Creek, a tributary of Agua Hedionda Creek, and within the western and southern portions of Buena Vista Park, south of Shadowridge Drive. This area lies within Section 6, Township 12 South, Range 3 West of the San Bernardino Base and Meridian 7.5-minute San Marcos, California Quadrangle.







Figure 2-2. General Plan 2030 Land Use and Biological Resources Overlay



2.3.1 Project Goals and Objectives

The City's goal for the Project is to address existing hydromodification impacts within the lower reaches of Roman Creek while providing a reliable source of compensatory mitigation for biological resources impacts associated with the 2017 Comprehensive Sewer Master Plan and related sewer capital improvement projects. The objectives for the proposed Project are to:

- Improve the hydrologic function of Roman Creek, including addressing peak flows from hydromodification within the upper watershed
- Maximize opportunities for onsite establishment, enhancement, and rehabilitation credits for waters of the United States (U.S.; WOUS) and State, including associated sensitive habitats protected by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW)
- Omit unauthorized trails within the riparian corridor of Roman Creek to protect compensatory mitigation and habitat restoration areas from damage
- Improve the management of natural resources through enhancements to existing trails, provision of interpretative signage and educational materials, and long-term adaptive management
- Enhance native habitats through removal of non-native species and re-planting/seeding with native species
- Protect existing habitat that is in insufficient condition so as to not require remedial weeding or plant installation
- Maintain and enhance the chemical, physical, and biological integrity of the aquatic resources within Roman Creek
- Provide wildlife habitat/structural diversity and connectivity
- Augment tree canopy to enhance shading within the riparian corridor and promote desirable aquatic organisms

2.4 Proposed Project Description

The Project would involve the implementation of riparian, streambed, and upland mitigation and habitat restoration opportunities within the western portion of Buena Vista Park. The proposed 16.7-acre Mitigation Site would include a combination of up to 10.7 acres of habitat establishment, enhancement, and restoration in conjunction with the implementation of hydromodification improvements at strategic locations. The City's proposed Mitigation Site would be subject to approval from the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), USFWS, and CDFW. Once approved, the City would be responsible for implementation, habitat success monitoring, and long term management, including adaptive management and maintenance. Figure 2-3 illustrates the Mitigation Site area in relation to the existing Park site and Dawson Los Monos Econological Reseve.



Figure 2-3. Proposed Project Area

Mitigation Site Boundary Existing Mitigation Mitigation Area Buena Vista Park Boundary Zawson Los Monos Reserve

0 Feet 250

Habitat Restoration

Proposed activities at the Mititable

gation Site would involve the implementation of riparian, wetland, streambed, and upland habitat establishment, restoration and enhancement opportunities within the western portion of Buena Vista Park. This 16.7-acre Mitigation Site would include a combination of habitat establishment, restoration and enhancement in conjunction with the implementation of hydromodification improvements at strategic locations. Specifically, the Project would include the establishment of approximately 0.87 acres of WOUS including 0.55 acre of wetland and 2.26 acres of CDFW-regulated riparian habitat integrated with the existing 3.40 acres of WOUS and 5.17 acres of CDFW-regulated stream associated with Roman Creek. Additionally, the Project includes hydrologic and biological enhancement of 4.08 acres of existing CDFW-regulated streambed and 2.30 acres of WOUS associated with the creek south of the existing dirt road crossing, and restoration and enhancement of up to 4.36 acres of native upland buffer habitats. These proposed habitats would provide additional live-in habitat for native species as well as improving aquatic functions of the creek and enhancing connectivity to the downstream habitats along Agua Hedionda Creek. Figure 2-4 and Table 2-1 through Table 2-3 identify the preliminary habitat acreages proposed. The final habitat areas and proposed vegetation communities would require resource agency concurrence and approval. Detailed plans and specifications for onsite restoration, seed mixes, container plant palettes, temporary irrigation system details, restoration techniques to maximize survivability and success of the restoration program, and performance standards would be prepared, if the Project is approved.

The City's proposed Mitigation Site is subject to approval from USACE, RWQCB USFWS CDFW. Once approved, the City would be responsible for implementation, habitat success monitoring, short-term (5 to 7 years) monitoring and management, and long-term monitoring and management (e.g., trash removal, fence repairs, and invasive species removal), including adaptive management and maintenance. In addition to meeting the success criteria for plant/habitat establishment identified in the Habitat Management Plan, a pre-construction functional assessment of the proposed mitigation area was conducted to establish a baseline for use in documenting increases in stream functions and values. A Ideally, an unaltered reference site within the Agua Hedionda Watershed would also be identified for comparison to the proposed site, however, to date a suitable reference site has not been identified. Should a suitable reference site be located, access to the reference site would be made by foot to conduct a functional assessment after any necessary right-of-entry is obtained.

Hydromodification Improvements

A suite of hydromodification improvements are under consideration for implementation at the Mitigation Site. These improvements could include:

- Installing one or more grade control structures;
- Replacing and upgrading the existing pedestrian access bridge near the south end of the Mitigation Site with a new, expanded bridge crossing;
- Widening the flood prone area of the creek by lowering the adjacent terrace(s) to the west of the creek in one or more locations;
- Installing rock weirs by hand within the incised, unvegetated portions of the existing channel and

• Excavating a secondary channel to increase flood prone area for the highly entrenched reach of the existing creek just north of the existing pedestrian bridge.

The proposed changes to creek morphology, in combination with the proposed establishment of additional wetland and riparian habitats, are expected to improve a variety of aquatic biogeochemical functions including dissipating the energy of floodwaters thereby reducing storm water velocities and reducing erosion: increasing groundwater infiltration and evapotranspiration rates, thereby increasing short-term and long-term storm water storage on site; detention of particulates and related reduction in deleterious elements and compounds in surface waters; and increasing wildlife benefits. Additionally, the Project would include the removal of eucalyptus woodland, which currently adds allelochemicals to the creek and promotes erosion by prohibiting the growth of protective ground covers. Therefore, the entire reach of Roman Creek from the existing dirt road crossing to the southern property boundary totaling 4.08 acres will exhibit enhanced hydrologic function in addition to more standard enhancement methods including invasive species removal and long-term management.

Table 2-1. Summary of Anticipated Mitigation Opportunities (United States Army Corps of Engineers)

Mitigation Type	Wetland (acres)	Nonwetland (acres)	Total (acres)l
Total Establishment	0.55	0.32	0.87
Emergent Wetland	0.05	—	0.20
Oak-Willow Alliance	0.50	0.32	0.67
Total Enhancement	1.35	0.95	2.30
Total	1.90	1.27	3.17

Table 2-2. Summary of Anticipated Mitigation Opportunities (California Department of Fish and Wildlife)

Mitigation Type	Riparian (acres)	Unvegetated Streambed (acres)	Total (acres)l
Total Establishment	2.26	0.00	2.26
Emergent Wetland	0.05	0.00	0.05
Mulefat Scrub	0.26	0.00	0.26
Oak-Willow Alliance	1.95	0.00	1.95
Enhancement	4.08	0.00	4.08
Oak-Willow Alliance	2.68	0/00	2.68

Table 2-2. Summary of Anticipated Mitigation Opportunities (California Department of Fish and Wildlife)

Mitigation Type	Riparian (acres)	Unvegetated Streambed (acres)	Total (acres)l
Coast Live Oak Alliance	1.40	0.00	1.40
Total	6.27	0.00	6.27

Table 2-3. Summary of Anticipated Mitigation Opportunities (Upland Buffer Restoration/Enhancement)

Habitat Type	Acres
Coastal Sage Scrub	1.24
Coast Live Oak Woodland	0.44
Native Grassland	1.68
Total	4.36

These improvements are subject to various agency approvals and further hydrologic analysis and may not all be implemented; however, for the purposes of this analysis, all of the improvements are assumed to be implemented.

Existing Pedestrian Bridge Crossing Existing Access Road Crossing Existing Day Use Area Roman Greek

Figure 2-4. Proposed Roman Creek Mitigation Site (Mitigation Categories Based on Proposed Vegetation)

LEGEND

Mitigation Site Boundary

- Creek Enhancement
- Creek Establishment
- Creek Enhancement and Establishment

Enhancement Coast live oak alliance Oak-willow alliance

<u>4.28 ac</u> 1.66 ac 2.62 ac

<u>Establishment</u> Coast live oak alliance Emergent Marsh Mulefat scrub Oak-willow alliance Unvegetated Stream

2.37 ac	
0.02 ac	
0.20 ac	
0.26 ac	
1.80 ac	
0.08 ac	

4.10 ac
0.88 ac
0.02 ac
0.19 ac
1.08 ac
0.17 ac
0.07 ac
1.68 ac



1 inch = 150 feet

Recreation/Access Use Areas

In conjunction with the proposed Project and to promote the habitat establishment, enhancement, and restoration opportunities proposed at the Mitigation Site, access to the riparian corridor along Roman Creek would be omitted through the installation of fencing at appropriate locations. New interpretative signage would be included at strategic locations to inform the public on key aspects of the City's Mitigation Site and observe the proposed habitat corridor. The two existing trail crossings would be retained to facilitate existing circulation through Buena Vista Park.

Trail Network Enhancements

In conjunction with improving the trail network at Buena Vista Park, the City proposes the enhancement of multiple sections of the designated trail network to minimize localized sediment inputs to Roman Creek, reduce hydraulic restrictions within Roman Creek, and minimize degradation of the trail network. In general, these improvements would include the following as funding becomes available:

- Placement of soil stabilization and erosion control best management practices (BMP) along existing trails at selected locations;
- Replacement of the existing, undersized bridge crossing over Roman Creek with a new 110-foot bridge in conjunction with the habitat establishment;
- Realignment of designated trails to improve walkability;
- Addition or replacement of fencing along riparian mitigation areas; and
- Placement of interpretative signage.

2.4.1 Mitigation Site Implementation Activities

Implementation of the Mitigation Site would include the following activities as further described in this section:

- Site Preparation
- Fencing and Trail Enhancements
- Planting
- Watering and Irrigation
- Monitoring and Adaptive Management

Site Preparation

Mitigation Site preparation activities would be contingent on the management unit involved. The protection of native species, including the retention of native riparian trees, is a high priority for each management unit. Clearing and grubbing, non-native tree removal, and grading would only occur in establishment and rehabilitation management units. Site grading would be limited to that required to achieve the elevations appropriate to support seasonal and emergent wetlands, oak woodland, riparian, or scrub habitats, establishing water supply, if required, and invasive plant control.

Native Species Protections and Exclusions

To minimize effects on desirable habitats and native plant species, avoidance measures would be implemented. Temporary access paths (where vegetation would be removed but no grading would occur) and staging areas would be identified, and equipment movement would be restricted to these areas by the use of environmentally sensitive area (ESA) fencing, signage, and other appropriate measures.

Clearing, Grubbing, and Tree Removal

Clearing and grubbing would include the removal and disposal of all undesirable material, including large eucalyptus trees, Mexican fan palm (*Washingtonia robusta*) trees, tamarisk (*Tamarix* sp.), non-native grasses, mustards, thistles, excess plant detritus (predominant as leaf litter in the eucalyptus woodland understory), and trash. Earthwork operations would not begin in areas where clearing and grubbing are not complete, except where stumps and large roots may be removed concurrently with excavation. Existing vegetation outside the areas to be graded would be protected using temporary fencing. However, in limited instances, selective removal of invasive non-native species may take place in the adjacent grassland areas in coordination with a qualified biologist.

Eucalyptus duff currently present on the ground would also need to be removed because it adversely affects soil pH levels and can provide thick ground cover that inhibits the germination and growth of understory herbaceous vegetation. Eucalyptus duff removal would occur with a biological monitor present and the material would be removed offsite and disposed of at an approved facility.

Upland and In-Channel Grading

Grading limits would be clearly defined in the field to limit impacts on existing WOUS, including wetlands, waters of the state, and high quality upland habitat. Temporary impacts on any adjacent habitats would be mitigated through in-situ restoration activities, including revegetation with native species. In-channel grading would be limited and designed to increase the channel's capacity to accommodate increased peak flows from the upper watershed. Much of this work would occur in existing upland areas, non-wetland reaches of the creek, or riparian areas dominated by non-native species. Figure 2-5 identifies the proposed grading limits and temporary work areas within the Mitigation Site.

The temporary loss of aquatic function during grading and habitat establishment would be compensated for by reducing the amount of mitigation credit available to compensate for other City projects. Additionally, temporary erosion and sediment control BMPs would be installed to manage sediment until permanent stabilization is achieved.

Soil Preparation

In-situ soils at design grade may require amendment, either by amending the entire revegetation area or by amending the backfill in the planting holes. During preparation of construction documents, the approach would be finalized, including the need for soil testing.

Invasive Plant Control

It is expected that invasive plant species control would be necessary prior to Project implementation. Invasive plant species control should be planned in advance and could be started prior to anticipated initial planting. Invasive plant species are defined as those listed by the California Invasive Plant Council with a rating of high or moderate, any Tier 1 or Tier 2 invasive species listed in the Water Board's Fact Sheet for Wetland projects, or species considered locally invasive (RWQCB 2009). Local invasive plant species lists from San Diego County would be used to supplement these lists. Control methods for each invasive plant species would be determined based on up-to-date research on effective control techniques.

Fencing and Trail Enhancements

In conjunction with the Project, the City would install new fencing at locations bordering the Mitigation Site. The fencing would be designed to restrict access to Park users to the habitat mitigation areas and maintain wildlife movement through the riparian corridor. The fencing would consist of wooden posts with wire or cable strands.

Trail improvements to the western trail alignment that border the Mitigation Site on the west would include the addition of BMPs to minimize the generation and input of sediment into the habitat rehabilitation, enhancement, and establishment areas. Minor realignment of the trail would also occur to facilitate site grading activities and maximize the size and connectivity of the riparian corridor.

Planting Material

Plant Species and Sources

A list of the plant species proposed for each of the habitat restoration areas would be prepared as part of final design. To the extent feasible, planting materials would be collected from appropriate woodland, wetland, and riparian habitats within the local watershed to ensure that native plant material of local genetic origin is used. Hydroseeding or broadcast seeding with a native erosion control mix may be employed in erosion control areas and other highly disturbed areas if deemed appropriate.

Water Sources and Irrigation

No permanent irrigation installation would be necessary for the seeded areas or the proposed seasonal and emergent wetlands (which would include installed wetland plugs), as they would be designed to be supported by groundwater and surface water runoff. However, if rainfall is more that 20 percent below average in Years 1 and/or 2, supplemental irrigation may be applied to wetland areas to establish survival of installed plugs and cuttings. If the site is irrigated during Years 3 through 5, the 5-year monitoring requirement would be reset to Year 1 and monitoring would resume for a minimum of 5 years after irrigation has ceased.

Overhead spray irrigation is not recommended due to water use inefficiency and increased establishment of weed species between the mitigation plantings. If an irrigation system is deemed necessary, water would be supplied by a water truck (via a stand pipe connection). Where wetland and willow plantings are proposed, the depth to available groundwater is expected to negate the need for irrigation.

Where temporary irrigation is required, watering would occur at least until the onset of the cool weather/wet season and/or a prolonged period of early rain in the fall. A restoration ecologist would evaluate watering needs after Year 1 of planting. If irrigation beyond the 2-year plant establishment period is required, the monitoring period would be reset to start anew at the cessation of irrigation. Under that scenario, once irrigation stops, Year 1 of the monitoring would resume.

Monitoring and Adaptive Management

Monitoring data would be collected and used to evaluate the success of the restoration areas. Information from this monitoring program would provide feedback to direct necessary maintenance and adjustments to planting areas or techniques to ensure the success of the mitigation program. Only created or restored habitats would be monitored; enhanced habitats would not be monitored or count towards the sites' success criteria.

Construction Details

Construction of the Project would start in Fall 2020. Construction activities would occur for approximately six months and would involve site preparation, grading activities, soils and materials transport, and revegetation activities. Portions of the Project site that would be subject to grading activities or temporary work areas are identified on Figure 2-5. Up to two crews of 25 people each would be required at the height of construction resulting in approximately 50 daily trips, excluding haul trucks. Up to 10 daily trips for haul trucks to import and export material would be required on peak construction days. Typical activities involved in the Project's construction would include the following:

- Equipment and materials transport;
- Placement of construction perimeter fencing;
- Site preparation, including exotic and invasive vegetation removal;
- Earthwork, including grading, excavation, and backfill;
- Civil improvements, trail, drainage, and fencing; and
- Revegetation activities.

Large organic debris, including eucalyptus tree trunks, along with smaller debris and construction-related import materials, would be transported offsite using single haul trucks. Native plant debris not removed offsite would be used onsite for erosion control or for coarse woody debris habitat enhancement features.

Surplus topsoil materials would be used as topsoil for the habitat planting area(s), where appropriate. Any suitable excess fill would be applied, where appropriate, onsite or exported offsite. The City anticipates that some material imports (e.g., aggregate, rocks, etc.) would be required to stabilize the final trail/access road alignments and to support habitat establishment. Construction specifications for these improvements would require that the materials be placed along the crown of the roadway and away from drainages. Additionally, at the locations where fill is placed, the City would provide appropriate erosion control measures, including, but not limited to, outsloping, soil stabilizers, and erosion control blankets or rock-lined V-ditches at drainage outlets.

Excavated soils materials would be temporarily stockpiled at the proposed staging area, which would be situated in the southwestern end of the park to minimize disruption to recreational uses. Following construction, the staging area would be restored to native habitat via tilling to alleviate any soil compaction and seeding.

Construction access to the site would require temporary access through Buena Vista Park and along the western access road, which follows an access easement along the adjacent property. Trail access along this section of the Park would be detoured to trails to the east until completion of construction. Temporary fencing would be erected, where required, to restrict access to the construction zone. Construction equipment would enter the Park site from the north from Shadowridge Drive.

Figure 2-5. Project Site Grading Limits and Work Areas



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3 Methods and Survey Limitations

3.1 General Biological Field Surveys and Vegetation Mapping

HDR biologists conducted vegetation mapping, habitat assessments for federally and/or state-listed plant and wildlife species, protocol focused species surveys, and a jurisdictional wetland delineation during spring and summer 2019 within the entire study area. The study area is bound to the south and southwest by the Buena Vista Park boundary, to the northwest by an access easement across the adjacent western parcel (under a conservation easement), to the north by the park use areas, and to the east by the City's sewer easement (Figure 2-3).

Vegetation communities are assemblages of plant species that usually coexist in the same area. The classification of vegetation communities is based upon the dominant species within that community and the associated flora. Vegetation communities were mapped using the classification system methodology and associations described in the *Vegetation Classification Manual for Western San Diego County* (San Diego Association of Governments 2011), adapted from *A Manual of California Vegetation* (Sawyer et al. 2009). This updated classification system was used to provide consistency with the National Vegetation Classification System and is currently the state-wide standard for vegetation mapping (Section 1900 of the California Fish and Game Code).

Based on the results of the vegetation mapping and habitat assessment, focused surveys were initiated for federally and/or state-listed plants and wildlife, including:

- San Diego thorn-mint (*Acanthomintha ilicifolia*) federally threatened, state endangered
- San Diego ambrosia (*Ambrosia pumila*) federally endangered
- Del Mar manzanita (Arctostaphylos glandulosa ssp. crassifolia) federally endangered
- Thread-leaved brodiaea (Brodiaea filifolia) federally threatened, state endangered
- Orcutt's spineflower (Chorizanthe orcuttiana) federally and state endangered
- San Diego button-celery (Eryngium aristulatum var. parishii) federally and state endangered
- Spreading navarretia (Navarretia fossalis) federally threatened
- Coastal California gnatcatcher (Polioptila californica; CAGN) federally threatened
- Least Bell's vireo (Vireo bellii pusillus; LBVI) federally and state endangered
- Southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL) federally and state endangered

3.1.1 Rare Plant Survey Methods

The rare plant surveys were conducted by HDR biologist Shelly Austin [CDFW Plant Voucher Collecting Permit No. 2081(a)-18-131-V] on March 14, April 22, and June 13, 2019. Surveys were conducted in accordance with *California Native Plant Society (CNPS) Botanical Survey Guidelines* (2001) and *CDFW Protocols for Surveying and Evaluation Impacts to Special Status Native Plant Populations and Natural Communities* (2009). Surveys were floristic in nature—all plant species

encountered during the surveys were identified to the taxonomic level necessary to determine whether or not they were a special-status plant species. Plant nomenclature follows the Jepson Flora Project (2019). The Calflora online database (Calflora 2019) was also used to assist with plant identification.

3.1.2 Protocol Wildlife Survey Methods

California Gnatcatcher - Protocol breeding season surveys for CAGN, conducted by HDR biologist Ingrid Eich, consisted of six site visits each separated by at least 7 days from April 10 to June 24, 2019, per protocol specified in the *Coastal California Gnatcatcher Presence/Absence Survey Guidelines* (USFWS 1997).

Least Bell's Vireo - Protocol surveys for LBVI, conducted by HDR biologists Ingrid Eich, Adam Lockyer, and Aaron Newton, consisted of eight site visits separated by at least 10 days from April 10 to July 16, 2019, per protocol specified in the *Least Bell's Vireo Survey Guidelines* (USFWS 2001).

Southwestern Willow Flycatcher - Protocol breeding season surveys for SWFL, conducted by HDR biologist Andrew Phillips, consisted of five site visits separated by at least 5 days from May 28 to July 16, 2019, during the appropriate survey periods, per protocol identified in *A Natural History Summary and Survey Protocol for Southwestern Willow Flycatcher* (U.S. Geological Survey [USGS] 2010).

During general biological and protocol wildlife surveys, a comprehensive list of all wildlife species encountered was maintained. Nomenclature for wildlife species follows Stebbins (2003) for reptiles and amphibians, American Ornithologists' Union (2009) for birds, Reid (2006) for mammals, and Emmel and Emmel (1973) for butterflies.

3.1.3 Jurisdictional Delineation Methods

Prior to conducting delineation fieldwork, the following literature and materials were reviewed:

- Current and historical aerial photographs of the survey area to determine the potential locations of WOUS and other riparian areas (Google Earth 2019; NETR Online 2019)
- USGS 7.5-minute San Marcos, California, quadrangle last updated 1996 to determine the presence of any "blue line" drainages or other mapped water features (USGS 2019) (Figure 3-1)
- Federal Emergency Management Agency Flood Zone Maps (Federal Emergency Management Agency 2019) (Figure 3-2)
- USFWS National Wetlands Inventory data to identify areas mapped as wetland features (USFWS 2019a) (Figure 3-2)
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil mapping data (USDA NRCS 2019a) (Figure 3-3)
- Site-specific vegetation mapping conducted for the Project.

Field surveys of the study area were conducted by HDR biologists Allegra Engleson and Aaron Newton on March 12 and 13, 2019. Surveys included direct inspection of the entire Project study area by foot. Surveyors identified and mapped field indicators of potentially jurisdictional drainage features. Weather conditions during delineation field work were conducive for surveying with generally clear skies. Supplemental desktop analysis was conducted in March 2020 based on data from the 2019 delineation survey, soil mapping, vegetation mapping, observations made during various 2019 biological surveys within the project area and 2-year water depth modeling (HDR 2020).

WoUS were delineated according to the methods outlined in the USACE Wetland Delineation Manual (Environmental Laboratory 1987), the Interim Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (USACE 2008a), and A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States (USACE 2008b). In addition, the 2016 Arid West Regional Wetland Plant List was referenced when conducting the delineation (Lichvar et al. 2016). CDFW jurisdiction was mapped to the top of bank and/or the edge of riparian vegetation. Coast live oaks were included as riparian habitat where their canopy overhung the banks of the creek, thereby contributing directly to stream function. Common plant species observed were identified by visual characteristics and morphology in the field, while less common or otherwise unknown plant species were identified later with the aid of plant keys. Taxonomic nomenclature for plants follows the Jepson eFlora (Jepson Flora Project 2019).

Where jurisdictional limits of wetland features exhibited distinct boundaries based on distinct topographic or vegetation changes, limits were digitized based on those visible boundaries on an overlay of 1-foot contours and 1:2,400-scale 0.3-meter resolution 2017 aerial maps. All other boundaries, photograph locations, ordinary high water mark (OHWM) data sheet locations and wetland soil pit locations were collected using an iPad with global positioning system unit with an external receiver, providing sub-meter accuracy. Where the creek was incised and unvegetated, OHWM widths were measured where changes in width were observed. Acreage was calculated by averaging the OHWM widths between measurements using ArcGIS software during post-processing. In general, the OHWM was indicated by a break in the bank slope, scouring, or destruction of vegetation. In instances where the channel was not confined by incised banks or a predominance of hydrophytic vegetation was present, the boundary of WoUS was based on wetland determination points and elevation contours. Other data recorded included bank height and morphology, substrate type, and all vegetation within and adjacent to the streambed. Seven soil pits were sampled within the study area in areas exhibiting potential wetland conditions including hydrophytic vegetation and/or hydrology. Soils were analyzed using the NRCS Field Indicators of Hydric Soils in the U.S., Version 8.0 and List of California Hydric Soils (USDA NRCS 2016a and 2016b) and a Munsell Soil Color Chart.

For the reach of the creek where willows dominate the overstory and hydrophytic herbaceous species dominate the understory, hydric soils were presumed to occur at or below the contour at which hydric soils were detected (Wetland Determination datasheets SP 3, SP 5 and SP 6).


Figure 3-1. United States Geological Survey Topographic Map

SHADOWRIDGE DR Oreals altectonce

Figure 3-2. Federal Emergency Management Act Flood Zone Mapping and United States Fish and Wildlife Service National Wetlands Inventory

LEGEND

Mitigation Site Boundary National Wetland Inventory

FEMA Flood Designation

Zone A

Riverine

Freshwater Forested/Shrub Wetland



Zone X

0 Feet 300





Soil Type

CIE2-Cieneba coarse sandy loam, 15 to 30 percent slopes, ero ded

CmE2-Cieneba rocky coarse sandy loam, 9 to 30 percent slopes , eroded

- VsE-Vista coarse sandy loam, 15 to 30 percent slopes

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3.2 Literature Review

Before surveying the study area, a list of special-status plant and animal species that have the potential to occur within the study area was prepared using information provided by the USFWS species list from the online Information for Planning and Consultation Online System (USFWS 2020; Appendix A1), the CDFW's California Natural Diversity Database RareFind program (CDFW 2020; Appendix A2), and CNPS Inventory of Rare and Endangered Plants of California (CNPS 2020; Appendix A3). Appendix A provides the database search results. In addition to a review of special-status species databases, aerial photographs and topographic maps (1-foot contours) of the study area at a scale of 1:2,400 were reviewed prior to field surveys.

4 Regulatory Framework

4.1 Federal Regulations

4.1.1 Federal Endangered Species Act

The federal Endangered Species Act defines and lists *species* as "endangered" and "threatened" and provides regulatory protection for the listed species. The federal Endangered Species Act provides a program for conservation and recovery of threatened and endangered species; it also ensures the conservation of designated critical habitat that USFWS has determined is required for the survival and recovery of these listed species. Section 9 of the federal Endangered Species Act prohibits the "take" of species listed by USFWS as threatened or endangered. *Take* is defined as follows: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct." In recognition that take cannot always be avoided, Section 10(a) of the federal Endangered Species Act includes provisions for take that is incidental to, but not the purpose of, otherwise lawful activities. Section 10(a)(1)(B) permits (incidental take permits) may be issued if take is incidental and does not jeopardize the survival and recovery of the species.

Section 7(a) (2) of the federal Endangered Species Act requires that all federal agencies, including USFWS, evaluate projects with respect to any species proposed for listing or already listed as endangered or threatened and any proposed or designated critical habitat for the species. Federal agencies must undertake programs for the conservation of endangered and threatened species and are prohibited from authorizing, funding, or carrying out any action that will jeopardize a listed species or destroy or modify its critical habitat.

As defined in the federal Endangered Species Act, individuals, organizations, states, local governments, and other nonfederal entities are affected by the designation of critical habitat only if their actions occur on federal lands; require a federal permit, license, or other authorization; or involve federal funding (USFWS 2018).

4.1.2 Migratory Bird Treaty Act

The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 Code of Federal Regulations (CFR) Part 10, including feathers, or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Sections 3505, 3503.5, and 3800 of the CDFW code also prohibit the take, possession, or destruction of birds, their nests, or eggs.

4.1.3 Clean Water Act

Section 404 of Clean Water Act

Pursuant to Section 404 of the CWA, USACE regulates the discharge (temporary or permanent) of dredged or fill material into WOUS, including wetlands (U.S. Environmental Protection Agency [EPA] 2016a). A discharge of fill material includes, but is not limited to, grading, placing riprap for erosion control, pouring concrete, and stockpiling excavated material into WOUS. Activities that generally do not involve a regulated discharge (if performed specifically in a manner to avoid discharges) include driving pilings, performing certain drainage channel maintenance activities, constructing temporary mining and farm/forest roads, and excavating without stockpiling.

The term "waters of the United States" was defined in USACE regulations at 33 CFR Part 328.3(a) as:

- 1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- 2. All interstate waters including interstate wetlands;
- 3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - a. Which are or could be used by interstate or foreign travelers for recreation or other purposes; or
 - b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - c. Which are used or could be used for industrial purpose by industries in interstate commerce;
- 4. All impoundments of waters otherwise defined as waters of the U.S. under the definition;
- 5. Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;
- 6. The territorial seas;
- 7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not WOUS.

WOUS do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the U.S. EPA.

The limit of USACE jurisdiction, excluding wetlands and tidal waters, is delineated using the OHWM and defined in CFR Section 328.3(e) as:

...that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Navigable Waters Protection Rule

On January 23, 2020, the U.S. EPA and USACE finalized the Navigable Waters Protection Rule to define "waters of the U.S." and, thereby, establish federal regulatory authority under the CWA. The rule will become effective 60 days after publication in the *Federal Register*. At the time of this report's publication, the final rule had yet to be published in the *Federal Register*. The CWA permitting for the Project will be based upon the definition in place at the time of permit processing.

The prepublication version of the rule defines "waters of the U.S." to include the territorial seas and traditional navigable waters; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters. The final rule excludes from the definition of "waters of the U.S." all waters or features not mentioned above, including the following:

- Groundwater, including groundwater drained through subsurface drainage systems
- Ephemeral features that flow only in direct response to precipitation, including ephemeral streams, swales, gullies, rills, and pools
- Diffuse stormwater runoff and directional sheet flow over upland
- Ditches that are not traditional navigable waters, tributaries, or that are not constructed in adjacent wetlands, subject to certain limitations
- Prior converted cropland
- Artificially irrigated areas that would revert to upland if artificial irrigation ceases
- Artificial lakes and ponds that are not jurisdictional impoundments and that are constructed or excavated in upland or non-jurisdictional waters
- Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel
- Stormwater control features constructed or excavated in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater runoff
- Groundwater recharge, water reuse, and wastewater recycling structures constructed or excavated in upland or in non-jurisdictional waters
- Waste treatment systems

Wetlands

The term "wetlands" (a subset of WOUS) is defined at 33 CFR § 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987, USACE published a manual to guide its field personnel in determining jurisdictional wetland boundaries followed by the Arid West Supplement in 2008. The methodology set forth in the *1987 Wetland Delineation Manual* (Environmental Laboratory 1987) and *Arid West Supplement* (USACE 2008a) generally requires that in order to be considered a wetland, the vegetation, soils, and hydrology of an area exhibit at least minimal hydric characteristics. While the manual provides great detail in methodology and allows for varying special conditions, a wetland should normally meet each of the following three criteria:

 The plant community must be determined to be hydrophytic based on: (1) the test applied using the 50/20 rule, or (2) where the vegetation fails the dominance test and wetland hydrology and hydric soils are present, vegetation is determined to be hydrophytic using the Prevalence Index test based upon the indicator status (i.e., rated as facultative or wetter) in the National List of Plant Species that Occur in Wetlands.

- 2. Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., redoximorphic features with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions).
- 3. Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for a sufficient period to cause: (1) the formation of hydric soils; and (2) establishment of a hydrophytic plant community. A positive test for wetland hydrology is based on the presence of one primary or two secondary indicators.

Section 401 of Clean Water Act

A federal permit or license cannot be issued that may result in a discharge to WOUS unless certification under Section 401 of the CWA is granted or waived by the U.S., state, or tribe where the discharge would originate (U.S. EPA 2010). Within the proposed study area, the ability to grant, grant with conditions, deny, or waive certification falls to the San Diego RWQCB.

Pursuant to Section 401 of the CWA, Before USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification or waiver, as applicable. Under Section 401 of the CWA, all activities regulated at the federal level by USACE are also regulated at the state level. Therefore, state jurisdiction usually includes all waters or tributaries to waters that are determined to be WOUS and, similar to WOUS, are typically delineated at the OHWM.

4.2 State Regulations

4.2.1 California Endangered Species Act

The California Endangered Species Act prohibits the take of listed species, except as otherwise provided in state law. The term "take" under the California Endangered Species Act is defined the same as it is in the federal Endangered Species Act; however, unlike the federal Endangered Species Act, California Endangered Species Act also applies the take prohibitions to species petitioned for listing as state candidates rather than only listed species. State lead agencies are required to consult with the CDFW to ensure that any actions undertaken by the lead agency are not likely to jeopardize the continued existence of any state-listed species or result in the destruction or degradation of the species' required habitat. CDFW is authorized to enter into a Memorandum of Understanding with individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess listed species for scientific, educational, or management purposes.

4.2.2 Section 2080 and 2081 of the California Fish and Game Code

Section 2080 of the Code states:

"No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter [Chapter 1.5, Endangered Species], or the Native Plant Protection Act, or the California Desert Native Plants Act."

Pursuant to Section 2081 of the Code, the CDFW may authorize individuals or public agencies to import, export, take, or possess, any state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or Memorandums of Understanding: (1) if the take is incidental to an otherwise lawful activity, (2) if impacts of the authorized take are minimized

and fully mitigated, (3) if the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and (4) if the applicant ensures adequate funding to implement the measures required by the CDFW. The CDFW shall make this determination based on available scientific information and shall include consideration of the ability of the species to survive and reproduce.

4.2.3 Sections 3503 and 3503.5 of the State Fish and Game Code

These sections of the Code provide regulatory protection to resident and migratory birds and all birds of prey within the State of California, including the prohibition of the taking of nests and eggs, unless otherwise provided for by the Code. Specifically, these sections of the Code make it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code.

4.2.4 Sections 1600 to 1603 of the State Fish and Game Code

The State of California regulates water resources under Section 1600-1616 of the California Fish and Game Code. Section 1602 states:

"An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake."

CDFW jurisdiction includes ephemeral, intermittent, and perennial watercourses and extends to the top of the bank of a stream or lake, if unvegetated, or to the limit of the adjacent riparian habitat located contiguous to the watercourse, if the stream or lake is vegetated.

4.2.5 Porter-Cologne Water Quality Control Act

RWQCB also regulates discharge of waste to Waters of the State, pursuant to California's Porter-Cologne Act, enacted in 1969, which provides the legal basis for water quality regulation within California. Under this Act, the Water Code defines "waters of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state.

4.2.6 State Water Resources Control Board's 2019 Wetland and Riparian Area Protection Policy

The State Water Resources Control Board (SWRCB) adopted a statewide definition of rules to protect wetlands and other environmentally sensitive waterways throughout the state on April 2, 2019. These rules define what SWRCB considers a wetland and include a framework for determining if a feature that meets the SWRCB wetland definition is a "water of the state," subject to regulation. Second, the rules clarify requirements for permit applications to discharge dredged or fill material to any water of the state.

The SWRCB defines an area as wetland as follows:

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. (SWRCB 2019).

SWRCB considers the following wetlands (as determined using methodology in the USACE 1987 Wetland Delineation Manual) as waters of the state:

- 1. Natural wetlands
- 2. Wetlands created by modification of a surface water of the state
- 3. Artificial wetlands that meet any of the following criteria:
 - a. Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration
 - b. Specifically identified in a water quality control plan as a wetland or other water of the state
 - c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape
 - d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):
 - i. Industrial or municipal wastewater treatment or disposal
 - ii. Settling of sediment
 - iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program
 - iv. Treatment of surface waters
 - v. Agricultural crop irrigation or stock watering
 - vi. Fire suppression
 - vii. Industrial processing or cooling
 - viii. Active surface mining even if the site is managed for interim wetlands functions and values
 - ix. Log storage
 - x. Treatment, storage, or distribution of recycled water
 - xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits)
 - xii. Fields flooded for rice growing

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in numbers 2, 3.a, 3.b, or 3.c are not waters of the state. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state.

4.2.7 California Environmental Quality Act

The CEQA requires state and local agencies to identify impacts to the environment that might be caused by their actions. Projects undertaken by public or private agencies must comply with this act if there is any approval given by a state agency (CEQA 2012). CEQA is a self-regulating statute; however, agencies that do not comply may face litigation from the public. CEQA is a statute that requires state agencies to provide information about environmental impacts of their actions and requires that actions be taken to avoid, minimize, or mitigate those impacts. All listed species are protected as well as candidates and those listed by the CNPS (Lists 1A, 1B, and 2) and CDFW (CEQA 2012).

4.2.8 Public Resource Code § 21083.4

Per Public Resource Code § 21083.4, significant impacts on coast live oak (*Quercus agrifolia*) (greater than 5 inches diameter at breast height) woodland would require mitigation consisting of oak woodland conservation, oak woodland restoration, coast live oak planting and management or payment to the Oak Woodland Conservation Fund.

4.3 Local Regulations

4.3.1 North County Multiple Habitat Conservation Program

The North County MHCP is a planning program under the state Natural Community Conservation Planning Act that establishes an ecosystem preserve in northwestern San Diego County as well as monitoring and management objectives. The overall goal of the MHCP is to conserve viable populations of native plant and animal species and their habitats. The MHCP subregion encompasses seven incorporated cities, including Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista.

The MHCP includes Focused Planning Areas, which include preserves that are target areas for conservation and management of biological resources. The program also includes standards for planned development near preserve areas to avoid and minimize impacts on biological resources within the preserve from new development. It also identifies core areas and functional linkages between preserve areas. The Project is on land located within MHCP Focused Planning Area. The City of Vista is in the process of preparing a subarea plan and has not yet executed an implementing agreement with the wildlife agencies (USFWS and CDFW). Therefore, the Project will not authorized through participation in the MHCP, but the Project will be evaluated for consistency with the plan as a local planning guidance document.

4.3.2 City of Vista General Plan

The City of Vista General Plan includes policies relevant to biological resources within the Resource Conservation Sustainability (RCS) Element. These policies include:

- RCS Policy 4.3: Implement the Agua Hedionda Watershed Management Plan and develop and implement a similar watershed management plan for Buena Vista Creek and its major tributaries, dependent upon available funding.
 - **RCS Policy 4.5:** Protect and restore appropriate beneficial uses for prioritized water bodies impacted by stormwater and urban runoff.

- **RCS Policy 4.3.2:** Allow alteration, rechannelization, and /or modifications to existing channelized streams only if such modifications preserve or restore natural habitat values to the greatest extent feasible and necessary permits are obtained.
- RCS Policy 4.3.3: Restrict the installation of new concrete lining or channelization projects within open creeks and waterways and restore the creek system to its natural state where feasible in an effort to balance flood protection, water quality benefits, and habitat preservation. The daylighting and restoration of covered creek channels is encouraged.
- RCS Policy 5.1: Continue to require development that is proposed in areas identified or expected to contain sensitive vegetation and wildlife communities to consult with wildlife agencies (i.e., USFWS and CDFW) early in the development review process regarding special-status plant and wildlife species; conduct biological assessments, as appropriate; and develop and implement project-specific mitigation measures (MM) to mitigate impacts on threatened and endangered species.
- RCS Policy 5.2: In areas that are adjacent to sensitive vegetation and/or wildlife communities, continue to require development, uses, and activities to be designed and managed to ensure minimal impacts on those resources. Examples include, but are not limited to the following:
 - Provide buffers or barriers between the development and the biological resources.
 - o Prohibit parking lots and other developed areas from draining into sensitive resources.
 - Require land uses that use chemicals or fertilizers or generate by-products that are potentially toxic or harmful to wildlife, sensitive species, and habitats to incorporate measures to mitigate those impacts.
 - Require development to incorporate measures that avoid degradation of habitats from erosion and sedimentation.
 - Ensure that sensitive species are protected from night lighting from nearby development.
 - Mitigate noise impacts from development, uses, or activities on nearby sensitive species through noise reduction measures and/or restriction of hours during the breeding season of sensitive species.
 - Require development that is adjacent to sensitive resources to landscape their sites with native, non-invasive vegetation that is similar to or compatible with the adjacent resources; and prohibit horticultural regimes (irrigation, fertilization, pest control, and pruning) that could alter site conditions in natural areas.
 - Enforce fire and brush management plans so that both biological and safety goals are met.
- RCS Policy 5.3: Continue to require development that is proposed in areas identified or expected to contain sensitive vegetation and wildlife communities to consult with wildlife agencies (i e., USFWS and the California Department of Fish and Game) early in the development review process regarding special status plant and wildlife species; conduct biological assessments, as appropriate; and develop and implement project- specific MMs to mitigate impacts on threatened and endangered species.
- RCS Policy 5.3: Preserve the integrity of riparian habitat areas, creek corridors, and other drainages that support biological resources and contribute to the overall health of the watershed areas through the preservation and restoration of native plants and the removal of invasive, exotic, and nonnative species.

- RCS Policy 5.6: Continue to require the use of native, naturalized, and non-invasive plants and turf to avoid or minimize use of irrigation, fertilizers, and pesticides, and to provide increased wildlife habitats for native species.
- RCS Policy 5.7: To the extent practicable, and as determined by the City, avoid sensitive habitats and species during the planning, design, and construction of new public infrastructure (such as sewers, storm drain and flood control facilities, utilities, and roads), unless alternative locations are not practical.
- RCS Policy 5.8: Maintain and regularly update a database of biological resource information relevant to natural resources in the City of Vista, including regional data sets and more focused field investigations within the City.
- RCS Policy 6.2: Limit land uses within the BPO to only those necessary for the protection of public health and safety, or recreational uses that are consistent with the conservation standards in the MHCP. Biological conservation shall be the primary objective within the BPO whenever potential conflicts with recreational uses arise.
- **RCS Policy 6.3**: Establish and maintain a BPO reflecting the Focused Planning Area in the MHCP to the maximum extent practicable. The BPO shall define lands worthy of protection based on the presence of sensitive vegetation and wildlife communities, or those lands that support viable wildlife corridors.
- RCS Policy 6.3: Establish maintenance and management standards for the BPO to ensure permanent conservation. The City's standards shall be based on the applicable standards in Section 6.0 of the Final MHCP (i e., Fire Management; Habitat Restoration; Erosion Control; Landscaping Restrictions; Recreation and Public Access; Fencing, Signs and Lighting; Predator and Exotic Species Control; Hydrology and Flood Control; and Species Reintroduction), subject to the availability of permanent funding.

5 Affected Environment/Survey Results

5.1 Environmental Setting

The study area is located in Buena Vista Park on the USGS San Marcos 7.5-minute quadrangle (Figure 3-1). Elevation within the study area ranges between 295 and 345 feet above mean sea level. The study area slopes gradually from north to south along Roman Creek toward Agua Hedionda Creek. Buena Vista Park includes marsh, willow (*Salix* spp.), and coast live oak (*Quercus agrifolia*) riparian vegetation within the creek corridor, and eucalyptus (*Eucalyptus* spp.) trees, oak woodlands, coastal sage scrub, grasslands, and chaparral vegetation on the adjacent uplands (Figure 5-1). Several dirt trails crisscross through the upland and riparian areas within the park and are heavily used by the public for walking, biking, and dog walking.

Surrounding land uses include the 235-acre Dawson Los Monos Canyon Reserve, managed by University of California San Diego as part of its Natural Reserve System, located downstream and to the south and west of Buena Vista Park, and the existing Shadow Ridge Development, which contains a mix of residential, commercial/retail, and recreational uses and is located to the west and north of Buena Vista Park (Figure 2-3).

5.2 Project Soils

The online NRCS database was referenced to identify potential hydric soils occurring within the study area (USDA NRCS 2019b). The following soils are mapped within the study area (Figure 3-3):

- **Cieneba Series**: Soil consisting of very shallow and shallow, somewhat excessively drained, coarse to very rocky coarse sandy loam soils that formed in material weathered from granitic rock. These soils occur on hills and mountains and within the study area have slopes of 15 to 75 percent. Soils are moderately acidic.
 - This soil is not listed as a hydric soil within San Diego County (USDA NRCS 2019b).
- **Salinas Series**: Soil consisting of deep, well drained clay loam soils that formed in alluvium weathered from sandstone and shale. These soils occur on alluvial plains, fans, and terraces, and within the study area have slopes of 2 to 9 percent. Soils are moderately alkaline.
 - This soil is not listed as a hydric soil within San Diego County (USDA NRCS 2019b).
- Visalia Series: Soil consisting of well drained sandy loam soils that formed in alluvium derived from granite. These soils occur on alluvial fans and within the study area have slopes of 2 to 5 percent.
 - This soil is listed as a hydric soil (criteria 2) within San Diego County when it occurs in floodplains (USDA NRCS 2019b).
- Vista Series: Soil consisting of well drained coarse sandy loam soils formed in residuum weathered from granodiorite and quartz-diorite. These soils occur on hills and within the study area have slopes of 15 to 30 percent.
 - This soil is not listed as a hydric soil within San Diego County (USDA 2019b).

5.3 Topography

Within the study area, Roman Creek drains south through a shallow, south-facing gorge that descends from a coastal bluff, referred to as Coxey Hill, into Los Monos Canyon where it confluences with Agua Hedionda Creek.

5.4 Hydrology

The study area is located within the 18,837-acre (29.4-square mile) Agua Hedionda watershed, which is located within the Carlsbad Hydrologic Unit (Hydrologic Unit 904.00). The watershed is divided into two subareas: the Buena hydrologic subarea (904.32) in the upper watershed and the Los Monos hydrologic subarea (904.31) in the lower watershed. The watershed includes portions of four municipalities – the cities of Carlsbad, Vista, Oceanside, and San Marcos – as well as unincorporated portions of San Diego County. The watershed contains approximately 37 linear miles of stream, including Agua Hedionda, Roman, Little Encinas, La Mirada, Calavera, and Buena creeks. It also includes three significant standing bodies of water: Agua Hedionda Lagoon, Lake Calavera, and Squires Reservoir. Major transportation corridors include Interstate 5, State Route 78, Pacific Coast Highway, and the Santa Fe Railroad (Tetra Tech 2008).

The study area occurs along Roman Creek, which is tributary to Agua Hedionda Creek (Figure 3-2). Roman Creek is a historically natural drainage, originating in the hills approximately 1 mile northeast of the study area. Roman Creek generally flows in a southerly direction, and has a total drainage area of approximately 1.1 square miles to an outlet location near the Project site. The Roman Creek watershed includes a relatively steep terrain and consists primarily of urban developed communities, in addition to a high school, an 18-hole golf course, and Buena Vista Park. The Roman Creek watershed is a highly geomorphologically controlled creek for the majority of the upper-two thirds of the watershed (Tory R. Walker Engineering 2017). The creek is conveyed via both hardened and unlined channels and passes through multiple grade controls at culverts before draining into the Buena Vista Park open space area (Tory R. Walker Engineering 2017). Roman Creek exhibits a heavily vegetated natural channel through Buena Vista Park before discharging into Agua Hedionda Creek.

Roman Creek is not listed in the CWA Section 303(d) List of Impaired Waters (SWRCB 2017). Agua Hedionda is listed as an impaired water with selenium, total dissolved solids (salinity), and toxicity listed as pollutants for which total maximum daily loads need to be developed.

5.5 Vegetation Communities and Land Cover Types

Vegetation communities and other land cover types in the study area are provided on Figure 5-1. Acreages of vegetation communities and other land cover types in the study area are provided in Table 5-1. Descriptions of vegetation communities and land cover types are provided below. Special-status vegetation communities are discussed in Section 5.9.

Vegetation Community or Other Land Cover Type	Alliance level Vegetation Community Type	Area (acres)	
Tree-dominated habitats			
Forest/Woodland	Mixed willow riparian	0.75	

 Table 5-1. Vegetation Communities and other Land Cover Types in the Study Area

Vegetation Community or Other Land Cover Type	Alliance level Vegetation Community Type	Area (acres)	
	Oak-willow alliance	2.68	
	Coast live oak alliance	2.47	
Non-native woodland	Eucalyptus woodland	1.32	
Ornamental (planted)	Ornamental (planted)	0.47	
Shrub-dominated habitats			
Chaparral	Chamise chaparral	0.22	
	Sugarbush chaparral	0.04	
Coastal sage scrub	California sagebrush scrub	0.49	
	California sagebrush- black sage scrub	0.73	
	California sagebrush- California buckwheat scrub	0.94	
	Coyote brush scrub	0.31	
	California buckwheat scrub	0.59	
Non-native shrubland	Tamarisk thickets	0.04	
Herbaceous-dominated habitats			
Freshwater marsh	Cattail marsh	0.31	
Non-native grassland	Annual brome grassland	2.04	
	Red brome grassland	0.81	
Other land cover types			
Disturbed habitat	Disturbed habitat	2.19	
Urban/Developed	Urban/Developed	0.28	
Total		16.68	

Table 5-1. Vegetation Communities and other Land Cover Types in the Study Area



Mixed willow riparian (MWR)

Oak-willow alliance (OWA)

Ornamental (planted) (ORN)

Tamarisk Scrub (TS)

Urban/Developed (UD)

Figure 5-1. Vegetation Communities and Other Land Cover Types in the Study Area

Chamise chaparral (CC)

Coyote brush scrub (COBS)

Coast live oak alliance (CLO)

California buckwheat scrub (CBS)

California sagebrush scrub (CSS)

California sagebrush-California buckwheat scrub (CSS-C)



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California adolphia (Adolphia californica) San Diego sagewort (Artemisia palmeri) and San Diego marsh elder (Iva hayesiana)



5.5.1 Mixed Willow Riparian Forest (*Salix gooddingii* Woodland Alliance and *Salix lasiolepis* Shrubland Alliance) (California Department of Fish and Wildlife Codes 61.211.00 and 61.201.00)

Mixed willow riparian forest includes a combination of areas dominated by black willow (*Salix gooddingii*) and areas dominated by arroyo willow (*Salix lasiolepis*), or a mix of the two species. The black willow alliance typically occurs on terraces along large rivers, canyons, and along rocky floodplains of small, intermittent streams, seeps, and springs (Sawyer et al. 2009). Black willow is dominant or co-dominant in the tree canopy with at least five percent relative cover in that canopy (San Diego Association of Governments 2011). Trees are less than 30 meters in height, with an open to continuous canopy and shrub layer, and a variable herbaceous layer (Sawyer et al. 2009). The arroyo willow alliance typically occurs primarily along stream banks and benches, slope seeps, and stringers along drainages. Arroyo willow is dominant or co-dominant in the shrub layer with at least five percent relative cover and grows on seasonally or intermittently flooded sites. Trees are less than 10 meters in height, with an open to continuous canopy and a variable herbaceous layer (Sawyer et al. 2009).

Within the study area, mixed willow riparian forest occurs primarily adjacent to cattail marsh at the northern end of the study area within an existing designated restoration area. This community is dominated by black and arroyo willows with an understory comprised of San Diego marsh-elder (*Iva hayesiana*, California Rare Plant Rank [CRPR] 2B.2), San Diego sagewort (*Artemisia palmeri*, CRPR 4.2), coyote brush (*Baccharis pilularis*), mugwort (*Artemisia douglasiana*), western virgin's bower (*Clematis ligusticifolia*), and pampas grass (*Cortaderia selloana*).

5.5.2 Oak–Willow Alliance (*Quercus agrifolia* Woodland Alliance, *Salix gooddingii* Woodland Alliance, and *Salix lasiolepis* Shrubland Alliance) (California Department of Fish and Wildlife Codes 71.060.00, 61.211.00, and 61.201.00)

Oak-willow alliance includes a combination of areas dominated by coast live oak (*Quercus agrifolia*) and either black or arroyo willow, with both oaks and willows having at least five percent relative cover (San Diego Association of Governments 2011). The coast live oak alliance typically occurs on alluvial terraces, canyon bottoms, streams banks, slopes, and flats. Trees are less than 30 meters in height with an open to continuous canopy, a sparse to intermittent shrub layer, and a sparse or grassy herbaceous layer (Sawyer et al. 2009).

Within the study area, oak-willow alliance occurs in the middle section of the site along the Roman Creek drainage. This community is dominated by coast live oak in combination with black or arroyo willows, with lower cover of western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), white alder (Alnus *rhombifolia*), and eucalyptus (*Eucalyptus* sp.). Understory species present include small fruit bulrush (*Scirpus microcarpus*), celery (*Apium graveolens*), lovegrass flatsedge (*Cyperus eragrostis*), California bulrush (*Schoenoplectus californicus*), and poison oak (*Toxicodendron diversilobum*).

5.5.3 Coast Live Oak Alliance (*Quercus agrifolia* Woodland Alliance) (California Department of Fish and Wildlife Code 71.060.00)

Coast live oak woodland alliance is dominated by coast live oak and occurs either in a riparian or an upland setting. This alliance was described in Section 5.5.2.

Within the study area, coast live oak alliance occurs in the lower reaches of Roman Creek where arroyo willow may still be present, but is at much lower percent cover in the shrub layer than the oak-willow alliance. The understory has heavy leaf litter, with a sparse herbaceous layer that includes English ivy (*Hedera helix*), smilo grass (*Stipa miliacea* var. *miliacea*), and woolly-flowered vervain (*Verbena lasiostachys* var. *lasiostachys*). In addition, small patches of coast live oak woodland occur on the western boundary and continue westward outside the study area. The understory is dominated by non-native annual grasses, including ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), rattail sixweeks grass (*Festuca myuros*), and hare barley (*Hordeum murinum* ssp. *leporinum*). Other herbaceous species in the understory include black mustard (*Brassica nigra*) and shortpod mustard (*Hirschfeldia incana*). One area on the western part of the site had an understory dominated by California adolphia (*Adolphia californica*, CRPR 2B.1), with narrow-leaved bedstraw (*Galium angustifolium* ssp. *angustifolium*), Xantus' nightshade (*Solanum xanti*), common fiddleneck (*Amsinckia menziesii*) also present.

5.5.4 Eucalyptus Woodland (*Eucalyptus globulus, camaldulensis* Semi-Natural Woodland Stand) (California Department of Fish and Wildlife Code 79.100.00)

Eucalyptus woodlands typically include areas that have been planted as groves or windbreaks and have become naturalized on uplands and along stream courses. Trees are under 50 meters in height with an intermittent to continuous canopy and sparse to intermittent shrub and herbaceous layers (Sawyer et al. 2009).

Within the study area, eucalyptus woodland occurs as a row of planted eucalyptus trees adjacent an ornamental area in the northern part of the study area and as an extensive, dense grove of trees above the oak-willow riparian habitat in Roman Creek. Both red gum (*Eucalyptus camaldulensis*) and blue gum (*Eucalyptus globulus*) occur on the site, with a very thick, dense thatch of leaf litter in the understory. Towards the northern extent of the large grove, some coast live oak trees and laurel sumac (*Malosma laurina*) occur in the understory.

5.5.5 Ornamental (Planted) Vegetation (No California Department of Fish and Wildlife Code)

Areas with ornamental (planted) vegetation are typically found near developed areas, along streets, and in parks. This vegetation usually consists of irrigated plants that are not native.

Within the study area, ornamental vegetation occurs at the northern end of the study area as a grassy area with planted trees and picnic tables that is part of the park used by the public.

5.5.6 Chamise Chaparral (*Adenostoma fasciculatum* Shrubland Alliance) (California Department of Fish and Wildlife Code 37.101.00)

Chamise chaparral is dominated by chamise (*Adenostoma fasciculatum*), which accounts for at least 50 percent relative cover in the shrub layer. This alliance occurs on uplands. Shrubs are typically less than 4 meters in height with an intermittent to continuous canopy (Sawyer et al. 2009).

Within the study area, chamise chaparral occurs on a gentle slope along the western part of the site, west of an existing dirt trail, and continues westward outside of the study area. Chamise forms a nearly continuous cover, with lesser amounts of black sage (*Salvia mellifera*) present in the shrub layer.

5.5.7 Sugarbush Chaparral (*Rhus ovata* Shrubland Alliance) (California Department of Fish and Wildlife Code 37.801.00)

Sugarbush chaparral is dominated by sugarbush (*Rhus ovata*), which accounts for at least 30 percent relative cover in the shrub layer. This alliance occurs on uplands and steep slopes. Shrubs are typically less than 5 meters in height, with an open to continuous canopy and a sparse herbaceous layer (Sawyer et al. 2009).

Within the study area, sugarbush chaparral occurs on a slope on the northwestern part of the site, west of an existing dirt access trail, and continues westward outside of the study area. Sugarbush is dominant, with lesser amounts of species characteristic of coastal sage scrub present, including California sagebrush (*Artemisia californica*), black sage, and California buckwheat (*Eriogonum fasciculatum*).

5.5.8 California Sagebrush Scrub (*Artemisia californica* Shrubland Alliance) (California Department of Fish and Wildlife Code 32.010.01)

California sagebrush scrub is dominated by California sagebrush, which accounts for at least 50 percent relative cover in the shrub layer. This alliance usually occurs on steep slopes that are rarely flooded and on low-gradient deposits along streams. Shrubs are typically less than 2 meters in height, with an intermittent to continuous canopy and an herbaceous layer that is variable both seasonally and annually (Sawyer et al. 2009).

Within the study area, California sagebrush scrub occurs on the eastern part of the site on slopes adjacent to an existing dirt access trail. California sagebrush is dominant, with lesser amounts of California buckwheat and black sage, and occasional blue elderberry (*Sambucus nigra* ssp. *caerulea*).

5.5.9 California Sagebrush- Black Sage Scrub (*Artemisia californica-Salvia mellifera* Shrubland Alliance) (California Department of Fish and Wildlife Codes 32.010.01 and 32.020.00)

California sagebrush – black sage scrub is co-dominated by California sagebrush and black sage, with both species accounting for 30 to 60 percent relative cover in the shrub layer. This alliance usually occurs on steep, east- to southwest-facing slopes. Shrubs are typically less than 2 meters in height, with an intermittent to continuous canopy and a variable herbaceous layer (Sawyer et al. 2009).

Within the study area, California sagebrush – black sage scrub occurs in several locations on the western and eastern parts of the site on slopes adjacent to existing dirt access trails. California sagebrush and black sage are co-dominant, with lesser amounts of California buckwheat, occasional blue elderberry, and orange monkeyflower (*Diplacus aurantiacus*). Some of the areas within this community on the eastern part of the site are characterized by a fairly open shrub layer and disturbed understory dominated by non-native grasses and mustards.

5.5.10 California Sagebrush- California Buckwheat Scrub (*Artemisia californica-Eriogonum fasciculatum* Shrubland Alliance) (California Department of Fish and Wildlife Codes 32.010.01 and 32.040.00)

California sagebrush – California buckwheat scrub is co-dominated by California sagebrush and California buckwheat, with both species accounting for 30 to 60 percent relative cover in the shrub layer. This alliance usually occurs on steep, south-facing slopes. Shrubs are typically less than 2 meters in height, with an intermittent to continuous canopy and an herbaceous layer that is present seasonally (Sawyer et al. 2009).

Within the study area, California sagebrush – California buckwheat scrub occurs in a few locations on the eastern part of the site on gentle slopes adjacent to existing dirt access trails and riparian habitat in Roman Creek. California sagebrush and California buckwheat are co-dominant, with lesser amounts of black sage and coyote brush. Some of the areas within this community on the eastern part of the site are characterized by a fairly open shrub layer and disturbed understory dominated by non-native grasses and mustards.

5.5.11 Coyote Brush Scrub (*Baccharis pilularis* Shrubland Alliance) (California Department of Fish and Wildlife Code 36.060.00)

Coyote brush scrub is dominated by coyote brush, which accounts for at least 50 percent relative cover in the shrub layer. This alliance is found in a variety of landscape settings, including along streams, terraces, stabilized dunes of coastal bars, spits along the coastline, coastal bluffs, open slopes, and ridges. Shrubs are typically less than 3 meters in height, with a variable canopy and herbaceous layer (Sawyer et al. 2009).

Within the study area, coyote brush scrub occurs in a few locations both on the western and eastern parts of the site on gentle slopes adjacent to existing dirt access trails and riparian habitat in Roman Creek. Coyote brush is dominant in these areas, with lesser amounts of California buckwheat and black sage.

5.5.12 California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance) (California Department of Fish and Wildlife Code 32.040.00)

California buckwheat scrub is dominated by California buckwheat, which accounts for at least 50 percent relative cover in the shrub layer. This alliance usually occurs on upland slopes, intermittently flooded arroyos, channels, and washes. Shrubs are typically less than 2 meters in height, with an intermittent to continuous canopy and a variable, grassy herbaceous layer (Sawyer et al. 2009).

Within the study area, California buckwheat scrub occurs in a small patch on the northeastern part of the site and a larger patch on the southeastern part of the site on slopes adjacent to existing dirt access trails. California buckwheat is dominant, with lesser amounts of black sage and coyote brush. The areas within this community on the eastern part of the site are characterized by a fairly open shrub layer and disturbed understory dominated by non-native grasses and mustards as well as the native fascicled tarplant (*Deinandra fasciculata*).

5.5.13 Tamarisk Scrub (*Tamarix* spp. Semi-natural Shrubland Stand) (California Department of Fish and Wildlife Code 63.810.00)

Tamarisk scrub is dominated by one or more species of tamarisk (*Tamarix* spp.), a shrub species that is invasive in riparian areas. Tamarisk is dominant in the shrub layer, with at least 60 percent relative cover. This alliance usually occurs along arroyo margins, lake margins, ditches, washes, rivers, and other watercourses. Shrubs are typically less than 8 meters in height, with a continuous to open canopy and a sparse herbaceous layer (Sawyer et al. 2009).

Within the study area, tamarisk scrub occurs in one small patch adjacent to oak-willow riparian and coastal sage scrub on the northeastern side of Roman Creek.

5.5.14 Cattail Marsh (*Typha angustifolia, domingensis, latifolia* Herbaceous Alliance) (California Department of Fish and Wildlife Code 52.050.03)

Cattail marsh is dominated by one or more species of cattail (*Typha* spp.), with at least 50 percent relative cover in the herbaceous layer. Cattails are rhizomatous and grow in dense colonies forming uniform stands that are not proximally associated with other plants except generally as wetland affiliates. This alliance usually occurs in semi-permanently flooded freshwater or brackish marshes. Herbaceous plants are typically less than 1.5 meters in height, with intermittent to continuous cover (Sawyer et al. 2009).

Within the study area, cattail marsh occurs within an existing restoration area at the north end of Roman Creek.

5.5.15 Annual Brome Grassland (*Bromus diandrus, hordeaceus* Semi-Natural Herbaceous Stand (California Department of Fish and Wildlife Code 42.026.00)

Annual brome grassland includes areas where ripgut brome (*Bromus diandrus*) and soft chess (*Bromus hordeaceus*) are dominant or co-dominant in the herbaceous layer, with at least 60 percent relative cover. This alliance is found in all topographic settings in foothills, waste places, rangelands, and openings in woodlands. Herbs are typically less than 75 centimeters in height, with intermittent to continuous cover (Sawyer et al. 2009).

Within the study area, annual brome grasslands are primarily found on upland terraces adjacent to oak riparian habitat in the southern and southwestern parts of the site, but also occur in smaller patches on the eastern and western parts of the site adjacent to the existing dirt trails. Areas that were mapped as annual brome grassland in early spring transitioned to dominance by upland mustards by summer. Therefore, these areas could also be mapped as upland mustard stands dominated by black mustard or shortpod mustard.

5.5.16 Red Brome Grassland (*Bromus madritensis ssp. rubens* Semi-Natural Herbaceous Stand (No California Department of Fish and Wildlife Code)

Red brome grassland is dominated by red brome (*Bromus madritensis* ssp. *rubens*), with at least 80 percent relative cover. This alliance is found in all topographic settings in foothills, waste places, rangelands, and openings in woodlands. Herbs are typically less than 75 centimeters in height, with an open to continuous cover (Sawyer et al. 2009).

Within the study area, red brome grassland is primarily found on upland terraces adjacent to oak woodland habitat in the southern and southwestern parts of the site, but also occurs in smaller patches on the eastern part of the site adjacent to the existing dirt trails. Areas that were mapped as red brome grassland in early spring transitioned to dominance by upland mustards by summer. Therefore, these areas could also be mapped as upland mustard stands dominated by black mustard or shortpod mustard.

5.5.17 Disturbed Habitat (No California Department of Fish and Wildlife Code)

Disturbed habitat is primarily used to identify areas of severe impacts on natural communities to the extent where it is no longer sustaining or functioning naturally. These areas have been previously physically disturbed but continue to retain a soil substrate. Disturbed areas consist of predominantly non-native weedy and ruderal exotic species. This is not a natural community and generally does not provide habitat for wildlife or special-status species. Examples of disturbed habitat include areas that have been graded, cleared areas for fuel management, staging areas, off-road vehicle trails, and abandoned home sites.

Within the study area, disturbed habitat occurs as a network of dirt trails.

5.5.18 Urban/Developed (No California Department of Fish and Wildlife Code)

Urban/developed refers to areas that have been manipulated by grading and compacting soils to build infrastructure, such as roads, buildings, parks, fields, etc. These areas have no biological function or value. However, landscaping that is often planted within urban/developed areas can provide habitat for nesting birds.

Within the study area, the paved road by the parking lot is mapped as urban/developed.

5.6 Botanical Resources

During the general biological survey and focused rare plant surveys, all native and naturalized botanical species observed were recorded and are included in Appendix B. Based on the results of this survey, the study area supports 114 vascular plant species. The species detected are representative of the vegetation communities located within the study area. Special-status botanical species observed or with the potential to occur within the study area are discussed in Section 5.9.2.



5.7 Zoological Resources

5.7.1 Birds (Avifauna)

Bird species observed during the survey reflect an assemblage of typical species encountered in coastal live oak riparian, oak-willow riparian, oak riparian, California sycamore- coast live oak riparian, mixed willow riparian, eucalyptus woodland, cattail marsh, chaparral and coastal sage scrub habitats. A total of 51 species of birds were observed in the study area during the general biological survey (Appendices C, D, and E). Special-status avifauna observed or with the potential to occur within the study area is discussed in Section 5.9.4.

5.7.2 Mammals

Four native mammal species were detected or observed within the study area: the coyote (*Canis latrans*), dusky-footed woodrat (*Neotoma fuscipes*), desert cottontail (Sylvilagus audubonii) and California ground squirrel (*Spermophilus beecheyi*) (Appendix C and Appendix D). These species are commonly found in the vegetation communities occurring within the study area. Special-status mammalian species observed or with the potential to occur within the study area are discussed in Section 5.9.3.

5.7.3 Reptiles and Amphibians

Four reptilian species were observed within the study area: the western fence lizard (*Sceloporus occidentalis*), southern alligator Lizard (*Elgaria multicarinata*), ring-necked snake (*Diadophis punctatus*), and western rattlesnake (*Crotalus oreganus*) (Appendix C and Appendix D). Two amphibians were observed during the general biological survey: American bullfrog (*Lithobates catesbeianus*), and Pacific tree frog (*Pseudacris regilla*). Special-status reptilian/amphibian species observed or with the potential to occur within the study area are discussed in Section 5.9.3.

5.8 Jurisdictional Resources

Based on the results of a jurisdictional delineation survey, the study area includes: (1) wetland and non-wetland WOUS subject to USACE jurisdiction pursuant to Section 404 of the CWA; (2) waters of the state subject to RWQCB jurisdiction pursuant to Section 401 of the CWA; and (3) streambed and riparian areas subject to CDFW jurisdiction pursuant to Section 1602 of the California Fish and Game Code (Table 5-2; Figure 5-2a, Figure 5-2b, Figure 5-3a, and Figure 5-3b). Detailed information on the existing site conditions related to jurisdictional areas is provided in Appendix E.

Table 5-2. Summary of Jurisdictional Resources in the Study Area

Jurisdictional Type	Acreage
USACE/RWQCB Wetland WOUS	1.91
USACE/RWQCB Non-wetland WOUS	1.49
Total USACE/RWQCB	3.40
CDFW Unvegetated Streambed	0.04
CDFW Riparian	5.13
Total CDFW	5.17

Notes:

CDFW=California Department of Fish and Wildlife; RWQCB=Regional Water Quality Control Board; USACE=United States Army Corps of Engineers; WOUS=waters of the United States



Figure 5-2a. United States Army Corps of Engineers Jurisdictional Resources in the Study Area

Figure 5-2b. United States Army Corps of Engineers Jurisdictional Resources in the Study Area



- X Map Corner Point
- ____ Culvert
- No OHWM
-117.2448 33.15737 × de. --in the of the ... and a state of the

Figure 5-3a. California Department of Fish and Wildlife Jurisdictional Resources in the Study Area

LEGEND



Coordinate System:NAD 1983 StatePlane California VI FIPS 0406 Feet Projection: Lambert Conformal Conic Datum: North American 1983 Vertical Datum: NAVD88, U.S. Feet Aerial Imagery: SDE, 2019 Created on: 3/23/2020 Revised on: 4/8/2020



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Figure 5-3b. California Department of Fish and Wildlife Jurisdictional Resources in the Study Area



	Survey Boundary	CDFW Unve	ege
	5 ft contour	CDFW Ripa	riar
	- 1 ft contour	=== Culvert	
×	Map Corner Point	No OHWM	

- - ----- Approximate Creek Flow Line

Coordinate System:NAD 1983 StatePlane California VI FIPS 0406 Feet Projection: Lambert Conformal Conic Datum: North American 1983 Vertical Datum: NAVD88, U.S. Feet Aerial Imagery: SDE, 2019 Created on: 3/23/2020 Revised on: 4/8/2020

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5.8.1 United States Army Corps of Engineers Jurisdiction

In total, the study area includes 3.40 acres of WOUS, of which 1.91 acres consist of wetland (Table 5-1). All WOUS within the study area are associated with Roman Creek. Another drainage feature, Tributary A, occurs along the western study area boundary but does not have an OHWM. Tributary A is further discussed in Sections 5.8.2 and 5.8.4. Maps depicting the location of WOUS are included as Figure 5-2a and Figure 5-2b, and photographs of each are included in Appendix E. A summary of WOUS within the study area is found in Table 5-1 and a summary of soil test pit results is found in Table 5-3.

Traditional Navigable Waters

Roman Creek is a historically natural drainage, originating in the hills located a mile northeast of the study area. The creek flows south offsite and into Agua Hedionda Creek, which drains to Agua Hedionda Lagoon, which outlets to the Pacific Ocean, a Traditionally Navigable Water.

Table 5-3. Soil Pit Summaries

					Meets USACE Wetland Criteria			
Soil Pit Name	Pit Location	Dominant Vegetation Indicator Statusª	Soil Color and Redox	Hydrologic Indicators	Hydrophytic Vegetation	Hydric Soil Indicators	Hydrology	Jurisdictional Wetland (Y/N)
SP-1	Floodplain Terrace / Roman Creek	FACW, UPL	10YR 3/2, 2.5Y 3/1 Redox present in matrix at 13+ inches	A3	Х		X	No
SP-2	Floodplain Terrace / Roman Creek	FACW, UPL	10YR 3/3, 10YR 3/6 10YR 3/4 Redox in matrix	A2, B9			X	No
SP-3	Floodplain Terrace (inundated) / Roman Creek	FACW	5Y 2.5/1, 2.5Y 3/1 2.5Y 2.5/1 Distinct redox in matric and pore linings	A1, A2, A3, B3, B9, B10	Х	Х	Х	Yes
SP-4	In-channel bar / Roman Creek	FACW, UPL	10YR 3/2, 10YR 3/3 Redox present in matrix	B3, B9, B10	Х		Х	No
SP-5	Floodplain terrace (inundated) / Roman Creek	FACW	Hydrogen sulfide (A4)	A1, A2, A3, B3, B9	Х	Х	Х	Yes
SP-6	Floodplain Terrace / Roman Creek	FACW, FACU	10YR 2/1, 7.5YR 3/1 Redox present in the matrix	A2, A3, B3, B10, C3	Х	Х	X	Yes

					Meets US	ACE Wetland	Criteria	
Soil Pit Name	Pit Location	Dominant Vegetation Indicator Statusª	Soil Color and Redox	Hydrologic Indicators	Hydrophytic Vegetation	Hydric Soil Indicators	Hydrology	Jurisdictional Wetland (Y/N)
SP-7	Unvegetated Road Rut	N/A	2.5Y 3/3, no redox observed. Compacted soils, test pit 3 inches deep	B7, Ponding observed during March delineation survey			Х	No
SP-8	Hillslope adjacent to floodplain / Roman Creek	FACW, FACU	10YR 3/3, 10YR 3/6, 10YR 3/4 Redox present in the matrix	None	Х			No
SP-9	Active floodplain / Roman Creek	OBL, FACW	Soils presumed hydric - see note on data sheet in Appendix A	A1, A2, A3, D5	Х	Х	×	Yes
SP-10	Active floodplain / Roman Creek	OBL, FACW, FACU	Soils presumed hydric based on elevation – see note on data sheet in Appendix A	A1, A2, A3,	Х	Х	X	Yes
SP-11	Hillslope / Roman Creek	FACW, FACU, UPL	Soils presumed not hydric based on elevation and topography – see note on data sheet in Appendix A	None				No

Table 5-3. Soil Pit Summaries

Table 5-3. Soil Pit Summaries

					Meets USACE Wetland Criteria			
Soil Pit Name	Pit Location	Dominant Vegetation Indicator Status ^a	Soil Color and Redox	Hydrologic Indicators	Hydrophytic Vegetation	Hydric Soil Indicators	Hydrology	Jurisdictional Wetland (Y/N)
SP-12	Active channel / Roman Creek	FACU, UPL	Soils presumed not hydric based on hydrology and topography – see note on data sheet in Appendix A	A1, A2, A3, B3			X	No
SP-13	Active channel / Roman Creek	Unvegetated	Soils presumed to be hydric based on prolonged inundation – see note on data sheet in Appendix A	A1, A2, A3		Х	Х	No
SP-14	Active floodplain / Roman Creek	OBL, FACW	Soils presumed hydric – see note on data sheet in Appendix A	A1, A2, A3	Х	Х	Х	Yes
SP-15	Terrace / Pedestrian trail / Roman Creek	UPL	Soils presumed hydric based on elevation – see note on data sheet in Appendix A	None				No
SP-16	Active channel / Roman Creek	OBL	Soils presumed hydric – see note on data sheet in Appendix A	A1, A2, A3, D5	Х	Х	Х	Yes

Source: USACE 2018

Notes:

^a Indicator status: OBL=Obligate; FACW=Facultative Wetland; FAC=Facultative; FACU=Facultative Upland; UPL=Upland USACE=United States Corps of Engineers

Drainage Description

Within the study area, Roman Creek is the primary drainage feature. Roman Creek enters the study area through an outflow structure that consists of a 24-inch reinforced concrete pipe low flow pipe, a 12-foot-wide low flow notch, and a 64-foot-wide overflow weir, which drains the detention basin located north of the study area (Appendix E). Flow from the outflow structure discharges into an 8-foot by 7-foot reinforced concrete box beneath the roadway and south into Roman Creek. The storage volume available in the (detention) pond is approximately 10 acre-feet before it overtops the downstream access roadway, which can occur during large rainfall events (HDR 2019). A large ponded area occurs at the culvert outlet under the park road and the main channel continues south along the western bank (Appendix E) and exhibits approximately one foot high, moderately sloped banks. Roman Creek has a narrow floodplain along the western boundary in the upper reach. Overflow from the culvert outlet also diverts to the east into a large cattail (*Typha* sp.; OBL) marsh (Figure 5-1; Figure 5-2a and Figure 5-2b; Appendix E). The upper reach is dominated by willow riparian vegetation and cattail marsh. The upper reach of Roman Creek contains both wetland and non-wetland WOUS (Figure 5-2a).

Roman Creek narrows at a culverted dirt trail crossing and supports cattail and willows upstream and downstream of the crossing. Downstream of the culvert outlet, the channel and floodplain narrow and exhibit a 32 to 61-foot wide OHWM. Narrow patches of wetland dominated by hydrophytic vegetation occur along the creek banks. These areas are assumed to be wetland, as they occur within the elevation of previously sampled wetlands (having hydric soils) and showed evidence of hydrology. Approximately 360 feet downstream of the dirt trail culvert crossing, Roman Creek opens up into a broad floodplain and has a 6 to 43-foot wide low flow channel (Figure 5-2a and Figure 5-2b, Appendix E). The entire width of the floodplain was inundated at the time of the survey (March 2019) and was primarily vegetated by small fruited bulrush (*Scirpus microcarpus*; OBL), willows (*Salix* spp.; FACW) and Fremont's cottonwood (*Populus fremontii* ssp. *fremontii*; FAC).

Approximately 600 feet downstream from where the creek's floodplain broadens out, the floodplain narrows significantly and the channel becomes incised as it flows through oak riparian woodland (Figure 5-2b). The lower reach of the Creek supports a 20 to 57-foot wide OHWM and only a small patch of cattail-dominated wetlands downstream of the foot bridge. In general, the creek banks are 5 to 7 feet high. At the southern boundary of the study area, the creek widens to approximately 25 feet but remains incised as it exists the study area (Appendix E).

5.8.2 Presumed Non-Jurisdictional Features

Tributary A, located along the western boundary of the study area, does not exhibit a defined OHWM (Figure 5-2b and Appendix E). The tributary originates approximately 1,500 feet west of the study area in the adjacent hills. At the study area boundary, the channel is incised and has eroded down approximately three feet (bank height). The channel diverts flows east towards the creek, however, flows terminate and pond at a low point on the dirt road/trail. No evidence of surface flow from the pond to the creek was observed and a compact dirt mound would impede flows should they occur. A metal bar gate/barrier has been erected across the channel to prevent people from entering the adjacent property, which is fenced along the entire western boundary of the study area. Within the study area, the tributary supports an oak riparian understory with a sparsely vegetated understory consisting mostly of poison oak (*Toxicodendron diversilobum*) and a dense cover of leaf litter.

5.8.3 Waters Regulated by Regional Water Quality Control Board

For this Project, waters of the state as defined by the SWRCB 2019 Wetland and Riparian Area Protection Policy are equivalent to WOUS. In total, the study area includes 3.40 acres of WOUS/waters of the state regulated by RWQCB, of which 1.91 acres consist of wetland. Location of WOUS are identified on Figure 5-2a and Figure 5-2b, and photographs of onsite features are included in Appendix E.

5.8.4 California Department of Fish and Wildlife Jurisdiction

CDFW regulated streambed occurs throughout the study area (Figure 5-3a and Figure 5-3b). CDFW regulated streambed is generally associated with the features described above in Section 5.8.2 and extends beyond the OHWM to the top of bank or to the edge of riparian vegetation when present. Within the study area, CDFW regulated streambed consists primarily of riparian vegetation (5.13 acre) with a small section of unvegetated streambed (0.04 acre) where the channel was observed overflowing the culvert under a dirt access road and flowing across the road. In one location, Tributary A, CDFW vegetated streambed occurs where there is no USACE wetland or non-wetland WOUS (no OHWM) (Appendix E). Table 5-4 provides a summary of potential CDFW regulated streambed within the study area.

Section	Total Unvegetated Streambed (acres)	Total Riparian (acres)	Total CDFW Regulated Streambed (acres)
Roman Creek	0.04	5.07	5.11
Tributary A	0.00	0.06	0.06
Total	0.04	5.13	5.17

 Table 5-4. Summary of California Department of Fish and Wildlife Regulated

 Streambed occurring within the Project Study Area

Notes:

CDFW=California Department of Fish and Wildlife

5.9 Special- Status Biological Resources

Habitat assessments for federally and/or state-listed and other special-status botanical and zoological species were conducted throughout the study area. Special-status botanical and zoological species evaluated for their potential to occur within the study area are summarized in Appendix F and Appendix G, respectively.

5.9.1 Special- Status Vegetation Communities

A special-status vegetation community is one that has a state rarity rank of S1, S2, or S3 as determined by the NatureServe Heritage Program Status Ranking system (Faber-Langendoen et al. 2012) or is identified subject to local, state or federal regulations or planning policy. Definitions of the state ranks are as follows:

- S1: Critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors.
- S2: Imperiled and at high risk of extinction or elimination due to a very restricted range, very few populations or occurrences, steep declines, or other factors.
- S3: Vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors.

The study area supports 12 special-status vegetation communities including:

- Mixed willow riparian forest, which includes black willow thickets (*Salix gooddingii* woodland alliance) that has a state rank of S3;
- Oak-willow alliance, and cattail marsh communities which are regulated pursuant to the CWA and/or State Fish and Game Code Section 1600, as well as being identified for no net loss within the MHCP;
- Coast live oak alliance, which is regulated pursuant to Public Resources Code § 21083.4 and by State Fish and Game Code Section 1600 where it is associated with streambed, as well as being identified as a rare upland habitat in the MHCP;
- Coastal sage scrub and chaparral communities (California sagebrush scrub, California sagebrush-buckwheat scrub, California sagebrush-black sage scrub, buckwheat scrub, coyote brush scrub, sugarbush chaparral and chamise chaparral), which are targeted by the MHCP for preservation at a 2:1 and 1:1 ratio, respectively; and
- Annual grassland (annual brome grassland and red brome grassland), which is targeted by the MHCP for preservation at a 0.5:1 ratio.

5.9.2 Federally and/or State- Listed Botanical Species

The study area supports at least marginally suitable habitat for the following federally and/or state-listed plant species: San Diego ambrosia, Orcutt's spineflower, and thread-leaved brodiaea. However, based on focused special-status plant species surveys conducted on March 14, April 22, and June 13, 2019, no federally and/or state-listed plant species were observed within the study area. The focused rare plant survey report is included as Appendix F. The state endangered short-leaved dudleya (*Dudleya brevifolia*) has been documented in the Dawson Los Monos Canyon Reserve located south and west of the study area (Wolf 2010).

5.9.3 Other Special-status Botanical Species

Three plant species considered special-status by CNPS were detected within the Project site during focused surveys: California adolphia (*Adolphia californica*, CRPR 2B.1¹), San Diego marsh-elder (*Iva hayesiana*, CRPR 2B.2), and San Diego sagewort (*Artemisia palmeri*, CRPR 4.2) (Figure 5-1). According to the University of California San Diego Reserve Manager, California adolphia is locally common in the reserve located west and south of the Mitigation Site (Kay, Isabelle. 2019. Personal communication with Shelly Austin. April 1). San Diego marsh-elder and San Diego sagewort occur at

¹ CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere; CRPR 2B = Plants rare, threatened or endangered in California but more common elsewhere. 0.1 = Seriously endangered in California: 0.2 = Fairly endangered in California; CRPR 4 = Plants of limited distribution.

the northern end of the Mitigation Site in an area designated as a restoration area. California native plant survey field forms for occurrences of these species to be submitted to CDFW for inclusion in their California Natural Diversity Data Base and a list of all plant species observed at the Mitigation Site are also included as Attachment F. Photographs of these plant species and the habitats in which they occur are included in the rare plant survey letter report (Appendix B).

No other special-status plant species were found within the study area.

Six other non-listed special-status plant species that were not observed during focused surveys, but that have been documented in the Dawson Los Monos Canyon Reserve include Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*, CRPR 4.3), sticky dudleya (*Dudleya viscida*, CRPR 1B.2), Nuttall's scrub oak (*Quercus dumosa*, CRPR 1B.1), Engelmann oak (*Quercus engelmannii*, CRPR 4.2), Parry's tetracoccus (*Tetracoccus dioicus*, CRPR 1B.2), and ashy spike-moss (*Selaginella cinerascens*, CRPR 4.1).

5.9.4 Federally and/or State-Listed Zoological Species

Appendix G identifies the zoological species evaluated for potential to be impacted by the Project.

The study area supports potentially suitable foraging and/or breeding habitat for CAGN, LBVI, and SWFL. Protocol surveys were conducted for these species as described below. Survey dates and conditions are provided in Table 5-5.

Species	Survey Date	Time (start/end)	Surveyor	Temperature °C (start/end)	Cloud Cover (start/end)	Wind Speed mph (start/end)
CAGN	4/10/19	0830/1015	Ingrid Eich*	17/22	Clear/clear	0-1/0-3
LBVI	4/10/19	1000/1100	Ingrid Eich	17/21	Clear/clear	0-1/0-1
LBVI	4/22/19	0700/0940	Ingrid Eich	13/18	30% cover/clear	1/3
CAGN	4/22/19	1000/1130	Ingrid Eich*	19/19	Clear/10% Cloud Cover	0-2/1-4
LBVI	5/1/19	0800/1015	Ingrid Eich	17/20	Clear/clear	0/1
CAGN	5/1/19	0830/1015	Ingrid Eich*	17/18	Overcast/80% Cloud Cover	0-1/0-1
CAGN	5/8/19	0830/1015	Ingrid Eich*	16/17	Overcast/Overcast	0-2/0-2
LBVI	5/17/19	0845/1115	Adam Lockyer	17/18	50% cover/50% cover	2-4/1-2

Table 5-5. Summary of Survey Dates and Weather Conditions

Species	Survey Date	Time (start/end)	Surveyor	Temperature °C (start/end)	Cloud Cover (start/end)	Wind Speed mph (start/end)
SWFL	5/28/19	0545/0730	Andrew Phillips*	9/13	100% cloud/100% cloud	0/0
CAGN	5/28/19	0545/0730	Ingrid Eich*	9/9	Clear/Clear	0-1/0-2
LBVI	5/28/19	0830/1000	Ingrid Eich	16/18	80% cover	0-2
SWFL	6/10/19	0840/0935	Andrew Phillips*	24/25	Clear/clear	0/0
CAGN	6/23/19	0930/1015	Ingrid Eich*	19/19	Overcast/Overcast	0-1/0-1
SWFL	6/24/19	0845/1015	Andrew Phillips*	21/21	100% cloud/100% cloud	0/0
LBVI	6/24/19	0930/1100	Ingrid Eich	18/19	80% cover	0-1
LBVI	7/3/19	0830/1030	Adam Lockyer	18/23	10% cloud/clear	6/1-3
SWFL	7/10/19	0840/0950	Andrew Phillips*	20/24	50% cloud/clear	3/2
SWFL	7/16/19	0830/0930	Andrew Phillips*	21/22	100% cloud/100% cloud	1/1
LBVI	7/16/19	0838/1033	Aaron Newton	18/29	Clear/clear	0/1-3

Table 5-5	Summary of	of Survey	Dates and	Weather	Conditions
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Notes:

* denotes permitted surveyor

CAGN=coastal California gnatcatcher; LBVI=Least Bell's vireo; SWFL=Southwestern willow flycatcher

Coastal California Gnatcatcher (Polioptila californica californica)

The federally threatened CAGN is a small, long-tailed member of the old-world and gnatcatcher family (American Ornithologists' Union 2009). Plumage is dark blue-gray above and grayish-white below with a tail that is mostly black. CAGN territory ranges from southern Ventura County southward into Baja California. CAGN typically occur in or near the coastal sage scrub habitat and also uses chaparral, grassland, and riparian habitats when they occur adjacent to sage scrub (Campbell et al. 1998).

Suitable habitat for the federally threatened CAGN occurs within the study area. Pursuant to survey protocol for CAGN in Natural Community Conservation Plan areas, protocol surveys were initiated on

April 10 and concluded on June 23, 2019. No CAGN were detected during protocol surveys conducted within the study area. The protocol CAGN survey report is included as Appendix C.

Least Bell's Vireo (Vireo bellii pusillus)

The federally endangered LBVI usually arrives from its Mexican wintering areas by the end of March to early April and departs by the end of September (Zeiner et al. 1990).

The least Bell's vireo was once common and was the major breeding subspecies of Bell's vireo in California. It is endemic to California and northern Baja California and is now a rare, local, summer resident. Except for a few outlying pairs, the subspecies is currently restricted to Southern California south of the Tehachapi Mountains and northwestern Baja California (Garrett and Dunn 1981). Breeding pairs have been observed in the counties of Monterey, San Benito, Inyo, Santa Barbara, San Bernardino, Ventura, Los Angeles, Orange, Riverside, and San Diego, with the highest concentration in San Diego County along the Santa Margarita River (Small 1994).

Least Bell's vireos primarily occupy riverine riparian habitats that typically feature dense cover within 1 to 2 meters of the ground and a dense, stratified canopy. It inhabits low, dense riparian growth along water or along dry parts of intermittent streams. Typically, it is associated with southern willow scrub, cottonwood forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, wild blackberry, or mesquite in desert localities. It uses habitat limited to the immediate vicinity of water courses below 1,500 feet elevation in the interior (USFWS 1986; Small 1994). In the coastal portions of Southern California, the least Bell's vireo occurs in willows and other low, dense valley foothill riparian habitat and lower portions of canyons and along the western edge of the deserts in desert riparian habitat.

The least Bell's vireo primarily nests in small, remnant segments of vegetation typically dominated by willows and mule fat but may also use a variety of shrubs, trees, and vines. The birds forage in riparian and adjoining chaparral or scrub habitat (Salata 1983). Nests are typically built within 1 meter of the ground in the fork of willows, wild rose (*Rosa californica*), mule fat (*Baccharis salicifolia*), or other understory vegetation (Franzreb 1989). Cover surrounding nests are moderately open mid-story with an over-story of willow, cottonwood, sycamore, or oak. Crown cover is usually more than 50 percent and contains occasional small openings. The most critical structural component to least Bell's vireo breeding habitat is a dense shrub layer at 2 to 10 feet above the ground (Goldwasser 1981; Franzreb 1989).

The decline of the least Bell's vireo coincides with the reduction of riparian habitat throughout its range. The least Bell's vireo has been impacted by the loss and degradation of riparian habitats, loss and modification of hydrological and fluvial processes, sand mining, flood control activities (mowing, channelization), ground water withdrawal, mosquito control, infestation of non-native plant species (i.e., giant reed), widespread cowbird parasitism, loss of native habitat buffers, and edge effects from upland development (Brown 1988).

Suitable riparian habitat for LBVI occurs within the study area. Protocol surveys for LBVI were initiated on April 10, 2019 and concluded on July 16, 2019. No LBVI were observed or detected during protocol surveys. The protocol LBVI survey report is included as Appendix D.

Southwestern Willow flycatcher (Empidonax traillii extimus)

SWFL is a federally endangered species. The specific breeding range for this subspecies of the willow flycatcher includes Owens Valley, south fork of the Kern River, the Los Angeles Basin (Unitt 1987; Zeiner et al. 1990), the Santa Ynez River near Buellton, the Prado Basin riparian forest in Riverside

County, the Santa Margarita and San Luis Rey Rivers in San Diego County, Middle Peak in the Cuyamaca Mountains, and near Imperial Beach (Small 1974). Breeding populations also exist in southern Nevada, Arizona, and New Mexico (Garrett and Dunn 1981).

SWFL typically arrive in southern California at the end of April, and adults depart from the breeding territory in mid-August to early September (San Diego Natural History Museum 1995). The SWFL most likely winters in Mexico, Central America, and perhaps northern South America; however, the habitats it uses on wintering grounds are unknown (USFWS 1993).

The SWFL is restricted to riparian woodlands along streams and rivers with mature, dense stands of willows (*Salix* spp.), cottonwoods (*Populus* spp.), or smaller spring fed or boggy areas with willows or alders (*Alnus* spp.) (Sedgwick and Knopf 1992). Riparian habitat provides both breeding and foraging habitat for the SWFL. SWFLs nest from zero to 13 feet above ground in thickets of trees and shrubs approximately 13 to 23 feet tall with a high percentage of canopy cover and dense foliage. The nest site plant community is typically even-aged, structurally homogeneous, and dense (Brown 1988; Whitfield 1990; Sedgwick and Knopf 1992).

Once considered widespread and common breeders in Southern California, the SWFL has declined precipitously throughout its range during the last 50 years (Unitt 1987). The major threats to the species are the current or future destruction, modification, or curtailment of its habitat and the nest parasitism by the brown-headed cowbird that affects its productivity (USFWS 1995). Another likely factor in the loss and modification of the SWFL habitat is the invasion by the exotic tamarisk (*Tamarix* sp.) and giant reed (*Arundo donax*).

Water developments and flood control projects also have likely reduced and modified the habitat for the flycatcher. The series of dams along most major southwestern rivers have altered riparian habitats downstream of the dams through hydrological changes, vegetational changes, and inundated habitats upstream.

Suitable willow riparian habitat for SWFL occurs within the study area. Focused surveys for this species were initiated on May 28, 2019, and concluded on July 16, 2019. No SWFL were observed or detected during protocol surveys. The protocol SWFL survey report is included as Appendix H.

5.9.5 Other Special-status Zoological Species

Based on the results of the literature review search described in Section 2.1 and the Project-specific habitat assessments, Appendix G lists special-status wildlife species and their potential to occur in the study area.

Non-listed special-status wildlife species that were observed during field surveys include yellow warbler (*Setophaga petechia*), a California Species of Special Concern. Other special-status species with potential to occur include: arroyo chub (*Gila orcuttii*), California glossy snake (*Arizona elegans occidentalis*), coastal whiptail (*Aspidoscelis tigris stejnegeri*), red-diamond rattlesnake (*Crotalus ruber*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), coast horned lizard (*Phrynosoma blainvillii*), western spadefoot (*Spea hammondii*), western pond turtle (*Emys marmorata*), two-striped garter snake (*Thamnophis hammondii*), south coast gartersnake (*Thamnophis sirtalis* ssp.), tri-colored blackbird (*Agelaius tricolor*), white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), Dulzura pocket mouse (*Chaetodipus californicus femoralis*), western yellow bat (*Lasiurus xanthinus*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diego desert woodrat (*Neotoma lepida intermedia*), and American badger (*Taxidea taxus*).

Lists of all wildlife species observed at the Project site are provided in Appendices C, D, and E.

5.10 Nesting Birds

Suitable habitat to support nesting birds protected under the MBTA and California Fish and Game Code 3500-5500 occurs throughout the study area and within the Project footprint. A number of migratory and native bird species were observed in the study area and are identified in Appendices C, D, and E.

5.11 Wildlife Corridors and Habitat Linkages

Wildlife movement corridors, also called dispersal corridors or landscape linkages, are linear features whose primary wildlife function is to connect at least two significant habitat areas (Beier and Loe 1992). Other definitions of corridors and linkages are as follows:

- A corridor is a specific route used for movement and migration of species. A corridor may be different from a "linkage" because it represents a smaller or narrower avenue for movement. "Linkage" means an area of land which supports or contributes to the long-term movement of wildlife and genetic material.
- 2. A linkage is a habitat area that provides connectivity between habitat patches, as well as year-round foraging, reproduction, and dispersal habitat for resident plants and animals.

Wildlife corridors and linkages are important features in the landscape, and the viability and quality of a corridor or linkage are dependent on site-specific factors. Topography and vegetative cover are important factors for corridors and linkages. These factors should provide cover for both predator and prey species. They should direct animals to areas of contiguous open space or resources and away from humans and development. The corridor or linkage should be buffered from human encroachment and other disturbances (e.g., light, loud noises, domestic animals) associated with developed areas that have caused habitat fragmentation (Schweiger et al. 2000). Wildlife corridors and linkages may function at various levels depending upon these factors and, as such, the most successful of wildlife corridors and linkages will accommodate all or most of the necessary life requirements of predator and prey species.

Areas not considered as functional wildlife dispersal corridors or linkages are typically obstructed or isolated by concentrated development and heavily traveled roads, known as "chokepoints." One of the worst scenarios for dispersing wildlife occurs when a large block of habitat leads animals into "cul-de-sacs" of habitat surrounded by development. These habitat cul-de-sacs frequently result in adverse human/animal interface.

The Buena Vista Park Management Area includes Agua Hedionda Creek, north of its confluence with La Mirada Creek, which has been identified at this location as a minor local movement corridor for small- to medium-bodied animals within Core Preserves within the City of Carlsbad (City of Carlsbad 2015, 2018). The creek corridor becomes confined by rural and then urban development approximately 0.75 mile to the east of the Buena Vista Park Management Area and rapidly narrows to as little as 20 feet in width further east. A 375-foot-long small double box culvert extends beneath State Route 78 beyond which the corridor becomes heavily bisected by roadways and eventually is placed underground for almost 1000 linear feet before re-emerging north of Cherimoya Drive where the corridor widens into a relatively isolated habitat fragment of approximately 1,500 acres. Therefore, the Project site provides habitat for local small- to medium-bodied animal movement, but does not contribute to significant east-west wildlife movement.

6 Effects

Direct and indirect effects on biological resources would result from Project implementation. Direct effects are changes in the physical environment caused by the Project that are immediately related to the Project; they occur in the same time and place as the Project (e.g., grading associated with construction, etc.). Indirect effects are changes to the physical environment that occur later in time or farther removed in distance than direct effects (e.g., long-term changes in water quality; off-site impacts from noise, dust, lighting, etc.). Both direct and indirect effects may be considered temporary or permanent depending upon the situation.

6.1 Direct Effects

6.1.1 Vegetation Communities

As previously indicated, the goal of the Project is to implement hydromodification mitigation strategies, establish and enhance wetland and nonwetland WOUS and CDFW-regulated streambed, and restore and enhance upland buffer habitat. The Project would result in direct impacts on vegetation communities as summarized in Table 6-1 and depicted on Figure 6-1. As indicated in Table 6-1, permanent impacts on vegetation are generally limited to the conversion of non-native vegetation communities (eucalyptus woodland, annual brome grassland, and red brome grassland) to special-status native vegetation communities. However, as indicated on Figure 2-5, implementation of the proposed Project would require earth movement at one or more locations within the site that support special-status vegetation communities. These earth movement activities would include:

- Installing two grade control structures to prevent the deeply incised channel reach just north of the existing pedestrian bridge from migrating further upstream,
- Replacing and upgrading the existing pedestrian access bridge near the south end of the Mitigation Site with a new, expanded bridge crossing,
- Widening the flood prone area of the creek by lowering the adjacent terrace(s) to the west of the creek in one or more locations, and/or
- Excavating a secondary channel to increase flood prone area for the highly entrenched reach of the existing creek just north of the existing pedestrian bridge.

Riparian Habitat and Other Special- Status Vegetation Communities

Wetland/Riparian Habitats (Multiple Habitat Conservation Program Group A)

Implementation of the Project results in a 2.26-acre net increase in wetland and riparian habitat including wetland and nonwetland WOUS and CDFW-regulated streambed habitat (oak-willow alliance, mulefat scrub, emergent wetland and unvegetated streambed) and enhancement of 2.68 acres of Oak-Willow Alliance and 2.47 acres of Coast Live Oak Alliance. However, as indicated above, earth-moving activities are required to implement several Project components. Specifically, grading is required to excavate soils to lower the existing ground surface elevation below the creek's OHWM and widen the active flood plain, thereby reducing surface water velocities, establishing WOUS and providing the necessary hydrology to support wetland WOUS and CDFW-regulated streambed. Grading will temporarily impact 0.49-acre of CDFW-regulated oak-willow alliance and 0.39 acre of CDFW-regulated Coast Live Oak Alliance where excavation must occur within the existing creek to

integrate hydrologic and habitat functions as well as during construction of the two proposed grade control structures.

The grade control structures are required to prevent the deep incision observed in the lower half of the existing creek from migrating upstream and causing both the existing and proposed wetland, which is situated in the active floodplain, from becoming disconnected from the active channel. Construction of the grade control structures results in permanent impacts to 0.004-acre of oak willow alliance and 0.004 acre of unvegetated streambed due to displacement by the structure. The installation of rock weirs by hand within the incised, unvegetated portions of the existing channel will not adversely impact special status vegetation, but rather by trapping sediment and slowing water velocities, would further stabilize the existing channel.

Pedestrian bridge removal and replacement would be completed without impacting special-status vegetation communities. could the lengthening of the bridge will result in improved hydrologic conditions at the current bridge location, which currently experiences impeded and constrained storm flows. In addition, a series of rock weirs may be installed in the unvegetated, incised portions of the existing creek. However, constructing these would have minimal impact to existing vegetation because they could be constructed without mechanized equipment while having a beneficial impact on hydrology.

The permanent loss of 0.009 acre of Oak-Willow Alliance would be significant prior to mitigation. Similarly, the temporary loss of aquatic function that would occur between Project construction and maturation of restored oak-willow and coast live oak riparian habitat would be significant prior to mitigation. Implementation of MM BIO-1: Implement Biological Resource Protection Measures during Construction and MM BIO-2: Avoidance, Minimization and Compensation for Direct and Indirect Impacts on Special- Status Vegetation Communities, described in Section 7, will reduce impacts to less than significant.

Rare Uplands - Coast Live Oak Woodland Alliance (Multiple Habitat Conservation Program Group B)

The Project results no net loss of coast live oak alliance. As indicated in the Wetland/Riparian Habitat Section above, grading will temporarily impact 0.39-acre of coast live oak alliance where excavation must occur within the existing channel to tie in the secondary channel at its upstream and downstream ends. In addition, the loss of any individual oak trees with a diameter at breast height of greater than or equal to 5 inches would be considered significant prior to mitigation. Implementation of MM BIO-3: Conduct Oak Tree Survey and Avoid, Minimize and Compensate for Direct and Indirect Impacts on Oak Trees, described in Section 7, will reduce impacts to less than significant.

Coastal Sage Scrub and Chaparral Habitats (Multiple Habitat Conservation Program Group C)

Project construction does not directly impact coastal sage scrub or chaparral habitat. Rather, implementation of the Project results in the preservation and long term management of 3.68 acres of coastal sage scrub and 0.26-acre of chaparral of which 2.24 acres consists of coastal sage scrub, restoration. As communities with potential to support a wide variety of native species including federally-threatened California gnatcatcher, the net increase in coastal sage scrub is beneficial to the function of the Project site and the Focus Planning Area in which it is located. The Project results in no significant adverse effects on coastal sage scrub or chaparral habitats.

Annual (non-native) grassland (Multiple Habitat Conservation Program Group E)

The proposed Project results in the net loss of 1.18 acres of annual (non-native) grassland habitat, however it results in the preservation and long term management of 1.67 acres of native grassland. Annual grassland provides raptor foraging habitat and is an important component of dynamic California gnatcatcher dispersal and foraging habitat. The net loss of annual grassland is considered significant prior to mitigation. The net loss of non-native grassland would be significant prior to mitigation. Implementation of MM BIO-1: Implement Biological Resource Protection Measures during Construction and MM BIO-2: Avoidance, Minimization and Compensation for Direct and Indirect Impacts on Special- Status Vegetation Communities, described in Section 7, will reduce impacts to less than significant.

Vegetation Community	Existing (acres)	Temporary Loss (acres)	Proposed within the SDG&E Easement (acres)***	Proposed not including SDG&E Easement (acres)	Net Change (acres)
Tree-dominated habitats		(0000)		(40100)	()
Coast live oak alliance*	2.47	0.39	0.16	2.31	-
Eucalyptus woodland (non-native/invasive community)	1.32	-	_	0.08	-1.24
Mixed willow riparian*	0.75	—	—	0.75	-
Oak-willow alliance*	2.68	0.49	0.84	3.64	+1.95
Ornamental (planted)	0.47	—	—	0.47	—
Shrub-dominated habitats					
California buckwheat scrub	0.59	—	0.20	0.74	+0.35
California sagebrush scrub	0.49	—	0.15	0.36	+0.02
California sagebrush– black sage scrub	0.73	—	0.04	0.82	+0.13
California sagebrush– California buckwheat scrub	0.94	—	0.40	0.66	+0.12
Chamise chaparral	0.22	—	0.09	0.13	—
Coyote brush scrub	0.31	—	0.07	0.24	—
Mulefat Scrub**	0.00	—	0.26	0.00	+0.26
Sugarbush chaparral	0.04	—	0.04	_	—

Table 6-1. Mitigation Site Implementation: Anticipated Vegetation Community Impacts

Vegetation Community	Existing (acres)	Temporary Loss (acres)	Proposed within the SDG&E Easement (acres)***	Proposed not including SDG&E Easement (acres)	Net Change (acres)
Tamarisk thickets (non-native/invasive community)	0.04	-	_	0.00	-0.04
Herbaceous-dominated habitat	ts				
Annual brome grassland (non-native/invasive community)	2.04	-	-	0.00	-2.04
Cattail marsh*	0.31	-	—	0.31	—
Emergent Marsh**	0.00	-	0.20	0.00	+0.05
Native grassland**	0.00	-	_	1.68	+1.68
Red brome grassland (non-native/invasive community)	0.81	-	_	0.00	-0.81
Other land cover types					
Disturbed habitat	2.19	—	0.31	1.45	-0.43
Urban/Developed	0.28	—	—	0.28	—
Total	16.68	0.88	2.76	13.92	0.00

Table 6-1. Mitigation Site Implementation: Anticipated Vegetation Community Impacts

Notes:

* Special-status Vegetation Communities

** Proposed establishment, community does not currently exist within the Mitigation Site

***Restored impact areas are included within the Proposed Vegetation Columns. Vegetation within SDG&E Easement is, and will continue to be subject to maintenance

SDG&E=San Diego Gas and Electric

Figure 6-1. Impacts on Vegetation Communities and Special-Status Plant Species



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6.1.2 Federally and/or State- Listed Botanical Species

No federally- and/or state listed botanical species were found within or immediately adjacent to the Project area. Therefore, the Project would not result in impacts on these species and no project-specific mitigation measure pertaining to federally and/or state-listed plant species are required.

6.1.3 Other Special- Status Botanical Species

The special status botanical species occurring on site are not located within grading areas and therefore will not be directly impacted. Therefore, the Project would not have a substantial adverse effect, either directly or through habitat modifications, on these non-listed special-status plant species.

6.1.4 Federally and/or State- Listed Zoological Species

Potentially suitable foraging and breeding habitat for federally- and state-endangered LBVI and SWFL and federally-threatened CAGN is present within the Mitigation Site, although none of these species were detected during focused surveys. Suitable habitat for tri-colored blackbird is located just north of the proposed Project improvements, although direct impacts to that habitat is not proposed. Implementation of the Project would temporarily remove 0.49 acres and permanently remove approximately 0.004 acre of potentially suitable habitat for LBVI and SWFL. Should any of these species utilize the site in the future and vegetation removal occurred during the breeding season (March 15-September 15 collectively), impacts would be significant. Implementation of MM BIO-4: Avoid and Minimize Direct and Indirect Impacts on LBVI, SWFL, and CAGN, as detailed in Section 7, would avoid direct impacts on these species while nesting.

6.1.5 Other Special- Status Zoological Species

The proposed Project would be beneficial to special status species with potential to occur on site due to the establishment, restoration and enhancement of habitat suitable to support those species. Potential impacts on special-status wildlife species from construction would primarily be in proposed establishment areas. As detailed in Section 6.1.1, construction activities would include ground disturbance that could adversely impact other special-status species if present.

Direct impacts on special status nesting birds that have potential to breed on site such as white-tailed kite and yellow warbler, would be considered significant. Implementation of MM BIO-1: Implement Biological Resource Protection Measures during Construction and MM BIO-5: Avoid Impacts on Migratory and Nesting Birds, as described in Section 7, would avoid direct impacts on nesting birds.

Direct impacts on California glossy snake, orange-throated whiptail, southern California legless lizard, coastal whiptail, red-diamond rattlesnake, coast patch-nosed snake, coast horned lizard, two-striped garter snake, south coast garter snake, Dulzura pocket mouse, northwestern San Diego pocket mouse, western yellow bat, San Diego black-tailed jackrabbit, San Diego desert woodrat, and American badger, if present in the Project area, could result from grading operations. Most of these species would be able to move out of the Project area when disturbance begins. Given the wide range of habitat these species utilize, their wide geographic range, the loss of a small number of individuals would not significantly alter these species' future survival. Implementation of standard wildlife preservation measures as part of mitigation measure BIO-1 would minimize impacts on these species.

Direct impacts on both western spadefoot toad and southwestern pond turtle could result from grading and could be significant. Implementation of MM BIO-6: Conduct Pre-Construction Surveys for Western Spadefoot and Southwestern Pond Turtle, as described in Section 7, would reduce impacts to a level less than significant.

The Project would involve the rehabilitation and establishment of areas within the study area that would increase the quantity and quality of suitable habitat for special-status wildlife species, therefore, construction impacts would be temporary and operation impacts would be beneficial. In addition, no construction activities are proposed for the enhancement areas at this time; however, planting activities could be proposed in order to improve upon the existing riparian habitat. Future improvements to the riparian habitat or hydrology would be beneficial to the existing habitat for special-status wildlife species. In this context, direct impacts on special-status wildlife species would be less than significant.

6.1.6 Migratory Bird Treaty Act/Migratory Birds and Raptors

Suitable nesting and foraging habitat for birds protected by the MBTA and California Fish and Game Code 3300-5500 occurs within and adjacent to the Project footprint and a nesting red-shouldered hawk was specifically observed in the eucalyptus woodland. Direct impacts on an active nest would be considered significant. Implementation of MM BIO-1: Implement Biological Resource Protection Measures during Construction and MM BIO-5: Avoid Impacts on Migratory and Nesting Birds, as described in Section 7, would avoid direct impacts on nesting birds.

Eucalyptus woodland, although it provides raptor nesting habitat, is not native to California and significantly impacts native ecosystems and species. For example, due to their oily nature and the high levels of leaf and bark litter produced, eucalyptus trees are far more flammable than native species and ecosystems. Stands of eucalyptus lend themselves to the spread of wildfires that may not have burned as far or as intense as the native vegetation they replaced. Additionally, allelochemicals excreted from the foliage as well as the bark and leaf litter below the trees have a deleterious effect on germination of native vegetation, often leading to pure stands of eucalyptus with little other vegetation present. Blue gum eucalyptus (*Eucalyptus globulus*) is only able to survive by tapping into deep water reservoirs and has high transpiration rates, which can alter water availability to depths of 45 feet and distances of 100 feet from the trunk. It can also extract water from the soil at higher soil moisture tensions than most upland plants, allowing it to compete strongly with other vegetation for water. Some research also suggests that this reduced understory, in combination with the high water use capacity of eucalyptus, can cause increased erosion on hillsides (Wolf and DiTomaso 2016).

The effects of increased blue gum eucalyptus stands on native wildlife are mixed. For instance, birds that build large nests in native trees appear to transition to using blue gum eucalyptus rather easily, while cavity nesters would not be able to utilize the same stand of trees. However, the lack of understory in eucalyptus stands limits the diversity of wildlife that utilize eucalyptus woodland relative to native riparian habitat (Wolf and DiTomaso 2016). Therefore, the replacement of the eucalyptus woodland on the Mitigation Site with native wetland and riparian species would provide significant benefits for the local watershed beyond just the areal extent of the eucalyptus trees themselves, such as reducing local erosion and runoff that introduces allelochemicals to downstream aquatic systems, reducing intensity of fires should they occur, and reducing depth to groundwater, thus supporting more diverse habitat communities and the wildlife communities that rely on them.

As noted in Section 6.1, implementation of the proposed mitigation program would result in a temporary reduction in mature trees. However, sufficient mature eucalyptus, coast live oaks, and

arborescent willows (3.57 acres) would continue to be available within the site for nesting in addition to abundant woodland habitat available nearby in Agua Hedionda Creek while 6.88 acres of potential raptor nesting habitat (including oak-willow alliance and coast live oak alliance) is restored, enhanced and established following Project completion. Therefore, the temporary loss of raptor nesting habitat is not significant.

6.1.7 Jurisdictional Aquatic Resources

As detailed in Section 6.1.1, the Project would require vegetation clearing, grading, and excavation that would temporarily impact federally protected wetlands and other WOUS and state-regulated streambed and riparian resources (Figure 6-2a, Figure 6-2b, Figure 6-3a, and Figure 6-3b). However, following construction and replanting with native riparian vegetation, there would be a net increase in area subject to USACE and CDFW jurisdiction (Figure 6-4 and Figure 6-5; Table 6-2).

Implementation of the Project results in the establishment of 2.22-acre of CDFW-regulated riparian habitat consisting of Oak-Willow Alliance, Mulefat Scrub and Emergent Wetland. However, as indicated in Section 6.1.1.1 above, soil excavation is required to lower the existing ground surface elevation below the creek's OHWM and widen the active flood plain, thereby reducing surface water velocities, establishing WOUS and providing the necessary hydrology to support wetland WOUS and CDFW-regulated riparian habitat. Excavation will temporarily remove up to 0.49-acre of CDFW-regulated Oak-Willow Alliance and 0.39 acre of CDFW-regulated Coast Live Oak Alliance where the proposed establishment sites tie into the existing creek. Excavation will temporarily impact up to 0.16-acre of wetland WOUS and 0.52 acre of non-wetland WOUS where the proposed establishment sites tie into the existing creek.

Also as detailed in Section 6.1.1 above, two grade control structures are proposed to prevent the deep incision observed in the lower half of the existing creek from further migrating upstream and causing the loss of additional floodplain functions. Construction of the grade control structures results in permanent impacts to 0.008-acre of CDFW-regulated riparian habitat due to displacement by the structure. Construction of the grade control structures results in permanent impacts to 0.003 acre of non-wetland WOUS due to displacement by the structure.

The installation of rock weirs by hand within the incised, unvegetated portions of the existing channel will not adversely impact special status vegetation, but rather by trapping sediment and slowing water velocities, would further stabilize the existing channel.

The proposed changes to creek morphology, in combination with the proposed establishment of additional wetland and riparian habitats, are expected to improve a variety of aquatic biogeochemical functions including dissipating the energy of floodwaters thereby reducing storm water velocities and reducing erosion: increasing groundwater infiltration and evapotranspiration rates, thereby increasing short-term and long-term storm water storage on site; detention of particulates and related reduction in deleterious elements and compounds in surface waters; and increasing wildlife benefits. Additionally, the Project would include the removal of eucalyptus woodland, which currently adds allelochemicals to the creek and promotes erosion by prohibiting the growth of protective ground covers. Therefore, the entire reach of Roman Creek from the existing dirt road crossing to the property boundary totaling 4.08 acres will exhibit enhanced hydrologic function in addition to more standard enhancement methods including invasive species removal and long-term management.

Pedestrian bridge removal and replacement would be completed without impacting special-status vegetation communities. could the lengthening of the bridge will result in improved hydrologic conditions at the current bridge location, which currently experiences impeded and constrained storm

flows. In addition, a series of rock weirs may be installed in the unvegetated, incised portions of the existing creek. However, constructing these would have minimal impact to existing vegetation because they could be constructed without mechanized equipment while having a beneficial impact on hydrology.

The permanent loss of 0.009 acre of CDFW-regulated riparian habitat and 0.009-acre of WOUS, including 0.006 acre of wetland, would be significant prior to mitigation. Similarly, the temporary loss of aquatic function that would occur between Project construction and maturation of 0.009 acre of restored Oak-Willow Alliance (including 0.16 acre of wetland WOUS) and coast live oak riparian habitat would be significant prior to mitigation. Implementation of MM BIO-1: Implement Biological Resource Protection Measures during Construction and MM BIO-2: Avoidance, Minimization and Compensation for Direct and Indirect Impacts on Special- Status Vegetation Communities, described in Section 7, will reduce impacts to less than significant.

All impacts on WOUS, including wetlands, and CDFW-regulated streambed, including riparian habitat, would require CWA Section 404 and Section 401 authorizations as well as a state streambed alteration agreement, as described in mitigation measure BIO-2.

Jurisdictional Type	Existing (acres)	Proposed (acres)	Net Increase (acres)
USACE			
Wetland WOUS	1.91	2.46	0.55
Non-wetland WOUS	1.48	1.80	0.32
Total	3.39	4.26	+0.87
CDFW			
Riparian	5.13	7.44	2.26
Un-vegetated Streambed	0.04	0.04	—
Total	5.17	7.48	2.26

 Table 6-2. Existing and Proposed United States Army Corps of Engineers and

 California Department of Fish and Wildlife Jurisdiction

Notes:

CDFW=California Department of Fish and Wildlife; USACE=United States Army Corps of Engineers; WOUS_waters of the United States

WOUS=waters of the United States



Figure 6-2a. Impacts on United States Army Corps of Engineers Jurisdictional Areas



- X Map Corner Point ____ Culvert
 - No OHWM
- - Grading

- Revised on: 4/24/2020

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Figure 6-2b. Impacts on United States Army Corps of Engineers Jurisdictional Areas





- ----- 1 ft contour
- X Map Corner Point
- = Culvert No OHWM
- Non-jurisdictional unvegetated road rut USACE Non-Wetland (1.4 acres) USACE Wetland (1.9 acres)
 - Grade Control Structure
 - Grading

• Upland Sampling Point

Enhancement Work Area - Hand Tools Only Access Only

Active Restoration And Access Area

Coordinate System:NAD 1983 StatePlane California VI FIPS 0406 Feet Projection: Lambert Conformal Conic Datum: North American 1983 Vertical Datum: NAVD88, U.S. Feet Aerial Imagery: SDE, 2019 Created on: 3/23/2020 Revised on: 4/24/2020





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Figure 6-3a. Impacts on California Department of Fish and Wildlife Jurisdictional Areas



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Figure 6-3b. Impacts on California Department of Fish and Wildlife Jurisdictional Areas



- Active Restoration And Access Area

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Figure 6-4. Existing and Proposed United States Army Corps of Engineers Jurisdiction


Figure 6-5. Existing and Proposed California Department of Fish and Wildlife Jurisdiction

6.1.8 Wildlife Corridors and Habitat Linkages

As detailed in Section 5.11, the Project site provides habitat for local small- to medium-bodied animal movement, but does not contribute to significant east-west wildlife movement. Implementation of the Project would improve cover for local wildlife movement and does not add barriers to movement. Large amounts of native habitat would remain available outside of the grading areas during construction to maintain wildlife access and movement. Therefore, wildlife movement would not be significantly impacted by the Project.

6.1.9 Local Policies

The proposed mitigation Project is consistent with local policies, as detailed in Table 6-3.

Policy/Goal	Project Consistency	Consistent? (Yes/No)			
Vista General Plan 2030 Resource Conservation and Sustainability Element					
RCS Policy 4.3: Implement the Agua Hedionda Watershed Management Plan and develop and implement a similar watershed management plan for Buena Vista Creek and its major tributaries, dependent upon available funding.	The Project would result in establishment and enhancement that address the concerns identified in the Agua Hedionda Watershed Management Plan related to degradation and significant loss of natural habitat within the ecosystems of the hydrologic area.	Yes			
RCS Policy 4.5: Protect and restore appropriate beneficial uses for prioritized water bodies impacted by stormwater and urban runoff.	The Project would improve the hydrologic function of Roman Creek by reducing flow velocities and associated scour as well as enhancing flood plain connectivity, increasing energy dissipation, and increasing the quantity of native riparian and wetland habitat within Roman Creek, which would increase nutrient input, improve the removal of elements and compounds, and reduce the input of allelochemicals, retention of articulates and short-term surface water storage. The removal of eucalyptus may also reduce the depth to groundwater, further supporting riparian habitat establishment.	Yes			
RCS Policy 4.3.3.: Restrict the installation of new concrete lining or channelization projects within open creeks and waterways and restore the creek system to its natural state where feasible in an effort to balance flood protection, water quality benefits, and habitat preservation. The daylighting and restoration of covered creek channels is encouraged.	The Project's improvements to Roman Creek would not include installation of concrete lining within the creek or channelization. The proposed improvements are intended to mitigate historic hydromodification of the creek and restore and enhance natural aquatic habitat values within the Mitigation Site.	Yes			
RCS Policy 4.3.2: Allow alteration, rechannelization, and /or modifications to existing channelized streams only if such modifications preserve or restore natural habitat values to the greatest extent feasible and necessary permits are obtained.		Yes			

 Table 6-3. Compliance with Local Policies

Table 6-3. Compliance with Local Policies

Policy/Goal	Project Consistency	Consistent? (Yes/No)
RCS Policy 5.3.: Continue to require development that is proposed in areas identified or expected to contain sensitive vegetation and wildlife communities to consult with wildlife agencies (i e., USFWS and the California Department of Fish and Game]) early in the development review process regarding special status plant and wildlife species; conduct biological assessments, as appropriate; and develop and implement project- specific mitigation measures to mitigate impacts on threatened and endangered species.	Applications for CWA Section 404 and 401 permits and a CDFW Streambed Alteration Agreement would be submitted, thus initiating collaboration with USACE, RWQCB, and CDFW. Once approved, the City would be responsible for implementation, habitat success monitoring, and long-term management, including adaptive management and maintenance. Project-specific mitigation measures are identified in Section 7 of this technical report.	Yes
RCS Policy 5.3: Preserve the integrity of riparian habitat areas, creek corridors, and other drainages that support biological resources and contribute to the overall health of the watershed areas through the preservation and restoration of native plants and the removal of invasive, exotic, and nonnative species.	The Project would include a combination of habitat establishment, enhancement, and rehabilitation of the existing riparian corridor along Roman Creek. Additionally, unauthorized trails would be omitted within the riparian corridor of Roman Creek to protect compensatory mitigation and habitat restoration areas from damage.	Yes
RCS Policy 5. 6: Continue to require the use of native, naturalized, and non-invasive plants and turf to avoid or minimize use of irrigation, fertilizers, and pesticides, and to provide increased wildlife habitats for native species.	The Project would involve clearing and grubbing, which would include the removal and disposal of all undesirable material, including large eucalyptus trees, Mexican fan palm trees, tamarisk, non-native grasses, mustards, thistles, and excess plant detritus; as well as in-situ restoration activities, including revegetation with native species. Additionally, within the Mitigation Site, grading would increase the flood prone area throughout much of the creek within the Mitigation Site and excavate down to groundwater to establish native aquatic habitat within the Mitigation Site.	Yes
RCS Policy 6.3.: Establish and maintain a BPO reflecting the Focused Planning Area in the MHCP to the maximum extent practicable. The BPO shall define lands worthy of protection based on the presence of sensitive vegetation and wildlife communities, or those lands that support viable wildlife corridors.	The Mitigation Site is within the BPO and western portion of Buena Vista Park. The proposed Project would create management areas (or units) within the limits of the existing Buena Vista Park to facilitate planning and implementation of hydromodification improvements, compensatory mitigation, and habitat restoration activities.	Yes
RCS Policy 6.2: Limit land uses within the BPO to only those necessary for the protection of public health and safety, or recreational uses that are consistent with the conservation standards in the MHCP. Biological conservation shall be the primary objective within the BPO whenever potential conflicts with recreational uses arise.	Unauthorized trails would also be omitted within the riparian corridor of Roman Creek to protect compensatory mitigation and habitat restoration areas from damage. The City would be responsible for implementation, habitat success monitoring, and long-term	Yes

Table 6-3.	Compliance	with Local	Policies
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Policy/Goal	Project Consistency	Consistent? (Yes/No)
RCS Policy 6.3: Establish maintenance and management standards for the BPO to ensure permanent conservation. The City's standards shall be based on the applicable standards in Section 6.0 of the Final MHCP (i e., Fire Management; Habitat Restoration; Erosion Control; Landscaping Restrictions; Recreation and Public Access; Fencing, Signs and Lighting; Predator and Exotic Species Control; Hydrology and Flood Control; and Species Reintroduction), subject to the availability of permanent funding.	management, including adaptive management and maintenance.	Yes

Source: City of Vista 2011

Notes:

BPO=Biological Preserve Overlay; CDFW=California Department of Fish and Wildlife; CWA=Clean Water Act; MHCP=Multiple Habitat Conservation Program; RWQCB=Regional Water Quality Control Board; USACE=United States Army Corps of Engineers; USFWS=United States Fish and Wildlife Service

6.1.10 Habitat Conservation Plan

The Project occurs within land identified as hardline preserve within the MHCP. The Vista Subarea Plan has not been completed and the City has not entered into an Implementation Agreement with the resource agencies. Therefore, the Project may not be authorized by the MHCP, but the proposed habitat restoration is consistent with allowed uses of preserve land and the compensatory mitigation proposed here-in is consistent with that identified in the MHCP.

6.2 Indirect effects

6.2.1 Vegetation Communities

Construction activities would occur on the margins of Roman Creek, which may result in indirect impacts on special-status vegetation communities as a result of increased dust, changing erosion patterns, introduction of invasive species and reducing water quality. The contractor would be required to comply with all state and federal air quality and water quality regulations (e.g., National Pollutant Discharge Elimination System General Construction Permit). However, if special status habitats are removed outside of authorized limits, impacts would be considered significant. Implementation of MM BIO-1: Implement Biological Resource Protection Measures during Construction and MM BIO-2: Avoidance, Minimization and Compensation for Direct and Indirect Impacts on Special- Status Vegetation Communities, described in Section 7, will reduce impacts to less than significant.

The Project site would be subject to short-term and long-term monitoring and management, which would include active management such as invasive species removal, trash removal, fence maintenance and repair, monitoring and as-needed adaptive management. Maintenance and monitoring activities have the potential to 1) introduce exotic species that would degrade habitat quality for wildlife, 2) introduce pollutants to Roman Creek through the use of herbicides and pesticides or poor erosion control and 3) disrupt nesting birds if maintenance or monitoring activities are conducted

during the breeding season. These impacts would be significant prior to mitigation. Implementation of MM BIO-7: Implement a Long-term Management Plan would reduce impacts to less than significant.

6.2.2 Federally and/or State- Listed Botanical Species

No federally or state-listed botanical species occur within the Project site; therefore, the Project would not result in indirect impacts on federally or state-listed botanical species.

6.2.3 Other Special- Status Botanical Species

Special status botanical species recorded on site could be subject to indirect impacts from construction including dust, inadvertent crushing or removal, changes in hydrology during or as a result of construction, or introduction of invasive species. Given the relatively wide geographic range of the special status botanical species occurring on site and the quantity of suitable habitat preserved in the region, temporary short-duration indirect impacts are not expected to significantly alter these species' future survival.

6.2.4 Federally and/or State- Listed Zoological Species

The Project area supports suitable habitat for CAGN, LBVI, and SWFL. However, as noted in Section 5.9.4, none of these species were observed within the Project area during 2019 focused surveys. Since the Project area supports suitable habitat for these species, there is potential for them to occur within the site during Project activities. Indirect impacts to these species during construction or long term management such as reduction in the quality of occupied habitat from dust or noise, disruption of nesting, interfering with communication between adults or adults and juveniles, or introduction of nest predators would be considered significant. Implementation of MM BIO-1: Implement Biological Resource Protection Measures during Construction and MM BIO-2: Avoidance, Minimization and Compensation for Direct and Indirect Impacts on Special- Status Vegetation Communities, MM BIO-4: Avoid and Minimize Direct and Indirect Impacts on LBVI, SWFL, and CAGN, and MM BIO-7: Implement a Long-term Management Plan, described in Section 7, will reduce impacts to less than significant.

6.2.5 Other Special- Status Zoological Species

Indirect impacts on California glossy snake, orange-throated whiptail, southern California legless lizard, coastal whiptail, red-diamond rattlesnake, coast patch-nosed snake, coast horned lizard, two-striped garter snake, south coast gartersnake, Dulzura pocket mouse, northwestern San Diego pocket mouse, western yellow bat, San Diego black-tailed jackrabbit, San Diego desert woodrat, and American badger, if present in the Project area, could result from construction-related dust, noise and water quality effects from equipment working in or around the study area. Noise, dust and water quality impacts on other special-status species would be temporary and of relatively brief duration. Wildlife could temporarily move out of the area in response to these temporary construction disturbances. Therefore, impacts on special-status wildlife species would be less than significant.

6.2.6 Migratory Bird Treaty Act/Nesting Birds and Raptors

Construction of the Project may have indirect impacts on birds protected by the MBTA and California Fish and Game Code 3500 - 5500. Length and timing of the construction of the Project could coincide with the bird breeding season (January 15 – September 15) and could result in indirect effects on these species (e.g., temporary loss of preferred/suitable nesting areas or degradation of suitable

habitat due to noise and dust). However, the temporary short-duration of these potential impacts to a small number of non-federally-listed species would not be expected to significantly alter these species' survival.

6.2.7 Jurisdictional Aquatic Resources

Construction activities would occur on the margins of Roman Creek, which may result in indirect impacts on USACE and CDFW- regulated aquatic resources as a result of increasing dust, changing erosion patterns, and reducing water quality. The contractor would be required to comply with all state and federal air quality and water quality regulations (e.g., National Pollutant Discharge Elimination System General Construction Permit). Compliance with these regulations would minimize potential indirect effects on USACE and CDFW regulated resources. Therefore, the Project is not expected to result in adverse indirect effects on wetland or non-wetland WOUS or CDFW riparian habitat or streambed.

7 Mitigation Measures

Mitigation measure BIO-1 is required to avoid and minimize direct and indirect impacts on biological resources.

- **BIO-1** Implement Biological Resource Protection Measures during Construction. The City will implement the following BMPs, which are consistent with BMPs in the Habitat Mitigation Plan, during construction to minimize direct and indirect impacts on special-status species.
 - a. Prior to the commencement of construction, the City shall designate a Project Biologist (a person with, at minimum, a bachelor's degree in biology, ecology, or environmental studies with familiarity with special-status plant and wildlife species with the potential to be impacted by the Project) who shall be responsible for overseeing compliance with protective measures for biological resources during vegetation clearing and work activities within and adjacent to areas of native habitat. The Project Biologist shall be familiar with the local habitats, plants, and wildlife, and shall maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project Biologist may designate qualified biologists or biological monitors to help oversee Project compliance or conduct pre-construction surveys for special-status species. These biologists shall have familiarity with the species for which they would be conducting pre-construction surveys or monitoring construction activities.
 - b. The Project Biologist or designated gualified biologist shall review final plans, designate areas that need temporary fencing (e.g., ESA fencing), and monitor construction activities within and adjacent to areas with native vegetation communities or special-status plant and wildlife species. The qualified biologist shall monitor activities within designated areas during critical times such as vegetation removal, initial ground-disturbing activities, and the installation of BMPs and fencing to protect native species, and shall ensure that all wildlife and regulatory agency permit requirements, conservation measures, and general avoidance and minimization measures are properly implemented and followed. The qualified biologist shall check construction barriers or exclusion fencing and shall provide corrective measures to the contractor to ensure that the barriers or fencing are maintained throughout construction. The qualified biologist shall have the authority to stop work if a special-status wildlife species is encountered within the Project area during construction. Construction activities shall cease until the Project Biologist or qualified biologist determine(s) that the animal will not be harmed or that it has left the construction area on its own. The appropriate regulatory agency(ies) shall be notified within 24 hours of sighting of a special-status wildlife species.
 - c. Prior to the start of construction, all Project personnel and contractors who will be on site during construction shall complete mandatory training conducted by the Project Biologist or a designated qualified biologist. Any new Project personnel or contractors that come on board after the initiation of construction shall also be required to complete the mandatory Worker Environmental Awareness Program training before they commence with work. The training shall advise workers of potential impacts on special-status vegetation communities and special-status species, and the potential penalties for impacts on such vegetation communities and special-status species and special-status vegetation communities in the

Project area (including vegetation communities subject to USACE, CDFW, and RWQCB jurisdiction), (2) the purpose for resource protection; (3) sensitivity of special-status species to human activities; (4) protective measures to be implemented in the field, including strictly limiting activities, vehicles, equipment, and construction materials to the fenced to avoid special-status resource areas in the field (i.e., avoided areas delineated on maps or on the Project site by fencing); (5) environmentally responsible construction practices; (6) the protocol to resolve conflicts that may arise at any time during the construction process; (7) reporting requirements and procedures to follow should a special-status species be encountered during construction; and, (8) avoidance and minimization measures designed to reduce the impacts on special-status species.

- d. The training program shall include color photos of special-status species and special-status vegetation communities. Following the education program, the photos shall be posted in the contractor and resident engineer's office, where the photos shall remain throughout the duration of Project construction. Photos of the habitat in which special-status species are found shall be posted onsite. The contractor shall be required to provide the City with evidence of the employee training (e.g., a sign-in sheet) on request. Project personnel and contractors shall be instructed to immediately notify the Project Biologist or designated biologist of any incidents that could affect special-status vegetation communities or special-status species. Incidents could include fuel leaks or injury to any wildlife. The Project Biologist shall notify the City of any incident and the City shall notify the appropriate regulatory agency within 24 hours of being noticed.
- e. The Project Biologist shall be authorized to halt work, if necessary, and contact the appropriate regulatory agencies in collaboration with the City to ensure the proper implementation of species and habitat protection measures. The Project Biologist shall report any non-compliance issue to the City and the City will notify the appropriate regulatory agencies within 24 hours of its occurrence.
- f. The Project Biologist shall monitor the Project site immediately prior to and during construction to identify the presence of invasive weeds and shall recommend measures to avoid their inadvertent spread in association with the Project. Such measures may include inspection and cleaning of construction equipment and use of eradication strategies. All heavy equipment shall be washed and cleaned of debris prior to entering special-status vegetation communities to minimize the spread of invasive weeds.
- g. ESA fencing shall be placed along the perimeter of the identified work area. Work areas shall be clearly marked in the field and shall be confirmed by the Project Biologist or designated biologist prior to any clearing, and the marked boundaries shall be maintained throughout the duration of the work. Staging areas, including lay down areas and equipment storage areas, shall be flagged and fenced with ESA fencing.
- h. All native or special-status vegetation communities outside of and adjacent to the designated Project limits of disturbance shall be designated as ESAs on Project maps. Prior to construction, the Contractor shall delineate the Project limits, including construction, staging, lay-down, and equipment storage areas, and erect the construction boundary, with fencing or flagging, along the perimeter of the identified construction area to protect adjacent special-status habitats and special-status plant populations. ESAs shall be clearly delineated with fencing or flagging or other BMPs prior to construction to inform construction personnel where the ESAs are located. ESAs fencing may include orange

plastic snow fence, orange silt fencing, or stakes and flagging in areas of flowing water. No personnel, equipment, or debris shall be allowed within the ESAs. Fences and flagging shall be installed by Contractor in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment. Ten days prior to initiating construction, the Contractor shall submit to the City final plans for initial clearing and grubbing of habitat and Project construction. At least five days prior to initiating construction (except for impacts resulting from clearing to install temporary fencing), The City shall submit to the appropriate regulatory agencies for approval, the final plans for initial clearing and grubbing of habitat and Project construction. These final plans shall include photographs that show the fenced and flagged ESA limits and all areas to be impacted or avoided. If work occurs beyond the fenced or demarcated limits of impact, all work shall cease until the problem has been remedied to the satisfaction of the City and the appropriate regulatory agencies. Temporary construction fences and markers shall be maintained in good repair by the Contractor and shall be removed upon completion of Project construction.

- i. No work activities, materials or equipment storage or access shall be permitted outside the Project limits without permission from the City. All parking and equipment storage by the contractor related to the Project shall be confined to the Project limits. Undisturbed areas and special-status vegetation communities outside and adjacent to the Project limits shall not be used for parking or equipment storage. Project-related vehicle traffic shall be restricted to the Project limits and established roads and construction access points.
- j. Construction activities shall be limited to daylight hours to the extent feasible. If nighttime activities are unavoidable, then workers shall direct all lights for nighttime lighting into the work area and shall minimize the lighting of natural habitat areas adjacent to the work area. The contractor shall use light glare shields to reduce the extent of illumination into special-status vegetation communities. If the work area is located near surface waters, the lighting shall be shielded such that it does not shine directly into the water.
- k. Clearing shall be confined to the minimal area necessary to facilitate construction activities. Cleared vegetation and spoils shall be disposed of daily at a permanent offsite spoils location or at a temporary onsite location that will not create habitat for special-status wildlife species. Spoils and dredged material shall be disposed of at an approved site or facility in accordance with all applicable federal, state, and local regulations.
- Food-related and other garbage shall be disposed of in wildlife-proof containers and shall be removed from the Project area daily during the construction period. Vehicles carrying trash shall be required to have loads covered and secured to prevent trash and debris from falling onto roads and adjacent properties.
- m. All construction equipment used for the Project shall be maintained in accordance with manufacturer's recommendations and requirements and shall be maintained to comply with noise standards (e.g., exhaust mufflers, acoustically attenuating shields, shrouds, or enclosures).
- n. The Contractor shall store all construction-related vehicles and equipment in the designated staging areas. These areas shall not contain native or special-status vegetation communities and shall not support special-status plant or wildlife species.
- o. The Contractor shall avoid wildlife entrapment by completely covering or providing escape ramps for all excavated steep-walled holes or trenches more than 1 foot deep at the end

of each construction work day. The qualified biologist shall inspect open trenches and holes and shall remove or release any trapped wildlife found in the trenches or holes prior to filling by the construction contractor.

- p. Special-status wildlife can be attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar features; construction equipment; or construction debris left overnight in areas that may be occupied by special-status species that could occupy such structures shall be inspected by a qualified biologist prior to being used for construction. Such inspections shall occur at the beginning of each day's activities for those materials to be used or moved that day. If necessary, and under the direct supervision of the biologist, the structure may be moved up to one time to isolate it from construction activities, until the special-status species has moved from the structure of their own volition, has been captured and relocated, or has otherwise been removed from the structure.
- q. Capture and relocation of trapped or injured wildlife listed under the federal Endangered Species Act or the California Endangered Species Act can only be performed by personnel with appropriate state and/or federal permits. Any sightings and any incidental take shall be reported to the City via email within one working day of the discovery. A follow-up report shall be sent to the regulatory agencies, including dates, locations, habitat description, and any corrective measures taken to protect special-status species encountered. For each special-status species encountered, the biologist shall submit a completed California Natural Diversity Data Base field survey form (or equivalent) to CDFW no more than 90 days after completing the last field visit to the Project site.
- r. The City shall be notified within one working day of the discovery of, injury to, or mortality of a special-status species that results from Project-related construction activities or is observed at the Project site. Notification shall include the date, time, and location of the incident or of the discovery of an individual special-status species that is dead or injured. For a special-status species that is injured, general information on the type or extent of injury shall be included. The location of the incident shall be clearly indicated on a USGS 7.5-minute quadrangle and/or similar map at a scale that will allow others to find the location in the field, or as requested by the City. The biologist is encouraged to include any other pertinent information in the notification.
- s. The spread of dust from work sites to special-status vegetation communities or habitats for special-status species on adjacent lands shall be minimized by use of a water truck. Dirt access roads, haul roads, and spoils areas shall be watered at least twice each day when being used during construction dry periods.
- t. The Contractor shall strictly limit their activities, vehicles, equipment, and construction materials to established roads and the Project disturbance limits. Posted speed limit signs on local roads and a 15 mile-per-hour speed limit along ingress and egress routes shall be observed. Extra caution shall be used when special-status reptile species may be basking on roads.
- u. To avoid injury or death to wildlife, no firearms shall be allowed on the Project site except for those carried by authorized security personnel or local, state, or federal law enforcement officials.
- v. To prevent harassment, injury, or mortality of special-status wildlife species by dogs or cats, no canine or feline pets shall be permitted in the active construction area.

- w. Plastic monofilament netting or similar material shall not be used for erosion control because smaller wildlife may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackifier hydroseeding compounds. This limitation shall be communicated to the contractor through specifications or special provisions included in the construction bid solicitation package.
- x. Rodenticides and herbicides shall be used in accordance with the manufacturer recommended uses and applications and in such a manner as to prevent primary or secondary poisoning of special-status fish, wildlife, and plant species and depletion of prey populations upon which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. EPA, the California Department of Pesticide Regulation, and other appropriate state and federal regulations, as well as additional Project-related restrictions imposed by the City.
- y. Hazardous materials and equipment stored overnight, including small amounts of fuel to refuel hand-held equipment, shall be stored within secondary containment when within 50 feet of open water to the fullest extent practicable. Secondary containment shall consist of a ring of sand bags around each piece of stored equipment/structure. A plastic tarp/visqueen lining with no seams shall be placed under the equipment and over the edges of the sandbags, or a plastic hazardous materials secondary containment unit shall be used by the Contractor.
- z. The Contractor shall be required to conduct vehicle refueling in upland areas where fuel cannot enter WOUS or waters of the state and in areas that do not have suitable habitat to support federally and/or state-listed species. Any fuel containers, repair materials including creosote-treated wood, and/or stockpiled material that is left onsite overnight shall be secured in secondary containment within the work area and staging/assembly area, and covered with plastic at the end of each work day.
- aa. In the event that no activity is to occur in the work area for the weekend and/or a period of time greater than 48 hours, the Contractor shall ensure that all portable fuel containers are removed from the Project site.
- bb. Equipment and containers will be inspected daily for leaks. Should a leak occur, contaminated soils and surfaces will be cleaned up and disposed of following the guidelines identified in the Stormwater Pollution Prevention Plan, Materials Safety Data Sheets, and any specifications required by other permits issued for the Project.
- cc. The Contractor shall utilize off-site maintenance and repair shops as much as possible for maintenance and repair of equipment.
- dd. If maintenance of equipment must occur onsite, fuel/oil pans, absorbent pads, or appropriate containment shall be used to capture spills/leaks within all areas. Where feasible, maintenance of equipment shall occur in upland areas where fuel cannot enter WOUS or waters of the state and in areas that do not have suitable habitat to support federally and/or state-listed species.

Mitigation Measures BIO-2 and BIO-3 are required to avoid and minimize impacts on special-status vegetation communities.

BIO-2 Avoid, Minimize and Compensate for, Direct and Indirect Impacts on Special- Status Vegetation Communities. Temporary impacts on special-status vegetation communities, including Oak-Willow Alliance, Coast Live Oak Alliance and unvegetated streambed will be restored onsite pursuant to the Habitat Mitigation and Monitoring Plan for the Project. Compensatory mitigation for the temporary loss of function associated with Oak-Willow Alliance and Coast Live Oak Alliance while restored areas mature, will consist of 1:1 enhancement as proposed by the Project herein.

Compensatory mitigation for the net loss of non-native grassland shall consist of preservation and long-term management of native grassland established onsite per the Habitat Mitigation and Monitoring Plan for the Project at a 0.5:1 ratio.

Permanent impacts on jurisdictional aquatic resources will be mitigated at a 3:1 ratio for USACE wetlands and CDFW riparian habitats and at a 2:1 ratio for non-wetland WOUS. Coordination with USACE (through the 404 process) and CDFW (through the Section 1602 Streambed Alteration Agreement process) may determine a higher ratio is required. Mitigation shall be achieved through a combination of in-kind creation, restoration, and/or enhancement as determined to be appropriate through consultation with the resource agencies. Mitigation shall first be considered onsite, then with an approved mitigation bank, and thirdly through offsite mitigation. The appropriate permit applications shall be submitted to state and federal regulatory agencies. The permits issued by these agencies will finalize the mitigation requirements.

BIO-3 Conduct Oak Tree Survey and Avoid, Minimize and Compensate for Direct and Indirect Impacts on Oak Trees. A certified arborist shall conduct an oak tree survey to document the size and health of each oak tree within the grading area. Heritage oak trees shall be assessed to determine the feasibility of boxing and relocating those trees to the proposed onsite oak riparian establishment area. All oak trees greater than 5 inches diameter at breast height shall be replaced in-kind at a 3:1 ratio by planting acorns and container plants at the proposed onsite oak riparian establishment area. Planting of acorns has been demonstrated to be the most effective technique for native oak tree establishment; however, a mix of acorns and container plants (1-gallon and 5-gallon) may be used to provide a variety of size classes in the establishment area. Acorns shall be collected onsite for planting in the establishment area. In addition, soil from existing oak riparian and woodland habitats within the grading area shall be collected and used in the acorn and container plant soil pits to serve as a source of inoculum for mycorrhizal fungi and other beneficial soil microorganisms and invertebrates.

Mitigation Measure BIO-4 is required based on the presence of potentially suitable habitat for CAGN, LBVI, and SWFL.

BIO-4 Avoid and Minimize Direct and Indirect Impacts on LBVI, SWFL, and CAGN. The removal of native vegetation and habitat shall be avoided and minimized to the maximum extent practicable. For temporary impacts, the work site shall be graded and revegetated with appropriate native species as detailed in the Habitat Mitigation and Monitoring Plan for the Project.

Contractor shall, to the maximum extent practicable, avoid removing suitable habitat for CAGN (coastal sage scrub habitats) and LBVI and SWFL (all riparian and coast live oak alliances) during their respective breeding seasons (February 15 through August 31 for CAGN) and March 15 - September 15 for LBVI and SWFL collectively).

- i. Should LBVI or SWFL habitat removal occur during these timeframes, a qualified biologist will conduct three pre-construction surveys within 7 days of the initiation of suitable habitat removal. The final survey shall be conducted within 24 hours of vegetation removal. If either species is detected, work will be halted until the species is no longer present, CDFW, USACE, and USFWS will be notified for consultation. Work may proceed upon authorization by CDFW, USACE, and USFWS.
- ii. A qualified biologist will conduct three pre-construction surveys within 7 days of the initiation of suitable habitat removal. The final survey shall be conducted within 24 hours of vegetation removal. If CAGN is detected, work will be halted until the species is no longer present, CDFW, USACE and USFWS will be notified for consultation. Work may proceed upon authorization by CDFW, USACE, and USFWS.

Mitigation Measures BIO-5 and BIO-6 are required based on the presence of suitable habitat for species protected by the MBTA California Fish and Game Code 3500 - 5500.

- **BIO-5** Avoid Impacts on Migratory and Nesting Birds. If construction activities occur between January 15 and September 15, a preconstruction nesting bird survey (within seven days prior to construction activities) shall be conducted by a qualified biologist to determine if active nests are present within the area proposed for disturbance in order to avoid the nesting activities of breeding birds/raptors. The results of the surveys shall be submitted to the City (and made available to the wildlife agencies [USFWS/CDFW], upon request) prior to initiation of any construction activities.
- BIO-6 Conduct Pre-Construction Surveys for Western Spadefoot and Southwestern Pond Turtle. Prior to ground-disturbing activities in or near aquatic habitats, preconstruction surveys for western spadefoot and southwestern pond turtles will be conducted to determine their presence or absence within the construction footprint. If western spadefoot are found within the construction footprint, the occupied habitat and appropriate buffer, as determined by a qualified biologist, will be avoided to the maximum extent practicable. If avoidance is not possible and the species is determined to be present in work areas the Project biologist will consult with the Wildlife Agencies to determine appropriate measures to avoid and minimize take of individuals.

If western pond turtles are found within the construction footprint, the occupied habitat and appropriate buffer, as determined by a qualified biologist, will be avoided to the maximum extent practicable. If avoidance is not possible and the species is determined to be present in work areas, the biologist may capture turtles prior to construction activities and relocate them to nearby suitable habitat a minimum of 300 feet downstream from the work area. Alternatively, if recommended/approved by the Wildlife Agencies, the turtles may be captured and either temporarily held or relocated to an appropriate nearby location.

BIO-7 Implement Long-Term Management Plan. A Long-Term Management Plan shall be prepared and implemented. The Long Term Management Plan shall include measures to minimize the potential introduction of invasive species during maintenance activities including, but not limited to: washing all equipment, clothing, boots, and vehicles prior to entering the site from another location, remove invasive species before seeding to the maximum extent feasible, collect all plant material removed during maintenance securely, such as in a burlap bag, and remove from the site. The plan shall prohibit the use of pesticides or herbicides with potential toxicity to aquatic or terrestrial wildlife species. Maintenance shall be conducted outside of the bird breeding season (February 15 to September 15) to the maximum extent feasible. If maintenance must occur during the breeding season, a qualified biologist shall conduct pre-construction nesting bird surveys and direct maintenance staff to areas not occupied by breeding birds. The plan shall include contingency erosion control BMP's should they be needed following especially large storms.

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Appendix A. Database Search Results



Appendix B. Focused Rare Plant Survey Letter Report

Appendix C. Protocol Survey Results for California Coastal Gnatcatcher

Appendix D. Protocol Survey Results for Least Bell's Vireo



Appendix E. Jurisdictional Delineation Report

Appendix F. Potential for Occurrence of Special-status Plant Species

Appendix G. Potential for Occurrence of Special-status Wildlife Species
Appendix H. Protocol Survey Results for Southwestern Willow Flycatcher

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