Appendix B Biological Resources Technical Report

DRAFT

Biological Resources Technical Report
Park Drive Slope and Drainage Improvement Project

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ACOE	U.S. Army Corps of Engineers
Carlsbad HMP	City of Carlsbad Habitat Management Plan
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
ESA	federal Endangered Species Act
GIS	geographic information system
HMP	Habitat Management Plan
LCP	local coastal permit
North County MHCP	North County Multiple Habitat Conservation Program
ROW	right-of-way
SSC	species of special concern
USFWS	U.S. Fish and Wildlife Service

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1 Introduction

1.1 Environmental Setting

The City of Carlsbad (city) proposes to stabilize and repair a steep slope on an area generally located on the northeast side of Park Drive between Cove Drive and Bayshore Drive (Project) in the City of Carlsbad, San Diego County, California. The Project study area encompasses approximately 5.29 acres, and is located in Section 8, Township 11 South, Range 4 West, within the Agua Hedionda Land Grant as shown on the San Luis Rey, California 7.5-minute series U.S. Geological Survey topographic map (Figure 1, Project Location). The Project study area is an undeveloped hillside with an elevation range of approximately 13 feet above mean sea level to approximately 115 feet above mean sea level, with south-facing slope ranging from steep to moderately steep. The Project site is primarily surrounded by residential housing, with a public park situated at the top of the slope along the northeastern edge of the site. Agua Hedionda Lagoon is located approximately 520 feet southwest of the site. There are three soil types mapped on site: Gaviota fine sandy loam, 30% to 50% slopes; Huerhuero loam, 15% to 30% slopes, eroded; and Carlsbad gravelly loamy sand, 5% to 9% slopes (LSA 2018).

The Project study area is not within a habitat management plan (HMP) hardline preserve, standards area, or exempt area, but is located within a deferred certification area of the coastal zone, and therefore, is subject to the issuance of a Coastal Development Permit (CDP) approved by the California Coastal Commission (LSA 2018).

1.2 Project Description

1.2.1 Proposed Project

The Project is needed to stabilize the slope along the north side of Park Drive, and to mitigate surface (surficial slaking, sloughing, and erosion) and deeper-seated instability. Minor slope failure and sediment loss from the hillside has occurred requiring the city to close the sidewalk and roadway on a regular basis to clean up large volumes of debris.

Weakly cemented to friable sandstone is exposed at face of the slope, which is very prone to surface water-induced erosion as evidenced by the deep rills in the face of the slope. This erosion creates a large volume of sediment loss. Mitigation of the erosion can be achieved by directing surface water away from the face of the slope in combination with one or more geometric, structural, surface protection, landscaping, and maintenance solutions. Slope failure and sediment loss from the hillside repeatedly occurs during rain events, requiring the City to close the sidewalk and roadway on a regular basis to clean up large volumes of debris. Mitigation of deeper-seated slope instability would require geometric and/or structural solutions.

To address public safety and coastal access issues associated with the failing hillside, the city proposes to remove the existing wall, install a new retaining wall, and repair portions of the failing slope within the city's right-of-way (ROW) and the utility and open space easements. For this analysis, the Project site has been sectioned into three improvement zones: Zone A, B, and C (Figure 2, Proposed Project).

Zone A

Zone A is located at the southeast end of the Project site. Zone A currently consists of about 1.5 to 1 (horizontal to vertical [1.5:1]) slope with a low retaining wall, 2 to 5 feet high. In most portions of this zone, the soil has eroded

down to parent material, with little to no topsoil present. The overtopping of the sediment-laden flows as well as the runoff from the hillside is straining the existing wall in this area.

Proposed Zone A improvements include an approximately 330-linear-foot stepped planter block wall with geogrid reinforcement. The geogrid wall in Zone A would replace the existing wall at a maximum height of 12 feet. A geogrid-reinforced segmental retaining walls consist of masonry facing blocks with proprietary means of vegetating the face, supported by a geogrid-reinforced soil mass behind the wall to create a gravity retaining wall. The slope behind the wall would be contour graded to a 2:1 slope (horizontal to vertical inclination). The slope height within the Project area of Zone A is approximately 30 feet. The wall would be constructed in incremental lifts consisting of stacked masonry facing blocks connected to geogrid reinforcing layers that are embedded in structural backfill behind the wall facing. The geogrid wall would be planted with native and drought-tolerant species and would be maintained by the City. A brow ditch would be located at the top of the 2:1 slope as well as at the top of wall to safely convey stormwater runoff to the existing storm drain system. Although erosion is expected to decrease substantially, the potential for erosion would not be eliminated entirely by removing the stormwater runoff from the face of the slope using the brow ditch at the top of the slope.

Zone A is located within the Park Drive ROW (Assessor's Parcel Number 207-101-01) and private property (Assessor's Parcel Number 207-100-57) within the open space easement and 25-foot storm drain easement (Doc. No. 85-207258).

Revegetation of coastal sage scrub along the hillside would commence once construction is complete. The stepped planter wall would be revegetated using native plants and maintained by the city. On-site seedlings and plantings would not be counted toward mitigation, but would benefit existing and post-project conditions. Off-site mitigation efforts would result in no net loss to coastal sage scrub.

Zone B

The majority of Zone B is within private property; therefore, alternatives in this area were limited to options where the permanent impacts were contained within the existing ROW and easements. Understanding that reduction of the current public access was unfavorable, this limited the options for this zone to replacing the existing retaining wall in kind at its existing height. Proposed improvements for Zone B include installation of an approximately 10-foot-tall solider pile and lagging type retaining wall to replace approximately 180 linear feet of the existing retaining wall in this area. The soldier piles would be drilled behind the existing wall along the majority of the alignment, and sections of the existing wall would be demolished from the top down to allow the lagging to be installed while maintaining the stability of the slope behind the wall. Once the lagging is installed, a finish would be installed on the face of the wall to mimic the existing block wall's look and color. The proposed retaining wall in Zone B would minimize the temporary construction impacts on the existing slope. At either end of the solider pile and lagging retaining wall in Zone B, the wall would tie into the proposed wall in Zone A to the southeast, and transition into the proposed wall in Zone C to the north.

Zone C

Similar to Zone B, the majority of Zone C is within private property and the options are limited to improvements that can be made within the ROW. Proposed improvements for Zone C would include installation of a 2-foot-tall block wall approximately 300 feet in length. Additionally, a drainage ditch and sediment trapping best management practice (BMP) is proposed to reduce the potential deposition of sediment from the slope on the sidewalk after storm events and to reduce the sediment that reaches the storm drain system and ultimately discharges into the Agua Hedionda Lagoon. The drainage ditch and screen wall would collect the eroded slope material until City crews are able to remove it. The proposed wall in Zone C would tie into the existing wall located at the north end of the Project site

and is intended to be of similar color and type. The proposed 2-foot-tall wall in Zone C would transition into the proposed solider pile wall in Zone B. Similar to Zone B, the majority of Zone C is within private property, and the options are limited to improvements that can be made within the ROW.

1.2.2 Alternatives

Dudek reviewed three additional alternative scenarios to stabilize and repair the steep slope: (1) 20-foot retaining wall and 3:1 slope, (2) stepped slope and no wall, and (3) no improvements. In the selection of the preferred alternative (the Project), key considerations included minimization of environmental impacts, reduction of safety hazards, and improved public access.

Coastal Act Section 30251 requires scenic and visual qualities of coastal areas to be considered and protected as a resource of public importance. It also requires permitted development to be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.

Alternative 1: No Improvements. The alternative to leave the current conditions as-is and to do no improvements is not considered a viable option. The erosion of the slope area would continue to impact the public access along the sidewalk, bike lane, and the roadway, and it would continue to reduce the critical habitat as the slope erodes away. The eventual failure of the degraded retaining wall would also negatively impact access and create loss of habitat in addition to the safety implications of allowing the wall to fail.

Alternative 2: Stepped Slope, No Wall. The stepped, cut-slope-only option includes removing the existing retaining wall and loose surface soils, reforming the slope at 2:1 (horizontal to vertical inclination), and excavating small benches in the slope to mitigate erosion. Revegetation of the graded slope face with erosion-resistant planting could be considered to further mitigate erosion and surficial slope stability. This design improves resistance to erosion, but does not eliminate it entirely. Erosion control would be further improved using: (a) fill or reinforced fill slopes with careful selection of the import fill (cohesive fines) needed for construction and (b) typical surface drainage and landscaping treatments on the face of the slope.

Alternative 3: Retaining Wall, 3:1 Slope. The 20-foot-tall retaining wall and 3:1 slope was analyzed to reduce habitat impacts. To achieve this, the slope grade was decreased to reduce potential erosion. Similar to Alternative 1, a brow ditch would be located at the top of the retaining wall and at the top of the slope. Based on the review of stable slope grades near the residential development, a grade of 3:1 (horizontal to vertical inclination) was used in the design. The resulting wall height for this alternative was determined to be a maximum of 20 feet tall. This alternative assumed the vegetated retaining wall (geogrid reinforced) would be used. Overall, the potential erosion reduction in the proposed Project and Alternative 3 would be similar because they both include a brow ditch at the top of the new slope to minimize runoff across the proposed slope face. However, to accommodate the reduction in slope angle, Alternative 3 would include nearly double the amount of imported fill compared to the preferred alternative. In addition, the impact of replacement of a 20-foot-tall wall would be significantly more than a 10-foot-tall wall.

Given the siting and design alternatives, the proposed Project described in Section 1.2.1 has been designed to reduce impacts to coastal sage scrub to the maximum extent feasible while also accomplishing the need to stabilize and repair the unstable slope to maintain public access to Bayshore Drive and Agua Hedionda Lagoon.

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2 Regulatory Context

2.1 Federal Endangered Species Act

The federal Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by U.S. Fish and Wildlife Service (USFWS) for most plant and animal species, and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend, and to provide programs for the conservation of those species, thereby preventing extinction of plants and wildlife. ESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under the federal ESA, it is unlawful to take any listed species, and take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. 1531 et seq.).

ESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals; and under Section 10, which provides for the approval of habitat conservation plans on private property without any other federal agency involvement. Upon development of a habitat conservation plan, USFWS can issue incidental take permits for listed species.

2.2 California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA) (California Fish and Game Code, Section 2050 et seq.), which prohibits the "take" of plant and animal species designated by the California Fish and Game Commission as endangered or threatened in the state of California. Under Fish and Game Code Section 86, take is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy."

CESA Section 2062 defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." CESA Section 2067 defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the [California Fish and Game] Commission as rare on or before January 1, 1985, is a threatened species." CESA Section 2068 defines a candidate species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the Commission has published a notice of proposed regulation to add the species to either list." CESA does not list invertebrate species.

CESA authorizes the take of threatened, endangered, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, CESA allows CDFW to adopt a CESA incidental take authorization as satisfactory for California Environmental Quality Act (CEQA) purposes based on finding that the federal permit adequately protects the species and is consistent with state law.

A CESA permit may not authorize the take of fully protected species that are protected in other provisions of the California Fish and Game Code.

2.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. 703–712) was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. Each of the treaties protects selected species of birds and provides for closed and open seasons for hunting game birds. The Migratory Bird Treaty Act protects over 800 species of birds. Two species of eagles that are native to the United States, the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*), were granted additional protection within the United States under the Bald and Golden Eagle Protection Act (16 U.S.C. 668–668[d]) to prevent the species from becoming extinct.

2.4 California Environmental Quality Act

CEQA (California Public Resources Code, Section 21000 et seq.) requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. The CEQA Guidelines (14 CCR 15000 et seq.) also provide guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

Section 15380(b)(1) of the CEQA Guidelines defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors." A rare animal or plant is defined in CEQA Guideline 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline 15380(c).

CDFW recognizes that all plants with California Rare Plant Rank (CRPR) 1A, 1B, and 2 of the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants in California (CNPS 2019) may meet the criteria for listing as threatened or endangered and should be considered under CEQA (CDFW 2019a). Some of the CRPR 3 and CRPR 4 plants meet the criteria for determination as "rare" or "endangered" as defined in Section 1901, Chapter 10 (Native Plant Protection Act), Division 2, of the California Fish and Game Code, as well as Section 2062 and Section 2067, Chapter 1.5 (CESA), Division 3. Therefore, consideration under CEQA for these CRPR 3 and CRPR 4 species is strongly recommended by CNPS (CNPS 2019).

The criteria used to determine the significance of Project impacts to biological resources under CEQA are provided in Section 5, Anticipated Project Impacts.

2.5 Jurisdictional Waters of the United States/State

2.5.1 U.S. Army Corps of Engineers

Pursuant to Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (ACOE) regulates the discharge of dredged and/or fill material into "waters of the United States." The term waters of the United States is defined in the ACOE regulations as follows (33 CFR 328.3):

- (a)(1) – Territorial seas
- (a)(2) – Tributaries
  - A river, stream, or similar naturally occurring surface water channel that contributes surface water flow to territorial seas/navigable waters in a typical year either directly or through another tributary, a lake/pond/impoundment of a jurisdictional water, or an adjacent wetland
  - Intermittent or perennial
- (a)(3) – Lakes and ponds, and impoundments of jurisdictional waters
- (a)(4) - Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1) through (3) of this section (33 CFR 328.3(a)).

The term "wetlands" (a subset of waters) is defined in 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

In the absence of wetlands, the limits of ACOE jurisdiction in non-tidal waters, such as intermittent streams, extend to the ordinary high water mark, which is defined in 33 CFR 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."

The discharge of dredge or fill material into waters, including wetlands, requires authorization from ACOE prior to impacts through either an Individual Permit or a Nationwide Permit.

2.5.2 California Department of Fish and Wildlife

Pursuant to Section 1602 of the California Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife.

CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72).

CDFW's definition of "lake" includes "natural lakes or man-made reservoirs" (14 CCR 1.56). Diversion, obstruction, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife requires authorization from CDFW by means of entering into an agreement pursuant to Section 1602 of the California Fish and Game Code.

2.5.3 California Regional Water Quality Control Board

Pursuant to Section 401 of the federal Clean Water Act, the Regional Water Quality Control Board regulates discharging waste, or proposing to discharge waste, within any region that could affect a "water of the state" (California Water Code, Section 13260(a)), pursuant to provisions of the Porter–Cologne Water Quality Control Act (Porter–Cologne Act). Waters of the state are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code, Section 13050(e)). Before ACOE will issue a Clean Water Act Section 404 permit, applicants must receive a Clean Water Act Section 401 Water Quality Certification from the Regional Water Quality Control Board. If a Clean Water Act Section 404 permit is not required for the Project, the Regional Water Quality Control Board may still require a permit (i.e., Waste Discharge Requirement) for impacts to waters of the state under the Porter–Cologne Act.

2.5.4 California Coastal Act

Under the California Coastal Act, the California Coastal Commission and/or local governments with a certified Local Coastal Program (LCP) regulates the "coastal zone" and requires a CDP for all development within the coastal zone. From 3 miles seaward, the coastal zone generally extends approximately 1 mile inland. In less developed areas, it can extend up to 5 miles inland from mean high-tide line, but can also be considerably less than the 1 mile inland typical of developed areas.

The California Coastal Act also protects designated sensitive coastal areas by providing additional review and approvals for proposed actions in these areas. The act defines wetlands as "…lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens…" The California Coastal Act allows diking, filling, or dredging of wetlands for certain uses, such as restoration. The act also directs each city or county within the coastal zone to prepare LCP for California Coastal Commission certification (CERES 2010). Under approved LCPs, jurisdictions can independently approve LCPs for projects developed consistent with the approved LCP. The city has an approved LCP.

2.6 Local Conservation Plans

2.6.1 North County Multiple Habitat Conservation Program

The North County Multiple Habitat Conservation Program (North County MHCP) is a long-term regional conservation plan established to protect sensitive species and habitats in northern San Diego County. The North County MHCP is divided into seven subarea plans—one for each jurisdiction within the North County MHCP—that are permitted and implemented separately from one another. The City of Carlsbad is the only city under the North County MHCP that has an approved and permitted subarea plan (i.e., the City of Carlsbad Habitat Management Pan [Carlsbad HMP]).

The North County MHCP sets forth general and subarea conditions of coverage that must be met for each covered species for the city to obtain take authorization. These conditions can be found in Appendix C of the Carlsbad HMP (City of Carlsbad 2004).

2.6.2 City of Carlsbad Habitat Management Plan

The city adopted the Carlsbad HMP in December 1999; USFWS and CDFW granted final approvals, including implementing agreement and terms and conditions, in November 2004. The purpose of the Carlsbad HMP is to guide the design, management, monitoring, and public use of the preserve system. The Carlsbad HMP calls for 6,478 acres of natural habitat to be preserved within the city, as well as an additional 308 acres of habitat for the coastal California gnatcatcher (*Polioptila californica californica*) within the city's or the county's gnatcatcher core area. The Carlsbad HMP identifies local facility management zones, which were developed based on the distribution of existing vegetation communities and sensitive species. The zones were further broken down into HMP cores, linkages, and special resource areas. The Project site is not located within a Carlsbad HMP hardline preserve, standards area, core, linkage, or special resource area (Figure 3, Regional Context).

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3 Survey Methods

3.1 Literature Review

Dudek reviewed the following reports and data to determine the biological resources present within the study area:

- Biological Resources Technical Report for Park Drive Slope and Drainage Improvement Project (LSA 2018)
- U.S. Department of Agriculture Natural Resource Conservation Service (USDA 2019a)
- CDFW California Natural Diversity Database (CDFW 2019b)[1]
- CNPS Inventory of Rare and Endangered Plants (CNPS 2019)[1]
- USFWS Species Occurrence Data (USFWS 2019) [1]
- City of Carlsbad Guidelines for Biological Studies (2008)

3.2 Biological Surveys

The Project study area was previously surveyed by LSA in 2016. In 2019, Dudek conducted a site visit in order to update the vegetation mapping, review the site for potential jurisdictional aquatic features, and survey for rare plants (Table 1).

Table 1. Schedule of Surveys

Survey Date	Survey Time	Personnel	Survey Type	Survey Conditions
3/25/2019	10:00 AM–1:00 PM	Callie Amoaku, Tricia Wotipka	Vegetation mapping, jurisdictional delineation	61–66°F; 0% cloud cover; 0–1 mph wind
5/17/2019	8:50 AM–11:21 AM	Katie Dayton	Rare plant surveys	61–63°F; 10–30% cloud cover; 0–5 mph wind

3.2.1 Vegetation Mapping

On March 25, 2019, Dudek Biologist Callie Amoaku updated the vegetation map to reflect changes in the study area based on the presence of native and non-native plants, as well as eroded slopes. Vegetation communities and land covers were mapped in the field directly in a GPS-based application using aerial photograph-based map of the Project site (Bing 2019). Following completion of the fieldwork, all vegetation polygons were transferred to a topographic base and digitized using ArcGIS, and a geographic information system (GIS) coverage was created by Senior GIS Analyst Andrew Greis. Once in ArcGIS, the acreage of each vegetation community and land cover present on site was determined.

[1] The literature search included the following U.S. Geological Survey topographic quadrangles: San Luis Rey, Las Pulgas Canyon, Morro Hill, Bonsall, San Marcos, Oceanside, Encinitas, and Rancho Santa Fe.

Vegetation community classifications used in this report follow Holland (1986) and Oberbauer et al. (2008), where feasible, with modifications to accommodate the lack of conformity of the observed communities to those of Holland (1986) or Oberbauer et al. (2008).

3.2.2 Jurisdictional Delineation

On March 25, 2019, Dudek biologists Callie Amoaku and Tricia Wotipka surveyed the study area for potential jurisdictional aquatic features. Methods described in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (TR Y-87-1) (ACOE 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (ACOE 2008), Section 1600 of Fish and Game Code, and the State Wetland Definition and Procedures for Discharges of Dredged or Fill Materials to Waters of the State (SWRCB 2019) were used. Prior to the delineation, Dudek biologists reviewed the LSA report (LSA 2018) and previously-identified potentially jurisdictional aquatic resources.

3.2.3 Rare Plant Survey

On May 17, 2019, Dudek Biologist Katie Dayton conducted a focused rare plant survey. All native and naturalized plant species encountered on the Project site were identified and recorded. Latin and common names for plant species with a CRPR (formerly CNPS List) follow the CNPS Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2019). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2019), and common names follow the U.S. Department of Agriculture Plants Database (USDA 2019b).

4 Survey Results

4.1 Vegetation Communities

The City's Guidelines for Biological Studies (City of Carlsbad 2008) defines "sensitive" habitats as riparian scrub, riparian woodland, riparian forest, southern coastal salt marsh, freshwater marsh, estuary, cismontane alkali marsh, fresh/open water, vernal pools, disturbed wetlands, native grassland, non-native grassland, coastal sage scrub, maritime succulent scrub, coastal sage scrub/chaparral scrub, southern mixed or chamise chaparral, southern maritime chaparral, oak woodland, and eucalyptus woodland. Section IV, Appendix G (Environmental Checklist Form) of the CEQA Guidelines (14 CCR 15000 et seq.) requires an evaluation of impacts to "any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service." Natural communities with state and/or global ranks of 1–3 are considered sensitive (CDFW 2018a).

On site, there are four vegetation communities or land covers: coastal sage scrub (including disturbed), disturbed habitat, ornamental, and developed (Figure 4, Biological Resources; Table 2).

Table 2. Vegetation Communities and Land Covers

Vegetation Community or Land Cover	Acreage
Native Vegetation Communities	
Coastal Sage Scrub	3.71
Disturbed Coastal Sage Scrub	0.05
Subtotal	*3.76*
Land Covers	
Disturbed Habitat	0.22
Ornamental	1.04
Developed	0.30
Subtotal	*1.56*
Total	**5.32**

4.1.1 Coastal Sage Scrub

Coastal sage scrub vegetation occurs in most of the Project study area. This vegetation community was dominated by common deerweed (*Acmispon glaber* var. *glaber*), California sagebrush (*Artemisia californica*), coastal cholla (*Cylindropuntia prolifera*), California buckwheat (*Eriogonum fasciculatum var. foliolosum*), laurel sumac (*Malosma laurina*), toyon (*Heteromeles arbutifolia*), Menzies' goldenbush (*Isocoma menziesii* var. *vernonioides*), coastal prickly pear (*Opuntia littoralis*), lemonade berry (*Rhus integrifolia*), black sage (*Salvia mellifera*), and Mojave yucca (*Yucca schidigera*).

Along Park Drive in the eastern side of the Project study area, there is a patch of coastal sage scrub mapped as "disturbed" because it has a high percent cover of Uruguayan pampas grass (*Cortaderia selloana*) mixed in with some California sage brush and California buckwheat.

4.1.2 Disturbed Habitat

Disturbed habitat refers to areas that are primarily void of vegetation (i.e., the eroded slopes). These areas are on the south-facing slopes along Park Drive. Scattered plants in the disturbed habitat include slender oat (*Avena barbata*), wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), and Menzie's goldenbush.

4.1.3 Ornamental

The areas mapped as ornamental are comprised of non-native plants that are typical in planted ornamental landscapes. Along Park Drive, these areas are dominated by Uruguayan pampas grass, coastal wattle (*Acacia cyclops*), and Washington fan palm (*Washingtonia robusta*), with a lower cover of native scrub plants. Along the northern portion of the Project site, the ornamental areas consist of lawns and landscaped areas. Common plants observed here include lantana (*Lantana camara*), hottentot fig (*Carpobrotus edulis*), heartleaf iceplant (*Aptenia cordifolia*), jade plant (*Crassula ovata*), and common iceplant (*Mesembryanthemum crystallinum*).

4.1.4 Developed

The areas mapped as developed include concrete walking paths, concrete ditches, a residential area, and sidewalk along Park Drive.

4.2 Potential Jurisdictional Aquatic Features

Dudek biologists Tricia Wotipka and Callie Amoaku reviewed the Project site to confirm the presence or absence of potential aquatic features previously identified by LSA (2018). Prior to conducting the site visit, Dudek biologists reviewed the LSA report which had previously identified "disturbed wetlands" and non-wetland waters. As described in the LSA report (2018), the earthen gully is dominated by upland plants that drains onto the sidewalk and then presumably into a storm drain. Dudek evaluated this gully during the 2019 site visit and determined that it was an erosional feature caused by nuisance runoff from the surrounding developments. This feature lacks an ordinary high water mark (OHWM) as there was no distinguishable bed and bank often associated with a stream channel and there were no discernible hydrology indicators such as drift deposits, shelving, sediment deposition, and drainage patterns. A small, isolated patch of dead cattails (*Typha* sp.) was observed near the base of the slope where runoff appears to concentrate during storm events. Because the cattails are in a state of senescence it is clear they are supported solely by artificial means (i.e., nuisance runoff from adjacent development). Given the absence of a persistent water source, the vegetation in this area appears to be returning to a dry, disturbed upland state similar to what is present in immediately surrounding areas. Additionally, there are no known historic drainages on site that previously conveyed water into the lagoon or other waters of the U.S. (NETR 2019). Further, there are concrete-lined ditches located east of this gully. These concrete-lined ditches drain runoff from the adjacent residential areas and outlet into a storm drain. It is evident that the gully formed in this particular area because runoff from the adjacent development is too far west to drain into the ditches and instead created their own erosive area. Given the highly erodible soils in this area coupled with the steep topography and the lack of ditches along the eastern side, which would serve to drain the area more efficiently, erosional features are expected.

Gullies typically lack a traditional "ordinary high water mark" because they are formed by erosion rather than a natural stream course with typical channel morphology. The *Clean Water Rule: Definitions of "Waters of the United States"*, specifically excludes erosional features, such as gullies, from the definition of a waters of the U.S. (40 CFR 110, 112, 116, et al.). The RWQCB recently adopted the Statewide Wetland Definition and Procedures (SWRCB 2019), which defines waters of the state subject to RWQCB jurisdiction and the procedures to conduct wetland delineations. Dudek's 2019 evaluation followed the guidelines outlined in these latest procedures, which direct practitioners to follow the existing ACOE procedures and manuals when making wetland determinations. CDFW does not regulate gullies due to the lack of a "streambed".

The LSA report also describes a three very small "disturbed wetlands" primarily comprised of cattails, Mexican fan palm, Menzie's [=coastal] goldenbush, and annual rabbitsfoot grass (*Polypogon monspeliensis*) (LSA 2018) that are present at, and near, the bottom of the earthen gully that drains into the sidewalk and at the base of the slope. Dudek biologists observed dead cattails and several scattered Mexican fan palms with less than 5% cover of annual rabbitsfoot grass in this same area. However, when looking at the entire site as a whole, it is clear that the site does not support natural wetlands or wetlands that provide any type of ecological value, particularly those functions and services typically observed in coastal wetlands including, but not limited to, water supply and storage; support of commercial fisheries; provision of commercially-harvested organisms; water quality maintenance; flood flow storage and modification; erosion control; the provision of wildlife and aquatic habitat for special-status wildlife species including waterfowl; food chain support; consumptive and non-consumptive recreation; open space; and scientific study/research (CCC 1994). The entire site is an upland area characterized by coastal sage scrub and highly erodible soils (as evidenced by rills and gullies), and as previously mentioned, there are no drainages or wetlands that existed prior to the development in this area (NETR 2019). While LSA identified three small areas with hydric soil indicators at these "disturbed wetland" locations, the soil type in this area is mapped as Gaviota fine sandy loam, 30 to 50 percent slopes, eroded; it has no hydric rating (NRCS 2019).

For CCC purposes, under 14 CCR Section 13577(a)(1), wetlands are defined as "land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes . . .." As this definition has been applied by the Commission, the presence of any one of the three Army Corps wetland criteria (wetland hydrology, a predominance of wetland vegetation, or hydric soils) can be sufficient evidence to qualify an area as a wetland. However, in the subject study area, wetland vegetation occurs in small, isolated patches that constitute less than 0.01 acres in total. In addition, as described above, the loamy, sandy soil present has no hydric rating. The site is also not located adjacent to or connecting to any lagoon or wetland habitat. Given the lack of a persistent water source, the lack of discernible hydrology indicators and the lack of hydrophytic vegetation, the gully does not meet the definition of an aquatic resource regulated by the ACOE, RWQCB, CDFW and/or CCC. Therefore, there are no potential jurisdictional aquatic features within the Project study area.

4.3 Flora and Fauna

A total of 82 species of native or naturalized plants, 44 native (54%) and 38 non-native (46%), was recorded on the site during the rare plant survey (see Appendix A, Plant Compendium). Dudek did not conduct any wildlife surveys, but the report prepared by LSA includes a list of wildlife species observed during their surveys in 2016 (LSA 2018). Latin and common names of animals follow Crother (2012) for reptiles and amphibians, American Ornithologists' Society (AOS 2019) for birds, Wilson and Reeder (2005) for mammals, and North American Butterfly Association (NABA 2001) or San Diego Natural History Museum (SDNHM 2002) for butterflies.

4.4 Special-Status Species

The city's Guidelines for Biological Studies (City of Carlsbad 2008) defines special-status or "sensitive" species as HMP-covered species, narrow endemic species, estuarine species, federally or state-listed species, fully protected species (as described in the California Fish and Game Code, Sections 4700 and 3511), raptors or migratory birds, and other non-listed sensitive species. For purposes of this report, other non-listed sensitive species that are not included in one of the definitions above include species of special concern (SSC), as designated by the CDFW (2018b); birds of conservation concern, as designated by the USFWS (2008); and all plants with a CRPR between 1 and 3 (CNPS 2019).

4.4.1 Special-Status Wildlife Species

Special-status wildlife species recorded in the vicinity[2] were evaluated for their potential to occur on site (CDFW 2019b; USFWS 2019). Appendix B1 describes the special-status wildlife species observed or with moderate to high potential to occur and Appendix B2 describes the special-status wildlife species that are not expected to occur on site based on lack of suitable habitat, range, or other habitat requirements.

One special-status wildlife species was observed by LSA during focused surveys in 2016 (LSA 2018): coastal California gnatcatcher. Additional species with moderate or high potential to occur include Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), southern California legless lizard (*Anniella stebbinsi*), San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), western yellow bat (*Lasiurus xanthinus*), and San Diego desert woodrat (*Neotoma lepida intermedia*) (Appendix B1).

4.4.1.1 Coastal California Gnatcatcher

Coastal California gnatcatcher is a federally threatened, state SSC, and covered species under the Carlsbad HMP. LSA biologists observed a pair of nesting coastal California gnatcatchers in coastal sage scrub in the northern portion of the Project study area (Figure 4). Coastal sage scrub covers the majority of the Project site along the top of the slope and north toward the residential area. Based on the 2016 nesting observation of coastal California gnatcatchers, the coastal sage scrub is considered occupied habitat. The small portion of disturbed coastal sage scrub mapped along Park Drive is a small isolated patch adjacent to a busy sidewalk and co-dominated by non-native species; therefore, it is not considered suitable habitat for coastal California gnatcatcher.

4.4.1.2 Southern California Rufous-Crowned Sparrow

Southern California rufous-crowned sparrow is a CDFW watch list species and covered species under the Carlsbad HMP. This species was not observed during the 2016 wildlife surveys; however, there is suitable habitat on site and this species is known to occur in the area (Unitt 2004).

4.4.1.3 Southern California Legless Lizard

Southern California legless lizard is a CDFW SSC species. This species has moderate potential to occur in the Project area. There are historic occurrences of this species within 1 mile of the site, but the most recent dates back to

[2] The term vicinity refers to U.S. Geological Survey topographic quadrangles: San Luis Rey, Las Pulgas Canyon, Morro Hill, Bonsall, San Marcos, Oceanside, Encinitas, and Rancho Santa Fe.

1971. The eroded gully provides leaf litter and the dense coastal sage scrub provides cover and contains soils that this species prefers.

4.4.1.4 San Diegan Tiger Whiptail

San Diegan tiger whiptail is a CDFW SSC species. This species has moderate potential to occur in the Project area. It is relatively common in scrub habitats, and while the coastal sage scrub on site is fairly dense, there are some areas—particularly where the soil has eroded—that may provide enough openings for this species to move within the area.

4.4.1.5 Western Yellow Bat

Western yellow bat is a CDFW SSC species. This species roosts in palm trees and, in recent years, has expanded its range to coastal San Diego (Tremor et al. 2017). There is some potential for western yellow bat to roost in the Washington fan palms on site and forage over the lagoon.

4.4.1.6 San Diego Desert Woodrat

San Diego desert woodrat is a CDFW SSC species. This species has potential to occur in the coastal sage scrub on site.

4.4.2 Special-Status Plant Species

Special-status plant species recorded in the vicinity[3] were evaluated for their potential to occur on site (CDFW 2019a; USFWS 2019; CNPS 2019). Appendix C1 describes the special-status plant species observed on site; Appendix C2 describes the special-status plant species with the potential to occur, but that were not observed during rare plant surveys.

One special-status plant species was observed during the 2019 focused rare plant surveys: California adolphia (*Adolphia californica*; CRPR 2B.1). California adolphia is not a narrow endemic species or covered under the Carlsbad HMP (City of Carlsbad 2008). Fourteen individual California adolphia plants were observed toward the southwestern portion of the Project site in the coastal sage scrub (Figure 4). No other special-status plants were observed during the May 2019 surveys, which occurred during the bloom period for the majority of the plants that had potential to occur on site based on suitable vegetation, soils, and range. Plants with bloom periods outside of May were determined to be absent because they are mostly perennial species that would have been detected.

4.4.3 HMP-Covered Species

Covered species are those for which incidental take has been authorized under the terms and conditions the Carlsbad HMP and Implementing Agreement (City of Carlsbad 2008). Coastal California gnatcatcher is a covered species that was observed by LSA in 2016. No plant species covered by the Carlsbad HMP were observed during the surveys or are expected to occur on site.

[3] The term vicinity refers to U.S. Geological Survey topographic quadrangles: San Luis Rey, Las Pulgas Canyon, Morro Hill, Bonsall, San Marcos, Oceanside, Encinitas, and Rancho Santa Fe.

4.4.4 Narrow Endemic Species

Narrow endemic species are native plant species with restricted geographic distributions, soil affinities, and/or habitats; and for purposes of the Carlsbad HMP, endemic species include those that have important populations or their habitat is within the plan area, such that substantial loss of these populations or habitat within the HMP area might jeopardize the continued existence or recovery of that species (City of Carlsbad 2008). No narrow endemic species were observed during the surveys or are expected to occur on site.

4.4.5 Critical Habitat

There is no USFWS-designated critical habitat within the Project study area (USFWS 2019). There is designated critical habitat for coastal California gnatcatcher approximately 0.1 miles to the east, as well as to the north and northwest.

4.5 Wildlife Movement

The Project study area is not located within a core or linkage defined in the Carlsbad HMP or described as a wildlife movement area in the City of Carlsbad Wildlife Movement Analysis Final Report (City of Carlsbad 2015). The Project study area is restricted by Park Drive and Agua Hedionda Lagoon to the south, and residential areas to the north. Therefore, the site is not considered a significant wildlife movement corridor or habitat linkage.

5 Anticipated Project Impacts

5.1 Preferred Alternative/Proposed Project

The proposed Project is described in detail under Section 1.2.1 above. This section addresses direct and indirect impacts to biological resources that would result from implementation of the proposed Project.

Direct impacts result from the direct removal or conversion of an area's biological resources (e.g., through slope grading and other ground-disturbing activities). Direct impacts can be both temporary and permanent. Direct impacts to vegetation communities were quantified by overlaying the proposed impact limits on the biological resources map of the study area (Figure 5, Impacts to Biological Resources). For special-status wildlife species, impacts to suitable primary habitat were quantified in the same manner. While the graded slope would be revegetated with coastal sage scrub species once the Project is completed, the revegetation would not occur for at least 12 months and it will be a manufactured slope; therefore, this impact would be permanent. The impacts associated with the retaining wall and brow ditch would also be permanent. There are no temporary direct impacts associated with this Project.

Indirect impacts result primarily from adverse edge effects, and may be short or long term in nature, or related to construction. For the proposed Project, it is assumed that the potential indirect impacts resulting from short-term construction activities would include dust, noise, and general human presence that may temporarily disrupt species and habitat vitality, and construction-related soil erosion and runoff. With respect to these potential indirect impacts, however, all Project grading would be subject to the typical restrictions (e.g., best management practices) and requirements that address erosion and runoff, including the federal Clean Water Act, National Pollution Discharge Elimination System, and preparation of a stormwater pollution prevention plan. Long-term indirect impacts associated with the proposed Project are not anticipated, considering the Project is proposing slope stabilization and repair, which would improve the currently adverse edge conditions and therefore result in a beneficial impact. All impacts or potential impacts to biological resources would be identified during the construction phase of the Project, and appropriate mitigation would be applied. There are no permanent activities or new land uses proposed as part of the Project.

5.2 Direct Impacts

5.2.1 Vegetation Communities

The Project would have direct impacts to vegetation communities and land covers. While the graded slope would be revegetated with coastal sage scrub species once the Project is completed, the slope would be graded and would therefore be considered a permanent impact (manufactured slope). The impacts associated with the retaining wall and brow ditch would also be permanent. These impacts are summarized in Table 3 and shown on Figure 5.

Table 3. Impacts to Vegetation Communities and Land Covers

Vegetation Community or Land Cover	Existing Acreage	Permanent Impacts
Native Vegetation Communities		
Coastal Sage Scrub	3.71	0.28
Disturbed Coastal Sage Scrub	0.05	0.05
Subtotal	*3.76*	*0.33*
Land Covers		
Disturbed Habitat	0.22	0.15
Ornamental	1.04	0.13
Developed	0.30	0.10
Subtotal	*1.56*	*0.38*
Total	**5.32**	**0.71**

Coastal sage scrub (including disturbed) is considered a sensitive upland vegetation community per the city's Guidelines for Biological Studies (City of Carlsbad 2008). Permanent impacts to 0.33 acres of coastal sage scrub (including disturbed) would be a **significant impact**, absent mitigation.

5.2.2 Jurisdictional Aquatic Features

No jurisdictional aquatic features were identified on site; therefore, there would be **no impacts** to these features.

5.2.3 Special-Status Wildlife Species

5.2.3.1 Coastal California Gnatcatcher

A pair of nesting coastal California gnatcatchers were observed during 2016 focused surveys (LSA 2018). The Project limits are outside of where the pair was observed; however, the coastal sage scrub is suitable habitat and considered potentially occupied. The Project would result in impacts to 0.28 acres of coastal sage scrub that can support coastal California gnatcatcher. While the coastal sage scrub would be revegetated once the Project is completed, the slope would be graded and would therefore be considered a permanent impact (manufactured slope).

Coastal California gnatcatcher is a covered species under the Carlsbad HMP, which states the following conditions of coverage for coastal California gnatcatcher (City of Carlsbad 2004):

> Within Standards Areas, 75% of gnatcatchers shall be conserved. The long-term preserve management plan shall provide area specific management directives for all conserved gnatcatcher locations and any other potential habitat, including specific measures to address control of domestic pets, to reduce other edge effects, to minimize disturbance during the nesting season, and to reduce the potential for habitat degradation due to unplanned fire. Adaptive management may include measures to maintain or improve overall habitat quality, including vegetation structure. No clearing of occupied habitat may occur between March 1 and August 15.

The Project site is not located within a standards area; therefore, the 75% avoidance would not apply. However, the proposed Project is designed to minimize impacts to coastal sage scrub. The city's Guidelines for Biological Studies require mitigation at a 2:1 ratio for occupied coastal sage scrub. Permanent impacts to 0.28 acres of occupied coastal sage scrub would be a **significant impact**, absent mitigation.

5.2.3.2 Southern California Rufous-Crowned Sparrow

Southern California rufous-crowned sparrow is a CDFW watch list species and covered species under the Carlsbad HMP. The proposed Project would result in impacts to 0.28 acres of coastal sage scrub that can support Southern California rufous-crowned sparrow. While the coastal sage scrub would be revegetated once the Project is completed, the slope would be graded and would therefore be considered a permanent impact (manufactured slope).

Southern California rufous-crowned sparrow is a covered species under the Carlsbad HMP, which states the following conditions of coverage for Southern California rufous-crowned sparrow (City of Carlsbad 2004): "The long-term preserve management plan shall provide area specific management directives for known or likely locations of Rufous-crowned Sparrow, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts."

The city's Guidelines for Biological Studies require mitigation at a 2:1 ratio for suitable coastal sage scrub. Permanent impacts to 0.28 acres of suitable habitat would be a **significant impact**, absent mitigation.

5.2.3.3 Southern California Legless Lizard

Southern California legless lizard is a CDFW SSC species. This species has moderate potential to occur within the Project area. The proposed Project would result in impacts to 0.28 acres of coastal sage scrub that can support Southern California legless lizard. While the coastal sage scrub would be revegetated once the Project is completed, the slope would be graded and would therefore be considered a permanent impact (manufactured slope). The city's Guidelines for Biological Studies require mitigation at a 2:1 ratio for suitable coastal sage scrub. Permanent impacts to 0.28 acres of suitable habitat would be a **significant impact**, absent mitigation.

5.2.3.4 San Diegan Tiger Whiptail

San Diegan tiger whiptail is a CDFW SSC species. This species has moderate potential to occur within the Project area. The proposed Project would result in impacts to 0.28 acres of coastal sage scrub that can support San Diegan tiger whiptail. While the coastal sage scrub would be revegetated once the Project is completed, the slope would be graded and would therefore be considered a permanent impact (manufactured slope). The city's Guidelines for Biological Studies require mitigation at a 2:1 ratio for suitable coastal sage scrub. Permanent impacts to 0.28 acres of suitable habitat would be a **significant impact**, absent mitigation.

5.2.3.5 Western Yellow Bat

Western yellow bat is a CDFW SSC species. This species roosts in palm trees and has expanded its range to coastal San Diego in recent years. There is some potential for western yellow bat to roost in the Washington fan palms on site and forage over the lagoon. The stand of Washington fan palms would not be impacted by the proposed Project; therefore, there would be **no impacts** to suitable roosting habitat.

5.2.3.6 San Diego Desert Woodrat

San Diego desert woodrat is a CDFW SSC species. This species has the potential to occur in the coastal sage scrub on site. The proposed Project would result in impacts to 0.28 acres of coastal sage scrub that can support San Diego desert woodrat. While the coastal sage scrub would be revegetated once the Project is completed, the slope would be graded and would therefore be considered a permanent impact (manufactured slope). The city's Guidelines for Biological Studies require mitigation at a 2:1 ratio for suitable coastal sage scrub. Permanent impacts to 0.28 acres of suitable habitat would be a **significant impact**, absent mitigation.

5.2.4 Special-Status Plants Species

One special-status plant species, California adolphia (CRPR 2B.1), was observed on site. Approximately nine individuals would be impacted as part of the proposed Project. While the area of impact would be revegetated once the Project is completed, the slope would be graded and would therefore be considered a permanent impact (manufactured slope). Permanent impacts to California adolphia would be a **significant impact**, absent mitigation.

5.2.5 Wildlife Movement

The Project site is not considered a significant wildlife movement corridor or habitat linkage. Additionally, the site would be functional for wildlife use after Project completion. Therefore, there would be **no impacts** to wildlife movement.

5.3 Indirect Impacts

Indirect impacts may result from (1) temporary, short-term effects due to construction activity; and (2) long-term effects.

5.3.1 Vegetation Communities

Generally, indirect effects to vegetation communities primarily result from adverse "edge effects." During Project construction, short-term edge effects may include dust, soil erosion, and runoff that could disrupt plant vitality. However, all Project grading would be subject to the implementation of best management practices and typical restrictions and requirements that address dust control, erosion, and runoff, including the federal Clean Water Act and National Pollution Discharge Elimination System. Short-term, construction-related indirect impacts to vegetation communities would be a **significant impact**, absent mitigation.

No long-term edge effects are anticipated, since the permanent structure is limited to the retaining wall, and the 2:1 graded slope would be revegetated with coastal sage scrub species after Project completion.

5.3.2 Jurisdictional Aquatic Features

No jurisdictional aquatic features were identified on site; therefore, there would be **no impacts** to these features.

5.3.3 Special-Status Wildlife Species

Indirect impacts to vegetation communities cited above also apply to habitats for special-status wildlife species. Additional potential wildlife species-specific indirect impacts include noise, increased human presence, non-native species (e.g., Argentine ants [*Linepithema humile*]), and dust. No nighttime work would occur as part of the Project; therefore there would be no lighting or increased noise at night associated with the Project.

Nesting birds can be significantly affected by short-term construction-related noise, resulting in decreased reproductive success or abandonment of an area as nesting habitat. Breeding passerine and common raptors (e.g., red-tailed hawk [*Buteo jamaicensis*]) likely utilize the various habitats on site and nearby for nest construction and foraging. Indirect impacts from construction-related noise may occur to sensitive wildlife if construction occurs during the breeding season (i.e., February 15 through September 15).

5.3.4 Special-Status Plants Species

Indirect impacts to vegetation communities cited above also apply to habitats for special-status plant species.

5.3.5 Wildlife Movement

The Project site is not considered a significant wildlife movement corridor or habitat linkage. Additionally, the site would be functional for wildlife use after Project completion; therefore, there would be **no impacts** to wildlife movement.

5.4 Conservation Plan Compliance

This report provides baseline information in accordance to the city's Guidelines for Biological Studies in order to demonstrate compliance with the Carlsbad HMP. Specifically, this report provides an assessment on (1) potentially occurring species, (2) vegetation mapping, (3) jurisdictional wetlands delineation, (4) general biological resources and wildlife movement assessment, and (5) focused species surveys (i.e., coastal California gnatcatcher and rare plants). Spatial GIS data will be submitted to the city along with this report.

Impacts to coastal sage scrub within the Coastal Zone require that at least 67% of coastal sage scrub is conserved; the proposed Project would avoid 91% of coastal sage scrub. Mitigation for unavoidable impacts to coastal sage scrub is described in Section 6, Mitigation Measures.

The Carlsbad HMP's conditions of coverage for Southern California rufous-crowned sparrow are based on preserve management and management directives, which do not apply to this Project. However, the Project design would minimize the direct and indirect impacts to Southern California rufous-crowned sparrow and its suitable habitat.

The proposed Project would not located adjacent to a hardline preserve or an undeveloped portion of a standards area that might be conserved in the future; therefore, the Project would not be subject to the adjacency standards.

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6 Mitigation Measures

Proposed mitigation measures to address potential impacts associated with the Project are listed as follows

MM-BIO-1 **Habitat Mitigation:** Impacts to 0.33 acres of coastal sage scrub requires mitigation at a 2:1 ratio, totaling 0.66 acres of coastal sage scrub. This habitat mitigation shall be achieved by conserving 0.66 acres of suitable habitat in an off-site mitigation area within the Coastal Zone (see Table 4, Impact and Mitigation Summary). The habitat mitigation shall include the transplanting of California Adolphia (*Adolphia californica*) to the off-site creation site.

The applicant shall prepare a conceptual mitigation plan and submit to the City of Carlsbad and/or Agencies for review. The final plan shall be submitted at least 30 days prior to initiating Project impacts. The mitigation shall be prepared and implemented consistent with Volume II, Appendix C (Revegetation Guidelines), and Vol. III of the North County Multiple Habitat Conservation Program; pages F-8 to F-11 of the City of Carlsbad Habitat Management Plan; and Section 3.1.5 of the Open Space Management Plan. The mitigation plan shall, at a minimum, include an evaluation of restoration suitability specific to proposed habitat types, soil and plant material salvage/translocation, planting and seeding lists, discussion of irrigation, maintenance and monitoring program, and success criteria. All areas shall be monitored for a minimum of 5 years to ensure establishment of intended plant communities.

Any invasive removal associated with the coastal sage scrub creation site shall be completed using hand equipment and removal shall be completed outside of the nesting bird season. If invasive removal cannot be completed outside of the nesting bird season, pre-work surveys shall be conducted per the nesting bird survey mitigation measure (MM-BIO-4).

Table 4. Impact and Mitigation Summary

Vegetation Community or Land Cover	Existing Acreage	Permanent Impacts	Required Mitigation Ratio[1]	Required Mitigation Acreage
Native Vegetation Communities				
Occupied Coastal Sage Scrub	3.73	0.28	2:1	0.56
Disturbed Coastal Sage Scrub	0.05	0.05	2:1	0.10
Subtotal	*3.78*	*0.33*	–	*0.66*
Land Covers				
Disturbed Habitat	0.22	0.15	–	–
Ornamental	1.05	0.13	–	–
Developed	0.24	0.10	–	–
Subtotal	*1.51*	*0.38*	–	–
Total	**5.29**	**0.71**	–	**0.66**

[1] Per Table 6 in the Carlsbad HMP (City of Carlsbad 2004).

MM-BIO-2 **Revegetation:** The graded slope shall be revegetated with coastal sage scrub species once construction of the wall and slope are completed. Soil shall be revegetated with native plant species found within adjacent habitats. Locally available seed and/or container plants shall be used.

MM-BIO-3 **Avoid Coastal California Gnatcatcher Nesting Season:** Coastal sage scrub habitat shall not be cleared between March 1 and August 15, per the conditions of coverage for coastal California gnatcatcher (*Polioptila californica californica*).

MM-BIO-4 **Nesting Bird Survey:** For clearing of any other vegetation between February 1 and September 15, and clearing of occupied coastal sage scrub between February 1 and February 28 and August 16 through September 15, a nesting bird survey shall be conducted within the proposed impact area and a 500-foot buffer within 72 hours prior to construction. This survey is necessary to assure avoidance of impacts to nesting raptors (e.g., red-tailed hawk [*Buteo jamaicensis*]) and/or birds protected by the federal Migratory Bird Treaty Act and California Fish and Game Code Section 3503 and 3513. If any active nests are detected, the area shall be flagged and mapped on the construction plans along with a minimum of a 300-foot buffer and up to a maximum of 500 feet for raptors or listed species, and shall be avoided until the nesting cycle is complete. If construction activities—particularly clearing/grubbing, grading, and other intensive activities—stop for more than 3 days, an additional nesting bird survey shall be conducted within the proposed impact area and a 500-foot buffer before such activities can recommence.

MM-BIO-5 **Temporary Installation of Fencing:** To prevent inadvertent disturbance to areas outside the limits of grading, the contractor shall install temporary fencing along the entire limits of grading prior to any vegetation clearing.

MM-BIO-6 **Construction Monitoring and Reporting:** To prevent inadvertent disturbance to areas outside the limits of grading, all grading of native habitat shall be monitored by a biologist. The biological monitor shall be contracted to perform biological monitoring during all clearing and grubbing activities. The Project biologist shall perform the following duties:

1. Attend the pre-construction meeting with the contractor and other key construction personnel prior to clearing and grubbing to reduce conflict between the timing and location of construction activities with other mitigation requirements (e.g., seasonal surveys for nesting birds).
2. Conduct meetings with the contractor and other key construction personnel describing the importance of restricting work to designated areas and of minimizing harm to or harassment of wildlife prior to clearing and grubbing.
3. Review and/or designate the construction area in the field with the contractor in accordance with the final grading plan prior to clearing and grubbing.
4. Supervise and monitor vegetation clearing and grubbing weekly to ensure against direct and indirect impacts to biological resources that are intended to be protected and preserved, and to document that protective fencing is intact.
5. Flush special-status species (i.e., avian or other mobile species) from occupied habitat areas immediately prior to brush-clearing activities.
6. Periodically monitor the construction site to verify the Project is implementing the following stormwater pollution prevention plan best management practices:
    i. dust-control
    ii. silt fencing (if required)

iii. removal of construction debris and maintenance of a clean work area

iv. covered trash receptacles that are animal- and weather-proof

v. prohibition of pets on the construction site

vi. and a speed limit of 15 miles per hour during the daylight

7. Keep monitoring notes for the duration of the Project for submittal in a final report to substantiate the biological supervision of the vegetation clearing and grading activities and the protection of the biological resources.
8. Prepare a monitoring report after completion of construction activities, which describes the biological monitoring activities, including a monitoring log; photos of the site before, during, and after the grading and clearing activities; and a list of special-status species observed.

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7 Level of Significance after Mitigation

7.1 Vegetation Communities

Mitigation measures MM-BIO-1 and MM-BIO-2 would reduce impacts to vegetation communities to **less than significant**, consistent with requirements in the Carlsbad HMP. MM-BIO-1 requires a no net loss of coastal sage scrub in the Coastal Zone and 2:1 mitigation for loss of coastal sage scrub, and MM-BIO-2 requires revegetation of the manufactured slope. This revegetation area does not count towards the 0.66-acre mitigation requirement; however, it would reduce the overall loss of coastal sage scrub habitat and functions.

7.2 Special-Status Wildlife

7.2.1 Coastal California Gnatcatcher

Mitigation measures MM-BIO-1 and MM-BIO-3 would reduce impacts to potentially occupied coastal California gnatcatcher habitat to **less than significant**, consistent with requirements in the Carlsbad HMP. MM-BIO-1 requires habitat restoration/creation of 0.66 acres of coastal sage scrub to achieve a no net loss of coastal sage scrub in the Coastal Zone and meet the 2:1 mitigation requirement. MM-BIO-3 prohibits clearing of occupied habitat between March 1 and August 15 (coastal California gnatcatcher nesting season).

7.2.2 Other Special-Status Wildlife Species

Mitigation measures MM-BIO-1 and MM-BIO-2 would reduce impacts to suitable habitat for Southern California rufous-crowned sparrow, Southern California legless lizard, and San Diegan tiger whiptail to **less than significant**. MM-BIO-1 provides habitat restoration/creation of 0.66 acres of coastal sage scrub to achieve a no net loss of coastal sage scrub in the Coastal Zone and meet the 2:1 mitigation requirement. MM-BIO-2 requires revegetation of the manufactured slope.

7.2.3 Nesting Birds

Mitigation measures MM-BIO-2 and MM-BIO-3 would avoid potential impacts to nesting birds protected under the federal Migratory Bird Treaty Act or the California Fish and Game Code, Sections 4700 and 3511.

7.3 Special-Status Plants

Mitigation measures MM-BIO-1 would reduce impacts to California adolphia to **less than significant**. MM-BIO-1 requires transplanting of California adolphia to the coastal sage scrub creation site.

7.4 Indirect Impacts

Mitigation measures MM-BIO-5 and MM-BIO-6 would reduce potential indirect impacts to **less than significant**. MM-BIO-5 requires temporary construction fencing to delineate the limits of grading, and MM-BIO-6 mandates that a biological monitor must be present during construction activities.

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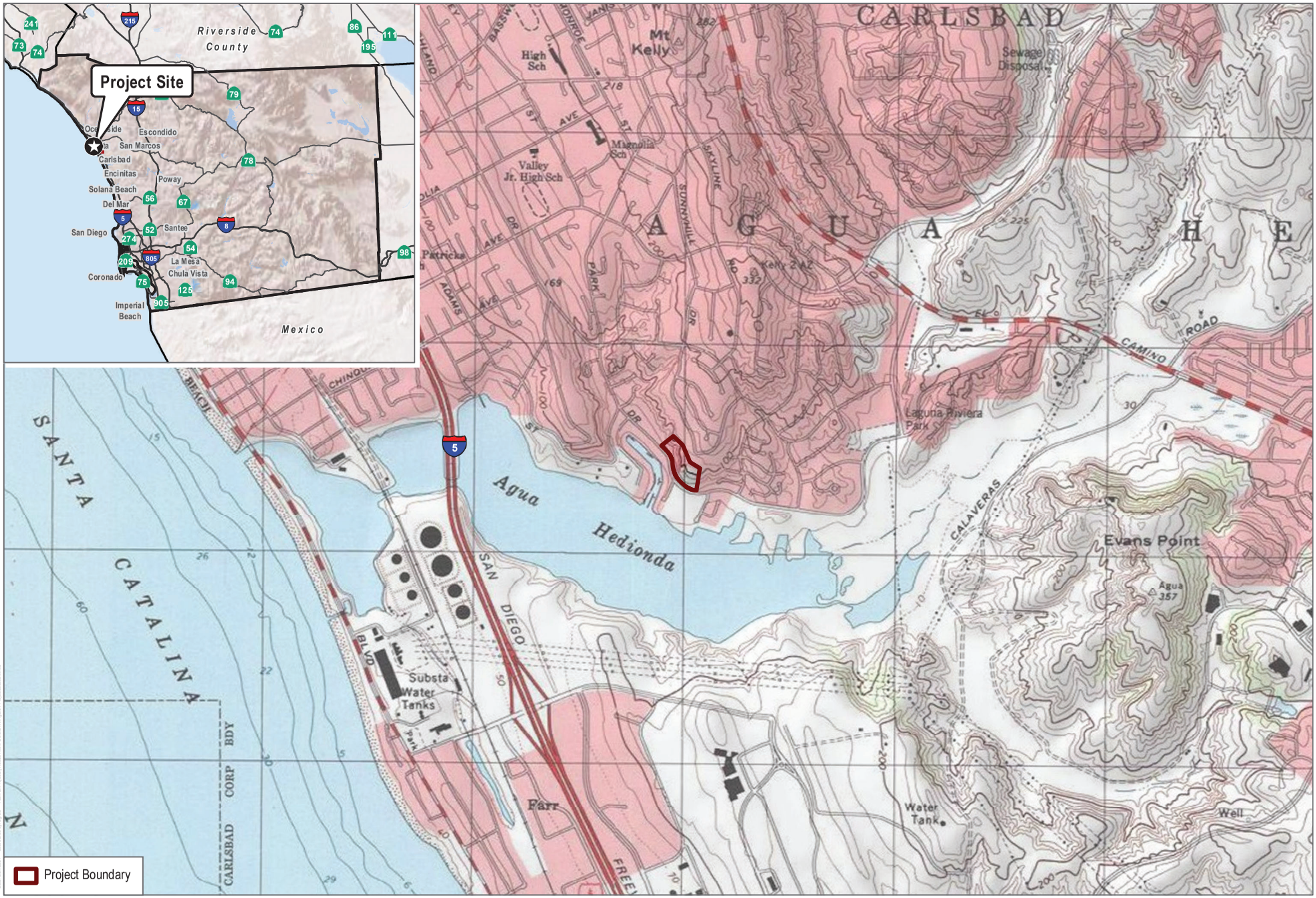

SOURCE: USGS 7.5-Minute Series San Luis Rey Quadrangle

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Park Drive Slope and Drainage Improvement Project - Biological Resources Technical Report

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SOURCE: SANGIS 2017, 2021

DUDEK

0 50 100 Feet

FIGURE 2

Proposed Project

Park Drive Slope and Drainage Improvement Project - Biological Resources Technical Report

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SOURCE: City Carlsbad 2016; SANGIS 2017, 2021

DUDEK

0 500 1,000 Feet

FIGURE 3

Regional Context

Park Drive Slope and Drainage Improvement Project - Biological Resources Technical Report

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SOURCE: LSA 2016; SANGIS 2017, 2021

DUDEK

0 50 100 Feet

FIGURE 4

Biological Resources

Park Drive Slope and Drainage Improvement Project - Biological Resources Technical Report

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SOURCE: LSA 2016; SANGIS 2017, 2021

DUDEK

0 50 100 Feet

FIGURE 5

Impacts to Biological Resources

Park Drive Slope and Drainage Improvement Project - Biological Resources Technical Report

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Appendix A

Plant Compendium

EUDICOTS

VASCULAR SPECIES

AIZOACEAE—FIG-MARIGOLD FAMILY

Aptenia cordifolia—heartleaf iceplant*
Carpobrotus edulis—hottentot fig*
Mesembryanthemum crystallinum—common iceplant*
Mesembryanthemum nodiflorum—slenderleaf iceplant*

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Malosma laurina—laurel sumac
Rhus integrifolia—lemonade berry
Schinus terebinthifolius—Brazilian peppertree*

ASTERACEAE—SUNFLOWER FAMILY

Artemisia californica—California sagebrush
Baccharis pilularis ssp. *consanguinea*—coyotebrush
Centaurea melitensis—Maltese star-thistle*
Deinandra fasciculata—clustered tarweed
Encelia californica—California brittle bush
Erigeron bonariensis—asthmaweed*
Eriophyllum confertiflorum var. *confertiflorum*—golden-yarrow
Isocoma menziesii var. *vernonioides*—Menzies' goldenbush
Lactuca serriola—prickly lettuce*
Pseudognaphalium biolettii—two-color rabbit-tobacco
Pseudognaphalium canescens—Wright's cudweed
Rafinesquia neomexicana—New Mexico plumeseed
Sonchus asper ssp. asper—spiny sowthistle*
Sonchus oleraceus—common sowthistle*

BORAGINACEAE—BORAGE FAMILY

Eucrypta chrysanthemifolia var. *chrysanthemifolia*—spotted hideseed
Heliotropium curassavicum var. *oculatum*—seaside heliotrope

BRASSICACEAE—MUSTARD FAMILY

Hirschfeldia incana—shortpod mustard*
Lepidium nitidum—shining pepperweed
Raphanus raphanistrum—wild radish*
Raphanus sativus—cultivated radish*

CACTACEAE—CACTUS FAMILY

Cylindropuntia prolifera—coastal cholla
Opuntia littoralis—coast prickly pear

CARYOPHYLLACEAE—PINK FAMILY

Spergularia rubra—red sandspurry*

CHENOPODIACEAE—GOOSEFOOT FAMILY

Atriplex semibaccata—Australian saltbush*
Chenopodium murale—nettleleaf goosefoot*
Salsola tragus—prickly Russian thistle*

CLEOMACEAE—CLEOME FAMILY

Peritoma arborea var. *arborea*—bladderpod spiderflower

CONVOLVULACEAE—MORNING-GLORY FAMILY

Calystegia macrostegia—island false bindweed

CRASSULACEAE—STONECROP FAMILY

Crassula ovata—jade plant*
Dudleya edulis—fingertips
Dudleya lanceolata—lanceleaf liveforever
Dudleya pulverulenta—chalk dudleya

CUCURBITACEAE—GOURD FAMILY

Marah macrocarpa—Cucamonga manroot

EUPHORBIACEAE—SPURGE FAMILY

Euphorbia polycarpa—smallseed sandmat
Ricinus communis—castorbean*

FABACEAE—LEGUME FAMILY

Acacia cyclops—coastal wattle*
Acmispon glaber var. *glaber*—common deerweed
Lupinus bicolor—miniature lupine
Lupinus truncatus—collared annual lupine
Melilotus indicus—annual yellow sweetclover*

GENTIANACEAE—GENTIAN FAMILY

Zeltnera venusta—charming centaury

LAMIACEAE—MINT FAMILY

Salvia mellifera—black sage

MALVACEAE—MALLOW FAMILY

Malacothamnus fasciculatus var. *fasciculatus*—Mendocino bushmallow
Malva parviflora—cheeseweed mallow*

MYRSINACEAE—MYRSINE FAMILY

Lysimachia arvensis—scarlet pimpernel*

NYCTAGINACEAE—FOUR O'CLOCK FAMILY

Mirabilis laevis var. *crassifolia*—California four o'clock

ONAGRACEAE—EVENING PRIMROSE FAMILY

Camissonia strigulosa—sandysoil suncup

OXALIDACEAE—OXALIS FAMILY

Oxalis pilosa—creeping woodsorrel

PLANTAGINACEAE—PLANTAIN FAMILY

Antirrhinum nuttallianum ssp. *subsessile*—lesser snapdragon

POLYGONACEAE—BUCKWHEAT FAMILY

Eriogonum fasciculatum var. *foliolosum*—California buckwheat
Pterostegia drymarioides—woodland pterostegia

RHAMNACEAE—BUCKTHORN FAMILY

Adolphia californica—California adolphia

ROSACEAE—ROSE FAMILY

Heteromeles arbutifolia—toyon

RUBIACEAE—MADDER FAMILY

Galium porrigens var. *porrigens*—graceful bedstraw

SIMAROUBACEAE—QUASSIA OR SIMAROUBA FAMILY

Ailanthus altissima—tree of heaven*

SOLANACEAE—NIGHTSHADE FAMILY

Nicotiana glauca—tree tobacco*

TAMARICACEAE—TAMARISK FAMILY
Tamarix ramosissima—tamarisk*

VERBENACEAE—VERVAIN FAMILY
Lantana camara—lantana*

ZYGOPHYLLACEAE—CALTROP FAMILY
Tribulus terrestris—puncturevine*

MONOCOTS

VASCULAR SPECIES

AGAVACEAE—AGAVE FAMILY
Yucca schidigera—Mojave yucca

ARECACEAE—PALM FAMILY
Washingtonia robusta—Washington fan palm*

POACEAE—GRASS FAMILY
Avena barbata—slender oat*
Avena fatua—wild oat*
Bromus diandrus—ripgut brome*
Bromus madritensis ssp. *rubens*—red brome*
Cortaderia selloana—Uruguayan pampas grass*
Distichlis spicata—salt grass
Melica imperfecta—smallflower melicgrass
Muhlenbergia microsperma—littleseed muhly
Poa annua—annual bluegrass*
Polypogon monspeliensis—annual rabbitsfoot grass*
Polypogon viridis—beardless rabbitsfoot grass*
Schismus barbatus—common Mediterranean grass*
Stipa lepida—foothill needlegrass

THEMIDACEAE—BRODIAEA FAMILY
Dichelostemma capitatum ssp. *capitatum*—bluedicks

* signifies introduced (non-native) species

Appendix B1

Special-Status Wildlife Species Observed or with Potential to Occur in Project Area

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Reptiles					
Anniella stebbinsi	southern California legless lizard	None/SSC	None	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and moist sandy or loose, loamy soils	Moderate potential to occur. There is some suitable habitat in the coastal sage scrub and covered areas. There are historic occurrences of this species within 1 mile of the site but the most recent dates back to 1971.
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC	None	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	Moderate potential to occur. The coastal scrub on site is dense, but there are some areas where the soil is eroded creating openings.
Birds					
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	None/WL	Covered	Nests and forages in open coastal scrub and chaparral with low cover of scattered scrub interspersed with rocky and grassy patches	High potential to occur in the coastal sage scrub habitat.
Polioptila californica californica	coastal California gnatcatcher	FT/SSC	Covered	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	Present. The site contains coastal sage scrub dominated by California sagebrush and buckwheat suitable for coastal California gnatcatcher nesting and foraging. A pair of coastal California gnatcatchers were observed nesting and foraging during protocol surveys conducted by LSA in May of 2016.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Mammals					
Lasiurus xanthinus	western yellow bat	None/SSC	None	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Moderate potential to occur. This species generally prefers more desert and foothill habitats, but it has expanded its range in more recent years. There is some roosting potential in the palm trees on site.
Neotoma lepida intermedia	San Diego desert woodrat	None/SSC	None	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Moderate potential to occur. The coastal scrub on site could provide suitable habitat for this species. Additionally, there are occurrences recorded of this species occurring less than 2 miles from the site.

Appendix B2

Special-Status Wildlife Species with Low Potential to Occur in Project Area

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Amphibians					
Anaxyrus californicus	arroyo toad	FE/SSC	NE	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable streambeds or rivers present on or near the site.
Spea hammondii	western spadefoot	None/SSC	None	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	Not expected to occur. No suitable ephemeral wetland or vernal pool areas exist on site. The earthen gully, concrete V-ditches and vegetated swale on site do not retain the water necessary to support this species. The nearest recorded occurrence of this species is over 5 miles from the site.
Reptiles					
Actinemys marmorata	western pond turtle	None/SSC	None	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Not expected to occur. No suitable vegetation present.
Arizona elegans occidentalis	California glossy snake	None/SSC	None	Commonly occurs in desert regions throughout southern California. Prefers open sandy areas with scattered brush. Also found in rocky areas.	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Aspidoscelis hyperythra	orange-throated whiptail	None/WL	Covered	Low-elevation coastal scrub, chaparral, and valley–foothill hardwood	Low potential to occur. Although the site contains some suitable habitat for this species, this species is often found near washes and rocky areas in scrub and chaparral habitat. The nearest recorded occurrence of this species is over 5 miles from the site.
Crotalus ruber	red diamondback rattlesnake	None/SSC	None	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	Low potential to occur. This species has not been recorded within 5 miles of the site and the suitable habitat present is isolated and surrounded by development.
Phrynosoma blainvillii	Blainville's horned lizard	None/SSC	None	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats	Low potential to occur. This species has not been recorded within 3 miles of the site and the suitable habitat present is isolated and surrounded by development.
Salvadora hexalepis virgultea	coast patch-nosed snake	None/SSC	None	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Low potential to occur. This species has not been recorded within 4 miles of the site and the suitable habitat present is isolated and surrounded by development.
Thamnophis hammondii	two-striped gartersnake	None/SSC	None	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Thamnophis sirtalis ssp. (Southern California coastal plain from Ventura County to San Diego County, and from sea level to about 850 m)	south coast garter snake	None/SSC	None	Marsh and upland habitats near permanent water and riparian vegetation	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Birds					
Accipiter cooperii (nesting)	Cooper's hawk	None/WL	Covered	Nests and forages in dense stands of live oak, riparian woodlands, or other woodland habitats often near water	Low potential to nest on site due to lack of tall trees used for nesting. Known to forage on site; this species was observed during a biological survey of the site conducted by LSA in 2016.
*Agelaius tricolor (*nesting colony)	tricolored blackbird	BCC/SSC, PSE	None	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberrry; forages in grasslands, woodland, and agriculture	Not expected to occur. No suitable vegetation present.
*Aquila chrysaetos (*nesting & wintering)	golden eagle	BCC/FP, WL	None	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Not expected to occur. The site is too small and surrounded by development for golden eagle use.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Artemisiospiza belli belli	Bell's sage sparrow	BCC/WL	None	Nests and forages in coastal scrub and dry chaparral; typically in large, unfragmented patches dominated by chamise; nests in more dense patches but uses more open habitat in winter	Low potential to occur. The site does not possess large patches of contiguous coastal scrub habitat and this species has not been recorded within 5 miles of the site.
*Buteo swainsoni (*nesting*)*	Swainson's hawk	BCC/ST	None	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	Not expected to occur. No suitable vegetation present, or large trees for nesting.
*Campylorhynchus brunneicapillus sandiegensis (*San Diego & Orange Counties only*)*	coastal cactus wren	BCC/SSC	None	Southern cactus scrub patches	Low potential to occur. The site lacks large areas of cactus scrub suitable to support this species. This species has been recorded within several miles of the site.
*Charadrius alexandrinus nivosus (*nesting*)*	western snowy plover	FT, BCC/SSC	Covered	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Circus hudsonius (nesting)	northern harrier	None/SSC	None	Nests in open wetlands (marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats	Not expected to occur. There is no suitable vegetation present.
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT, BCC/SE	None	Nests in dense, wide riparian woodlands and forest with well-developed understories	Not expected to occur. No suitable vegetation present.
Elanus leucurus (nesting)	white-tailed kite	None/FP	None	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	Not expected to nest on site due to lack of nesting habitat. Potential to forage on site.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE	Covered	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Not expected to occur. No suitable vegetation present.
Falco peregrinus anatum (nesting)	American peregrine falcon	FDL, BCC/FP, SDL	Covered	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Not expected to nest on site due to lack of nesting habitat. Potential to forage on site.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Icteria virens (nesting)	yellow-breasted chat	None/SSC	Covered	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Not expected to occur. The site does not possess riparian areas or woodlands with thick willow stands or riparian vegetation.
Ixobrychus exilis (nesting)	least bittern	BCC/SSC	None	Nests in freshwater and brackish marshes with dense, tall growth of aquatic and semi-aquatic vegetation	Not expected to occur. No suitable vegetation present.
Laterallus jamaicensis coturniculus	California black rail	BCC/FP, ST	None	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None/SE	Covered	Nests and forages in coastal saltmarsh dominated by pickleweed (Salicornia spp.)	Not expected to occur. No suitable vegetation present.
Pandion haliaetus (nesting)	osprey	None/WL	Covered	Large waters (lakes, reservoirs, rivers) supporting fish; usually near forest habitats, but widely observed along the coast	Not expected to occur. No suitable foraging or nesting habitat present.
Passerculus sandwichensis rostratus (wintering)	large-billed savannah sparrow	None/SSC	Covered	Nests and forages in open, low saltmarsh vegetation, including low halophytic scrub	Not expected to occur. No suitable vegetation present.
Pelecanus occidentalis californicus (nesting colonies & communal roosts)	California brown pelican	FDL/FP, SDL	Covered	Forages in warm coastal marine and estuarine environments; in California, nests on dry, rocky offshore islands	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Plegadis chihi (nesting colony)	white-faced ibis	None/WL	Covered	Nests in shallow marshes with areas of emergent vegetation; winter foraging in shallow lacustrine waters, flooded agricultural fields, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields, and estuaries	Not expected to occur. No suitable vegetation present.
Rallus obsoletus levipes	Ridgway's rail	FE/SE, FP	Covered	Coastal wetlands, brackish areas, coastal saline emergent wetlands	Not expected to occur. No suitable vegetation present.
Riparia riparia (nesting)	bank swallow	None/ST	None	Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration	Not expected to occur. No suitable vegetation present.
Setophaga petechia (nesting)	yellow warbler	BCC/SSC	None	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Not expected to occur. No suitable vegetation present.
Sternula antillarum browni (nesting colony)	California least tern	FE/FP, SE	Covered	Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats	Not expected to occur. No suitable vegetation present.
Thalasseus elegans (nesting colony)	elegant tern	None/WL	Covered	Inshore coastal waters, bays, estuaries, and harbors; forages over open water	Not expected to occur. No suitable vegetation present.
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE	Covered	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Fishes					
Eucyclogobius newberryi	tidewater goby	FE/SSC	None	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River	Not expected to occur. The site does not contain waters from neighboring Agua Hedionda Lagoon and thus cannot support this species.
Gila orcuttii	arroyo chub	None/SSC	None	Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths >40 centimeters (16 inches); substrates of sand or mud	Not expected to occur. The site is outside of the species' known geographic range.
Mammals					
Antrozous pallidus	pallid bat	None/SSC	None	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	Low potential to occur. The site lacks the open habitat and rocky outcrops for roosting necessary to support this species. Additionally, this species has not been recorded within 5 miles of the site.
Chaetodipus californicus femoralis	Dulzura pocket mouse	None/SSC	None	Open habitat, coastal scrub, chaparral, oak woodland, chamise chaparral, mixed-conifer habitats; disturbance specialist; 0 to 3,000 feet above mean sea level	Low potential to occur. There is suitable coastal scrub and disturbed habitat on site to support this species but the site is isolated and there are no records on site.
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None/SSC	None	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland	Low potential to occur. There is suitable coastal scrub and disturbed habitat on site to support this species but the site is isolated and there are no records on site.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Choeronycteris mexicana	Mexican long-tongued bat	None/SSC	None	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon–juniper woodland; roosts in caves, mines, and buildings	Not expected to occur. No suitable habitat present.
Corynorhinus townsendii	Townsend's big-eared bat	None/SSC	None	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels	Not expected to occur. No suitable habitat present.
Dipodomys stephensi	Stephens' kangaroo rat	FE/ST	None	Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas	Low potential to occur. The coastal scrub on site is dense and has thicker canopy cover than this species prefers. The closest records for this species are closer to Camp Pendleton and there are no records of this species near the study area (Tremor et al. 2017).
Eumops perotis californicus	western mastiff bat	None/SSC	None	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	Low potential to occur. The site does not possess vertical cliffs or rocks for roosting and is lacking in large trees. The site lacks water features ideal for foraging. This species has not been recorded within 5 miles of the project site.
Leptonycteris yerbabuenae	lesser long-nosed bat	FDL/None	None	Sonoran desert scrub, semi-desert grasslands, lower oak woodlands	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None/SSC	None	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands	Not expected to occur. Although this species is recorded within several miles of the site, the lack of open ground and the thick canopy of the coastal scrub on site is not ideal for this species.
Nyctinomops femorosaccus	pocketed free-tailed bat	None/SSC	None	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with drop-offs, caverns, and buildings	Not expected to occur. No suitable vegetation present.
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC	NE	fine-grained sandy substrates in open coastal strand, coastal dunes, and river alluvium	Not expected to occur. The site lacks the fine grained sand that this species requires.
Taxidea taxus	American badger	None/SSC	None	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Not expected to occur. The site possesses dense canopies of scrub and isolated habitat adjacent to development that this species does not prefer. There are no records of this species occurring within 5 miles of the site.
Invertebrates					
Branchinecta lynchi	vernal pool fairy shrimp	FT/None	None	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats	Not expected to occur. No suitable vegetation present.
Branchinecta sandiegonensis	San Diego fairy shrimp	FE/None	Covered (List 3), NE	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. The site does not contain vernal pools or ephemeral pools necessary to support this species.

Scientific Name	Common Name	Status (Federal/State)	Carlsbad HMP	Habitat	Potential to Occur
Euphydryas editha quino	quino checkerspot butterfly	FE/None	None	Annual forblands, grassland, open coastal scrub and chaparral; often soils with cryptogamic crusts and fine-textured clay; host plants include Plantago erecta, Antirrhinum coulterianum, and Plantago patagonica (Silverado Occurrence Complex)	Low potential to occur. The host plants for this species were not recorded on site in the preliminary biological surveys conducted by LSA nor in the rare plant surveys conducted by Dudek. Further, the coastal sage scrub is too tall and dense and is not suitable for this species.
Euphyes vestris harbisoni	Harbison dun skipper	None/None	Covered, NE	Oak riparian drainages and adjacent seeps supporting host plant Carex spissa	Not expected to occur. No suitable vegetation present.
Lycaena hermes	Hermes copper	FC/None	NE	Mixed woodlands, chaparral, and coastal scrub	Not expected to occur. No suitable vegetation present. The site lacks the species host plant, Rhamnus crocea.
Panoquina errans	wandering skipper	None/None	Covered	Saltmarsh	Not expected to occur. No suitable vegetation present.
Streptocephalus woottoni	Riverside fairy shrimp	FE/None	Covered (List 3), NE	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. The site does not contain vernal pools or ephemeral pools necessary to support this species.

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Appendix C1

Special-Status Plant Species Observed in Project Area

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Adolphia californica	California adolphia	None/None/2B.1	None	Chaparral, Coastal scrub, Valley and foothill grassland; Clay/perennial deciduous shrub/Dec–May/30–2430	Observed. This plant was recorded during focused rare plant surveys in 2019.

Appendix C2

Special-Status Plant Species with Low Potential to Occur in Project Area

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Abronia maritima	red sand-verbena	None/None/4.2	None	Coastal dunes/perennial herb/Feb–Nov/0–330	Absent. This species was not observed during the 2019 focused rare plant survey.
Abronia villosa var. *aurita*	chaparral sand-verbena	None/None/1B.1	None	Chaparral, Coastal scrub, Desert dunes; sandy/annual herb/(Jan)Mar–Sep/245–5250	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range.
Acanthomintha ilicifolia	San Diego thorn-mint	FT/SE/1B.1	List 2; Narrow Endemic	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools; Clay, openings/annual herb/Apr–June/30–3150	Absent. This species was not observed during the 2019 focused rare plant survey.
Acmispon prostratus	Nuttall's acmispon	None/None/1B.1	None	Coastal dunes, Coastal scrub (sandy)/annual herb/Mar–June(July)/0–35	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site lacks the dune-like sand needed to support this species.
Ambrosia pumila	San Diego ambrosia	FE/None/1B.1	List 2; Narrow Endemic	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools; sandy loam or clay, often in disturbed areas, sometimes alkaline/perennial rhizomatous herb/Apr–Oct/65–1360	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.
Arctostaphylos glandulosa ssp. *crassifolia*	Del Mar manzanita	FE/None/1B.1	List 3; Narrow Endemic	Chaparral (maritime, sandy)/perennial evergreen shrub/Dec–June/0–1200	Absent. This species was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Arctostaphylos rainbowensis	Rainbow manzanita	None/None/1B.1	None	Chaparral/perennial evergreen shrub/Dec–Mar/670–2200	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Artemisia palmeri	San Diego sagewort	None/None/4.2	None	Chaparral, Coastal scrub, Riparian forest, Riparian scrub, Riparian woodland; sandy, mesic/perennial deciduous shrub/(Feb)May–Sep/45–3000	Absent. This species was not observed during the 2019 focused rare plant survey.
Asplenium vespertinum	western spleenwort	None/None/4.2	None	Chaparral, Cismontane woodland, Coastal scrub; rocky/perennial rhizomatous herb/Feb–June/590–3280	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range.
Astragalus tener var. *titi*	coastal dunes milk-vetch	FE/SE/1B.1	None	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie (mesic); often vernally mesic areas/annual herb/Mar–May/0–165	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.
Atriplex coulteri	Coulter's saltbush	None/None/1B.2	None	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland; alkaline or clay/perennial herb/Mar–Oct/5–1510	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site does not contain suitable alkaline or clay soil for this species.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Atriplex pacifica	South Coast saltscale	None/None/1B.2	None	Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas/annual herb/Mar–Oct/0–460	Absent. This species was not observed during the 2019 focused rare plant survey.
Atriplex parishii	Parish's brittlescale	None/None/1B.1	None	Chenopod scrub, Playas, Vernal pools; alkaline/annual herb/June–Oct/80–6235	Absent. This species was not observed during the 2019 focused rare plant survey. While not in bloom during the May survey, there are no unidentified Atriplex species on site. In addition, no suitable alkaline habitat occurs on site.
Baccharis vanessae	Encinitas baccharis	FT/SE/1B.1	List 3; Narrow Endemic	Chaparral (maritime), Cismontane woodland; sandstone/perennial deciduous shrub/Aug,Oct,Nov/195–2360	Absent. This perennial shrub was not observed during the 2019 focused rare plant survey. Additionally, there is no suitable habitat on site for this species, which is found in chaparral (USFWS 2011).
Bloomeria clevelandii	San Diego goldenstar	None/None/1B.1	Narrow Endemic	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools; clay/perennial bulbiferous herb/Apr–May/160–1525	Absent. This species was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/1B.1	Covered; Narrow Endemic	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools; often clay/perennial bulbiferous herb/Mar–June/80–3675	Absent. This species was not observed during the 2019 focused rare plant survey. Also, thesite lacks theclay soils and alkali grassland/vernal pool habitats usually needed to support this species.
Brodiaea orcuttii	Orcutt's brodiaea	None/None/1B.1	Narrow Endemic	Closed-cone coniferous forest, Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland, Vernal pools; mesic, clay/perennial bulbiferous herb/May–July/95–5550	Absent. This species was not observed during the 2019 focused rare plant survey.
Camissoniopsis lewisii	Lewis' evening-primrose	None/None/3	None	Coastal bluff scrub, Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland; sandy or clay/annual herb/Mar–May(June)/0–985	Absent. This species was not observed during the 2019 focused rare plant survey.
Caulanthus simulans	Payson's jewelflower	None/None/4.2	None	Chaparral, Coastal scrub; sandy, granitic/annual herb/(Feb)Mar–May(June)/295–7220	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range.
Ceanothus verrucosus	wart-stemmed ceanothus	None/None/2B.2	List 2	Chaparral/perennial evergreen shrub/Dec–May/0–1245	Absent. This species was not observed during the 2019 focused rare plant survey. Also, chaparral is not present on site.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Centromadia parryi ssp. *australis*	southern tarplant	None/None/1B.1	None	Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools/annual herb/May–Nov/0–1575	Absent. This species was not observed during the 2019 focused rare plant survey.
Centromadia pungens ssp. *laevis*	smooth tarplant	None/None/1B.1	None	Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2100	Absent. This species was not observed during the 2019 focused rare plant survey.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None/None/1B.1	None	Coastal bluff scrub (sandy), Coastal dunes/annual herb/Jan–Aug/0–330	Absent. This species was not observed during the 2019 focused rare plant survey. Also, coastal dunes and the loose, fine sand that this species prefers are not present.
Chamaebatia australis	southern mountain misery	None/None/4.2	None	Chaparral (gabbroic or metavolcanic)/perennial evergreen shrub/Nov–May/980–3345	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Chorizanthe orcuttiana	Orcutt's spineflower	FE/SE/1B.1	Covered; Narrow Endemic	Closed-cone coniferous forest, Chaparral (maritime), Coastal scrub; sandy openings/annual herb/Mar–May/5–410	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site does not possess large, sandy openings that this species prefers. The site is also slightly north of the known range of this species.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	None/None/1B.2	None	Chaparral, Coastal scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; often clay/annual herb/Apr–July/95–5020	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.
Cistanthe maritima	seaside cistanthe	None/None/4.2	None	Coastal bluff scrub, Coastal scrub, Valley and foothill grassland; sandy/annual herb/(Feb)Mar–June(Aug)/15–985	Absent. This species was not observed during the 2019 focused rare plant survey.
Clarkia delicata	delicate clarkia	None/None/1B.2	None	Chaparral, Cismontane woodland; often gabbroic/annual herb/Apr–June/770–3280	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	None/None/1B.2	List 3	Chaparral, Cismontane woodland/perennial evergreen shrub/Apr–June/95–2590	Absent. This species was not observed during the 2019 focused rare plant survey.
Convolvulus simulans	small-flowered morning-glory	None/None/4.2	None	Chaparral (openings), Coastal scrub, Valley and foothill grassland; clay, serpentinite seeps/annual herb/Mar–July/95–2430	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site does not contain the soil types necessary to support this species.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Corethrogyne filaginifolia var. *incana*	San Diego sand aster	None/None/1B.1	None	Coastal bluff scrub, Chaparral, Coastal scrub/perennial herb/June–Sep/5–375	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	None/None/1B.1	List 3; Narrow Endemic	Coastal bluff scrub, Chaparral (maritime, openings), Coastal scrub; sandy/perennial herb/May, July, Aug, Sep/45–490	Absent. This species was not observed during the 2019 focused rare plant survey. While not in bloom during the May survey, there are no Corethrogyne species on site.
Cryptantha wigginsii	Wiggins' cryptantha	None/None/1B.2	None	Coastal scrub; often clay/annual herb/Feb–June/65–900	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site does not contain the soil type necessary to support this species.
Deinandra paniculata	paniculate tarplant	None/None/4.2	None	Coastal scrub, Valley and foothill grassland, Vernal pools; usually vernally mesic, sometimes sandy/annual herb/(Mar)Apr–Nov(Dec)/80–3085	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Dichondra occidentalis	western dichondra	None/None/4.2	None	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial rhizomatous herb/(Jan)Mar–July/160–1640	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is slightly outside of the species' known elevation range despite several occurrences near the site.
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	None/None/1B.1	Narrow Endemic	Coastal bluff scrub, Chaparral, Coastal scrub, Valley and foothill grassland; rocky, often clay or serpentinite/perennial herb/Apr–June/15–1475	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site lacks required soil types to support this species.
Dudleya brevifolia	short-leaved dudleya	None/SE/1B.1	Narrow Endemic	Chaparral (maritime, openings), Coastal scrub; Torrey sandstone/perennial herb/Apr–May/95–820	Absent. This species was not observed during the 2019 focused rare plant survey.
Dudleya multicaulis	many-stemmed dudleya	None/None/1B.2	None	Chaparral, Coastal scrub, Valley and foothill grassland; often clay/perennial herb/Apr–July/45–2590	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species and lacks required soil types.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Dudleya variegata	variegated dudleya	None/None/1B.2	None	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland, Vernal pools; clay/perennial herb/Apr–June/5–1905	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species and lacks required soil types.
Dudleya viscida	sticky dudleya	None/None/1B.2	List 2	Coastal bluff scrub, Chaparral, Cismontane woodland, Coastal scrub; rocky/perennial herb/May–June/30–1805	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species and lacks required soil types.
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	None/None/1B.1	None	Chaparral, Coastal scrub; mesic/perennial evergreen shrub/(July)Sep–Nov/95–1970	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/SE/1B.1	List 3; Narrow Endemic	Coastal scrub, Valley and foothill grassland, Vernal pools; mesic/annual / perennial herb/Apr–June/65–2035	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site does not contain suitable soils nor vernal pools necessary support this species.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Eryngium pendletonense	Pendleton button-celery	None/None/1B.1	None	Coastal bluff scrub, Valley and foothill grassland, Vernal pools; clay, vernally mesic/perennial herb/Apr–June(July)/45–360	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site does not contain suitable soils nor vernal pools necessary support this species.
Erysimum ammophilum	sand-loving wallflower	None/None/1B.2	None	Chaparral (maritime), Coastal dunes, Coastal scrub; sandy, openings/perennial herb/Feb–June/0–195	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species and lacks the required sandy openings this species requires.
Erythranthe diffusa	Palomar monkeyflower	None/None/4.3	None	Chaparral, Lower montane coniferous forest; sandy or gravelly/annual herb/Apr–June/4000–6005	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Euphorbia misera	cliff spurge	None/None/2B.2	Covered	Coastal bluff scrub, Coastal scrub, Mojavean desert scrub; rocky/perennial shrub/Dec–Aug(Oct)/30–1640	Absent. This species was not observed during the 2019 focused rare plant survey.
Ferocactus viridescens	San Diego barrel cactus	None/None/2B.1	List 2	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools/perennial stem succulent/May–June/5–1475	Absent. This species was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Harpagonella palmeri	Palmer's grapplinghook	None/None/4.2	None	Chaparral, Coastal scrub, Valley and foothill grassland; Clay; open grassy areas within shrubland/annual herb/Mar–May/65–3135	Absent. This species was not observed during the 2019 focused rare plant survey.
Hazardia orcuttii	Orcutt's hazardia	None/ST/1B.1	Covered; Narrow Endemic	Chaparral (maritime), Coastal scrub; often clay/perennial evergreen shrub/Aug–Oct/260–280	Absent. This species was not observed during the 2019 focused rare plant survey. Also, this species is only known in the U.S. from a mesa located in Encinitas, California (Vourlitis et al. 2009).
Heterotheca sessiliflora ssp. *sessiliflora*	beach goldenaster	None/None/1B.1	None	Chaparral (coastal), Coastal dunes, Coastal scrub/perennial herb/Mar–Dec/0–4020	Absent. This species was not observed during the 2019 focused rare plant survey.
Holocarpha virgata ssp. *elongata*	graceful tarplant	None/None/4.2	None	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/annual herb/May–Nov/195–3610	Absent. This species was not observed during the 2019 focused rare plant survey.
Hordeum intercedens	vernal barley	None/None/3.2	None	Coastal dunes, Coastal scrub, Valley and foothill grassland (saline flats and depressions), Vernal pools/annual herb/Mar–June/15–3280	Absent. This species was not observed during the 2019 focused rare plant survey.
Horkelia truncata	Ramona horkelia	None/None/1B.3	None	Chaparral, Cismontane woodland; clay, gabbroic/perennial herb/May–June/1310–4265	Absent. This species was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Isocoma menziesii var. *decumbens*	decumbent goldenbush	None/None/1B.2	None	Chaparral, Coastal scrub (sandy, often in disturbed areas)/perennial shrub/Apr–Nov/30–445	Absent. This species was not observed during the 2019 focused rare plant survey. Isocoma menziesii var. vernonoides was observed and keyed to variety using the Jepson Manual (Baldwin et al. 2012).
Iva hayesiana	San Diego marsh-elder	None/None/2B.2	List 3	Marshes and swamps, Playas/perennial herb/Apr–Oct/30–1640	Absent. This species was not observed during the 2019 focused rare plant survey.
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	None/None/4.2	None	Coastal dunes (mesic), Meadows and seeps (alkaline seeps), Marshes and swamps (coastal salt)/perennial rhizomatous herb/(Mar)May–June/5–2955	Absent. This species was not observed during the 2019 focused rare plant survey.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/1B.1	None	Marshes and swamps (coastal salt), Playas, Vernal pools/annual herb/Feb–June/0–4005	Absent. This species was not observed during the 2019 focused rare plant survey.
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	None/None/4.3	None	Chaparral, Coastal scrub/annual herb/Jan–July/0–2905	Absent. This species was not observed during the 2019 focused rare plant survey.
Leptosyne maritima	sea dahlia	None/None/2B.2	None	Coastal bluff scrub, Coastal scrub/perennial herb/Mar–May/15–490	Absent. This species was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Lycium californicum	California box-thorn	None/None/4.2	None	Coastal bluff scrub, Coastal scrub/perennial shrub/(Dec), Mar, June, July, Aug/15–490	Absent. This species was not observed during the 2019 focused rare plant survey.
Microseris douglasii ssp. *platycarpha*	small-flowered microseris	None/None/4.2	None	Cismontane woodland, Coastal scrub, Valley and foothill grassland, Vernal pools; clay/annual herb/Mar–May/45–3510	Absent. This species was not observed during the 2019 focused rare plant survey.
Monardella hypoleuca ssp. *lanata*	felt-leaved monardella	None/None/1B.2	None	Chaparral, Cismontane woodland/perennial rhizomatous herb/June–Aug/980–5165	Absent. This perennial species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Myosurus minimus ssp. *apus*	little mousetail	None/None/3.1	List 3; Narrow Endemic	Valley and foothill grassland, Vernal pools (alkaline)/annual herb/Mar–June/65–2100	Absent. This species was not observed during the 2019 focused rare plant survey.
Nama stenocarpa	mud nama	None/None/2B.2	None	Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan–July/15–1640	Absent. This species was not observed during the 2019 focused rare plant survey.
Navarretia fossalis	spreading navarretia	FT/None/1B.1	List 3; Narrow Endemic	Chenopod scrub, Marshes and swamps (assorted shallow freshwater), Playas, Vernal pools/annual herb/Apr–June/95–2150	Absent. This species was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Nemacaulis denudata var. *denudata*	coast woolly-heads	None/None/1B.2	None	Coastal dunes/annual herb/Apr–Sep/0–330	Absent. This species was not observed during the 2019 focused rare plant survey.
Nemacaulis denudata var. *gracilis*	slender cottonheads	None/None/2B.2	None	Coastal dunes, Desert dunes, Sonoran desert scrub/annual herb/(Mar)Apr–May/-160–1310	Absent. This species was not observed during the 2019 focused rare plant survey.
Nolina cismontana	chaparral nolina	None/None/1B.2	None	Chaparral, Coastal scrub; sandstone or gabbro/perennial evergreen shrub/(Mar)May–July/455–4185	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range.
Orcuttia californica	California Orcutt grass	FE/SE/1B.1	List 3; Narrow Endemic	Vernal pools/annual herb/Apr–Aug/45–2165	Absent. This species was not observed during the 2019 focused rare plant survey.
Orobanche parishii ssp. *brachyloba*	short-lobed broomrape	None/None/4.2	None	Coastal bluff scrub, Coastal dunes, Coastal scrub; sandy/perennial herb (parasitic)/Apr–Oct/5–1000	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.
Pentachaeta aurea ssp. *aurea*	golden-rayed pentachaeta	None/None/4.2	None	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland, Valley and foothill grassland/annual herb/Mar–July/260–6070	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Phacelia ramosissima var. *austrolitoralis*	south coast branching phacelia	None/None/3.2	None	Chaparral, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt); sandy, sometimes rocky/perennial herb/Mar–Aug/15–985	Absent. This species was not observed during the 2019 focused rare plant survey.
Phacelia stellaris	Brand's star phacelia	None/None/1B.1	None	Coastal dunes, Coastal scrub/annual herb/Mar–June/0–1310	Absent. This species was not observed during the 2019 focused rare plant survey.
Pinus torreyana ssp. *torreyana*	Torrey pine	None/None/1B.2	List 3	Closed-cone coniferous forest, Chaparral; Sandstone/perennial evergreen tree/N.A./95–525	Absent. This species was not observed during the 2019 focused rare plant survey.
Pogogyne abramsii	San Diego mesa mint	FE/SE/1B.1	None	Vernal pools/annual herb/Mar–July/295–655	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Polygala cornuta var. *fishiae*	Fish's milkwort	None/None/4.3	None	Chaparral, Cismontane woodland, Riparian woodland/perennial deciduous shrub/May–Aug/325–3280	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Pseudognaphalium leucocephalum	white rabbit-tobacco	None/None/2B.2	None	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; sandy, gravelly/perennial herb/(July)Aug–Nov(Dec)/0–6890	Absent. This perennial herb was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Psilocarphus brevissimus var. *multiflorus*	Delta woolly-marbles	None/None/4.2	None	Vernal pools/annual herb/May–June/30–1640	Absent. This species was not observed during the 2019 focused rare plant survey.
Quercus dumosa	Nuttall's scrub oak	None/None/1B.1	Covered	Closed-cone coniferous forest, Chaparral, Coastal scrub; sandy, clay loam/perennial evergreen shrub/Feb–Apr(May–Aug)/45–1310	Absent. This species was not observed during the 2019 focused rare plant survey.
Quercus engelmannii	Engelmann oak	None/None/4.2	List 2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland/perennial deciduous tree/Mar–June/160–4265	Absent. This species was not observed during the 2019 focused rare plant survey.
Salvia munzii	Munz's sage	None/None/2B.2	None	Chaparral, Coastal scrub/perennial evergreen shrub/Feb–Apr/375–3495	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range.
Selaginella cinerascens	ashy spike-moss	None/None/4.1	None	Chaparral, Coastal scrub/perennial rhizomatous herb/N.A./65–2100	Absent. This species was not observed during the 2019 focused rare plant survey.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Senecio aphanactis	chaparral ragwort	None/None/2B.2	None	Chaparral, Cismontane woodland, Coastal scrub; sometimes alkaline/annual herb/Jan–Apr(May)/45–2625	Absent. While the 2019 focused botanical survey was conducted after this species' typical blooming period, the site lacks alkaline soils and records of this species in the San Diego plant atlas are all south of SR-56 (SDNHM 2012).
Sidalcea neomexicana	salt spring checkerbloom	None/None/2B.2	None	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas; alkaline, mesic/perennial herb/Mar–June/45–5020	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species and lacks required soil types.
Stemodia durantifolia	purple stemodia	None/None/2B.1	None	Sonoran desert scrub (often mesic, sandy)/perennial herb/(Jan)Apr, June, Aug, Sep, Oct, Dec/590–985	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range and there is no suitable vegetation present.
Stipa diegoensis	San Diego County needle grass	None/None/4.2	None	Chaparral, Coastal scrub; rocky, often mesic/perennial herb/Feb–June/30–2625	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Carlsbad HMP	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Suaeda esteroa	estuary seablite	None/None/1B.2	None	Marshes and swamps (coastal salt)/perennial herb/(May)July–Oct(Jan)/0–15	Absent. This species was not observed during the 2019 focused rare plant survey.
Tetracoccus dioicus	Parry's tetracoccus	None/None/1B.2	None	Chaparral, Coastal scrub/perennial deciduous shrub/Apr–May/540–3280	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the species' known elevation range.
Viguiera laciniata	San Diego County viguiera	None/None/4.3	None	Chaparral, Coastal scrub/perennial shrub/Feb–June(Aug)/195–2460	Absent. This species was not observed during the 2019 focused rare plant survey. Also, the site is outside of the confirmed geographic range for this species.

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