APPENDIX D

Biological Resources Technical Report for the JVR Energy Park Project

Biological Resources Technical Report for the JVR Energy Park Project Major Use Permit PDS2018-MUP-18-022 Environmental Review Project Number PDS2018-ER-18-022-001 Jacumba, San Diego County, California

Prepared for:

County of San Diego

Department of Planning and Development Services
5510 Overland Avenue
San Diego, California 92123
Contact: Julia Boland

Project Proponent: JVR Energy Park LLC

17901 Von Karman Avenue, Suite 1050
Irvine, California 92614
Contact: Patrick Brown

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Callie Amoaku
760.479.4279



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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AC	alternating current
ACOE	U.S. Army Corps of Engineers
amsl	above mean sea level
BCC	birds of conservation concern
BESS	battery energy storage system
BSA	biological study area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
DC	direct current
EIR	environmental impact report
ESA	federal Endangered Species Act
FP	(California) Fully Protected
FPP	fire protection plan
GIS	geographic information system
I	Interstate
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MSCP	Multiple Species Conservation Program
MUP	Major Use Permit
MW	megawatt
NCCP	Natural Communities Conservation Plan
OHWM	ordinary high water mark
PV	photovoltaic
RMP	resource management plan
RPO	Resource Protection Ordinance
RWQCB	Regional Water Quality Control Board
SDG&E	San Diego Gas & Electric Company
SSC	(California) Species of Special Concern
SWPPP	stormwater pollution prevention plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WL	(California) Watch List

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0 Summary

This biological technical report was prepared to evaluate the proposed JVR Energy Park Project (proposed project). The biological study area (BSA) encompasses the 1,356-acre project site in unincorporated San Diego County, California. The project site is within the Multiple Species Conservation Program (MSCP) East County planning area.

The proposed project is a development of approximately 90 megawatts (MW) (alternating current [AC]) of renewable solar energy and up to 90 MW of energy storage. Primary access to the project site would be provided via an improved access road from Old Highway 80, with additional access off Carrizo Gorge Road.

Vegetation mapping, jurisdictional delineation, burrowing owl (*Athene cunicularia*), and late spring nesting raptor surveys were conducted by Dudek in 2018. Dudek conducted an early spring nesting raptor survey and Quino checkerspot butterfly (*Euphydryas editha quino*) surveys in 2019. Spring and summer rare plant surveys were completed in April and August 2019. This report documents the results of Dudek's fieldwork as well as an analysis of the biological impacts related to the proposed project.

Based on species composition and general physiognomy, 11 plant communities (including non-native and disturbed forms) were identified on the approximately 1,356-acre BSA. These plant communities include 766.11 acres of sensitive vegetation communities and land covers, and 589.47 acres of non-sensitive land covers (i.e., disturbed habitat, fallow agriculture and urban/developed land). Although fallow agriculture is typically not considered a sensitive vegetation community, these areas provide foraging habitat for wildlife. Therefore, the impacts would be potentially significant and mitigation is provided for impacts to this vegetation community.

Based on the jurisdictional delineation, a total of 154.02 acres of potential jurisdictional aquatic resources exist within the BSA. They are composed of 22.99 acres of non-wetlands waters and 130.96 acres of non-wetland/riparian habitat, both of which are regulated by U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board. There are 0.08 acres of wetland waters/riparian habitat and County RPO wetlands under U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board jurisdiction.

Five special-status plants were observed during the spring 2019 rare plant pass: pygmy lotus (*Acmispon haydonii*), Higgins' barberry (*Berberis higginsiae*), Colorado Desert larkspur (*Delphinium parishii* ssp. *subglobosum*), sticky geraea (*Geraea viscida*) and Palmer's grapplinghook (*Harpagonella palmeri*). No rare plants were observed during the August 2019 plant pass. Focused wildlife surveys resulted in the detection of the following special-status wildlife species: San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl, Costa's hummingbird (*Calypte costae*), turkey vulture (*Cathartes aura*), Vaux's swift (*Chaetura vauxi*), northern harrier (*Circus hudsonius*), California horned lark (*Eremophila alpestris actia*), merlin (*Falco columbarius*), loggerhead shrike (*Lanius ludovicianus*), black-tailed gnatcatcher (*Polioptila melanura*), Brewer's sparrow (*Spizella breweri*), Lawrence's goldfinch (*Spinus lawrencei*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diego desert woodrat (*Neotoma lepida intermedia*), mule deer (sign only) (*Odocoileus hemionus*), American badger (potential burrow) (*Taxidea taxus*), and Quino checkerspot butterfly.

The proposed project would result in permanent direct impacts on 126.99 acres of sensitive vegetation communities and land covers and 516.14 acres of disturbed habitat, fallow agriculture, and urban/developed area. Of the 516.14 acres of disturbed habitat, fallow agriculture, and urban/developed

area, 467.63 acres are categorized as fallow agriculture. The potential significant impacts include direct and indirect effects on special-status vegetation communities, special-status plants, special-status wildlife species, and wildlife movement. Mitigation to reduce these impacts to a less than significant level includes open space preserve designation and management, conservation of native vegetation, biological monitoring, best management practices, wildlife surveys and monitoring, pollutant and weed control, dust control, fire management, and federal and state agency permits.

1 Introduction

1.1 Purpose of the Report

This biological resources report provides the following: (1) a description of the existing conditions of biological resources within the study area in terms of vegetation, jurisdictional resources, flora, wildlife, and wildlife habitats; (2) a discussion of potential impacts on biological resources that would result from development of the property and description of those impacts in terms of biological significance in view of federal, state, and local laws and policies; and (3) recommended mitigation measures for potential impacts on special-status biological resources, if necessary. Recommendations will follow federal, state, and local rules and regulations, including the California Environmental Quality Act (CEQA), the County of San Diego (County) Guidelines for Determining Significance and Report Format and Content Requirements – Biological Resources (County of San Diego 2010a), and the County Resource Protection Ordinance (RPO) (County of San Diego 2012).

1.2 Project Description and Location

The proposed JVR Energy Park Project (proposed project) is located south of Interstate (I) 8 within private lands adjacent to the U.S./Mexico border in eastern San Diego County, California (Figure 1-1, Project Location). The project site is immediately north of the U.S./Mexico border. The site lies within the Jacumba U.S. Geological Survey (USGS) 7.5-minute quadrangle, Townships 17 South and 18 South, Range 8 East, Sections 4, 5, 8, 9, 32, and 33.

The project site includes right-of-way easements for Old Highway 80, San Diego Gas & Electric Company (SDG&E) easements, and an easement for the San Diego and Arizona Eastern Railway runs through north/south through the project site. The proposed solar facility would cover approximately 643 acres within the 1,356-acre project site (shown on Figure 1-2, Project Site Plan). Primary access to the project site would be provided via an improved access road from Old Highway 80, with additional access off Carrizo Gorge Road.

The Proposed Project is a solar energy generation and storage facility which would produce a rated capacity of up to 90 MW of AC generating capacity. The power produced by the proposed solar facility would be delivered to an existing SDG&E 138 KV transmission line which transects the Project site.

The Proposed Project would include the following primary components:

- Approximately 300,000 photovoltaic (PV) modules mounted on support structures (single-axis solar trackers)
- A 1,000- to 1,500-volt direct current (DC) underground collection system linking the modules to the inverters
- 25 inverter/transformer platforms, located throughout the solar facility, to convert the power generated by the modules into a compatible form for use with the transmission network
- Approximately 5,000 feet of 34.5-kilovolt (kV) underground AC collection system and 50 feet of overhead AC feeders, approximately 30-feet-tall linking the inverters to the on-site collector substation
- An on-site collector substation located within an approximately 27,360-square-foot area (152-foot by 180-foot)
- A 138 kV switchyard adjacent to the on-site collector substation to transfer power from the on-site collector substation to the existing SDG&E 138 kV transmission line
- A 138 kV, 220-foot-long 65-foot-high overhead slack span transmission line to connect the on-site collector substation to the switchyard

- Two 138 kV, 550-foot-long (1,100 feet total) 80-foot-high overhead transmission lines (gen-tie) to loop the switchyard into the existing SDG&E Boulevard – East County 138 kV transmission line
- A battery energy storage system of up to 90 MW (or 180MWh) comprised of battery storage containers located adjacent to the inverter/transformer pads (up to 3 containers at each location for a total of 75 containers on site)
- Fiber optic line
- Control system
- Five meteorological weather stations
- Site access driveways
- Internal access
- Improvements within SDG&E Transmission Corridor
- Security fencing and signage
- Lighting
- Water tanks (fire protection)
- Fuel modification zones (FMZs)
- Landscaping

The proposed project's collector substation and the switchyard would be sized to accommodate the proposed 90 MW (AC) solar facility and the 90 MW maximum battery energy storage system. Upon completion, the proposed project would be monitored and operated from an off-site supervisory control and data acquisition system.

1.3 Study Area and Impact Area Definitions

The biological study area (BSA) encompasses the 1,356-acre project site. Specific survey areas within the BSA are described in Section 3, Survey Methodologies.

The proposed project impacts are located within the boundary of the 643-acre Major Use Permit (MUP) area.

2 Applicable Regulations

2.1 Federal

2.1.1 Federal Endangered Species Act

The federal Endangered Species Act (ESA; 16 USC 1531 et seq.) is implemented by the U.S. Fish and Wildlife Service (USFWS) through a program that identifies and provides for protection of various species of fish, wildlife, and plants deemed to be in danger of or threatened with extinction. As part of this regulatory act, ESA provides for designation of critical habitat, defined in ESA Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and that "may require special management considerations or protection." Critical habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species." The BSA does not contain any critical habitat.

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do so (16 USC 703 et seq.). In December 2017, Department of the Interior Principal Deputy Solicitor Jorjani issued a memorandum (M-37050) that interprets the MBTA to prohibit only intentional take. Unintentional or accidental take is not prohibited (DOI 2017). Additionally, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The Executive Order requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect these species.

2.1.3 Clean Water Act

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 "wetlands" (a subset of waters of the United States) is defined in Title 33 of the Code of Federal Regulations, Section 328.3(b), as "those areas that are inundated or saturated by surface or ground water 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 (OHWM), which is defined in Title 33 of the Code of Federal Regulations, Section 328.3(e).

2.2 State

2.2.1 California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA) (California Fish and Game Code (CFGC) 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 California. Under CESA 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."

Sections 3511, 4700, and 5515 of the CFGC designate certain birds, mammals, and fish as "fully protected" species. These species may not be taken or possessed without a permit from the Fish and Game Commission, and such take may only occur pursuant to scientific research or in connection with an authorized Natural Communities Conservation Plan (NCCP). No "incidental take" of fully protected species is allowed.

CESA Sections 2080 through 2085 address the taking of threatened, endangered, or candidate species by stating, "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act (CFGC Sections 1900–1913), or the California Desert Native Plants Act (Food and Agricultural Code, Section 80001)."

Section 2081(b) and (c) of the CFGC authorize take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. In such cases, CDFW issues the applicant an incidental take permit, which functions much like an incidental take statement in the federal context. Sections 2081(b) and (c) also require CDFW to coordinate consultations with USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, Section 2080.1 of CESA allows CDFW to adopt a federal incidental take statement or a 10(a) permit as its own, based on its findings that the federal permit adequately protects the species and is consistent with state law. As mentioned above, CDFW may not issue a Section 2081(b) incidental take permit for take of "fully protected" species. The CFGC lists the fully protected species in Section 3511 (birds), Section 4700 (mammals), Section 5050 (reptiles and amphibians), and Section 5515 (fish).

2.2.2 California Fish and Game Code

Streambed Alteration Agreement

Pursuant to Section 1602 of the CFGC, 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. A Streambed Alteration Agreement (CFGC Section 1602 et seq.) is required for impacts on jurisdictional resources, including streambeds and associated riparian habitat.

Birds and Mammals

According to Sections 3511 and 4700 of the CFGC, which regulate birds and mammals, a fully protected species may not be taken or possessed. CDFW may not authorize the take of such species except (1) for necessary scientific research, (2) for the protection of livestock, and (3) when the take occurs for fully protected species within an approved NCCP, such as the East County Multiple Species Conservation Plan (ECMSCP), which, if developed and approved will cover the BSA.

Resident and Migratory Birds

The CFGC provides protection for wildlife species. It states that no mammals, birds, reptiles, amphibians, or fish species listed as fully protected can be "taken or possessed at any time." In addition, CDFW affords protection over the destruction of nests or eggs of native bird species (CFGC Section 3503), and it states that no birds in the orders of Falconiformes or Strigiformes (birds of prey) can be taken, possessed, or destroyed (CFGC Section 3503.5). CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock (CFGC Section 3511). Separate from federal and state designations of species, CDFW designates certain vertebrate species as Species of Special Concern (SSC) based on declining population levels, limited ranges, and/or continuing threats that have made them vulnerable to extinction.

California Native Plant Protection Act

The Native Plant Protection Act of 1977 (CFGC Sections 1900–1913) directed CDFW to carry out the legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare," and to protect endangered and rare plants from take. When CESA was passed in 1984, it expanded on the original Native Plant Protection Act, enhanced legal protection for plants, and created the categories of "threatened" and "endangered" species to parallel ESA. CESA categorized all rare animals as threatened species under CESA, but did not do so for rare plants, which resulted in three listing categories for plants in California: rare, threatened, and endangered. The Native Plant Protection Act remains part of the CFGC, and mitigation measures for impacts on rare plants are specified in a formal agreement between CDFW and project proponents.

2.2.3 Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (Porter–Cologne Act) protects water quality and the beneficial uses of water. It applies to surface water and groundwater. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the Regional Water Quality Control Boards (RWQCBs) develop regional basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of statewide plans and basin plans. Waters regulated under the Porter–Cologne Act include isolated waters that are not regulated by ACOE. Developments with impacts on jurisdictional waters must demonstrate compliance with the goals of the Porter–Cologne Act by developing stormwater pollution prevention plans (SWPPPs), standard urban stormwater mitigation plans, and other measures to obtain a Clean Water Act Section 401 certification.

2.2.4 California Environmental Quality Act

CEQA (California Public Resources Code, Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.) require identification of a project's potentially significant impacts on biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts. CEQA Guidelines Section 15380(b)(1) 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" (14 CCR 15000 et seq.). A rare animal or plant is defined in CEQA Guidelines Section 15380(b)(2) as a species that, although not currently 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 Guidelines Section 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

2.3 Regional

2.3.1 East County Multiple Species Conservation Program

The County has prepared a preliminary planning map for the future East County Multiple Species Conservation Program (MSCP) Plan. The intent of preparing the East County MSCP Plan is to create a large, connected preserve system that addresses the regional habitat needs for multiple species. The future East County MSCP Plan would cover approximately 1.6 million acres within the eastern unincorporated portion of the San Diego County. The Cleveland National Forest is located along the western boundary of the East County MSCP Plan area. The East County MSCP Plan area is bounded by Riverside County to the north, Imperial County on the east, and Mexico to the south. Tribal lands will be excluded from the East County MSCP Plan. Preparation of a future East County MSCP Plan is a cooperative effort among the County of San Diego, USFWS, and CDFW. Authority for this process comes from the California Natural Community Conservation Planning Act and Section 10(a) of FESA that addresses habitat conservation plans.

The BSA is located within the East County MSCP Plan area (Figure 2-1, Regional Context). A preliminary planning map has been completed for the East County MSCP. According to this map, the BSA is primarily within Agriculture or Natural Upland outside of the Focused Conservation Area, which suggests that the area has regional conservation value (Figure 2-1).

Projects within the East County MSCP planning area were subject to a Planning Agreement (2014) between the County, the CDFW, and USFWS for the East County MSCP; however, the 2014 Planning Agreement has expired. The County anticipates a new Planning Agreement will be in place later in 2020. The Planning Agreement is intended to determine if project approval would have an effect on the preparation and approval of the future East County MSCP. The Planning Agreement would outline preliminary conservation objectives for the future East County MSCP. In addition to the preliminary conservation objectives, the Planning Agreement would identify an interim project review process.

2.3.2 County Resource Protection Ordinance

The County RPO is administered by the County of San Diego and regulates biological and other natural resources within the County. These resources include wetlands, wetland buffers, floodways, floodplain fringe, steep slope lands, sensitive habitat lands, and significant prehistoric or historic sites. Generally, the RPO stipulates that no impacts may occur to wetlands except for scientific research, removal of diseased or invasive exotic plant species, wetland creation and habitat restoration, revegetation and management projects, and crossings of wetlands for roads, driveways, or trails/pathways when certain conditions are met. The same exemptions apply to impacts on wetland buffer areas and improvements necessary to protect adjacent wetlands. Sensitive habitat lands support unique vegetation communities, habitats of sensitive species, lands essential to the healthy functioning of a balanced natural ecosystem, and/or wildlife corridors. Impacts on sensitive habitat lands are permitted when impacts have been reduced as much as possible and mitigation provides at least an equal benefit to the affected species (County of San Diego 2012).

3 Survey Methodologies

3.1 Literature Review

To assess biological resources and potential constraints, Dudek reviewed available relevant literature and data on sensitive habitats and species distribution to determine those resources that have the potential for occurrence within the USGS 7.5-minute Jacumba quadrangle and surrounding quadrangles. Other appropriate and available biological documentation, surveys, and published research and maps were compiled, reviewed, and analyzed.

A literature review was conducted to evaluate the environmental setting of the BSA and identify potential special-status biological resources that may be found on the project site. The review included the following:

- CDFW California Natural Diversity Database (CDFW 2019a) including USGS 7.5-minute Jacumba, Carrizo Mountain, Sweeney Pass, Sombrero Peak, In-Ko-Pah Gorge, Live Oak Springs, and Tierra del Sol quadrangles
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2019) for the Cucamonga Peak and surrounding 7.5-minute USGS quadrangles
- USFWS database (USFWS 2018a) including USGS 7.5-minute Jacumba, Carrizo Mountain, Sweeney Pass, Sombrero Peak, In-Ko-Pah Gorge, Live Oak Springs, and Tierra del Sol quadrangles
- SanBIOS Database (SANGIS 2019) including USGS 7.5-minute Jacumba and In-Ko-Pah Gorge quadrangles and vegetation layers.
- U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (USDA 2018a) was evaluated for the potential to support rare vegetation communities, plants, and/or wildlife
- Multiple Species Conservation Program: County of San Diego Subarea Plan (County of San Diego 1997)
- County Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources (County of San Diego 2010a)
- Google Earth (2018)
- USFWS National Wetlands Inventory (USFWS 2018b)
- San Diego County Bird Atlas (Unitt 2004)
- San Diego Mammal Atlas (Tremor 2017)

3.2 Field Reconnaissance

Biological field surveys for the proposed project were conducted by Dudek biologists in 2018 and 2019. Surveys consisted of vegetation mapping, a formal jurisdictional delineation, habitat assessment and focused surveys for burrowing owl (*Athene cunicularia*; SSC), Quino checkerspot butterfly (*Euphydryas editha quino*), rare plants, and early and late spring focused surveys for nesting raptors.

A summary of surveys that have been conducted to date is provided in Table 3-1. Surveys were conducted on foot and in accordance with focused survey guidelines or protocols where applicable.

Table 3-1. Schedule of Surveys

Date	Hours	Personnel	Focus	Conditions
Vegetation Mapping, Jurisdictional Delineation, and Rare Plant Surveys				
2018-04-23	0656–1707	EB	Rare plant survey reference check	65–72 degrees Fahrenheit (°F); 0%–40% cloud cover (cc); 0–1 mile per hour (mph) wind
2018-04-24	0800–1749	EB, MF, MO	Rare plant survey reference check	75°F–76°F; 0%–20% cc; 0–1 mph wind
2018-04-25	0700–1000	EB, MF, MO	Rare plant survey reference check	60°F–72°F; 0%–10% cc; 0–1 mph wind
2018-08-02	0800–1640	CJA, SG	Vegetation mapping, jurisdictional delineation	80°F–96°F; 0% cc; 0–4 mph wind
2018-08-07	0900–1515	SG, LM	Jurisdictional delineation	89°F–95°F; 0%–10% cc; 1–6 mph wind
2018-08-22	0930–1430	SG	Jurisdictional delineation	87°F–102°F; 0%–30% cc; 1–6 mph wind
2019-01-20	0800–1000	EB	Jurisdictional delineation	53–63°F; 0–10% cc; 0–2 mph wind
2019-03-28	0803–1650	EB, SM	Rare plant survey reference check	66–62°F; 0–10% cc; 1–4 mph wind
2019-04-05	0717–1726	EB	Rare plant survey (spring)	52–58°F; 70–100% cloud cover; 0–4 mph wind
2019-04-08	0820–1642	BS, EB, MF, OK, SC	Rare plant survey (spring)	69–86°F; 10–20% cloud cover; 0–4 mph wind
2019-04-09	0723–1720	BS, EB, LM, MF	Rare plant survey (spring)	62–65°F; 0–40% cloud cover; 0–8 mph wind
2019-04-10	0719–1430	BS, LM, SC	Rare plant survey (spring)	50–69°F; 0% cloud cover; 0–3 mph wind
2019-04-10	0719–1100	CJA	Rare plant survey (spring)	50–69°F; 0% cloud cover; 0–3 mph wind
2019-04-24	1645-1743	CJA, PS	Jurisdictional delineation	85–88°F; 0% cloud cover; 1–5 mph wind
2019-08-01	0645-1630	EB	Rare plant survey reference check	68–100°F; 0% cloud cover; 1–5 mph wind
2019-08-05	0833–1517	BS	Rare plant survey (summer)	81–104°F; 10% cloud cover; 1–5 mph wind
2019-08-06	0558–1514	EB	Rare plant survey (summer)	63–102°F; 0–100% cloud cover; 0–3 mph wind
2019-08-08	0537–1318	EB, LS	Rare plant survey (summer)	61–100°F; 0–100% cloud cover; 0–3 mph wind
2019-08-12	0522–1602	EB	Rare plant survey (summer)	59–100°F; 0–90% cloud cover; 0–3 mph wind
2019-08-13	0604–1336	EB, LS	Rare plant survey (summer)	56–108°F; 0–100% cloud cover; 0–3 mph wind
2019-08-15	0537–1411	CS, EB	Rare plant survey (summer)	53–100°F; 0% cloud cover; 0–3 mph wind
2019-08-16	0537–1549	EB	Rare plant survey (summer)	52–100°F; 0–100% cloud cover; 0–4 mph wind

Table 3-1. Schedule of Surveys

Date	Hours	Personnel	Focus	Conditions
2019-08-19	0608–1451	EB, SC	Rare plant survey (summer)	51–103°F; 0–20% cloud cover; 0–3 mph wind
2019-09-24	1200–1345	SC	Jurisdictional delineation	81°F–84°F; 0% cloud cover; 1–5 mph wind
2020-02-24	0830–1600	SC, CS	Jurisdictional delineation	54–67°F; 0–20% cloud cover; 0–8 mph wind
Burrowing Owl (BUOW) Focused Surveys				
2018-04-04	0905–1648	CJA, SC	BUOW Pass 1 and habitat assessment	64°F–69°F; 10%–20% cc; 0–2 mph wind
2018-04-05	0821–1106	CJA, SC	BUOW Pass 1 and habitat assessment	63°F–78°F; 0%–10% cc; 0–1 mph wind
2018-04-10	0651–1930	KS, SC, MF	BUOW Pass 1	45°F–89°F; 20%–40% cc; 0–2 mph wind
2018-04-11	0644–1911	KS, SC, MF	BUOW Pass 1	50°F–85°F; 0%–20% cc; 0–18 mph wind
2018-04-16	0610–1025	KS	BUOW Pass 1	53°F–63°F; 50% cc; 0–25 mph wind
2018-04-17	0610–1300	KS, SC	BUOW Pass 1	40°F–56°F; 0%–10% cc; 0–5 mph wind
2018-05-15	0523–1121	KS, MF	BUOW Pass 2	46°F–80°F; 0% cc; 0–5 mph wind
2018-05-16	0636–1129	SC	BUOW Pass 2	54°F–81°F; 0% cc; 0–12 mph wind
2018-06-14	0602–1016	MF, SC	BUOW Pass 3	62°F–89°F; 40% cc; 0–5 mph wind
2018-06-15	0549–1030	OK, SC	BUOW Pass 3	72°F–79°F; 60%–80% cc; 0–4 mph wind
2018-07-11	0545–1004	KS	BUOW Pass 4	64°F–88°F; 20% cc; 0–5 mph wind
2018-07-13	0605–0945	MF, OK	BUOW Pass 4	63°F–83°F; 0% cc; 0–3 mph wind
2020-01-02	0845– 1309	CA, OK	Habitat Assessment at Jacumba Airport (offsite)	61°F– 66°F; 0% to 10% cc; 0–5 mph wind
Nesting Raptor Surveys				
2018-04-10	1310–1656	KS	Nesting raptors	88°F–90°F; 0% cc; 0–5 mph wind
2018-04-11	1310–1610	KS	Nesting raptors	81°F–82°F; 0%–10% cc; 3–10 mph wind
2019-02-26	0747–1300	KS	Nesting raptors	42°F–44°F; 50%–90% cc; 0–4 mph wind
2019-02-27	0728–1408	KS	Nesting raptors	51°F–70°F; 0%–10% cc; 2–7 mph wind

Table 3-1. Schedule of Surveys

Date	Hours	Personnel	Focus	Conditions
Quino Checkerspot Butterfly (QCB) Surveys				
2019-02-25 to 2019-05-10	Varied	Varied	QCB host plant mapping; QCB protocol survey	Varied (see Appendix A, 2019 Focused Quino Checkerspot Butterfly Survey Report for the JVR Energy Park Project, Jacumba, San Diego County, California)

Personnel: BS = Britney Strittmater; CJA = Callie Amoaku; CS = Cody Schaaf; EB = Erin Bergman; KS = Kevin Shaw; LM = Lindsy Mobley; MF = Mackenzie Forgey; MO = Monique O'Conner; OK = Olivia Koziel; PS = Patricia Schuyler; SC = Shana Carey; SG = Scott Gressard; SM = Scott McMillan.

3.2.1 Resource Mapping

Vegetation communities were evaluated within the BSA and the surrounding 100-foot buffer in accordance with County guidelines on an aerial map at a 200 scale (1 inch = 200 feet). These boundaries and locations were digitized and downloaded by Dudek geographic information system (GIS) technicians using ArcGIS software. Vegetation communities and land covers were mapped using the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) as modified by the County and noted in Vegetation Communities of San Diego County (Oberbauer et al. 2008), with modifications to accommodate the lack of conformity of the observed communities to those of Holland and Oberbauer et al. Vegetation communities were classified as a "disturbed" form of the community when native shrub cover comprised 20% to 50% of the relative cover and non-native species comprised approximately 50% of the relative cover.

3.2.2 Plants and Wildlife

All plant species encountered during the surveys were recorded. Latin and common names for plant species with a California Rare Plant Rank (CRPR; formerly CNPS List) follow the CNPS On-Line 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 2018) and common names follow the U.S. Department of Agriculture Natural Resources Conservation Service PLANTS Database (USDA 2018b).

All wildlife species observed or detected during the surveys were recorded. Latin and common names of animals follow Crother (2012) for reptiles and amphibians, American Ornithological Society (AOS 2018) for birds, Wilson and Reeder (2005) for mammals, and North American Butterfly Association (NABA 2016) or San Diego Natural History Museum (SDNHM 2002) for butterflies.

3.2.3 Jurisdictional Aquatic Resources

The jurisdictional wetland delineation was conducted within the BSA in accordance with the methods prescribed in the 1987 Corps of Engineers Wetland Delineation Manual (ACOE 1987), the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (ACOE 2008a), and the Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United

States: A Delineation Manual (ACOE 2008b). The information required to process an approved jurisdictional determination was gathered for the BSA. During the jurisdictional delineation surveys, the BSA was walked and evaluated for evidence of an OHWM, surface water, saturation, wetland vegetation, and nexus to a traditional navigable water of the United States. The extent of any identified jurisdictional areas was determined by mapping the areas with similar vegetation and topography to the sampled locations.

Pursuant to the federal Clean Water Act, ACOE- and RWQCB-jurisdictional areas include those supporting all three wetlands criteria described in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. Areas regulated by the RWQCB are generally coincident with those regulated by the ACOE, but can also include isolated features that have evidence of surface water inundation, pursuant to the state Porter–Cologne Act. These areas generally support at least one of the three ACOE wetlands indicators, but are considered isolated through the lack of surface water hydrology/connectivity downstream.

A predominance of hydrophytic vegetation, where associated with a stream channel, was used to determine CDFW-regulated riparian areas. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979).

Features that convey or hold water are regulated by multiple agencies. Federal, state, and local agencies have different definitions and terminology for these types of features. Water-dependent resources regulated by ACOE, RWQCB, CDFW, and the County are collectively referred to as "jurisdictional aquatic resources" herein. Terminology used in this document to distinguish each jurisdictional aquatic resource according to the agency that regulates the resource is as follows:

- **ACOE and RWQCB:** "Wetlands" and "non-wetland waters." Wetland waters of the United States and non-wetland waters of the United States are subject to regulation by ACOE and RWQCB, pursuant to the Clean Water Act. Within the study area, ACOE "waters of the United States and wetlands" and RWQCB "waters of the United States and wetlands" overlap; therefore, they are combined under one term: "non-wetland waters" or "wetlands."
- **CDFW:** "Riparian areas" and "streambeds." Lakes, rivers, and streambeds, including any associated riparian habitat, are subject to regulation by CDFW pursuant to the CFGC. Within the study area, CDFW streambeds are synonymous with ACOE and RWQCB non-wetland waters. CDFW riparian areas are not synonymous with ACOE and RWQCB wetlands because these areas lacked all three parameters.

The County's RPO (County of San Diego 2012) identifies environmental resources, including wetlands, present within the County, and provides measures to preserve these resources. The RPO defines wetlands as lands that have one or more of the following attributes: (1) lands that periodically support a predominance of hydrophytes (plants whose habitat is water or very wet places); (2) lands in which the substratum is predominantly undrained hydric soil; or (3) lands where an ephemeral or perennial stream is present and whose substratum is predominantly non-soil, and where such lands contribute substantially to the biological functions or values of wetlands in the drainage system. County-regulated wetlands were identified where a predominance of hydrophytic vegetation was associated with a stream channel.

3.3 Focused Surveys for Special-Status Biological Resources

Special-status, or sensitive, biological resources are those defined by the County or other regulatory agency as (1) species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes; (2) species and habitat types recognized by local and regional resource agencies as sensitive; (3) habitat areas or plant communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; or (4) wildlife corridors and habitat linkages.

Dudek biologists conducted focused surveys and/or habitat assessments for the following sensitive biological resources: a habitat assessment and four-pass protocol burrowing owl survey, early and late spring focused surveys for nesting raptors, focused Quino checkerspot butterfly surveys, and spring and summer rare plant surveys. Incidental detections of wildlife species, whether through sight, calls, tracks, scat, or other signs, were also recorded. Dates and site conditions for the field efforts performed as part of this biological report are provided in Table 3-1.

3.3.1 Special-Status Plants Focused Survey

Reference population checks for target species were conducted in April 2018; however, the lower than normal rainfall in winter 2017/2018 was not adequate for annual plant emergence and detection, and the surveys were postponed. Prior to the 2019 surveys, Dudek conducted reference checks in April and August to determine the appropriate timeframe for the rare plant passes. Focused surveys for special-status plants were conducted in April 2019 and August 2019 within the MUP boundary and potential mitigation lands (Figure 3-1, Survey Areas). These surveys were conducted at the appropriate phenological stage (blooming and fruiting) to detect and identify target species. Prior to special-status plant surveys, Dudek evaluated plant records in the Jacumba quadrangle and the surrounding six quadrangles, including Carrizo Mountain, Sweeney Pass, Sombrero Peak, In-Ko-Pah Gorge, Live Oak Springs, and Tierra del Sol (CDFW 2019a; CNPS 2019; USFWS 2018a) to determine target species. In addition to Dudek's knowledge of biological resources and regional distribution of each species, elevation, habitat, and soils present within the rare plant survey area were evaluated to determine the potential for various special-status plant species to occur. Field survey methods conformed to CNPS Botanical Survey Guidelines (CNPS 2001); Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2000); and General Rare Plant Survey Guidelines (Cypher 2002). Surveys were conducted by walking meandering transects throughout the project site to detect special-status species. If observed, special-status plant observations were mapped in the field using the ESRI Collector mobile application to record the location and population number of special-status plant occurrences.

3.3.2 Burrowing Owl Habitat Assessment and Focused Surveys

Burrowing owl is a CDFW Species of Special Concern (SSC). According to the guidelines in the Staff Report on Burrowing Owl Mitigation (CDFG 2012):

> Essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Qualified Dudek biologists conducted a habitat assessment throughout the BSA, followed by focused surveys in suitable habitat (e.g., grasslands, disturbed lands, and other open habitats where suitable burrow resources exist and the topography is relatively flat or has low slopes) (Figure 3-1). Dudek biologists conducted surveys pursuant to the survey guidelines outlined in Appendix D of the Staff Report on Burrowing Owl Mitigation (CDFG 2012). Burrows and/or burrow surrogates are required to be 11 centimeters (4.3 inches) or greater in diameter and 150 centimeters (59 inches) in depth for habitat to be considered suitable. During the habitat assessment, it was determined that some open vegetation communities present on the project site did not qualify as suitable habitat for burrowing owl if they lacked burrows, burrow surrogates and well-drained soils.

The habitat assessment was conducted concurrently with the first survey pass throughout the entire BSA and consisted of walking approximately 10-meter (33-foot) transects in suitable habitat where herb cover was dense (e.g., Russian thistle dominated) and 20-meter (65-foot) transects in suitable habitat where herb cover was more open to document the presence of suitable burrows and/or burrow surrogates (e.g., rock cavities, pipes, culverts, debris piles).

Following the habitat assessment and first survey pass, three focused surveys for burrowing owl and sign (i.e., owl pellets, molted feathers, abundant insect remains, whitewash) were conducted within the determined suitable habitat shown on Figure 3-1. These surveys consisted of the biologists walking 20-meter (65-foot) transects in areas where potential burrows were recorded during the first pass.

Four survey passes total were conducted between April and July 2018 during daylight hours (see Table 3-1). The first visit was conducted in April 2018 and the last three visits were timed to occur at least 3 weeks apart, May through July 2018, during the peak of the breeding season.[1] All potential burrows were examined for signs and recorded using the ESRI Collector mobile application. Climatic conditions at the time of the survey were within protocol guidelines, ensuring that surveys were conducted under good weather conditions that would permit clear detection of individuals should they occur on the project site.

In 2020, Dudek conducted a habitat assessment by Dudek biologists Callie Amoaku and Olivia Koziel throughout the approximately 60.75-acre area south of the Jacumba Airport's runway (off site). All fossorial burrows were examined for sign (i.e., owl pellets, molted feathers, abundant insect remains, whitewash) and potentially suitable burrows were recorded using the ESRI Collector mobile application. Climatic conditions at the time of the survey were within protocol guidelines, ensuring that surveys were conducted under good weather conditions that would permit clear detection of individuals should they occur within this offsite study area. The habitat assessment was conducted pursuant to the survey guidelines outlined in Appendix D of the Staff Report on Burrowing Owl Mitigation (CDFG 2012). Burrows and/or burrow surrogates are required to be 11 centimeters (4.3 inches) or greater in diameter and 150 centimeters (59 inches) in depth for habitat to be considered suitable.

The habitat assessment consisted of walking approximately 15-meter (50-foot) transects throughout this offsite study area and documenting the presence of any suitable burrows and/or burrow surrogates (e.g., rock cavities, pipes, culverts, debris piles).

[1] In California the burrowing owl breeding season extends from February 1 through August 31 (CDFG 2012). However, visits were timed to occur within the commonly accepted breeding season (April 15 through July 15) (CBOC 1997).

3.3.3 Nesting Raptor Surveys

Dudek conducted nesting surveys for raptor species on the project site in April 2018 and February 2019 per the methods described by Fuller and Mosher (1987). Walking surveys were conducted to look for active nest locations and potential nesting areas. The interval for stopping and the length of time spent at each stopping location were not specified in the literature, thus leaving it up to the qualified biologist to determine a suitable stopping interval (approximately every 1,000 to 1,500 feet) based on the topography and size of the habitat patch. In general, the rate of travel for the surveys is 10 to 25 miles per hour and the stop time included a duration of 5 minutes using binoculars to identify nests and raptors. Weather conditions and hours were appropriate for the detection of nesting raptors (see Table 3-1).

3.3.4 Quino Checkerspot Butterfly

2019 Habitat Assessment and Host Plant Mapping

Dudek biologists conducted two passes of Quino host plant mapping surveys between February 28, 2019, and April 9, 2019, in accordance with the schedule provided in Appendix A. Botanical surveys were conducted by biologists Olivia Koziel and Shana Carey. The surveys were conducted on foot. Approximately five person-days were spent conducting host plant mapping within the study area.

Host plant mapping surveys focused on the identification and location of six recognized host plants and one potential host plant for Quino: dwarf plantain (*Plantago erecta*), woolly plantain (*Plantago patagonica*), Coulter's snapdragon (*Antirrhinum coulterianum*), rigid bird's beak (*Cordylanthus rigidus*), purple owl's clover (*Castilleja exserta* spp. *exserta*), purple Chinese houses (*Collinsia heterophylla* var. *heterophylla*), and Chinese houses (*Collinsia* spp.) (USFWS 2014; Pratt and Pierce 2009). However, purple Chinese houses do not have an eastern San Diego County distribution. Nectar plants were recorded during each week of surveys. Nectar plants are flowers that provide a food source for the butterflies through the nectaries within the flowers.

Dudek biologists recorded locations of Quino host plants using a mobile application. Data collected included the surveyor(s), date, species of host plant, and density of the host plant at the point at which the host plant was found. All host plant occurrences were mapped as points. Density was assessed per square meter and was collected using the following classes:

- Very Low: 1–19 plants per square meter
- Low: 20–100 plants per square meter
- Medium: 100–1,000 plants per square meter
- High: 1,000–10,000+ plants per square meter

Points were collected within patches of host plant at least as close as every 3 meters (10 feet). At the conclusion of survey, Dudek geographic information systems (GIS) analysts created a GIS coverage for host plants. After review by a biologist, a geodatabase was created to ensure these data are topologically correct and met final quality control and assurance procedures

2019 Quino Protocol Surveys

After the host plant mapping, focused protocol surveys for Quino checkerspot butterfly were completed in spring 2019. Dudek biologists conducted a habitat assessment based on the vegetation communities. Developed areas were excluded from the host plant mapping and focused survey areas in accordance with the 2014 USFWS Quino Checkerspot Butterfly Survey Guidelines, which state that surveys are not recommended within developed areas. As mentioned above, Dudek biologists conducted host plant mapping in February 2019 prior to surveys within the MUP boundary (Figure 3-1); a second pass of host plant mapping in April 2019 included the potential mitigation lands as well.

Focused Quino surveys were conducted over nine visits from March 5, 2019, through May 10, 2019, per the 2014 USFWS Quino Checkerspot Butterfly Survey Guidelines. The survey area consisted of suitable habitat for Quino checkerspot (Figure 3-1). Surveys were conducted by Quino-permitted biologists Anita Hayworth (TE-781084-9.1), Antonette Gutierrez (TE-50992B), Brock Ortega (TE-813545-6), Callie Amoaku (TE-36118B-1), Darin Busby (TE115373-3), David Erik LaCoste (TE-027736-6), Diana Saucedo (TE-221287-1), Erin Bergman (TE-813545-5), Jeff Priest (TE-840619-6), John Dicus (TE-839960-7), Lindsay Willrick (TE-61175B-0), Melanie Dicus (TE-049175-4), Patricia Schuyler (TE-27502B-1), Paul M. Lemons (TE-051248-5), Tara Baxter (TE87004B-0), Tricia Wotipka (working under TE-840619-6), and Victor Novik (TE-069534).

The biologists were provided with 200-scale (1 inch = 200 feet) aerial maps of the survey area. Binoculars were used to aid in detecting and identifying butterfly and other wildlife species. While host plant surveys were performed in concert with the habitat assessment, surveyors also looked for host plants during the focused surveys to document any changes from the initial host plant mapping effort. No Quino larval host plants were observed within the 2019 Quino study area during the habitat assessment or focused surveys. The results of the surveys are discussed further in Section 4.6, and they are also provided in Appendix A, 2019 Focused Quino Checkerspot Butterfly Survey for the JVR Energy Park Project, San Diego County, California.

3.4 Survey Limitations

Direct observations of special-status plants and wildlife species were recorded during vegetation mapping, jurisdictional delineations, focused wildlife surveys, and habitat assessments. In addition to direct observations of wildlife species, signs such as tracks and scat were also recorded. Special-status species observed during these surveys were recorded and/or mapped.

Focused wildlife surveys were conducted per the appropriate protocols, where required, which resulted in wildlife surveys being conducted during the day. Birds represent the largest component of the vertebrate fauna. Since most birds are active in the day, diurnal surveys maximized the number of observations of this portion of the fauna. Daytime surveys, however, may result in fewer observations of animals that are more active at night, such as mammals. Similarly, many species of reptiles and amphibians are nocturnal or cryptic in their habits and may be difficult to observe using standard meandering transects.

To account for survey limitations, biologists identified special-status wildlife species that could occur in the study area based on pertinent distribution and habitat preference literature, recorded on-site and off-site observations, and the extensive local experience of the Dudek wildlife biologists (see Section 3.1, Literature Review). Adequate measures to avoid and minimize impacts on these species are provided in this report.

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4 Environmental Setting (Existing Conditions)

4.1 Project Area Description

The general topography of the site is gently rolling with some steeper hillslopes along the western and eastern sides. A portion of the project site has been previously disturbed for agricultural purposes. The elevation range within the BSA is from 2,720 feet to 3,360 feet above mean sea level (amsl). Soils mapped on site include acid igneous rock land; Carrizo very gravelly sand, 0% to 9% slopes; Indio silt loam, 0% to 2% slopes, 2% to 5% slopes, and saline, 0% to 2% slopes; La Posta rocky loamy coarse sand, 5% to 30% slopes, eroded; Ramona sandy loam, 5% to 9% slopes, and 9% to 15% slopes, eroded; Reiff fine sandy loam, 0% to 2% slopes; Rositas loamy coarse sand, 2% to 9% slopes; sloping gullied land; and stony land (USDA 2018a).

The proposed project falls within the Jacumba Valley hydrologic subarea of the Jacumba hydrologic area located within the Anza Borrego hydrologic unit (Figure 4-1, Hydrologic Setting). The project site is less than 1% of the area encompassed by the Jacumba Valley hydrologic subarea. The region can be characterized as relatively arid and dominated by ephemeral drainages that convey runoff during and/or shortly after rain events—there are no permanent bodies of water in or near the project site. Surface and subsurface water generally flows north via shallow drainages to a floodplain (named Carrizo Gorge Creek (SANGIS 2019)) that eventually flows into the northerly draining Carrizo Creek, which eventually flows into the Carrizo Wash. The Carrizo Wash drains into the San Felipe Creek. The endpoint of the watershed is the Salton Sea.

4.2 Habitat Types/Vegetation Communities

Eleven vegetation communities and/or land covers occur within the study area, including nine sensitive communities (County of San Diego 2010a). The acreages of vegetation communities and land covers in the BSA are listed in Table 4-1 and their distribution on site is shown on the biological resources map (Figure 4-2, Vegetation Communities and Land Covers and Jurisdictional Delineation).

Table 4-1. Vegetation Communities and Land Covers

Vegetation Community or Land Cover	Code[1]	Acres	Typical County Mitigation Requirement
Sensitive Vegetation Communities and Land Covers			
Big sagebrush scrub	35210	0.26	2:1
Desert saltbush scrub	36110	77.39	2:1
Desert sink scrub	36120	12.43	3:1
Disturbed freshwater marsh	52400	0.08	3:1
Mesquite bosque	61820	133.61	3:1
Sonoran mixed woody scrub	33210	139.34	1:1
Sonoran mixed woody and succulent scrub	33220	390.34	1:1
Tamarisk scrub	63810	2.11	3:1
Sensitive vegetation communities and land covers subtotal		755.55	—

Table 4-1. Vegetation Communities and Land Covers

Vegetation Community or Land Cover	Code[1]	Acres	Typical County Mitigation Requirement
Non-Sensitive Land Covers			
Disturbed habitat	11300	55.00	N/A
Fallow agriculture	N/A	508.46	N/A
Urban/developed	12000	26.00	N/A
Non-sensitive land covers		*589.47*	—
Non-wetland waters of the U.S.		10.56	1:1
Total		**1,355.58**	—

Note: N/A = not applicable.
[1] Oberbauer et al. 2008.

4.2.1 Disturbed Habitat (11300)

Disturbed habitat is characterized by predominantly non-native species introduced and established through human action (Oberbauer et al. 2008). Oberbauer further describes disturbed habitat as "areas that have been physically disturbed (by previous legal human activity) and are no longer recognizable as a native or naturalized vegetation association, but continues to retain a soil substrate. Typically vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance, or shows signs of past or present animal usage that removes any capability of providing viable natural habitat for uses other than dispersal."

On site, areas such as dirt roads and other areas lacking vegetation due to previous disturbance are mapped as disturbed habitat.

4.2.2 Fallow Agriculture (No Code)

On site, the areas mapped as "fallow agriculture" include the previous agriculture field that has been fallow for over 8 years and has since revegetated in varying degrees of cover with non-native (ruderal) forbs and grasses. Some portions of these areas are nearly entirely dominated by Russian thistle (*Salsola tragus*), while others are more sparsely dominated by a variety of non-native mustards (*Brassica tournefortii*, *Hirschfeldia incana,* and *Sysimbrium* spp.), redstem stork's bill (*Erodium cicutarium*), mallows (*Malva* spp.), and puncturevine (*Tribulus terrestris*). The fallow agriculture areas also support a variety of non-native grasses (Bromus spp., smooth barley (*Hordeum murinum* ssp. *glaucum*), and common Mediterranean grass (*Schismus barbatus*)); however, they do not represent a dominant cover within these areas. Vegetation sampling done at representative locations throughout the fallow agriculture documented less than 1% cover of brome and smooth barley within these areas. The common Mediterranean grass occurs in various patches ranging from 0% cover in some areas to 25% cover in smaller areas where it was found with a variety of non-native mustards and other forbs described above. Common Mediterranean grass is a low-growing grass, typically between 2--16 cm in height (Jepson eFlora 2020) and by itself is not characteristic of non-native grassland, which is characterized by grasses 0.2 to 1 meter high in height (Oberbauer 2008). Further, the County characterizes non-native grassland in Section 3.4.5 of their *Report Format and Content Requirements: Biological Resources* (County of San Diego 2010b) with grasses typically comprising at least 30% of the vegetation with characteristic species consisting of "foxtail chess (*Bromus madritensis*

ssp. *rubens*), ripgut grass (*Bromus diandrus*), wild oats (*Avena* spp.), fescues (*Vulpia* spp.), red-stem filaree (*Erodium cicutarium*), mustards (*Brassica* spp.), lupines (*Lupinus* spp.) and goldfields (*Lasthenia* spp.), among others." While some of these species co-occur, the BSA still lacks the bromes (as a dominant or co-dominant), wild oats, and fescues that are characteristic of non-native grassland. Additionally, because these areas are not comprised of active agriculture, they do not meet the definition of "agriculture" described in Oberbauer (2008).

Because the fallow agriculture field does not fit neatly into the agriculture, non-native grassland, or disturbed habitat categories, upon considering the species present within these areas (primarily mustards and Russian thistle) and the lack of overall function as a grassland community, these areas were classified as fallow agriculture, which is not specifically defined in Oberbauer (2008) or Holland (1986).

4.2.3 Urban/Developed (12000)

Urban/developed land refers to areas that have been built upon or disturbed so severely that native vegetation is no longer supported. Developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials (Oberbauer et al. 2008).

4.2.4 Sonoran Mixed Woody Scrub (33210)

Sonoran mixed woody scrub is characterized as being predominantly woody shrubs, 1.6 to 9.8 feet tall, and includes a mixture of three or more woody species (Oberbauer et al. 2008). Characteristic species include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and brittle bush (*Encelia farinosa*). In San Diego County, this vegetation community commonly occurs on lower alluvial fans, above the desert floor, and below the coarse mountain substrates (Oberbauer et al. 2008).

4.2.5 Sonoran Mixed Woody and Succulent Scrub (33220)

Sonoran mixed woody and succulent scrub occurs in the Colorado Desert and is dominated by 1.6- to 9.8-foot-tall shrubs and cacti and other stem succulents (Oberbauer et al. 2008). Common characteristic species include desert agave (*Agave deserti*), brittle bush, and Mojave yucca (*Yucca schidigera*). In San Diego County, this vegetation community is dominated by more than 50% cover of succulent species (Oberbauer et al. 2008).

4.2.6 Big Sagebrush Scrub (35210)

Big sagebrush scrub is characterized by mostly soft-woody shrubs approximately 1.6 to 6.5 feet tall. This vegetation community occurs on a variety of soils and terrain, including well-drained slopes to fine-textured valley soils. In San Diego County, big sagebrush scrub occurs in alluvial washes along dry margins of high desert and montane valleys (Oberbauer et al. 2008). Characteristic species include big sagebrush (*Artemisia tridentata*), fourwing saltbush (*Atriplex canescens*), black brush (*Coleogyne ramosissima*), and ashy ryegrass (*Elymus cinereus*).

4.2.7 Desert Saltbush Scrub (36110)

Desert saltbush scrub is characterized by spaced, low, microphyllous 1- to 3.2-foot-tall shrubs typically dominated by allscale (*Atriplex polycarpa*) and alkali goldenbush (*Isocoma acradenia* var. *eremophila*) (Oberbauer et al. 2008). This vegetation community commonly occurs on fine-textured, poorly drained soils with high alkalinity in drier areas. Characteristic species include quailbush (*Atriplex lentiformis*), fourwing saltbush, and spiny hop sage (*Grayia spinosa*).

4.2.8 Desert Sink Scrub (36120)

Desert sink scrub is characterized by widely spaced low, microphyllous 1- to 3.2-foot-tall shrubs (Oberbauer et al. 2008). Desert sink scrub is dominated by succulent chenopods and occurs on fine-textured, poorly drained soils with high alkalinity or salt content. Characteristic species on site include iodine bush (*Allenrolfea occidentalis*), fourwing saltbush, and salt heliotrope (*Heliotropium curassavicum*).

4.2.9 Disturbed Freshwater Marsh (52400)

Freshwater marsh is a wetland habitat that develops at permanently flooded sites by freshwater lacking a significant current (Oberbauer et al. 2008). Because it often is permanently flooded by fresh water, there is an accumulation of deep, peaty soils. It typically is dominated by species such as cattails (*Typha* spp.), sedge (*Carex* spp.), yellow nutsedge (*Cyperus esculentus*), and bulrushes (*Scirpus* spp.).

On site, there is a small patch of cattails and Mexican juncus (*Juncus mexicanus*) in saturated soils (at the time of the site visit) in the southwestern portion of the site. These were not present during the initial vegetation mapping in 2018, indicating that this area fluctuates based on the annual rainfall and availability of subsurface water. The cattails and juncus are relatively small and patchy, with a few tamarisk and herbs growing along the fringes. The freshwater marsh was classified as a "disturbed" form of the community based on the presence of tamarisk and other non-native species comprising approximately 50% of the relative cover of shrubs and herbs.

4.2.10 Tamarisk Scrub (63810)

Tamarisk scrub is a weedy monoculture of any of the several *Tamarix* species (Oberbauer et al. 2008). This vegetation community occurs on sandy or gravelly braided washes or intermittent streams, and occurs in areas following major disturbance.

On site, the tamarisk occurs mostly along the edge of dirt roads in the central portion of the BSA. There are also some very sparse patches of tamarisk within the borrow pits and soil piles next to the borrow pits, however these areas were not included in the vegetation mapping because they do not meet the minimum mapping unit, nor are they associated with any waters of the U.S. or state, which would normally be considered for smaller mapping as it would be considered a sensitive resource.

4.2.11 Mesquite Bosque (61820)

Mesquite bosque is characterized by an open to fairly dense, drought-deciduous streamside thorn forest with open annual and perennial grass understory (Oberbauer et al. 2008). This vegetation community is dominated by mesquite (*Prosopis glandulosa*); additional characteristic species include alkali goldenbush, white bursage, quailbush, and fourwing saltbush. Salt grass (*Distichlis spicata*) and mustards (*Sisymbrium* spp.) are present in some of the understory, but much is bareground. Iodine bush (*Allenrolfea occidentalis*) occurs sporadically within some of the mesquite, but is not present at a high percent absolute cover to be considered co-dominant. Mesquite bosque occurs on higher alluvial terraces and near washes, streambanks, alkali sinks, or outwash plains with substantial groundwater.

4.2.12 Unvegetated Streambed

Several ephemeral drainages area mapped as unvegetated streambed. These do not conform to classifications in Oberbauer et al. 2008.

4.3 Floral Diversity

A total of 225 vascular plant species, consisting of 187 native species (83%) and 38 non-native species (17%), were recorded within the BSA during initial surveys (Appendix B, List of Plant Species Observed). The majority of the plants observed within the disturbed habitat or fallow agriculture areas are non-native, disturbance related species, such as Russian thistle, shortpod mustard, Asian mustard, rocketsalad (*Eruca vesicaria* ssp. *sativa*), mustards (*Sisymbrium* spp., *Brassica tournefortii*, *Descurainia* spp., *Hirschfeldia incana*, etc.), burclover, bromes (*Bromus* spp.), and stork's bills (*Erodium* spp.). Commonly observed plants in the native scrub vegetation types include creosote, California buckwheat, California joint fir, common Mediterranean grass, desert woollystar, common deerweed, and cholla (*Cylindropuntia* spp.). Western honey mesquite is the dominant species in the mesquite bosque vegetation type.

4.4 Wildlife Diversity

The BSA supports habitat for common upland and riparian wash species. Desert and Sonoran scrubs, as well as mesquite bosque and fallow agriculture within the BSA provide foraging and nesting habitat for migratory and resident birds, and serve as habitat for other wildlife species, including reptiles, invertebrates, and mammals.

There were 153 wildlife species observed in the BSA during the 2018 and 2019 surveys. Species observed within the BSA were recorded during focused surveys, habitat assessments, vegetation mapping, and special-status plant surveys. A cumulative list of wildlife species observed during these surveys is provided in Appendix C, List of Wildlife Species Observed. Species richness in the BSA is moderate due to the property size, amount of undeveloped land, and the number of native upland habitats. Species richness is generally increased with the presence of more habitat types and ecotones. The BSA is dominated by three habitat types: scrub communities compose approximately 46%, riparian communities compose 9%, and disturbed and developed areas compose approximately 45% of the BSA. The number of species and the wildlife population levels recorded (i.e., number of individuals) are typical for undeveloped areas in this region, particularly those areas that support multiple upland habitat types. The BSA supports special-status wildlife species, which are addressed in Section 4.6, Sensitive Wildlife Species.

4.4.1 Reptiles and Amphibians

Seven species of reptile were observed within the BSA during the various surveys conducted. Some of the species observed include gophersnake (*Pituophis catenifer*), desert spiny lizard (*Sceloporus magister*), and coachwhip (*Coluber* sp.).

One special-status reptile, San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), was observed during surveys conducted in 2019.

4.4.2 Birds

A total of 90 species of birds were observed within the BSA during the surveys conducted in 2018 and 2019. Some of the species observed include Pacific-slope flycatcher (*Empidonax difficilis*), California quail (*Callipepla californica*), California scrub-jay (*Aphelocoma californica*), Say's phoebe (*Sayornis saya*), California towhee (*Melozone crissalis*), house finch (*Haemorhous mexicanus*), red-tailed hawk (*Buteo jamaicensis*), and northern mockingbird (*Mimus polyglottos*).

Sixteen special-status or County Group list birds were observed: Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl, Costa's hummingbird (*Calypte costae*), turkey vulture (*Cathartes aura*), Vaux's swift (*Chaetura vauxi*), northern harrier (*Circus hudsonius*), California horned lark (*Eremophila alpestris actia*), merlin (*Falco columbarius*), loggerhead shrike (*Lanius ludovicianus*), black-tailed gnatcatcher (*Polioptila melanura*), Brewer's sparrow (*Spizella breweri*), Lawrence's goldfinch (*Spinus lawrencei*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

4.4.3 Mammals

A total of 15 species of mammals were detected within the BSA by direct observation or sign. Mammals observed within the BSA include coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), and California ground squirrel (*Spermophilus (Otospermophilus) beecheyi*). Mule deer (*Odocoileus hemionus*) and coyote are the only larger mammals known to use the site.

Two special-status or County Group list mammal was observed: San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) and San Diego desert woodrat (*Neotoma lepida intermedia*). Dudek recorded a potential American badger (*Taxidea taxus*) den on site as well.

4.4.4 Invertebrates

A total of 41 species of invertebrates, 39 of which were butterflies, were identified within the BSA by direct observation. Commonly observed species within the BSA include western pygmy-blue (*Brephidium exile*), funereal duskywing (*Erynnis funeralis*), and desert pearly marble (*Euchloe hyantis lotta*).

One special-status butterfly was observed: Quino checkerspot butterfly.

4.5 Special-Status Plant Species

Endangered, rare, or threatened plant species, as defined in CEQA Guidelines Section 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status plant species" in this report and include (1) endangered or threatened plant species recognized in the context of CESA and ESA (CDFW 2019b), (2) plant species with a CRPR of 1 through 4 (CNPS 2019), and (3) plant species considered "sensitive" by the County (County of San Diego 2010a, Table 2).

In considering rarity, the CNPS inventory of rare and endangered vascular plants of California was the primary reference (CNPS 2019). Use of the CNPS inventory is helpful because it clearly defines levels of endangerment and rarity for all of the species addressed. The CNPS inventory divides its subject taxa into four ranks: CRPR 1

(which is further divided into 1A and 1B), CRPR 2 (which is further divided into 2A and 2B), CRPR 3, and CRPR 4. Plants with a CRPR of 1A are presumed extirpated or extinct because they have not been seen or collected in the wild in California for many years. Plants with a CRPR of 1B are rare throughout their range, with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. Plants with a CRPR of 2A are presumed extirpated because they have not been observed or documented in California for many years. Except for being common beyond the boundaries of California, plants with a CRPR of 2B would have been ranked 1B. Plants with a CRPR of 3 have not had sufficient information collected to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting CRPR 3 are taxonomically problematic. All of the plants constituting CRPR 1A, 1B, 2A, 2B, and 3 meet the definitions of CESA under the CFGC and are therefore eligible for state listing. Plants with a CRPR of 4 are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly. Should the degree of endangerment or rarity of a CRPR 4 plant change, they would be transferred to a more appropriate rank. CRPR plants are further defined as follows:

- .1 = seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- .2 = moderately threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat)
- .3 = not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

CRPR 4 plants may be considered significant locally, and it is strongly recommended that CRPR 4 plants be evaluated for impact significance during preparation of environmental documents relating to CEQA based on CEQA Guidelines Section 15125(c) and/or 15380. This may be particularly appropriate for the following:

- The type locality of a CRPR 4 plant
- Populations at the periphery of a species' range
- Areas where the taxon is especially uncommon
- Areas where the taxon has sustained heavy losses
- Populations exhibiting unusual morphology or occurring on unusual substrates

In addition to CRPR 1–4 species, plant species listed on County Lists A through D (County of San Diego 2010a) also were included in the consideration of special-status plant species for this analysis.

Focused special-status plant surveys were conducted within the rare plant survey area (Figure 3-1) to determine the presence or absence of special-status plant species that are considered endangered, rare, or threatened under CEQA Guidelines Section 15380 (14 CCR 15000 et seq.) and by the County. Special-status plant species directly observed during focused surveys or known to occur in the surrounding region are described in Appendix D1, Special-Status Plant Species Detected Within the Project Area. Plants that are not expected to occur are included in Appendix D2, Special-Status Plant Species Not Expected to Occur Within the Project Area. Appendices D1 and D2 include all County List A–D species (County of San Diego 2010a), as well as species recorded in the Jacumba quadrangle and the surrounding six quadrangles (CDFW 2019a; CNPS 2019; SDNHM 2018; USFWS 2018a). The potential-to-occur determination is based on elevation, habitat, and soils present within the BSA, and Dudek biologists' knowledge of biological resources in the area and regional distribution of each species.

Five sensitive plant species—pygmy lotus (*Acmispon haydonii*; County List A), Higgins' barberry (*Berberis higginsiae*), Colorado Desert larkspur (*Delphinium parishii* ssp. *subglobosum*; County List D), sticky geraea (*Geraea viscida*; County List B) and Palmer's grapplinghook (*Harpagonella palmeri*; County List D)—were observed within the surveyed portions of the BSA during focused surveys.

4.5.1 County List A and B Species

Plants categorized as County List A species are plants that are rare, threatened, or endangered in California and elsewhere. Plants categorized as County List B are rare, threatened, or endangered in California, but more common elsewhere (County of San Diego 2010a). County List A and B species that have high or moderate potential to occur are described in more detail in Appendix D1.

Pygmy Lotus (*Acmispon haydonii*; List A)

Pygmy lotus is a CRPR List 1B.3 (CNPS 2019) and County List A species (County of San Diego 2010a). This perennial herb in the pea or bean family (Fabaceae) blooms between January and June. It occurs in creosote bush scrub and pinyon–juniper woodland habitats at elevations of 1,705 to 3,935 feet amsl. It has been recorded in San Diego County and Baja California, Mexico (CNPS 2019).

This species was observed in the BSA.

Sticky Geraea (*Geraea viscida*; List B)

Sticky geraea is a CRPR 2B.2 (CNPS 2019) and a County List B species (County of San Diego 2010a). A member of the sunflower (Asteraceae) family, this species blooms between May and June in chaparral. Sticky geraea is a perennial herb that occurs at elevations of 1,475 to 5,575 feet amsl. It has been recorded in San Diego County and in Baja California, Mexico (CNPS 2019).

This species was observed in the BSA.

4.5.2 County List C and D Species

Plants categorized as County List C species are plants that may be rare but about which more information is needed to determine their true rarity status. Plants categorized as County List D are of limited distribution and are uncommon, but are not currently rare or endangered (County of San Diego 2010a). County List C and County List D species that have high potential to occur in the BSA are described below and included in Appendix D1.

Colorado Desert Larkspur (*Delphinium parishii* ssp. *subglobosum*; List D)

Colorado Desert larkspur is a CRPR List 4.3 (CNPS 2019) and a County List D species (County of San Diego 2010a). This perennial herb in the buttercup (Ranunculaceae) family blooms between March and June. It occurs in creosote bush scrub, chaparral, and pinyon–juniper woodland habitat at elevations of 1,965 to 5,905 feet amsl. It has been recorded in San Diego County and in Baja California, Mexico (CNPS 2019).

This species was observed in the BSA.

Palmer's Grapplinghook (*Harpagonella palmeri*; List D)

Palmer's grapplinghook is a CRPR 4.2 (CNPS 2019) and a County List D species (County of San Diego 2010a). A member of the borage (Boraginaceae) family, this species blooms between March and May in chaparral, coastal scrub, and valley and foothill grasslands. This annual herb occurs at elevations of 65 to 3,135 feet amsl. It has been recorded in San Diego County and in Baja California, Mexico (CNPS 2019).

This species was observed in the BSA.

4.5.3 Other Special-Status Plant Species

Plants that are not included on a County list, but have CRPRs and potential to occur on site are described below.

Higgins' Barberry (*Berberis higginsiae*)

Higgin's barberry is a CRPR 3.2 (CNPS 2019). A member of the barberry (Berberidacese) family, this species blooms between March and April. It occurs in chaparral and Sonoran desert scrub in rocky soils. This perennial shrub occurs at elevations of 2,620 to 3,495 feet amsl. It has been recorded in San Diego County (CNPS 2019).

This species was observed in the BSA.

Abram's Spurge (*Euphorbia abramsiana*)

Abram's spurge is a CRPR 2B.2 (CNPS 2019). A member of the spurge (Euphorbiaceae) family, this species blooms between August and November. It occurs in Mojavean desert scrub and Sonoran desert scrub in sandy soils. This annual herb occurs at elevations of -15 to 4,300 feet amsl. It has been recorded in San Diego County and in Baja California, Mexico (CNPS 2019).

This species has moderate potential to occur in the BSA.

4.6 Sensitive Wildlife Species

The County of San Diego divides sensitive wildlife species into County Group 1 and County Group 2, based on the species' rarity and known threats (County of San Diego 2010a). County Group 1 species include those that have a high level of sensitivity, are listed as threatened or endangered, or have a natural history requirement that increases their sensitivity. County Group 2 species include those that are becoming less common but are not so rare that extinction is imminent without immediate action. CDFW assigns SSC status to species whose population levels are declining, have limited ranges, and/or are vulnerable to extinction due to continuing threats (CDFW 2019c). In addition, Fully Protected (FP) species are protected by CDFW, and Watch List (WL) species are candidates for higher sensitive status. USFWS assigns the Birds of Conservation Concern (BCC) status to migratory and non-migratory bird species that meet the requirements of the 1988 amendment to the Fish and Wildlife Conservation Act that mandates USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973" (USFWS 2008). County Group 1, County Group 2 species, and/or SSC and BCC species that have been observed in the BSA, or those that have a high potential to occur, are discussed in this section and included in Appendix E1, Special-Status Wildlife Species Detected or Potentially Occurring.

Additional species that have moderate potential to occur are also described in more detail in Appendix E1. Species that have low potential or are not expected to occur are described in Appendix E2, Special-Status Wildlife Species With Low Potential or Not Expected to Occur, are not discussed further in this report.

The following special-status species were observed within the BSA: San Diegan tiger whiptail (County Group 2, SSC), Cooper's hawk (County Group 1, WL), sharp-shinned hawk (County Group 1), tricolored blackbird (Group 1, ST [state threatened], BCC, SSC), golden eagle (Group 1, BCC, FP, WL), burrowing owl (County Group 1, BCC, SSC), Costa's hummingbird (BCC), turkey vulture (County Group 1), Vaux's swift (SSC), northern harrier (County Group 1, SSC), California horned lark (County Group 2, WL), merlin (County Group 2, WL), loggerhead shrike (County Group 1, BCC, SSC), black-tailed gnatcatcher (WL), Brewer's sparrow (BCC), Lawrence's goldfinch (BCC), yellow-headed blackbird (SSC), San Diego black-tailed jackrabbit (Group 2, SSC), San Diego desert woodrat (County Group 2, SSC), mule deer (sign only) (*Odocoileus hemionus*; County Group 2), American badger (potential burrow) (Group 2, SSC), and Quino checkerspot butterfly (County Group 1; FE [federally endangered]) (Figure 4-2).

The following are special-status species and County of San Diego Group List species with high potential to occur in the BSA: California glossy snake (*Arizona elegans occidentalis;* SSC), San Diego banded gecko (*Coleonyx variegatus abbotti*; County Group 1, SSC), red diamond rattlesnake (*Crotalus ruber*; County Group 2, SSC), rosy boa (*Lichanura trivirgata*; County Group 2), Blainville's horned lizard (*Phrynosoma blainvillii*; County Group 2, SSC), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*; County Group 1, WL), pallid bat (*Antrozous pallidus*; County Group 2, SSC), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*; County Group 2, SSC), pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*; County Group 2, SSC), western small-footed myotis (*Myotis ciliolabrum*; County Group 2), Yuma myotis (*Myotis yumanensis*; County Group 2), and Jacumba pocket mouse (*Perognathus longimembris internationalis*; County Group 2, SSC).

4.6.1 County Group 1 Species and/or SSC Species

County Group 1 and/or SSC species that have been observed in the BSA or have a high potential to occur are described below. Species that were detected or have a high or moderate potential to occur are included in Appendix E1. Additional species that have a low potential to occur or are not expected to occur are described in detail in Appendix E2.

Reptiles

*California Glossy Snake (*Arizona elegans occidentalis*; SSC)*

California glossy snake is an SSC species. This species is found throughout Southern California in desert regions (Zeiner et al. 1988–1990). California glossy snake occurs in chaparral, sagebrush, valley–foothill hardwood, pinyon–juniper, and annual grass at an elevation below 6,000 feet amsl. This species is primarily nocturnal and spends periods of inactivity during the day and during winter in mammal burrows and rock outcrops. California glossy snakes are most common in arid regions.

This species has high potential to occur in the BSA.

*San Diegan Tiger Whiptail (*Aspidoscelis tigris stejnegeri*; SSC/County Group 2)*

San Diegan tiger whiptail is an SSC and County Group 2 species. It is found in coastal Southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges, north into Ventura County, and south into Baja California, Mexico (Lowe et al. 1970; Stebbins 2003).

Tiger whiptail (*A. tigris*) is found in a variety of habitats, primarily in areas where plants are sparse and there are open areas for running. According to Stebbins (2003), the species ranges from deserts to montane pine forests, where it prefers warmer and drier areas. The species is also found in woodland and streamside growth, and it avoids dense grassland and thick shrub growth.

This species was observed in the BSA in 2019.

*San Diego Banded Gecko (*Coleonyx variegatus abbotti*; SSC/County Group 1)*

San Diego banded gecko is an SSC and County Group 1 species. San Diego banded gecko is only recorded in Riverside, San Diego, and San Bernardino Counties in California (CDFW 2019a). San Diego banded gecko is active at night and hides in burrows during daylight (Nafis 2016). The typical breeding season for San Diego banded gecko occurs during April and May, and hibernation is generally November through February (Nafis 2016). General habitat for this species includes coastal scrub and chaparral, and this species is typically found in granite or rocky outcrops.

This species has high potential to occur in the BSA.

*Red Diamond Rattlesnake (*Crotalus ruber*; SSC/County Group 2)*

Red diamond rattlesnake is an SSC and County Group 2 species. It is found in a variety of habitats from the coast to the deserts, from San Bernardino County into Baja California, Mexico (below 5,000 feet amsl). It commonly occurs in rocky areas within coastal sage scrub, chaparral, juniper woodlands, and desert habitats, but can also be found in areas devoid of rocks (Lemm 2006).

This species has high potential to occur in the BSA.

*Blainville's Horned Lizard (*Phrynosoma blainvillii*; SSC/County Group 2)*

Blainville's horned lizard (previously coast horned lizard) is an SSC and County Group 2 species. It is found from the Sierra Nevada foothills and central California to coastal Southern California. It is often associated with coastal sage scrub, especially areas of level to gently sloping ground with well-drained loose or sandy soil, but it can also be found in annual grasslands, chaparral, oak woodland, riparian woodland, and coniferous forest between 30 and 7,030 feet amsl (Jennings and Hayes 1994). This reptile typically avoids dense vegetation, preferring 20% to 40% bare ground in its habitat. Blainville's horned lizard can be locally abundant in areas where it occurs, with densities of near 20 adults per acre. Adults are active from late March through late August, and young are active from August through November or December.

This species has high potential to occur in the BSA.

Birds

*Cooper's Hawk (*Accipiter cooperii*; WL/County Group 1)*

Cooper's hawk is a WL and County Group 1 species. It is found throughout California in wooded areas. This species inhabits live oak, riparian, deciduous, or other forest habitats near water. Nesting and foraging usually occur near open water or riparian vegetation. Nests are built in dense stands with moderate crown depths, usually in second-growth conifer or deciduous riparian areas. Cooper's hawk uses patchy woodlands and edges with snags for perching while it hunts for prey such as small birds, small mammals, reptiles, and amphibians in broken woodland and habitat edges (Zeiner et al. 1990a).

A Cooper's hawk was observed foraging on site within the BSA during the early spring nesting raptor surveys in February 2019. There is moderate potential for Cooper's hawk to nest in the denser mesquite bosque habitat in the northern portion of the BSA.

*Sharp-Shinned Hawk (*Accipiter striatus*; WL/County Group 1)*

Sharp-shinned hawk is a WL and County Group 1 species. This species is a common migrant and winter resident throughout California, and an uncommon permanent resident and breeder in mid-elevation habitats (Zeiner et al. 1988–1990). Sharp-shinned hawk breeds in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats on north-facing slopes with perches. This species prefers riparian habitats, and roosts in intermediate- to high-canopy forest, often to forage in openings at edges of woodlands. Nests are found in dense, even-aged, single-layered forest canopy. The sharp-shinned hawk is the least common breeding *Accipiter* species in California (Zeiner et al. 1988–1990).

Sharp-shinned hawk was observed flying over the site during the April 4 and April 5, 2018, burrowing owl habitat assessment surveys. The sharp-shinned hawk does not nest in San Diego County (Unitt 2004), but may use the project site for foraging.

*Tricolored Blackbird (*Agelaius tricolor*; ST/Group 1)*

The tricolor blackbird is a state-listed threatened and County Group 1 species. It occurs throughout Central Valley and in coastal districts from Sonoma County south (Zeiner et al. 1990a). This species breeds near freshwater, and in emergent wetland with tall, dense *Arundo* sp. and riparian thickets. Tricolor blackbird feeds in grassland, cropland, and alkali scrub habitats where aquatic insects are hatching (Beedy et al. 2018; Shuford and Gardali 2008). This species breeds in northeastern California and winters more widespread along the central coast and San Francisco Bay area (Grinnell and Miller 1944, McCaskie et al. 1979, Garrett and Dunn 1981).

Tricolored blackbird was observed during focused Quino checkerspot butterfly surveys perched in trees adjacent to the U.S./Mexico border. There are no suitable freshwater bodies of water for nesting within the BSA. The disturbed freshwater marsh mapped in the southwest corner of the BSA is very small (0.08 acres) and composed of patchy cattails and Mexican juncus. It lacks the vegetative protection (e.g., nettles, thistles, etc.), size and structure needed for nesting (Beedy and Hamilton 1999). Tricolored blackbirds were observed nesting in the pond west of Jacumba Street in 2019 (Amoaku 2019) approximately 0.5 miles west of the BSA. Based on 2019 observations, they utilize the southwestern portion of the site for foraging.

*Golden Eagle (*Aquila chrysaetos*; BCC/FP, WL/County Group 1)*

Golden eagle is a BCC, WL, FP, and County Group 1 species. In addition, golden eagle is protected under the federal Bald and Golden Eagle Protection Act. As a state Fully Protected species, take may only occur pursuant to scientific research or in connection with an authorized NCCP, such as the Multiple Species Conservation Program (MSCP) County of San Diego Subarea Plan (MSCP Subarea Plan; County of San Diego 1997).

Golden eagle is a year-round, diurnally active species that is a permanent resident and migrant throughout California. Golden eagle is more common in northeast California and the Coast Ranges than in Southern California and the deserts. In Southern California, the species tends to occupy mountain, foothill, and desert habitats. Foraging habitat for this species includes open habitats with scrub, grasslands, desert communities, and agricultural areas. This species nests on cliffs within canyons and escarpments and in large trees (generally occurring in open habitats), and occurs primarily in rugged, topographically complex landscapes (Garrett and Dunn 1981; Johnsgard 1990). Most nests are located on cliffs or trees near forest edges, in trees within woodland savannas, or in small stands near open habitats (Kochert et al. 2002). Nest locations tend to be more closely associated with topographic heterogeneity than with a particular vegetation type (Call 1978).

Nest building can occur almost any time during the year. This species nests on cliffs, rock outcrops, large trees, and artificial structures such as electrical transmission towers, generally near open habitats used for foraging (Garrett and Dunn 1981; Johnsgard 1990; Kochert et al. 2002; Scott 1985). Golden eagle commonly builds, maintains, and variably uses multiple alternative nest sites in its breeding territory, routinely refurbishing and reusing individual nests over many years. Generally, the nests are large platforms composed of sticks, twigs, and greenery that are often 10 feet across and 3 feet high (Zeiner et al. 1990a). Pairs may build more than one nest and tend multiple nests prior to laying eggs (Kochert et al. 2002). Each pair can have up to a dozen nests, especially in cliff-nesting habitat where nests persist for longer than they do in trees, but generally only two to three nests are used in rotation from one year to the next. Some pairs use the same nest each year, but others use alternative nests more regularly. Succeeding generations of eagles may even use the same nest (Terres 1980, as cited in CPUC and BLM 2011).

In California, golden eagle breeds January through August, with peak breeding activity occurring February through July. Breeding typically begins in January with courtship and nest building, and egg laying typically occurs in February and March (Brown 1976; CPUC and BLM 2011; WRI 2010). Golden eagles typically lay one to three eggs, which they incubate for 43 to 45 days (Beebe 1974). Hatching and then feeding of nestlings takes place March through June. After their young fledge, the adult eagles may continue to feed the young birds for several months (CPUC and BLM 2011; WRI 2010). In the prey-rich oak woodland and savanna habitats of the California Coast Ranges, established golden eagle breeding pairs typically nest in most years (Hunt et al. 1999; Hunt and Hunt 2006); however, the long breeding cycle may contribute to some pairs breeding only every other year, even when food is abundant (CPUC and BLM 2011; WRI 2010). In other situations, where overall ecosystem productivity is lower or more variable from year to year, pairs need to range farther in search of food and may not nest every year because of the energetic demands of securing dispersed prey (Kochert et al. 2002).

Lagomorphs (rabbits and hares) and ground squirrels are of primary importance in the diet of most golden eagles, including in San Diego County, but their diet may include a wide variety of other mammals, reptiles, and birds, and frequently includes carrion, especially during winter (Johnsgard 1990; Kochert et al. 2002; Olendorff 1976).

One juvenile golden eagle was observed flying over the project site on March 24, 2019 and a golden eagle was observed kettling with a group of turkey vultures, ravens, and red-tailed hawks on April 14, 2019. There is a

golden eagle nest recorded on Round Mountain (northwest of the BSA); however, the last information recorded by USFWS on the nest location was from 2012 documenting common ravens (*Corvus corax*) using the nest. The nest site was surveyed in April 2018 and February 2019, and no golden eagles or golden eagle nesting activity was observed at this location or elsewhere near the project site. While there is no formal definition of what constitutes an "inactive" or "abandoned" golden eagle nest/territory, seven or more years with no nesting is a strong indicator that this territory has been abandoned. Based on only two observations over several months of surveys both in 2018 and 2019, golden eagles do not appear to utilize the BSA regularly.

*Burrowing Owl (*Athene cunicularia*; BCC/SSC/County Group 1)*

The burrowing owl is a BCC, SSC, and County Group 1 species. It occurs throughout North and Central America west of the eastern edge of the Great Plains south to Panama (County of Riverside 2008). The winter range is much the same as the nesting range, except that most burrowing owls apparently vacate the northern areas of the Great Plains and the Great Basin (County of Riverside 2008) in winter. The majority of burrowing owls that breed in Canada and the northern United States are believed to migrate south during September and October and north during March and April, and into the first week of May. These individuals winter within the nesting habitat of more southern populations. Thus, winter observations may include both the migratory individuals as well as the resident population (County of Riverside 2008). The burrowing owls in Northern California are believed to migrate (Coulombe 1971).

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

Focused surveys for burrowing owl were conducted in 2018 following *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) guidelines (see Section 3.3.4 for methods). On April 11, 2018, a burrowing owl burrow was observed based on pellets, whitewash, and claw marks at the entrance and immediate surrounding area. During surveys the following day (April 12, 2018), a partial burrowing owl carcass was observed approximately 900 feet away from the burrow. It was likely that an owl used the burrow as a wintering burrow but was predated on. Biologists did not detect any other fresh burrowing owl sign or activity at/near the burrow or around the site during subsequent burrowing owl surveys. A burrowing owl was observed on March 16, 2019 during Quino checkerspot butterfly surveys. The individual flew away from the slope of a man-made berm along the southern portion of the BSA and a burrowing owl burrow was observed in the same area on April 1, 2019, with signs of pellets and whitewash (Figure 4-3, Special-Status Wildlife and Plants). The 2018 and 2019 observations are all in the southeast corner of the BSA. These locations were revisited during the January 2, 2020 habitat assessment within the Jacumba Airport's runway and no burrowing owls or new sign were observed. There have been no further observations of burrowing owl within the BSA. Based on communication with Colleen Wisinski, Conservation Program Specialist with the San Diego Zoo Institute for Conservation Research (per com 2019), a delayed onset of breeding further into the spring of 2019 was observed compared to previous years. Given this information combined with the infrequent observations in 2018 and 2019, the burrowing owls may only be using the site during the winter. Additionally, there are no records of burrowing owls within, or near, the BSA in CNDDB (CDFDW 2019), the San Diego Bird Atlas (Unitt 2004), or eBird (The Cornell Lab of Ornithology 2019).

Regardless, the County's guidelines state that habitat is considered occupied if there are observations of a burrowing owl burrow. Occupied habitat is delineated around the 2019 burrow, which showed signs of recent activity. There are approximately 14.2 acres of occupied burrowing owl habitat on site within the southeastern portion of the BSA, which was delineated based on the observation locations (Figure 4-3). Based on the lack of burrowing owl observations or burrows with sign anywhere else in the BSA, it appears this southeast portion of the BSA is at the outer edge of the suitable habitat in the area, and burrowing owl(s) are most likely using more suitable habitat to the east and south of the BSA. For example, there is non-native grassland and flat topographic areas east of the BSA around the Jacumba Airport airstrip, as well as flat open land just south of the BSA in Mexico. Both areas have better quality habitat compared to the burrowing owl observations in the BSA, which is primarily dominated by Russian thistle and other weeds. In order to provide additional information on these surrounding areas, Dudek conducted a habitat assessment along the southern boundary of the Jacumba Airport (Appendix F). This off-site study area consists of relatively flat land with occasional mounds and small hills, which generally constitutes suitable topography for burrowing owls to be able to perch and forage. Friable soils and rodent or lagomorph (hare or rabbit) burrows are present, although none of the burrows observed met the size criteria for a suitable or surrogate burrowing owl burrow (11 centimeters [4.3 inches] or greater in diameter and 150 centimeters [59 inches] in depth). One burrow mapped within the desert saltbush scrub habitat in the western portion of the off-site study area had an opening that met the diameter criteria, but did not quite meet the depth criteria for a suitable burrow. The depth of the burrow was approximately 107 centimeters (42 inches). The majority of this off-site area consists of suitable habitat with the potential to support burrowing owls.

Turkey Vulture (*Cathartes aura; County Group 1*)

Turkey vulture is not considered special status by any state or federal agencies; however, it is considered a County Group 1 species. In California, it is common during the nesting season and is a year-round resident west of the Sierra Nevada, especially in coastal areas. Summer and year-round ranges also include the southeastern United States; portions of Texas, Mexico, Central America, and South America; and some islands in the Caribbean (Kirk and Mossman 1998).

Turkey vultures use a variety of habitats while foraging on wild and domestic carrion. They prefer open stages of most habitats. In the western United States, they tend to occur regularly in areas of hilly pastured rangeland, non-intensive agriculture, and areas with rock outcrops suitable for nesting, although they are not generally found in high-elevation mountain areas (Kirk and Mossman 1998; Zeiner et al. 1990a). Nest locations tend to be difficult to find and are usually located in a crevice among granite boulders (Unitt 2004). This species prefers hilly areas that provide deflective updrafts for flight, and generally avoids extensive areas of row-crop farmland (Kirk and Mossman 1998).

Turkey vulture was observed regularly foraging over the BSA; no nests were observed during the raptor surveys.

Vaux's swift (*Chaetura vauxi;* SSC)

Vaux's swift is an SSC species. This species is a summer resident of Northern California; breeds commonly in Coast Ranges, Sierra Nevada, and Cascade Range; is a common migrant throughout California in spring and summer; and winters irregularly in southern coastal lowlands (Grinnell and Miller 1944; McCaskie et al. 1979; Garrett and Dunn 1981). Vaux's swift nests in redwood and Douglas-fir habitats in large hollow trees and snags, and feeds over most terrains and habitats at lower levels of forest openings and above rivers (Grinnell and Miller 1944).

This species does not nest in San Diego County (Baltosser and Scott 1996, Unitt 2004), but migrates through in spring and fall, and winters in western and eastern parts of the County, with winter observations near the project

(Unitt 2004). During migration, this species is much less common in the desert than along the coast (Unitt 2004) but could still utilize open portions of the BSA for foraging. Wintering and roosting on the site would be rare but possible in the several abandoned buildings and structures that exist within and adjacent to the BSA that could serve as potential roost sites. One Vaux's swift was observed flying over the BSA during the Quino checkerspot butterfly surveys in 2019.

*Northern Harrier (*Circus hudsonius*; SSC/County Group 1)*

Northern harrier is an SSC and County Group 1 species. Northern harriers use a wide variety of open habitats in California, including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, estuaries, floodplains, and marshes. This species can also forage over coastal sage scrub or other open scrub communities. Nesting areas are associated with marshes, pastures, grasslands, prairies, croplands, desert shrub-steppe, and riparian woodland (Macwhirter and Bildstein 2011). Winter habitats similarly include a variety of open habitats dominated by herbaceous cover. Northern harrier populations are most concentrated in areas with low vegetation.

Northern harrier was observed foraging along the southern portion of the site in the disturbed agricultural areas during the early spring nesting raptor surveys in February 2019 and once during the Quino checkerspot butterfly surveys in March 2019. The open habitat on site is marginal from past disturbance (agriculture) and a predominance of non-native species, particularly Russian thistle (*Salsola tragus*). While this species did not nest on site during the 2018 or 2019 surveys, there is moderate potential for this species to nest in the open habitat.

*Loggerhead Shrike (*Lanius ludovicianus*; BCC/SSC/County Group 1)*

Loggerhead shrike is a BCC, SSC, and County Group 1 species. It is found in lowlands and foothills throughout California, and it remains in the southern portion of the state year-round. Preferred habitats for the loggerhead shrike are open areas that include scattered shrubs, trees, posts, fences, utility lines, or other structures that provide hunting perches with views of open ground, as well as nearby spiny vegetation or built structures (such as the top of chain-link fences or barbed wire) that provide means to skewer prey items. The species occurs most frequently in riparian areas along the woodland edge, grasslands with sufficient perch and butcher sites, scrublands, and open-canopied woodlands, although they can be quite common in agricultural and grazing areas; and they can sometimes be found in mowed roadsides, cemeteries, and golf courses, although they occur rarely in heavily urbanized areas (Zeiner et al. 1990a). Loggerhead shrikes build nests in stable shrubs or trees, requiring dense foliage for well-concealed nests, and likely nest in the project area.

Loggerhead shrike was observed throughout most of the summer in 2018 during focused burrowing owl surveys and likely nests on site.

*Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*; WL/County Group 1)*

Southern California rufous-crowned sparrow is a WL and County Group 1 species. The current distribution of Southern California rufous-crowned sparrow is restricted to a narrow belt of semiarid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California (Bent 1968; Collins 1999; Grinnell 1926; Grinnell and Miller 1944; Todd 1922; Unitt 1984; Zeiner et al. 1990a). The subspecies has also been found on San Martin Island. Southern California rufous-crowned sparrow is considered a resident throughout its range. No true migratory movements have been recorded, although limited movements to lower elevations in some areas have been reported during especially severe winters (Collins 1999).

This species has high potential to occur in the BSA.

*Yellow-Headed Blackbird (*Xanthocephalus xanthocephalus*; SSC)*

Yellow-headed blackbird is an SSC species. This species breeds commonly east of Cascade Range and Sierra Nevada, in Imperial and Colorado River valleys, in the Central Valley, and selected locations in the coast ranges west of the Central Valley (Zeiner et al. 1990a). It occurs as a migrant and local breeder in deserts and along Orange County coast. Yellow-headed blackbird nests in fresh emergent wetland with dense vegetation and deep water, and forages in emergent wetland and moist, open areas, including cropland and shores of lacustrine habitat. This species nests and roosts over water, and forages over water, near water, and moist ground.

One yellow-headed blackbird was observed during focused Quino checkerspot butterfly surveys in 2019. It may be nesting with the tricolored blackbirds in the pond west of the BSA.

Mammals

*Pallid bat (*Antrozous pallidus*; County Group 2, SSC)*

Pallid bat is an SSC and County Group 2 species. It occurs throughout California (Zeiner et al. 1990b). Records from counties in Southern California include San Diego, San Bernardino, Los Angeles, Riverside, Imperial, and Orange Counties (CDFW 2019a). It roosts in rocky outcrops, man-made structures, and trees. Pallid bat is known to occur in a wide variety of habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests (Zeiner et al. 1990b). It is commonly found in open, dry habitats with rocky areas for roosting (Zeiner et al. 1990b).

This species is fairly common and widespread in San Diego County and has potential to roost, including maternity roost, in the abandoned buildings on site and in the rocky outcrops on Round Mountain. The closest known California Natural Diversity Database occurrence overlaps the eastern boundary of the BSA (CDFW 2019a). There are records of pallid bats roosting in a bridge in Jacumba in 2014 (Tremor 2017).

This species has high potential to occur in the BSA.

*Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*; SSC/County Group 2)*

Northwestern San Diego pocket mouse is an SSC and County Group 2 species. Northwestern San Diego pocket mouse is a subspecies and inhabits sandy herbaceous areas in association with rocks and coarse gravel (Grinnell 1933; Miller and Stebbins 1964). This subspecies occurs in arid coastal and desert border areas in southwestern California (Zeiner et al. 1990b). Typical habitats for the northwestern San Diego pocket mouse include coastal scrub, chamise–redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland.

This subspecies has high potential to occur in the BSA.

*Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*; SSC/County Group 2)*

Pallid San Diego pocket mouse is an SSC and County Group 2 species. This subspecies is found in southwestern California at an elevation below 6,000 feet amsl (Zeiner et al. 1988–1990). This subspecies prefers coastal scrub, chamise–redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–

juniper, and annual grassland habitats in rocky or gravelly areas (Miller and Stebbins 1964). In San Diego County, pallid San Diego pocket mouse occurs in arid coastal and desert border areas (Zeiner et al. 1988–1990).

This subspecies has high potential to occur in the BSA.

*San Diego Black-Tailed Jackrabbit (*Lepus californicus bennettii*; SSC/County Group 2)*

San Diego black-tailed jackrabbit is an SSC and County Group 2 species. It is confined to coastal Southern California, with marginal eastern records in Mount Piños, Arroyo Seco, Pasadena, San Felipe Valley, and Jacumba (Hall 1981). It is found in many diverse habitats, but primarily in arid regions supporting short-grass habitats. Jackrabbits typically are not found in high grass or dense brush where it is difficult for them to move quickly, and the openness of open scrub habitat likely is preferred over dense chaparral. Jackrabbits are common in grasslands that are overgrazed by cattle, and they are well adapted to using low-intensity agricultural habitats (Hall 1981). While the black-tailed jackrabbit was previously widespread throughout San Diego County, particularly in north county coastal areas from Del Mar to Oceanside, the species now persists in small, scattered habitat patches (Tremor 2017).

San Diego black-tailed jackrabbit was detected regularly in the BSA during focused surveys; however, not all specific locations were recorded.

*San Diego Desert Woodrat (*Neotoma lepida intermedia*; SSC/County Group 2)*

San Diego desert woodrat is an SSC and County Group 2 species. This species is found in coastal Southern California into Baja California, Mexico (Reid 2006). Marginal eastern records for San Diego desert woodrat in the United States include San Luis Obispo, San Fernando in Los Angeles County, the San Bernardino Mountains and Redlands in San Bernardino County, and Julian in San Diego County (Hall 1981). Desert woodrats are found in a variety of shrub and desert habitats, and are primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.

This species has high potential to occur in the BSA. A woodrat midden was observed within the BSA along the western boundary.

*Jacumba Pocket Mouse (*Perognathus longimembris internationalis*; SSC/County Group 2)*

Jacumba pocket mouse is an SSC and County Group 2 species. It is found in desert, grassland, herbaceous, shrubland, and chaparral habitats in Riverside and San Diego Counties (NatureServe 2018). This species prefers desert wash with sandy or gravelly alluvial substrate and disturbed grassland. Associated plant species include grasses, catclaw acacia thorn (*Senegalia greggii*), mesquite, and *Opuntia* sp.

This species has high potential to occur in the BSA.

*American Badger (*Taxidea taxus*; SSC/County Group 2)*

American badger is an SSC, and County Group 2 species. In California they are found throughout the state except in coastal Northern California (Zeiner et al. 1990b). American badger typically occurs in open, sparsely vegetated habitats, but also uses modified habitats such as agriculture. It is found in dry, open areas with friable soils, and can occur throughout the BSA. Its distribution in a landscape coincides with the availability of prey, burrowing sites, and mates, with distribution of males ranging wider than distribution of females during the breeding season

and summer months (Minta 1993). In general, badger activity within a home range tends to concentrate in areas with suitable soils for burrowing or with colonies of ground squirrels.

This species has high potential to occur. One potential badger den was observed during focused Quino checkerspot butterfly protocol surveys.

Invertebrates

*Quino Checkerspot Butterfly (*Euphydryas editha quino*; FE/County Group 1)*

Quino checkerspot butterfly is a federally endangered and County Group 1 species. This species is found only in western Riverside County, southern San Diego County, and northern Baja California, Mexico (USFWS 2003). This species is found on sparsely vegetated hilltops, ridgelines, and occasionally on rocky outcrops in open chaparral and coastal sage scrub habitat (typically at less than 3,000 feet amsl). This species requires host plants in these vegetation communities for feeding and reproduction. The primary larval host plant is dwarf plantain, also called dotseed plantain; however, several other species have been documented as important larval host plants, including desert plantain, sometimes called woolly plantain; thread-leaved bird's beak; Coulter's snapdragon; exserted Indian paintbrush, also called owl's clover (*Castilleja exserta*); and Chinese houses (USFWS 2003).

One Quino checkerspot butterfly was observed during the 2019 rare plant surveys in the southwestern portion of the BSA on a small hilltop nectaring on goldfields (*Lasthenia* spp.) and redstem stork's bill (*Erodium cicutarium*). No Quino checkerspot butterflies were observed during the focused protocol Quino surveys. This individual was likely using the southwestern portion of the Project site for nectar while traveling between locations.

4.6.2 County Group 2 Species and Other Special-Status Species

County Group 2 species, CDFW WL species, or USFWS BCC species that have been observed or have high potential to occur in the BSA are described below and included in Appendix E1. Additional species that have moderate potential to occur are described in more detail in Appendix E1.

Reptiles

*Rosy Boa (*Lichanura trivirgata*; County Group 2)*

Rosy boa is not considered special status by any state or federal agencies; however, it is a County Group 2 species. Rosy boa in California ranges from Los Angeles, eastern Kern, and southern Inyo Counties south through San Bernardino, Riverside, Orange, and San Diego Counties (Spiteri 1988; Stebbins 2003; Zeiner et al. 1990c). It occurs at elevations from sea level to 5,000 feet amsl in the Peninsular and Transverse Ranges. Within its range in Southern California, rosy boa is absent only from the southeastern corner of California around the Salton Sea and the western and southern portions of Imperial County (Zeiner et al. 1990c). Rosy boa inhabits rocky shrubland and desert habitats and is attracted to oases and streams, but does not require permanent water (Stebbins 2003).

This species has high potential to occur in the BSA.

Birds

*Costa's hummingbird (*Calypte costae*; BCC)*

Costa's hummingbird is a BCC species. Costa's hummingbird is common and widespread in Southern California. This species is restricted to winter on the southern coast and southern deserts (Garrett and Dunn 1981). Costa's hummingbird moves upslope after breeding and during fall migration (Garrett and Dunn 1981). This species occurs in arid habitat, including desert wash, edges of desert riparian and valley foothill riparian, coastal scrub, desert scrub, desert succulent shrub, lower-elevation chaparral, and palm oasis. Costa's hummingbird nests in trees, shrubs, woody forbs, and sometimes vines (Bent 1940).

This species was observed multiple times within the BSA in 2018 and 2019.

*California Horned Lark (*Eremophila alpestris actia*; WL/County Group 2)*

California horned lark is a WL and County Group 2 species. California horned lark is a permanent resident found throughout much of the southern half of California. This species breeds and resides in the coastal region of California from Sonoma County southeast to the U.S./Mexico border, including most of the San Joaquin Valley, and eastward to the foothills of the Sierra Nevada (Beason 1995; Grinnell and Miller 1944). It is found from grasslands along the coast and deserts near sea level to alpine dwarf-shrub habitat above the tree line. This species prefers open habitats, grassland, rangeland, shortgrass prairie, montane meadows, coastal plains, and fallow grain fields, and it nests on the ground in a hollow scrape.

California horned lark was observed foraging on site in April and May 2018 and 2019. Based on territorial and nesting behavior observed, this species is likely nesting within the disturbed agricultural fields and possibly within the lower hillsides on the north side of the railroad tracks.

*Merlin (*Falco columbarius*; WL/County Group 2)*

Merlin is a WL and County Group 2 species. Merlin inhabits annual grassland, savannahs, woodlands, lakes, wetlands, and pine and conifer habitats (Zeiner et al. 1990a). This species is a winter migrant from September to May throughout the western California below 3,900 feet in elevation. Merlin does not breed in California; however, this species does winter and forage in dense tree stands near bodies of water.

Merlin was observed within the BSA during focused Quino checkerspot butterfly surveys in 2019. Merlins only occur in California during the nonbreeding season (Warkentin et al. 2005).

*Black-Tailed Gnatcatcher (*Polioptila melanura*; WL)*

Black-tailed gnatcatcher is a WL species. Black-tailed gnatcatcher inhabits desert wash from Palm Springs and Joshua Tree National Monument to the eastern Mojave Desert and along the Colorado River at elevations below 1,000 feet amsl (Zeiner et al. 1988–1990). This species primarily nests in wooded desert wash habitat, and sparingly in desert scrub habitat in winter (Grinnell and Miller 1944; Garrett and Dunn 1981). The black-tailed gnatcatcher population has declined in numbers, and the species may be victimized by cowbird parasitism (Friedmann 1963).

Black-tailed gnatcatcher was observed occasionally within the BSA in April 2019 and could nest in the mesquite bosque on site.

*Lawrence's goldfinch (*Spinus lawrencei*; BCC)*

Lawrence's goldfinch is a BCC species. Lawrence's goldfinch is common along western edge of southern deserts and is fairly common but erratic in Santa Clara County (Kaiser 1976 as cited in Zeiner el al. 1988-1990), on coastal slope from Monterey County south, and in foothills surrounding Central Valley (Zeiner et al. 1988-1990). This species is present mostly from April through September; most individuals that breed in California will winter in other southwestern states and in northern Mexico. Lawrence's goldfinch winters erratically in southern coastal lowlands and Colorado River Valley and occurs in small numbers in Northern California (Grinnell and Miller 1944; McCaskie et al. 1979; Garrett and Dunn 1981). This species occurs in valley foothill hardwood, valley foothill hardwood-conifer, desert riparian, palm oasis, pinyon-juniper, and lower montane habitats. Lawrence's goldfinch nests in dense foliage of a tree or shrub, and prefers oak, cypress, cedar, or riparian thicket (Grinnell and Miller 1944).

Lawrence's goldfinch was observed in 2019 during focused Quino checkerspot butterfly surveys and was likely migrating through the site or using it as a non-breeding location since it does not nest in the region (Baltosser and Scott 1996). The site may provide foraging habitat for this species as it migrates through the area.

*Brewer's Sparrow (*Spizella breweri*; BCC)*

Brewer's sparrow is a BSS species. Brewer's sparrow inhabits desert scrub, croplands, and treeless shrub habitats with moderate canopy and sagebrush (Zeiner et al. 1990a). This species breeds east of the Cascades–Sierra Nevada crest, Mojave and Colorado Deserts, and San Joaquin Valley. In recent years, the Brewer's sparrow rarely breeds in southwestern California (Garrett and Dunn 1981) and is considered a wintering or migrating species in San Diego County (Unitt 2004). This species finds cover in sagebrush and nests in the center of sagebrush or other shrub up to 3.9 feet above the ground.

Brewer's sparrow was observed several times in April 2018 and 2019 and was likely migrating through the site. The site may provide foraging habitat for this species as it migrates through the area.

Mammals

Western Small-Footed Myotis (Myotis ciliolabrum; County Group 2)

Western small-footed myotis is not considered special status by any state or federal agencies; however, it is a County Group 2 species. Western small-footed myotis inhabits arid wooded and brushy uplands near water in coastal and desert California (Zeiner et al. 1990b). This species occurs in elevation below 8,900 feet. This species seeks cover in caves and built structures, including buildings, mines, and bridges.

This species has high potential to occur in the BSA. This species has potential to roost, including maternity roost, in the abandoned buildings on site.

*Yuma Myotis (*Myotis yumanensis*; County Group 2)*

Yuma myotis is not considered special status by any state or federal agencies; however, it is a County Group 2 species. It occurs throughout California except for the most arid areas of the Mojave and Colorado Deserts (Zeiner et al. 1990b). Records from counties in Southern California include San Diego, San Bernardino, Los Angeles, Riverside, Imperial, and Orange Counties (CDFW 2019a). Although Yuma myotis occurs in a wide variety of life zones, at elevations ranging from sea level to 10,820 feet amsl, its actual distribution is closely associated with access to water (Zeiner et al. 1990b). Forests and woodlands are primary habitats, and foraging usually occurs in

open, uncluttered habitats and low over-water sources such as ponds, streams, and stock ponds (Brigham et al. 1992; Zeiner et al. 1990b).

This species has high potential to occur in the BSA. This species is fairly common and widespread in San Diego County and has potential to roost, including maternity roost, in the abandoned buildings in the eastern portion of the site and in the rocky outcrops on Round Mountain.

Mule Deer (*Odocoileus hemionus*; County Group 2)

Mule deer is a County Group 2 species. It is a common species with a widespread distribution throughout the western United States and Canada, and south into mainland and Baja California, Mexico (Hall 1981). It occurs throughout most of California, except in deserts and intensively farmed areas without cover (Zeiner et al. 1990b). Throughout its range, mule deer uses coniferous and deciduous forests, riparian habitats, desert shrub, coastal scrub, chaparral, and grasslands with shrubs. It is often associated with successional vegetation, especially near agricultural lands (NatureServe 2018). It uses forested cover for protection from the elements and open areas for feeding (Wilson and Ruff 1999). Mule deer fawn in a variety of habitats that have available water and abundant forage, including moderately dense shrubs and forests, dense herbaceous stands, and higher-elevation riparian and mountain shrub vegetation.

Mule deer tracks were observed during biological surveys; locations are shown on Figure 4-3. Mule deer favor habitats such as riparian and oak woodland, and early growth chaparral (Tremor 2017). Given the open landscape on site and general absence of mule deer on the desert floor, it is likely that mule deer only occasionally occur on site and travel from the mountains north of the BSA. They are not expected to utilize the flat open areas due to the lack of vegetative cover.

4.7 Jurisdictional Aquatic Resources

Potential jurisdictional aquatic resources within the BSA total 153.51 acres and include 22.48 acres of potential ACOE/RWQCB/CDFW-jurisdictional non-wetland waters; 130.95 acres of potential ACOE/RWQCB-jurisdictional non-wetland waters, and CDFW-jurisdictional riparian habitat; and 0.08 acres of potential ACOE/RWQCB/CDFW-jurisdictional wetlands/riparian habitat and County RPO wetlands (Table 4-2). There are also two borrow pits on site with scattered, sparse tamarisk shrubs. These borrow pits were wholly constructed in upland areas. The northern borrow pit is approximately 100 feet by 80 feet; the southern borrow pit is larger (approximately 1.5 acres) but lacks hydrophytic vegetation based on the sampling pit. Per the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State, the northern borrow pit would be considered an artificial wetland that resulted from human activity, including excavation of the pit and discharging of water into the pit from agricultural activities (SWRCB 2019). Water is no longer being discharged to the borrow pit, and there is very minimal tamarisk in the pit. As such, the pit would not be considered a relatively permeant part of the natural landscape which is a requirement of the State procedures for an artificial wetland to be considered waters of the state. There is also a feature formed solely from a culvert directing surface and road runoff beneath Carrizo Gorge Road which has eroded the landscape until the runoff dissipates into a dirt road approximately 1,000 feet from Carrizo Gorge Road. This feature does not support any wetland vegetation. The northern borrow pit and the erosional features were constructed or formed in uplands and have no current or historical connection to waters of the United States or state. Therefore, they are not considered features regulated by federal or state agencies and are not further analyzed in this report. Acreages for these potential

jurisdictional resources are summarized in Table 4-2 and represented on Figure 4-2. Appendix G includes the Aquatic Resources Delineation Report.

Table 4-2. Jurisdictional Aquatic Resources in the BSA

Jurisdictional Aquatic Resources	Acreage
Potential ACOE/RWQCB Non-Wetlands and CDFW Streambed	
Non-wetland waters - desert sink scrub	12.43
Non-vegetated channel	9.96
Non-vegetated channel (isolated)	0.60
ACOE/RWQCB wetlands and CDFW riparian areas subtotal[a]	*22.99*
Potential ACOE/RWQCB Non-Wetland Waters, and CDFW Riparian Areas	
Mesquite bosque	130.96
Potential ACOE/RWQCB Wetland Waters, CDFW Riparian Areas, and County RPO Wetlands	
Disturbed freshwater marsh	0.08
Total jurisdictional area[a]	**154.02**

Note:
[a] Totals may not sum due to rounding.

ACOE/RWQCB/CDFW Determination

There are 11 potential aquatic features within the BSA that are non-wetland waters. Features 1, 2, 5, 6, and 9–11 generally flow north into Carrizo Creek. Carrizo Creek flows through Carrizo Gorge and Carrizo Canyon, where it turns into Carrizo Wash just north of the Coyote Mountains. Carrizo Wash outlets into San Felipe Creek near the Lower Borrego Valley and eventually drains into the Salton Sea to form a significant nexus to a traditional navigable water. Features 3 and 4 originate in Gray Mountain just northeast of the BSA; however, this drainage terminates in the middle of the site. Features 7 and 8 also flow south from Gray Mountain and terminate at Carrizo Gorge Road. These waters do not connect to a traditional navigable water or tributary to a traditional navigable water and will be evaluated during an approved jurisdictional determination if required.

There is one wetland waters (Feature 12) mapped in the southwestern corner of the BSA that is likely fed from the higher water table in the area. This feature does not connect via the surface to a traditional navigable water or tributary to a traditional navigable water and will be evaluated during an approved preliminary jurisdictional determination which is currently being processed by the USACE.

RPO Wetland Determination

The County's RPO identifies wetlands as follows: "at least periodically, the land supports a predominance of hydrophytes (plants whose habitat is water or very wet places)", "substratum is predominantly undrained soil", or "an ephemeral or perennial stream is present whose substratum is predominately non-soil and such lands contribute substantially to biological functions or values of wetlands in the drainage system" (County of San Diego 2012). One feature supports RPO wetlands within the BSA: the small disturbed freshwater marsh is fed from subsurface water seasonally and lacks consistent water sources. Based on the County's guidelines (County of San Diego 2010a), a 50-foot buffer would be appropriate for this feature (Figure 4-2).

Based on the lack of hydrophytes, hydric soils, or substratum that is predominantly non-soil in the ephemeral channels and the presence of well-drained soils, the ephemeral channels do not have the biological functions of a wetland nor do they have populations of wetland dependent species, and therefore are not considered an RPO wetland.

The mesquite bosque located within the floodplain along the western boundary is dominated by a facultative species which occur equally in wetland and non-wetland areas. Other common species within the mesquite bosque include facultative, facultative upland, or upland species, such as tamarisk, white bursage, fourwing saltbush, quailbush, saltgrass, and mustards (*Sisymbrium* spp.). The dominant and co-dominant plant species would not be categorized as hydrophytes because they are not facultative wetland (usually occur in wetlands but occasionally found in non-wetlands) or obligate (occur almost always under natural conditions in wetlands) species which are consistent with the RPO's definition of a hydrophyte (Lichvar et al. 2012; County of San Diego 2012). While iodine bush is present in some portions of the mesquite bosque at low percent cover, it is not dominant enough in the shrub cover to be considered a "predominance of hydrophytes" per the RPO definition. Areas mapped as mesquite bosque are located within a wide floodplain area with no evidence of surface flow. The soils are not hydric; the floodplain lacks a defined channel and a predominance of hydrophytes; and the slopes are less than 25%. Therefore, areas mapped as mesquite bosque would not be considered RPO wetlands.

Tamarisk often occupies jurisdictional wetlands but is also commonly associated with disturbed areas or toe of slopes that have higher groundwater tables in upland areas. On the project site the tamarisk scrub is not associated with any jurisdictional features and is located along road sides or in soil piles and pits. Similar to mesquite bosque, tamarisk is a facultative species which occurs equally in wetland and non-wetland areas and does not meet the County's definition of a hydrophyte (Lichvar et al. 2012; County of San Diego 2012). Data stations taken within the northern borrow pit showed signs of hydrology in the form of mudcracks, had sparse tamarisk, and assumed hydric soils (see Appendix F). The southern borrow pit had very minimal mudcracks, even sparser tamarisk, and no hydric soils. Due to its artificial nature, the presence of invasive species, the lack of hydrophytes, and the lack of observed hydric soils, these borrow pits created in upland areas would not be considered RPO wetlands.

4.8 Habitat Connectivity and Wildlife Corridors

Wildlife species generally inhabit suitable habitat patches distributed across a landscape. These habitat blocks, which may make up the species' home range or breeding territory, support most, if not all, of the species' life history needs (e.g., food resources, mates, refuge). Critical to the survival of most wide-ranging species is the ability to access or move between various habitat blocks to allow for juvenile dispersal, to access food and/or shelter during the winter months, to escape catastrophic events (e.g., flood, fire), and to ward against genetic inbreeding (Rosenberg et al. 1997). In undisturbed or unfragmented landscapes, such movements by some species may occur throughout the landscape without a defined movement route (e.g., between mosaics of suitable habitat patches). However, where landscapes have movement constraints related to either natural conditions, such as vegetation types or topography (e.g., steep slopes), or constructed obstacles (e.g., urban areas, roads), wildlife may have to move along defined landscape linkages or "wildlife corridors." The phrase "wildlife corridors," as used in this report, are generally linear landscape features that permit species to disperse between favorable habitats.

Habitat linkages are relatively large open space patches of natural habitat that function to join two larger adjacent open space patches of habitat (Bennett 2003). They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. The linkage represents a potential route for gene flow and long-term dispersal. Habitat linkages may serve as both habitat and avenues of gene flow for small animals such

as reptiles and amphibians. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as "stepping-stones" for dispersal. The project site would be considered an east/west linkage for wildlife movement south of the I-8 and north of the border fence.

The project area is included within a Core Wildlife Area as defined by the County based on its size and the surrounding undeveloped land (County of San Diego 1997). The project site is currently undeveloped, except for dairy and ranch structures north of Old Highway 80, but the international border fence limits the ability of the project site to function as a linear north–south wildlife corridor for large mammals. The project vicinity is generally surrounded by undeveloped landscapes to the north (north of I-8), east, and northwest. Old Highway 80, a two-lane highway, traverses the project site in an east–west direction within the southern portion of the project site. Carrizo Gorge Road traverses the project site in a generally north–south direction along the eastern portion of the project site. There are no wildlife crossings along the Old Highway 80 or road, but wildlife are generally able to make at-grade crossings over the highway. Based on observations from biological surveys, wildlife currently are able to traverse the project site and surrounding undeveloped areas in an unencumbered manner until they arrive at the U.S./Mexico border fence along the southern boundary of the site. However, since openings in the border fence are located off site, approximately 1.2 miles to the east and 2 miles to the west, north–south wildlife movement is anticipated to be higher in these areas. These breaks are in steeper terrain, but provide for continued wildlife movement, as the topography does not pose difficulties for most wildlife use. Coyote, cougar (or mountain lion; *Puma concolor*), bobcat (*Lynx rufus*), and other species are readily able to scale steep slopes. The border fence openings occur along very steep portions of the fence and provide reduced movement options for most large wildlife – additionally, the consistent presence of Border Patrol agents further reduces the attractiveness of the openings. Further, the project site is situated adjacent to, or near, State Park and federal Bureau of Land Management holdings, which allows for unhindered wildlife movement. Figure 4-4 Habitat Connectivity and Wildlife Movement, shows the border fence openings, conserved lands, and adjacent land ownership, and Figure 4-5 shows the Habitat Evaluation Model.

The mesquite-dominated floodplain along the western BSA may serve as a wildlife movement area between the site and the north side of I-8 for a variety of wildlife species, including mammals, birds, reptiles, and invertebrates. The western portion of the floodplain (i.e., Boundary Creek) narrows, but larger wildlife may still move through the area at night if they are traveling to the west. The eastern portion of the BSA is flatter and more open, with smaller drainages and dirt roads that could serve as movement areas for wildlife travel. Birds can move freely through the region; invertebrates and smaller mammals can move relatively freely through the region. All terrestrial species' movement is hindered by I-8, and, to a lesser degree, Old Highway 80 and surface streets. The exit to Carrizo Gorge Road and the San Diego and Eastern Railway/Carrizo Gorge Road underpasses are the only routes across I-8 in the vicinity. These constraints make the project site a connection between blocks of habitat to the east and west.

There is critical habitat for Quino checkerspot butterfly located approximately 0.25 miles west of the project site (Figure 4-4). The Jacumba Occurrence Complex appears to be the most southeasterly occurrence of Quino checkerspot butterfly in its U.S. range (USFWS 2019, 2003). According to the Recovery Plan for Quino Checkerspot Butterfly (USFWS 2003), there is occupied habitat south of El Condor, Baja California, Mexico, farther southeast of Jacumba, although this location is not specifically mentioned in the 5-Year Review (USFWS 2009). The Jacumba Occurrence Complex west of the project site is likely connected to the vicinity of McCain Valley and Campo west of the project site, potentially suitable habitat in the Table Mountain area northeast of the project site, and occupied habitat in El Condor southeast of the project site (USFWS 2003).

The In-Ko-Pah and Jacumba Mountains are north of the proposed project area; the Peninsular Ranges and Anza-Borrego Desert are to the east. The project site is approximately 3.4 miles southeast of designated critical habitat

for Peninsular bighorn sheep (*Ovis canadensis nelsoni*), and 2.6 miles from the western slope of the Peninsular Ranges (Figure 4-4). The project site is too removed from mountainous terrain to provide habitat attractive to bighorn sheep; it does not provide inter-mountain connectivity habitat between occupied mountain ranges; and the species has not been identified in the area previously. Based on their known range, USFWS Critical Habitat, and unsuitable habitat between the site and the species' known range (CDFG 2011), this species is not expected to occur on the project site.

"Sensitive habitat lands" is a definition by the County (County of San Diego 2012) that includes wildlife corridors. As mentioned above, the mesquite-dominated floodplain may provide the best area for terrestrial mammals and some bird species found in tree or shrub habitat. The border fence that runs along the southern boundary of the project site is currently impermeable to large mammals, such that wildlife movement between the United States and Mexico occurs only along breaks in the border fence east and west of the project area. Birds, small mammals, reptiles, and invertebrates are still able to travel between these areas. Given the undeveloped land to the north and east, the project site does not currently serve as a local or regional wildlife corridor since wildlife is not constrained to travel through the area. However, because the project site extends from I-8 to the border fence, it does serve as a linkage between open space to the east and west. Therefore, the project site is considered a sensitive habitat land with regard to wildlife corridors.

The Pacific Flyway is a major north–south migration route for birds that travel between North and South America. This is a broad-front route that covers large amounts of landscape. In Southern California, birds typically use the coast and inland areas. The Pacific Coast route is used by gulls, ducks, and other water birds. The longest and most important route of the Pacific Flyway is that originating in northeastern Alaska. This route, which includes most waterfowl and shorebirds, passes through the interior of Alaska and then branches such that large flights continue southeast into the Central and Mississippi Flyways, or they may turn in a southwesterly direction and pass through the interior valleys of California, ending or passing through the Salton Sea (BirdNature 2014). The southward route of long-distance migratory land birds of the Pacific Flyway that typically overwinter south of the United States extends through the interior of California to the mouth of the Colorado River and on to their winter quarters, which may be located in western Mexico (USGS 2006).

The Salton Sea, approximately 40 miles northeast of the project site, is an important stopover for many birds that travel inland (SDG&E 2009); the inland Pacific Flyway migration route, which is focused on a stopover at the Salton Sea, is east of the project area. A study from 1985 to 1999 focused on shorebird migration and recorded avian use at the Salton Sea and the adjacent Imperial Valley. Large numbers of shorebirds, including black-necked stilt (*Himantopus mexicanus*), American avocet (*Recurvirostra americana*), western sandpiper (*Calidris mauri*), and dowitchers (*Limnodromus* spp.) were recorded during migration periods (Shuford et al. 2002). In addition, the study showed that many birds traveling to the Salton Sea, including the mountain plover (*Charadrius montanus*), use the sea not only as a migratory stopover, but also as a wintering area (Shuford et al. 2002). Migration timing varies from species to species, and for some, there is little documentation of the timing; for others, the arrival and departure has been well documented species by species (Unitt 2004). In general, bird migration occurs during the months of March through April and August through November. However, the project area does not support any bodies of water or large wetlands that attract large migration stopovers or attractants for avian and bat species. The closest large bodies of water to the project site are Tule Lake, located approximately 4 miles to the northwest, and Lake Domingo, located approximately 8 miles to the west. Therefore, while birds likely migrate over the site, and certain birds may forage on site, the project site is not considered a stopover for birds migrating to and from the Salton Sea, particularly with the agricultural fields and irrigation resources available in the El Centro and Brawley areas south of the Salton Sea. Additionally,

many birds are known to migrate at night (Emlen 1975; Lowery 1951; USGS 2013), which reduces visibility and glare-related impacts on migrants.

Certain types of solar panels may create a "pseudo-lake effect," and birds may collide with solar panels that appear like a body of water due to the sky's reflection. However, there is little scientific information available regarding the pseudo-lake effect, and a detailed discussion of the impacts would be speculative. Further, the following factors would minimize the risk of collision due to sky reflection: (1) the project is not located near bodies of water that would attract wetland-associated birds; (2) the locale is not considered to be a major contributor to the Pacific Flyway; and (3) the solar units would be uniformly dark in color, coated to be non-reflective, and designed to be highly absorptive of all light that strikes their glass surfaces, and may not appear like water from above, as water displays different properties by both reflecting and absorbing light waves.

Special Habitat Management Areas

Several regional habitat management programs are planned for eastern San Diego County, including a future East County MSCP Plan. Conservation initiatives, including the Las Californias Binational Conservation Initiative and the Parque-to-Park Binational Corridor, include lands in the project area (Figure 4-4) (Stallcup et al. 2015).

The proposed project is located within the future East County MSCP Plan Area (Figure 2-1). The intent of preparing East County MSCP Plan is to create a large, connected preserve system that addresses the regional habitat needs for multiple species. The majority of the BSA is mapped as "Agriculture or Natural Upland outside Focused Conservation Area." Additional designations include "Other Public/Semi-Public Lands" associated with roads, "Riparian/Wetland Habitat and Transition Zone within FCA" associated with on-site drainages, "Land Managed as Open Space" associated with the railroad, and "Land managed with Ecological Protection" associated with the land adjacent to conserved lands in the very northwest corner of the BSA. The proposed project is designed within the "Agriculture or Natural Upland outside Focused Conservation Area" and "Other Public/Semi-Public Lands."

Projects within the East County MSCP planning area were subject to a Planning Agreement (2014) between the County, the CDFW, and USFWS for the East County MSCP; however, the Planning Agreement has expired. The County anticipates a new Planning Agreement will be in place later in 2020. The Planning Agreement is intended to determine if project approval would have an effect on the preparation and approval of the future East County MSCP, The Planning Agreement would outline preliminary conservation objectives for the future East County MSCP. In addition to the preliminary conservation objectives, the Planning Agreement would identify an interim project review process. Although, a Planning Agreement is not currently in place as of May 2020, the proposed project has been evaluated in regard to a future East County MSCP Plan.

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5 Project Effects

This section addresses direct and indirect impacts on sensitive biological resources that would result from implementation of the proposed project. Cumulative impacts are addressed in the proposed project's environmental impact report (EIR). A number of mitigation measures are included as part of the proposed project to avoid, minimize, and/or mitigate potential impacts to less than significant levels; these measures are summarized in Section 11, Summary of Project Impacts and Mitigation, of this report.

Direct impacts were quantified by overlaying the MUP boundary over the mapped biological resources and quantifying impacts (Figure 5-1, Impacts to Vegetation Communities and Land Covers and Jurisdictional Delineation, and Figure 5-2, Impacts to Special-Status Wildlife and Plants). Impacts related to on-site development of the proposed project would occur on approximately 643 acres.

Indirect impacts result from adverse "edge effects," either short-term indirect impacts related to construction, or long-term, chronic indirect impacts associated with the location of urban development in proximity to biological resources within natural areas. During construction of the proposed project, short-term indirect impacts may include dust and noise, which could temporarily disrupt habitat and species' vitality; changes in hydrology; disruption of wildlife activity due to increased human activity; and construction-related chemical pollutants. However, all proposed project grading would be subject to restrictions and requirements that address erosion and runoff, including the federal Clean Water Act and the National Pollutant Discharge Elimination System, and preparation of a SWPPP and standard urban stormwater management plan. These programs are expected to minimize proposed project impacts with respect to erosion/runoff, as well as potential impacts from chemical pollutants. Long-term indirect impacts on proposed preserve areas may include generation of fugitive dust, intrusions by humans and domestic pets, noise, lighting, invasion by exotic plant and wildlife species, effects of toxic chemicals (fertilizers, pesticides, herbicides, and other hazardous materials), urban runoff from developed areas, litter, fire, habitat fragmentation, and hydrologic changes.

Cumulative impacts refer to incremental individual environmental effects of two or more projects when considered together. These impacts may be minor when analyzed individually but become collectively significant as they occur over time. Cumulative impacts are addressed in the proposed project's EIR.

5.1 Riparian Habitat or Sensitive Vegetation Communities

5.1.1 Direct Impacts on Riparian Habitat or Sensitive Vegetation Communities

The significance of these potential impacts was determined through application of the County's Significance Guidelines, as described in Section 7.1, Guidelines for the Determination of Significance, of this report.

Temporary Direct Impacts

Impact V-1: Temporary Direct Impacts on Riparian Habitat or Sensitive Vegetation Communities in the BSA

No proposed short-term, construction-related, or temporary direct impacts on vegetation communities would occur as a direct result of the proposed project. However, in the absence of avoidance and mitigation measures, impacts on

vegetation outside designated construction zones could occur from clearing, trampling, or grading. These potential impacts could damage vegetation communities and alter their ecosystem, creating gaps in vegetation that would allow non-native plant species to become established, thus increasing soil compaction and leading to soil erosion.

Permanent Direct Impacts

Impact V-2: Permanent Direct Impacts on Riparian Habitat or Sensitive Vegetation Communities

The proposed project would result in permanent direct impacts on up to 126.99 acres of sensitive vegetation communities and 467.63 acres of fallow agriculture. Although fallow agriculture is not defined as a vegetation community or land cover in Holland (1986) or Oberbauer (2008), these areas provide foraging habitat for wildlife and therefore would be considered a sensitive vegetation community. These impacts are summarized in Table 5-1 and shown on Figure 5-1.

Table 5-1. Summary of Permanent Project Impacts on Vegetation Communities and Land Covers

Vegetation Community or Land Cover	Code[a]	BSA [b] (Acres)	Impacts (Acres)
Sensitive Vegetation Communities and Land Covers			
*Big sagebrush scrub	35210	0.26	—
*Desert saltbush scrub	36110	77.39	50.39
*Desert sink scrub	36120	12.43	—
*Disturbed freshwater marsh	52400	0.08	—
*Mesquite bosque	61820	133.61	2.64
*Sonoran mixed woody scrub	33210	139.34	—
*Sonoran mixed woody and succulent scrub	33220	390.34	72.85
*Tamarisk scrub	63810	2.11	1.11
Sensitive vegetation communities and land covers subtotal		*755.55*	*126.99*
Non-Sensitive Land Covers			
Disturbed habitat	11300	55.00	27.27
Fallow agriculture	N/A	508.46	467.63
Urban/developed	12000	26.00	21.24
Non-sensitive land covers subtotal		*589.47*	*516.14*
*Unvegetated streambed (non-wetland water of the U.S./state)		10.56	—
Total[b]		**1,355.58**	**643.13**

Notes: BSA = biological study area.
An asterisk (*) marks land cover types for which the County of San Diego (2010a) requires mitigation.
[a] Holland (1986) as modified by Oberbauer et al. (2008).
[b] Construction of the switchyard would impact 0.43 acres of Sonoran mixed woody and succulent scrub and 0.10 acres of fallow agriculture.
[c] May not sum due to rounding.

5.1.2 Indirect Impacts on Riparian Habitat or Sensitive Vegetation Communities

The significance of these potential impacts was determined through application of the County's Significance Guidelines, described in Section 7.1 of this report.

Temporary Indirect Impacts

Impact V-3: Temporary Indirect Impacts on Sensitive Vegetation Communities in the BSA

Potential short-term or temporary indirect impacts on sensitive vegetation communities in the BSA would primarily result from construction activities and would include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants (including herbicides). These potential impacts are described below.

Generation of Fugitive Dust. Excessive dust can decrease the vigor and productivity of vegetation through effects on light, penetration, photosynthesis, respiration, transpiration, increased penetration of phytotoxic gaseous pollutants, and increased incidence of pests and diseases.

Changes in Hydrology. Construction could result in hydrologic and water-quality-related impacts adjacent to and downstream of the construction area. Hydrologic alterations include changes in flow rates and patterns in streams, which may affect adjacent and downstream vegetation communities. Water-quality impacts include chemical-compound pollution (fuel, oil, lubricants, paints, release agents, and other construction materials), erosion, increased turbidity, and excessive sedimentation. Direct impacts can also remove native vegetation and increase runoff from roads and other paved surfaces, resulting in increased erosion and transport of surface matter into vegetation communities. Altered erosion, increased surface flows, and underground seepage can allow for the establishment of non-native plants. Changed hydrologic conditions can also alter seed bank characteristics and modify habitat for ground-dwelling fauna that may disperse seed.

Chemical Pollutants. Erosion and chemical pollution (releases of fuel, oil, lubricants, paints, release agents, and other construction materials) may affect special-status vegetation communities. The use of chemical pollutants can decrease the number of plant pollinators, increase the existence of non-native plants, and cause damage to and destruction of native plants.

Permanent Indirect Impacts

Impact V-4: Permanent Indirect Impacts on Sensitive Vegetation Communities in the BSA

Long-term or permanent indirect impacts could result from the proximity of the proposed project to sensitive vegetation communities after construction (e.g., maintenance of roads or fence lines). Permanent indirect impacts that could affect special-status vegetation communities include generation of fugitive dust, chemical pollutants, altered hydrology, non-native invasive species, increased human activity, and alteration of the natural fire regime. These potential impacts are described in detail below.

Generation of Fugitive Dust. The effects of fugitive dust on special-status vegetation communities would be the same as the temporary indirect impacts described in Section 5.1.1.

Chemical Pollutants. The effects of chemical pollutants on special-status vegetation communities would be the same as the temporary indirect impacts described in Section 5.1.1. In addition, landscaping activities may use herbicides to prevent vegetation from reoccurring around roads, the substation, and the parking lot. Weed control treatments would include all legally permitted chemical, manual, and mechanical methods. The herbicides used during landscaping activities would be contained within the project limits. Dust suppressants other than water, such as those listed in Lovich and Ennen (salts and brines, organic nonpetroleum products, synthetic polymers, organic petroleum, electrochemical substances, clay additives, and mulch and fiber mixtures) could have an indirect impact on hydrology and could damage plants (2011). Water will be used to suppress dust during construction and no other methods are proposed.

Altered Hydrology. Impacts to drainage patterns and flood flow from development of the solar facility are discussed in the EIR under Hydrology and Water Quality. During operation, water would be used for washing the solar modules, and nominal amounts for other maintenance activities and may alter the on-site hydrologic regime. These hydrologic alterations may affect special-status vegetation communities. Altered hydrology can allow for the establishment of non-native plants and/or invasion by Argentine ants (*Linepithema humile*), which can compete with native ant species that could be seed dispersers or plant pollinators. However, the water, and associated runoff, used during operation and maintenance activities will be contained within the proposed project impact footprint, and long-term indirect impacts associated with altered hydrology are not expected. Potential impacts would be reduced by design features that (i) contain operational water use, and associated runoff, within the proposed project impact footprint; (ii) specify installation of drip-irrigated landscaping for the proposed project; and (iii) ensure that landscape stock has been fumigated against ant infestation prior to transport to the project site.

Non-Native, Invasive Plant and Animal Species. Invasive plant species that thrive in edge habitats are a well-documented problem in Southern California and throughout the United States. Development could also fragment native plant populations, which may increase the likelihood of invasion by exotic plants due to the increased interface between natural habitats and developed areas. Bossard et al. (2000) list adverse effects of non-native species in natural open areas, including exotic plants competing for light, water, and nutrients, and creating a thatch that blocks sunlight from reaching smaller native plants. Exotic plant species may alter habitats and displace native species over time, leading to extirpation of native plant species, unique vegetation communities, and subsequently suitable habitat for special-status wildlife species. The introduction of non-native, invasive animal species could negatively affect native species that may be pollinators of or seed dispersal agents for plants within special-status vegetation communities.

Increased Human Activity. Increased human activity could result in the potential for trampling of vegetation outside of the impacts footprint, as well as soil compaction, and could affect the viability of plant communities. Trampling can alter the ecosystem, creating gaps in vegetation and allowing non-native plant species to become established, leading to soil erosion. Trampling may also affect the rate of rainfall interception and evapotranspiration, soil moisture, water penetration pathways, surface flows, and erosion. An increased human population increases the risk for damage to special-status vegetation communities; however, the facilities on the project site would be unmanned and operations-related human activity is expected to be low.

Shading. The proposed project would include construction of single-axis trackers oriented in the north–south direction. The solar PV modules would be mounted on a metal pipe pile or I-beam foundation. The panels would reset to the east in the evening or early morning to receive sunlight at sunrise. Shading can reduce the amount of sunlight available for photosynthesis, eliminating longer wavelengths of the visible light spectrum, and can reduce transpiration due to reduced photosynthetic rates, increasing soil moisture and resulting in changes to soil nutrient availability and microbial communities, potentially favoring non-native species and other shade-tolerant plants. However, shading will be contained within the proposed project impact footprint, and long-term indirect impacts associated with shading outside the impact footprint are not expected.

Alteration of the Natural Fire Regime. The proposed project would potentially increase the risk of fire, including fire associated with electrical shorts or electrical equipment malfunction, or inadvertent ignitions within or adjacent to open space. Shorter-than-natural fire return intervals can preclude recovery of the native vegetation between fires; weaken the ecological system; allow for invasion of exotic species; and, in some cases, result in permanent transition of the vegetation to non-native communities, such as to annual grassland and weedy communities (Keeley 1987; Malanson and O'Leary 1982; O'Leary et al. 1992). If the natural fire regime is suppressed, longer-than-natural fire return intervals can result in excessive buildup of fuel loads so that when fires do occur, they are catastrophic. Unnaturally long fire intervals can also result in senescence of plant communities, such as chaparral, that rely on shorter intervals for rejuvenation.

5.2 Special-Status Plant Species

5.2.1 Direct Impacts on Special-Status Plant Species

The significance of these potential impacts was determined through application of the County's Significance Guidelines, as described in Section 6.1, Guidelines for the Determination of Significance.

Temporary Direct Impacts

Impact SP-1: Temporary Direct Impacts on Special-Status Plant Species

Focused surveys for special-status plants were conducted in spring 2019 and summer 2019. Short-term, construction-related, or temporary direct impacts on special-status plants, if they occur, at the edge of the development footprint and non-impacted areas interface could primarily result from construction activities. There are no planned temporary impacts. However, in the absence of avoidance and mitigation measures, impacts on special-status plants outside designated construction zones could occur from clearing, trampling, or grading. These potential effects could damage individual plants and alter their ecosystem, creating gaps in vegetation that allow non-native plant species to become established, thus increasing soil compaction and leading to soil erosion. Any special-status plant species interface of construction activities and avoidance areas could be impacted by potential temporary direct impacts, such as those previously listed.

Permanent Direct Impacts

Impact SP-2: Permanent Direct Impacts on Special-Status Plant Species

Based on the spring and summer 2019 surveys, five special-status plants occur within the surveyed portions of the BSA (see Figure 3-1): pygmy lotus, Higgins' barberry, Colorado Desert larkspur, sticky geraea, and Palmer's grapplinghook. Permanent direct impacts to two special-status plant species would result from development of the proposed project: pygmy lotus and sticky geraea. Table 5-2 summarizes these impacts and Figure 5-2 show the impacts to these species. There are no special-status plant species present within the development footprint of the switchyard.

Table 5-2. Summary of Permanent Project Impacts to Special-Status Plant Species

Species	Regulatory Status: Federal/State/CRPR	Number of Individuals within the Rare Plant Survey Area	Impacts to Number of Individuals
County List A			
Pygmy lotus	None/None/1B.3	1	1
County List B			
Sticky geraea	None/None/2B.2	43	21
County List D			
Colorado Desert larkspur	None/None/4.3	250	--
Palmer's grapplinghook	None/None/4.2	7,494	--
Other Status			
Higgins' barberry	None/None/3.2	1	--

5.2.2 Indirect Impacts on Special-Status Plant Species

The significance of these potential impacts was determined through application of the County's Significance Guidelines, as described in Section 6.1.

Temporary Indirect Impacts

Impact SP-3: Temporary Indirect Impacts on Special-Status Plant Species

Most of the indirect impacts on vegetation communities described in Section 5.1.2 can also affect sensitive plants. Potential short-term or temporary indirect impacts on special-status plant species that have potential to occur on site would primarily result from construction activities and would include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants (including herbicides). Special-status plant species at the edge of the interface of construction activities and avoidance areas could be impacted by potential temporary indirect impacts such as those previously listed (see descriptions in Section 5.1.2).

Permanent Indirect Impacts

Impact SP-4: Permanent Indirect Impacts on Special-Status Plant Species

Permanent indirect impacts could result from the proximity of the development to special-status plants after project buildout. Permanent indirect impacts that could affect special-status plant species include generation of fugitive dust, chemical pollutants, altered hydrology, non-native invasive species, increased human activity, and alteration of the natural fire regime. Each of these potential indirect impacts is discussed in Section 6.2.2, Project Effects Relevant to Guideline 4.1.B (County-Designated Sensitive Species). Special-status plant species at the edge of the development interface could be impacted by permanent indirect impacts such as those previously listed.

5.3 Sensitive Wildlife Species

5.3.1 Direct Impacts on Special-Status Wildlife Species

The significance of these potential impacts was determined through application of the County's Significance Guidelines, as described in Section 6.1.

Temporary Direct Impacts

Impact W-1: Temporary Direct Impacts on Habitat for Special-Status Wildlife Species

Short-term, construction-related, or temporary direct impacts on avian foraging and wildlife access to foraging, nesting, or water resources would primarily result from construction activities. In the absence of avoidance and mitigation measures, impacts on vegetation communities outside designated construction zones could occur from clearing, trampling, or grading. These potential impacts could reduce suitable habitat for wildlife species and alter their ecosystem, thus creating gaps in vegetation that allow non-native plant species to become established. These impacts could occur along the interface between development and non-impacted areas if clearing occurs outside

the limits of grading, but are generally avoided with the designation of the 100-foot limited building zone easement[2] (to be provided once the mitigation lands are finalized).

Permanent Direct Impacts

Impact W-2: Permanent Direct Impacts on Foraging Habitat for Golden Eagle

Two golden eagles were observed flying over the site during the 2019 Quino checkerspot butterfly surveys. They did not circle, forage, or land on any part of the project site. Golden eagles are known to nest in the region, including at Table Mountain, which is approximately 2 miles northeast of the BSA (USFWS 2019). Round Mountain is located along the western edge of the BSA and there is a golden eagle nest record on the northern side of Round Mountain. This nest was described as an intact cliff nest occupied by common ravens in 2012 (USFWS 2019). This nest location, along with other crags on Round Mountain, was surveyed in April 2018 and February 2019; ravens and red-tailed hawks were observed nesting in these areas. As described in Section 4.6, seven or more years with no nesting is a strong indicator that this territory has been abandoned. Aside from Round Mountain, there is no suitable nesting habitat (i.e., large trees or cliffs) in the BSA; therefore, no nesting habitat is modeled for golden eagle. Permanent direct impacts to foraging habitat for golden eagles will occur and those impacts are summarized in Table 5-3.

Impact W-2: Permanent Direct Impacts on Habitat for Special-Status Wildlife Species

Long-term or permanent direct impacts on special-status wildlife species were quantified by comparing the maximum impact footprint with suitable habitat for wildlife species. Table 5-3 summarizes the impacts on potential habitat for special-status wildlife that have been observed within the BSA. Implementation of the proposed project would result in the direct loss of potential habitat, including foraging habitat, for some of the County of San Diego Group 1, Group 2, and SSC species that are described in Section 4.6.1 (County Group 1 Species and/or SSC Species) and Section 4.6.2 (County Group 2 Species and Other Special-Status Species) as being detected or having high potential to occur on site. These species are described in Table 5-3.

Locations of sensitive wildlife observed are shown on Figures 4-3 and 5-2 and described in Sections 4.6.1 and 4.6.2. Additional species that have moderate potential to occur but that were not directly observed are described in Appendix E1.

[2] This easement is required adjacent to any on- or off-site biological open space or conservation easement. The easement prohibits the building of structures that would require vegetation clearing within the protected open space for fuel management purposes. The Limited Building Zone would extend at least 100 feet from the open space boundary. This distance may be extended or reduced if approved by the appropriate fire authorities and supported by the Fire Protection Plan for the project. The easement would include the provision to allow structures that do not require fire fuel modification/vegetation management (County of San Diego 2010b).

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
Reptiles			
California glossy snake (*Arizona elegans occidentalis*)	USFWS: None CDFW: SSC County: None	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Disturbed habitat • Fallow agriculture • Sonoran mixed woody and succulent scrub	High potential to occur. There are 1,183.2 acres of modeled habitat in the BSA, of which 618.1 acres would be directly impacted. Of the 618.1 acres of impact 0.63 acres are associated with the switchyard.
San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Disturbed habitat • Fallow agriculture • Mesquite bosque • Sonoran mixed woody and succulent scrub • Tamarisk scrub	Observed. There are 1,318.9 acres of modeled habitat in the BSA, of which 621.9 acres would be directly impacted. Of the 621.9 acres of impact 0.63 acres are associated with the switchyard.
San Diego banded gecko (*Coleonyx variegatus abbotti*)	USFWS: None CDFW: SSC County: Group 1	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Sonoran mixed woody and succulent scrub	High potential to occur. There are 619.7 acres of modeled habitat in the BSA, of which 123.2 acres would be directly impacted. Of the 123.2 acres of impact 0.53 acres are associated with the switchyard.
Red diamond rattlesnake (*Crotalus ruber*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Sonoran mixed woody and succulent scrub	High potential to occur. There are 619.7 acres of modeled habitat in the BSA, of which 123.2 acres would be directly impacted. Of the 123.2 acres of impact 0.53 acres are associated with the switchyard.
Rosy boa (*Lichanura trivirgata*)	USFWS: None CDFW: None County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Mesquite bosque • Sonoran mixed woody and succulent scrub	High potential to occur. There are 753.4 acres of modeled habitat in the BSA, of which 125.9 acres would be directly impacted. Of the 125.9 acres of impact 0.53 acres are associated with the switchyard.

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
Blainville's horned lizard (*Phrynosoma blainvillii*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Mesquite bosque • Sonoran mixed woody and succulent scrub • Tamarisk scrub	High potential to occur. There are 755.5 acres of modeled habitat in the BSA, of which 127.0 acres would be directly impacted. Of the 127.0 acres of impact 0.53 acres are associated with the switchyard.
Birds			
Cooper's hawk (*Accipiter cooperii*)	USFWS: None CDFW: WL County: Group 1	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Developed • Disturbed habitat • Fallow agriculture • Disturbed freshwater marsh • Mesquite bosque • Sonoran mixed woody and succulent scrub • Unvegetated channel	Observed. There are 1,353.5 acres of modeled habitat in the BSA, of which 642.0 acres would be directly impacted. No potential suitable nesting habitat (the mesquite in the northern portion of the BSA) will be impacted. Of the 642.0 acres of impact 0.63 acres are associated with the switchyard
Sharp-shinned hawk (*Accipiter striatus*)	USFWS: None CDFW: WL County: Group 1	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Developed • Disturbed habitat • Fallow agriculture • Disturbed freshwater marsh • Mesquite bosque • Sonoran mixed woody and succulent scrub • Unvegetated channel	Observed. There are 1,353.5 acres of modeled habitat in the BSA, of which 642.0 acres would be directly impacted. Of the 642.0 acres of impact 0.63 acres are associated with the switchyard.

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
Tricolored blackbird *Agelaius tricolor* (nesting colony)	USFWS: BCC CDFW: ST, SSC County: Group 1	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Fallow agriculture • Disturbed freshwater marsh • Mesquite bosque • Sonoran mixed woody and succulent scrub • Unvegetated channel	Observed. There are 1,272.5 acres of modeled habitat in the BSA, of which 593.5 acres would be directly impacted (excluding access roads and substation). Of the 593.5 acres of impact 0.63 acres are associated with the switchyard.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	USFWS: None CDFW: WL County: Group 1	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Sonoran mixed woody and succulent scrub	High potential to occur. There are 619.7 acres of modeled habitat in the BSA, of which 123.2 acres would be directly impacted. Of the 123.2 acres of impact 0.53 acres are associated with the switchyard.
Golden eagle (*Aquila chrysaetos*)	USFWS: BCC CDFW: FP, WL County: Group 1	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Developed • Disturbed habitat • Fallow agriculture • Disturbed freshwater marsh • Mesquite bosque • Sonoran mixed woody and succulent scrub • Unvegetated channel • Tamarisk scrub	Observed. There are 1,355.6 acres of modeled habitat in the BSA, of which 643.1 acres would be directly impacted. Of the 643.1 acres of impact 0.63 acres are associated with the switchyard.
Burrowing owl (*Athene cunicularia*)	USFWS: BCC CDFW: SSC County: Group 1	• Model (area surrounding burrows, excluding developed land)	Observed. There are 14.3 acres of modeled occupied habitat in the BSA, of which 14.2 acres would be directly impacted. The switchyard would not impact any occupied burrowing owl habitat.

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
Costa's hummingbird (*Calypte costae*)	USFWS: BCC CDFW: None County: None	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Sonoran mixed woody and succulent scrub	Observed. There are 619.7 acres of modeled habitat in the BSA, of which 123.2 acres would be directly impacted. Of the 123.2 acres of impact 0.53 acres are associated with the switchyard.
Turkey vulture (*Cathartes aura*)	USFWS: None CDFW: None County: Group 1	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Disturbed habitat • Fallow agriculture • Sonoran mixed woody and succulent scrub	Observed. There are 1,183.2 acres of modeled habitat in the BSA, of which 618.1 acres would be directly impacted. Of the 618.1 acres of impact 0.63 acres are associated with the switchyard.
Vaux's swift (*Chaetura vauxi*)	USFWS: None CDFW: SSC County: None	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Developed • Disturbed habitat • Fallow agriculture • Disturbed freshwater marsh • Sonoran mixed woody and succulent scrub • Unvegetated channel • Tamarisk scrub	Observed. There are 1,222.0 acres of modeled habitat in the BSA, of which 640.5 acres would be directly impacted. Of the 640.5 acres of impact 0.63 acres are associated with the switchyard.
Northern harrier (*Circus cyaneus*)	USFWS: None CDFW: SSC County: Group 1	• Disturbed habitat • Fallow agriculture	Observed. There are 563.5 acres of modeled habitat in the BSA, of which 494.9 acres would be directly impacted. Of the 494.9 acres of impact 0.10 acres are associated with the switchyard.
California horned lark (*Eremophila alpestris actia*)	USFWS: None CDFW: WL County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Fallow agriculture • Sonoran mixed woody and succulent scrub	Observed. There are 1,128.2 acres of modeled habitat in the BSA, of which 590.9 acres would be directly impacted. Of the 590.9 acres of impact 0.63 acres are associated with the switchyard.

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
Merlin (*Falco columbarius* (wintering))	USFWS: None CDFW: WL County: Group 2	• Fallow agriculture • Disturbed freshwater marsh • Unvegetated channel	Observed. There are 519.1 acres of modeled habitat in the BSA, of which 467.6 acres would be directly impacted. Of the 467.6 acres of impact 0.10 acres are associated with the switchyard.
Loggerhead shrike (*Lanius ludovicianus*)	USFWS: BCC CDFW: SSC County: Group 1	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Fallow agriculture • Sonoran mixed woody and succulent scrub	Observed. There are 1,128.2 acres of modeled habitat in the BSA, of which 590.9 acres would be directly impacted. Of the 590.9 acres of impact 0.63 acres are associated with the switchyard.
Black-tailed gnatcatcher (*Polioptila melanura*)	USFWS: None CDFW: WL County: None	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Mesquite bosque • Sonoran mixed woody and succulent scrub	Observed. There are 753.4 acres of modeled habitat in the BSA, of which 125.9 acres would be directly impacted. Of the 125.9 acres of impact 0.53 acres are associated with the switchyard.
Lawrence's goldfinch (*Spinus lawrencei*)	USFWS: BCC CDFW: None County: None	Foraging • Big sagebrush scrub • Desert saltbush scrub • Fallow agriculture • Sonoran mixed woody and succulent scrub • Tamarisk scrub	Observed. There are 1,130.3 acres of modeled habitat in the BSA, of which 590.9 acres would be directly impacted. Of the 590.9 acres of impact 0.63 acres are associated with the switchyard.
Brewer's sparrow (*Spizella breweri*)	USFWS: BCC CDFW: None County: None	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Fallow agriculture • Sonoran mixed woody and succulent scrub • Tamarisk scrub	Observed. There are 1,130.3 acres of modeled habitat in the BSA, of which 590.9 acres would be directly impacted. Of the 590.9 acres of impact 0.63 acres are associated with the switchyard.
Yellow-headed blackbird (*Xanthocephalus xanthocephalus* (nesting))	USFWS: None CDFW: SSC County: None	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Fallow agriculture • Disturbed freshwater marsh • Sonoran mixed woody and succulent scrub • Unvegetated channel	Observed. There are 1,138.9 acres of modeled habitat in the BSA, of which 590.9 acres would be directly impacted (excluding access roads and substation). Of the 590.9 acres of impact 0.53 acres are associated with the switchyard.

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
Mammals			
Pallid bat (*Antrozous pallidus*)	USFWS: None CDFW: SSC County: Group 2	• Disturbed habitat • Fallow agriculture • Developed	High potential to occur. There are 589.5 acres of modeled habitat in the BSA, of which 516.1 acres would be directly impacted. Of the 516.1 acres of impact 0.10 acres are associated with the switchyard.
Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Disturbed habitat • Fallow agriculture • Developed • Sonoran mixed woody and succulent scrub	High potential to occur. There are 1,209.2 acres of modeled habitat in the BSA, of which 639.4 acres would be directly impacted. Of the 639.4 acres of impact 0.63 acres are associated with the switchyard.
Pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Disturbed habitat • Fallow agriculture • Developed • Sonoran mixed woody and succulent scrub	High potential to occur. There are 1,209.2 acres of modeled habitat in the BSA, of which 639.4 acres would be directly impacted. Of the 639.4 acres of impact 0.63 acres are associated with the switchyard.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Sonoran mixed woody and succulent scrub	Observed. There are 619.7 acres of modeled habitat in the BSA, of which 123.2 acres would be directly impacted. Of the 123.2 acres of impact 0.53 acres are associated with the switchyard.
Western small-footed myotis (*Myotis ciliolabrum*)	USFWS: None CDFW: None County: Group 2	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Developed • Disturbed habitat • Fallow agriculture • Disturbed freshwater marsh • Sonoran mixed woody and succulent scrub • Unvegetated channel Roosting (abandoned building; not quantified)	High potential. There are 1,219.9 acres of modeled habitat in the BSA, of which 639.4 acres would be directly impacted. Of the 639.4 acres of impact 0.63 acres are associated with the switchyard.

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
Yuma myotis (*Myotis yumanensis*)	USFWS: None CDFW: None County: Group 2	Foraging • Big sagebrush scrub • Desert saltbush scrub and sink scrub • Developed • Disturbed habitat • Fallow agriculture • Disturbed freshwater marsh • Mesquite bosque • Sonoran mixed woody and succulent scrub • Unvegetated channel Roosting (abandoned building and/or rocky outcrops on Round Mountain; not quantified)	High potential. There are 1,353.5 acres of modeled habitat in the BSA, of which 642.0 acres would be directly impacted. Of the 642.0 acres of impact 0.63 acres are associated with the switchyard.
San Diego desert woodrat (*Neotoma lepida intermedia*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Disturbed habitat • Fallow agriculture • Sonoran mixed woody and succulent scrub	High potential to occur. There are 1,183.2 acres of modeled habitat in the BSA, of which 618.1 acres would be directly impacted. Of the 618.1 acres of impact 0.63 acres are associated with the switchyard.
Mule deer (*Odocoileus hemionus*)	USFWS: None CDFW: None County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Developed • Disturbed habitat • Fallow agriculture • Mesquite bosque • Sonoran mixed woody and succulent scrub	Observed. There are 1,342.8 acres of modeled habitat in the BSA, of which 642.0 acres would be directly impacted. Of the 642.0 acres of impact 0.10 acres are associated with the switchyard.
Jacumba pocket mouse (*Perognathus longimembris internationalis*)	USFWS: None CDFW: SSC County: Group 2	• Big sagebrush scrub • Desert saltbush scrub and sink scrub • Disturbed habitat • Fallow agriculture • Developed • Sonoran mixed woody and succulent scrub	High potential to occur. There are 1,209.2 acres of modeled habitat in the BSA, of which 639.4 acres would be directly impacted. Of the 639.4 acres of impact 0.63 acres are associated with the switchyard.

Table 5-3. Permanent Impacts on Special-Status Wildlife Species Present in the BSA or with High Potential to Occur

Common Name (*Scientific Name*)	Federal/State/ County of San Diego	Modeled Habitat[a]	Impacts on Modeled Habitat in the BSA and Occurrence
American badger (*Taxidea taxus*)	USFWS: None CDFW: SSC County: Group 2	• Disturbed habitat • Fallow agriculture	High potential to occur. There are 563.5 acres of modeled habitat in the BSA, of which 494.9 acres would be directly impacted. Of the 494.9 acres of impact 0.10 acres are associated with the switchyard.
Invertebrates			
Quino checkerspot butterfly (*Euphydryas editha quino*)	USFWS: FE CDFW: None County: Group 1	No model; this species was observed once on a hilltop in the southwest corner with host plants absent from the hilltop and surrounding area.	N/A. Hilltop and southwest corner is being avoided.

Status Designations:
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC:California Species of Special Concern
WL: California watch list species
County of San Diego Sensitive Animal List:
Group 1: Species with a high level of sensitivity, listed as threatened or endangered, or with a natural history requirement that increases their sensitivity.
Group 2: Species that are becoming less common but are not so rare that extinction is imminent without immediate action.
Notes: BSA = biological study area; USFWS = U.S. Fish and Wildlife Service; CDFW = California Department of Fish and Wildlife: County = County of San Diego.
[a] Desert scrub modeled habitat includes desert saltbush scrub, desert sink scrub, Sonoran mixed woody and succulent scrub, and Sonoran mixed woody scrub vegetation communities.

Impact W-3: Permanent Direct Impacts on Nesting Birds

The MBTA prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursuing, hunting, shooting, capturing, collecting, killing, or attempting to commit any of these acts (16 USC 703 et seq.). Note that impacts on habitat do not constitute take under this definition unless such impacts result in death of a migratory bird. Additionally, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The executive order requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect these species. Permanent direct impacts on nesting birds could result if active nests or the young of nesting County Group 1 and/or SSC bird species are impacts through direct grading or clearing and grubbing in preparation for construction.

Impact W-4: Permanent Direct Impacts on Maternity Bat Roosts

Yuma myotis, pallid bat, and western small-footed myotis have high potential to roost in the abandoned buildings on site, which will be demolished as part of the proposed project. Permanent direct impacts on maternity bat roosts could occur if there were a maternity roost in a building.

5.3.2 Indirect Impacts on Special-Status Wildlife Species

The significance of these potential impacts was determined through application of the County's Significance Guidelines, as described in Section 6.1.

Temporary Indirect Impacts

Impact W-5: Temporary Indirect Impacts on Special-Status Wildlife Species

Short-term, construction-related, or temporary indirect impacts on avian foraging and wildlife access to foraging, nesting, or water resources would primarily result from construction activities. Species potentially affected by such activities include loggerhead shrike, California horned lark, and other special-status species that occur or have potential to occur on site. Indirect impacts on sensitive bird species may occur if construction is conducted during the nesting season for passerines (generally March 1 through August 31) and raptors (January 15 through July 31). These potential impacts are described in detail below.

Generation of Fugitive Dust. Dust and applications for fugitive dust control can impact vegetation surrounding the limits of grading, resulting in changes in the community structure and function. These changes could result in impacts on suitable habitat for special-status wildlife species.

Noise. Construction-related noise could occur from equipment used during vegetation clearing and installation of the solar panels and associated infrastructure. Noise impacts can have a variety of indirect impacts on wildlife species, including increased stress, weakened immune systems, altered foraging behavior, displacement due to startle, degraded communication with conspecifics (e.g., masking), damaged hearing from extremely loud noises, and increased vulnerability to predators (Lovich and Ennen 2011; Brattstrom and Bondello 1983, as cited in Lovich and Ennen 2011). Construction-related noise could have an indirect impact on wildlife species.

Construction noise and vibration levels would vary from hour-to-hour and day-to-day, depending on the equipment in use, the operations being performed, and the distance between the source and receptor. Construction would occur during the day, and no construction is proposed to take place at night.

Chemical Pollutants. Accidental spills of hazardous chemicals could contaminate nearby surface waters and groundwater and indirectly impact wildlife species through poisoning or altering suitable habitat.

Increased Human Activity. Construction activities can deter wildlife from using habitat areas near the impact footprint and increase the potential for vehicle collisions. Additionally, some localized security-related lighting, on-site security personnel, and/or a remotely monitored alarm system may be required during construction.

Invasive Predators and Non-Native Animal Species. Trash from construction-related activities could attract invasive predators such as ravens and coyotes in higher numbers than occur naturally in the area; this increase in predators could negatively affect the wildlife species in the BSA. Landscaping stock could bring in Argentine ants or other pests that could compete with native wildlife.

Permanent Indirect Impacts

Impact W-6: Permanent Indirect Impacts on Special-Status Wildlife Species

Potential long-term or permanent indirect impacts on special-status wildlife species would include non-native, invasive plant and animal species introduction; habitat fragmentation; increased human activity; alteration of the natural fire regime; altered hydrology; and lighting. All special-status wildlife species at the project interface could potentially be indirectly impacted. These potential impacts are described in detail below.

Non-Native, Invasive Plant and Animal Species. The effects of non-native, invasive plant and animal species on special-status wildlife are similar to what is described in Section 5.3.2.1. In addition, trash cans attract invasive predators such as ravens and coyotes in higher numbers than occur naturally in the area, which could impact the wildlife species in the BSA.

Increased Human Activity. The effects of increased human activity on special-status wildlife are similar to what is described in Section 5.3.2.1. While the proposed project would be an unmanned facility that would be monitored remotely, some on-site security personnel may be required during operation. It is anticipated that in-place PV panel washing would occur four times a year during daylight hours. Washing of the panels would be undertaken using wash trucks.

Alteration of the Natural Fire Regime. The effects of altered natural fire regime on special-status wildlife are similar to what is described in Section 5.3.2.1. Alterations of plant communities could affect wildlife that relies on those habitat types.

Creation of Collision Hazards. The proposed project could potentially increase the risk of collisions due to sky reflection (or "pseudo-lake effect"). Although avian collisions with towers and structures have been well documented, there are few published papers that study the possibility that large areas of solar PV panels in the desert environment may mimic water bodies and inadvertently attract migrating or dispersing wetland bird species. Polarized reflections from solar PV arrays have been observed to attract insects (Horvath et al. 2010), which could in turn attract other sensitive wildlife, such as bats, but the magnitude of this effect is unknown, since no comprehensive scientific studies have been conducted for this potential phenomenon.

Anecdotal evidence suggests that wetland species, particularly those that require water to take flight (e.g., loons, grebes), may either collide with or become stranded in solar fields, resulting in fatalities. Two solar projects in the desert southwest had recent, publicized bird mortalities. One project is a different type of facility that does not rely on PV cells to generate electricity, instead using heat generated by mirrors reflecting and focusing sunlight on a central focal point to power a generator. Different types of effects might have killed the birds. Regardless, little is known about the actual percentage of species and individuals that are negatively affected by the hypothetical pseudo-lake effect of PV arrays. USFWS recognizes the lack of data on the effects of solar facilities on migratory bird mortality, and provides guidance on monitoring migratory bird mortalities at solar facilities (Nicolai et al. 2011). However, little scientific information is available to assess the magnitude or likely risk associated with such events, and a detailed discussion of the potential impacts would be speculative. Regardless, the following factors would minimize the risk of collision due to sky reflection: (1) the project is not located near bodies of water that would attract wetland-associated birds; (2) the locale is not considered to be a major contributor to the Pacific Flyway; and (3) the solar units would be uniformly dark in color, coated to be non-reflective, and designed to be highly absorptive of all light that strikes their glass surfaces, and may not appear like water from above, as water displays different properties by both reflecting and absorbing light waves.

The gen-tie line would include two 138 kV 550-foot-long (1,100 feet total) overhead transmission lines to loop the switchyard into the existing SDG&E Boulevard-East County 138 kV transmission line. The potential for avian collisions with the gen-tie lines is considered a minor risk compared to the higher voltage, long distance transmission lines in the region such as the Southwest Powerlink and Sunrise Power link. Furthermore, the Project area is not an area where birds flock to wetlands or is part of migratory flyway or within a known eagle territory. Similarly, the four proposed utility poles would provide perches from which avian species may forage but are considered a minor risk for collision due to the small number of poles (only four poles are proposed).

Electromagnetic. It is known that migrating birds use electromagnetic directional senses and that artificial electromagnetic pulses can cause a response in some migration behaviors in some species (Holland and Helm 2013). However, there is very little scientific information available, and a discussion of the potential project impacts would be speculative.

Altered Hydrology. The effects of altered hydrology on special-status wildlife are similar to what is described in Section 5.3.2.1. Alterations of plant communities could affect wildlife that relies on those habitat types. Changes in plant composition could affect the native vegetation communities and wildlife habitat.

Lighting. Lighting for the project would be limited to motion detector lighting at the substation and site entry ways. Lighting would use bulbs that do not exceed 100 watts, and all lights will be shielded and directed downward to minimize any effects to the surrounding area, and would be used only on an as-needed basis. Nighttime lighting would comply with the County of San Diego Light Pollution Code, also known as the Dark Sky Ordinance, Section 59.101 et seq. Additionally, lighting for the proposed project would be designed in accordance with the San Diego County Zoning Ordinance, Performance Standards, Sections 6320, 6322, and 6324, which guide performance standards for glare and control excessive or unnecessary outdoor light emissions. The minimal lighting associated with the project is not expected to deter nocturnal wildlife from moving between undeveloped habitat areas adjacent to the site.

Noise. There would be minimal increased human activity since the facilities would be unmanned. On-site operational noise sources associated with the proposed project would include pad-mounted inverters, transformers, and HVAC units cooling energy storage equipment (noise levels of 64 dBA at 50 feet)—all of which would be distributed across twenty-five (25) locations throughout the solar facility (see Figure 1-2). The electrical transformer located within the collector substation, and to a much lesser degree the smaller transformers within the switchyard, would also generate relatively steady-state sources of continuous noise. Nocturnal wildlife would not be significantly impacted while foraging or moving between undeveloped habitat areas. Noise pollution is not anticipated to decrease breeding of any special-status species.

5.4 Jurisdictional Aquatic Resources

5.4.1 Direct Impacts on Jurisdictional Aquatic Resources

The significance of these potential impacts is determined through application of the County's Significance Guidelines, described in Sections 7.1 and 8.1, Guidelines for the Determination of Significance.

Temporary Direct Impacts

Impact JAR-1: Temporary Direct Impacts on Jurisdictional Aquatic Resources

Short-term, construction-related, or temporary direct impacts on jurisdictional aquatic resources could result from clearing, trampling, or grading of jurisdictional aquatic resources outside of designated construction zones. These potential impacts could damage individual plants and alter their ecosystem, creating gaps in vegetation that allow non-native plant species to become established, thus increasing soil compaction and leading to soil erosion.

Permanent Direct Impacts

The proposed project would not result in impacts to potential ACOE and RWQCB non-wetland waters or CDFW streambed (Figure 5-1).

5.4.2 Indirect Impacts on Jurisdictional Aquatic Resources

The significance of these potential impacts was determined through application of the County's Significance Guidelines, described in Sections 7.1 and 8.1.

Temporary Indirect Impacts

Impact JAR-2: Temporary Indirect Impacts on Jurisdictional Aquatic Resources

Potential short-term or temporary indirect impacts on jurisdictional resources in the BSA would primarily result from construction activities and include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants (including herbicides). Potential short-term indirect impacts that could affect all the jurisdictional resources that occur adjacent to development are described below.

Generation of Fugitive Dust. The effects of fugitive dust on jurisdictional aquatic features are similar to those described in Section 5.1.2 for vegetation communities.

Changes in Hydrology. The effects of changes in hydrology on jurisdictional aquatic features are similar to those described in Section 5.1.2 for vegetation communities.

Chemical Pollutants. The effects of chemical pollutants on jurisdictional aquatic features are similar to those described in Section 5.1.2 for vegetation communities.

Permanent Indirect Impacts

Impact JAR-3: Permanent Indirect Impacts on Jurisdictional Aquatic Resources

Permanent indirect impacts could result from the proximity of the development to jurisdictional aquatic resources after project build-out. Permanent indirect impacts that could affect jurisdictional resources include generation of fugitive dust, chemical pollutants, altered hydrology, non-native invasive species, increased human activity, alteration of the natural fire regime, and shading. Each of these potential indirect impacts is discussed below.

Generation of Fugitive Dust. The effects of fugitive dust on jurisdictional resources are similar to those described in Section 5.1.2 for vegetation communities.

Chemical Pollutants. The effects of chemical pollutants on jurisdictional resources are similar to those described in Section 5.1.2 for vegetation communities.

Altered Hydrology. As described in Section 5.1.2, water would be used for washing the solar modules, for annual reapplication of the nontoxic permeable soil stabilizers, and in nominal amounts for other maintenance activities, and may alter the on-site hydrologic regime. These hydrologic alterations may affect special-status vegetation communities. Altered hydrology can allow for the establishment of non-native plants and/or invasion by Argentine ants, which can compete with native ant species that could be seed dispersers or plant pollinators. However, the water, and associated runoff, used during operation and maintenance activities will be contained within the proposed project impact footprint, and long-term indirect impacts associated with altered hydrology are not expected. Potential impacts would be reduced by design features that (1) contain operational water use, and associated runoff, within the proposed project impact footprint; (2) specify installation of drip-irrigated landscaping for the proposed project; and (3) ensure that landscape stock has been fumigated against ant infestation prior to transport to the project site.

Non-Native, Invasive Plant and Animal Species. The effects of non-native, invasive plant and animal species on jurisdictional aquatic resources are similar to those described in Section 5.1.2 for vegetation communities.

Increased Human Activity. The effects of increased human activity on jurisdictional resources are similar to those described in Section 5.1.2 for vegetation communities.

5.5 Habitat Connectivity and Wildlife Corridors

5.5.1 Direct Impacts on Habitat Connectivity and Wildlife Corridors

The significance of these potential impacts was determined through application of the County's Significance Guidelines, as described in Section 9.1, Guidelines for the Determination of Significance, of this report.

Temporary Direct Impacts

Impact WLC-1: Temporary Direct Impacts on Habitat Connectivity and Wildlife Corridors

In the absence of avoidance and mitigation measures, short-term, construction-related, or temporary direct impacts on habitat connectivity and wildlife corridors outside designated construction zones could occur from clearing, trampling, or grading of vegetation. These potential impacts could affect wildlife movement through these areas by reducing cover and food sources.

Permanent Direct Impacts

Impact WLC-2: Permanent Direct Impacts on Habitat Connectivity and Wildlife Corridors

Large-scale solar energy development has the potential to present barriers to movement for wildlife populations in the desert Southwest (Lovich and Ennen 2011). Research has been conducted on the effects of comparable solar

energy development projects on wildlife. Potential effects on wildlife include impediments to free movement, the creation of migration bottlenecks, and a reduction in effective winter range size (Lovich and Ennen 2011). For example, studies conducted by Sawyer et al. (2009) concluded that mule deer (*Odocoileus hemionus*) responded immediately to the construction of a large-scale energy development with no sign of acclimation during the 3 years of study. However, the solar panels and associated infrastructure on the proposed project are concentrated primarily in the old agricultural fields, which is consistent with Lovich and Ennen (2011) recommendations for places to concentrate solar projects. Additionally, the project design is consistent with the recommendations by the Las California Binational Conservation Initiative 2015, which recommends that renewable energy companies "site facilities on lands of lower ecological value, design road networks that minimize fragmentation, designate off-site conservation of land as mitigation for direct and indirect impacts of development, and establish conservation easements on the lands where facilities are sited" (Stallcup et al. 2015). The adjacent mitigation lands shown on Figure 5-3 will be placed in an open space easement. The project is primarily sited on the previously disturbed agricultural areas to reduce impacts to native vegetation.

There would be permanent direct impacts on up to 643.13 acres of the 1,356-acre project site. The project site currently functions as a large block of habitat which, after project development, would be converted to two dedicated wildlife corridors and a 435-acre biological open space easement. The remaining 278 acres of the project site would not be developed by the proposed project and would include right-of-way easements for Old Highway 80 an SDG&E easements and other land not included in the biological open space easement. The remaining open space is not proposed to be developed as part of the project, however, it will not be actively managed.

The project would require permanent fencing in five separate areas within the project site (Figure 1-2). The fencing will be 7 feet in height total, with a 6-foot-high chain-link perimeter fence and 1 foot of three-strand barbed wire along the top, and varying clearance from the ground surface. The 7-foot-tall fence, along with motion-detector lighting is likely to deter the coyotes, bobcats, and cougars that may move through the site from jumping over the fence and becoming stuck on the barbed wire. Small wildlife species (e.g., lizards and small mammals) would be able to access the site through openings in the gates, fence and beneath the fence, which would be raised off of the ground in multiple areas and would allow for small mammal movement.

Larger wildlife (e.g., coyotes, bobcats, cougars) could still move along the mesquite-dominated floodplain and unvegetated portion of Boundary Creek to access undeveloped lands on either side of the project site and to cross into Mexico at the open border to the east and west. Wildlife movement would be more restricted along the eastern side since there are fewer topographic features for cover; however, the undeveloped SDG&E easement between the fence lines, which is approximately 700 – 1,100 feet wide and over 4,000 feet long would allow uninterrupted movement from Boundary Creek to the undeveloped land to the east. Mule deer are not expected to utilize the easement due to lack of vegetative cover within the easement. It is likely that they will continue to utilize the open space on the western side of the railroad tracks which is dominated by mesquite. There is also land between Carrizo Gorge Road and I-8 that would allow movement for some wildlife species, particularly nocturnal wildlife. In addition, although not an ideal movement corridor, the approximately 60-foot wide border patrol road along the southern portion of the project site will continue to allow for wildlife movement. The project is setback 45 feet from the edge of the road along the southeastern portion of the site, gradually widening to 270 feet to the west, with a 100-foot buffer along the southwestern border.

5.5.2 Indirect Impacts on Habitat Connectivity and Wildlife Corridors

The significance of these potential impacts was determined through application of the County's Significance Guidelines, described in Section 9.1.

Temporary Indirect Impacts

Impact WLC-3: Temporary Indirect Impacts on Habitat Connectivity and Wildlife Corridors

Short-term indirect impacts on habitat connectivity and wildlife corridors could result from increased human activity and noise during construction. Project construction would likely take place during the daytime and would not affect wildlife species such as mammals that are most active in the evening and at night. Noise pollution is not anticipated to interfere with the nesting or breeding of any special-status species. The descriptions for impacts associated with human activity and noise are provided in Section 5.3.2.

Permanent Indirect Impacts

Permanent Indirect Impacts on Habitat Connectivity and Wildlife Corridors

Long-term indirect impacts to habitat connectivity and wildlife corridors could include noise and lighting.

Noise: There would be minimal increased human activity since the facilities would be unmanned. On-site operational noise sources associated with the proposed project would include pad-mounted inverters, transformers, and HVAC units cooling energy storage equipment (noise levels of 64 dBA at 50 feet) – all of which would be distributed across twenty-five (25) locations throughout the solar facility (see Figure 1-2). The electrical transformers within the switchyard would also generate relatively steady-state sources of continuous noise. Nocturnal wildlife would not be significantly impacted while foraging or moving between undeveloped habitat areas.

Lighting. Lighting for the project would be limited to motion detector lighting at the substation and site entry ways. Lighting would use bulbs that do not exceed 100 watts, and all lights would be shielded and directed downward to minimize any effects to the surrounding area and would be used only on an as-needed basis. Nighttime lighting would comply with the County of San Diego Light Pollution Code, also known as the Dark Sky Ordinance, Section 59.101 et seq. Additionally, lighting for the proposed project would be designed in accordance with the San Diego County Zoning Ordinance, Performance Standards, Sections 6320, 6322, and 6324, which guide performance standards for glare and control excessive or unnecessary outdoor light emissions. However, long-term lighting may deter nocturnal wildlife from moving between undeveloped habitat areas adjacent to the site.

6 Special-Status Species

6.1 Guidelines for the Determination of Significance

The County Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources (County of San Diego 2010a) are based on the criteria in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) and were used to analyze potential direct and indirect impacts on biological resources. The following guidelines for the determination of significance come directly from the County's guidelines (County of San Diego 2010a).

Guideline 4.1: Special Status Species

The project would have a substantial adverse effect, either directly or through habitat modifications, on a candidate, sensitive, or special status species listed in local or regional plans, policies, or regulations, or by the California Department of Fish and Game [now California Department of Fish and Wildlife] or U.S. Fish and Wildlife Service.

The following information should be evaluated to provide evidence to support a determination of impact significance.

A. The project would impact one or more individuals of a species listed as federally or state endangered or threatened.
B. The project would impact an on-site population of a County List A or B plant species, or a County Group I animal species, or a species listed as a state Species of Special Concern [SSC]. Impacts to these species are considered significant; however, impacts of less than 5 percent of the individual plants or of the sensitive species' habitat on a project site may be considered less than significant if a biologically-based determination can be made that the project would not have a substantial adverse effect on the local long-term survival of that plant or animal taxon.
C. The project would impact the local long-term survival of a County List C or D plant species or a County Group II animal species.
D. The project may impact arroyo toad aestivation, foraging or breeding habitat. Any alteration of suitable habitat within 1 kilometer (3,280 feet) in any direction of occupied breeding habitat or suitable stream segments (unless very steep slopes or other barriers constrain movement) could only be considered less than significant if a biologically-based determination can be made that the project would not impact the aestivation or breeding behavior of arroyo toads.
E. The project would impact golden eagle habitat. Any alteration of habitat within 4,000 feet of an active golden eagle nest could only be considered less than significant if a biologically-based determination can be made that the project would not have a substantially adverse effect on the long-term survival of the identified pair of golden eagles.
F. The project would result in the loss of functional foraging habitat for raptors. Impacts to raptor foraging habitat is considered significant; however, impacts of less than 5 percent of the raptor foraging habitat on a project site may be considered less than significant if a biologically-based determination can be made that the project would not have a substantial adverse effect on the local long-term survival of any raptor species.
G. The project would impact the viability of a core wildlife area, defined as a large block of habitat (typically 500 acres or more not limited to project boundaries, though smaller areas with particularly valuable

resources may also be considered a core wildlife area) that supports a viable population of a sensitive wildlife species or supports multiple wildlife species. Alteration of any portion of a core habitat could only be considered less than significant if a biologically-based determination can be made that the project would not have a substantially adverse effect on the core area and the species it supports.

H. The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would likely harm sensitive species over the long term. The following issues should be addressed in determining the significance of indirect impacts: increasing human access; increasing predation or competition from domestic animals, pests or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown to adversely affect sensitive species.

I. The project would impact occupied burrowing owl habitat.

J. The project would impact occupied cactus wren habitat, or formerly occupied coastal cactus wren habitat that has been burned by wildfire.

K. The project would impact occupied Hermes copper habitat.

L. The project would impact nesting success of the following sensitive bird species through grading, clearing, fire fuel modification, and/or other noise generating activities such as construction.

Species*	Breeding Season
Coastal cactus wren	February 15 to August 15
Coastal California gnatcatcher*	February 15 to August 15
Least Bell's vireo	March 15 to September 15
Southwestern willow flycatcher	May 1 to September 1
Tree-nesting raptors	January 15 to July 15
Ground-nesting raptors	February 1 to July 15
Golden eagle	January 1 to July 31
Light-footed clapper rail**	February 15 to September 30

* The breeding seasons listed in this table do not supersede implementing agreements with the Wildlife Agencies, Habitat Conservation Plans (HCPs), Habitat/Resource Management Plans (HMPs/RMPs), and Special Area Management Plans (SAMPs). For example, inside the MSCP Subarea Plan, the gnatcatcher breeding season is March 1, to August 15.

** The light-footed clapper rail is a CDFG fully-protected species and under the Fish and Game Code, CDFG does not allow "take" of fully-protected species.

6.2 Analysis of Project Effects

6.2.1 Project Effects Relevant to Guideline 4.1.A (Federally Listed and State-Listed Species)

No federally or state-listed plant species were observed or have potential to occur in the BSA.

One federally listed wildlife species was observed in the BSA (Quino checkerspot butterfly) and one state-listed species was observed within the BSA (tricolored blackbird).

Quino Checkerspot Butterfly

One Quino checkerspot butterfly was observed during a rare plant survey on April 10, 2019, by a biologist possessing a recovery permit for this species pursuant to Section 10(a)(1)(A) of the federal ESA. The observation was in the southwest corner of the BSA on a small hilltop nectaring on goldfields and redstem stork's bill. No Quino checkerspot butterflies were observed during the focused protocol surveys in 2019. There is a known Quino checkerspot population approximately 1 mile west of the project near Jacumba Peak. This individual was likely using the site for nectar while traveling between locations and/or investigating the hilltop. With the absence of host plants in close proximity to the Quino checkerspot butterfly observation, females would not stay and males would not stake out a territory. Any future use of this hilltop by Quino checkerspot butterflies would likely have the same result (nectar, investigate, and continue to another location). Since the known populations are located west of the project site, travel is assumed to be between the western side of the BSA and west to suitable habitat and known populations.

Two locations of Chinese houses (host plants for Quino checkerspot butterfly), each with approximately one to 19 individuals, were mapped on site in the northwest portion of the BSA (Figure 5-2).

The Proposed Project has been designed to avoid the hill where the Quino checkerspot butterfly was observed and the two locations of Chinese houses. The proposed project is located approximately 1.5 kilometers from the host plant locations. Therefore, there are no permanent direct impacts to Quino checkerspot butterfly. Due to the lack of host plants near the Quino checkerspot butterfly sighting, and the distance of the proposed solar facility from the hill (approximately 150 feet), no indirect impacts to this species is anticipated, such as dust, construction noise, lighting, etc. No work would be conducted within this area, and the hill is situated at an elevation higher than the impact area, which provides an additional buffer.

There are no direct or indirect impacts to Quino checkerspot butterfly.

Impact W-2 Impacts to Tricolored Blackbird

Tricolored blackbirds were observed foraging, but not nesting, in the southern portion of the BSA in April 2019. No tricolored blackbirds were observed in 2018 despite surveys conducted along the southern portion of the BSA. Tricolored blackbirds nest occasionally at the pond in Jacumba, approximately 0.5 miles west of the BSA. According to Beedy et al. (2018), tricolored blackbirds typically forage within 5 kilometers (3 miles) of a colony site. Therefore, Dudek reviewed the vegetation data (SANGIS 2019) within a 3-mile radius of the nesting site (located west of the BSA) to determine the amount of suitable foraging habitat available in the 3-mile foraging range. Based on potential foraging habitat described in Beedy et al. (2018), suitable foraging habitat includes grasslands, irrigated pasture, grain fields, shallow wetlands, and alkali scrub habitats (Beedy and Hamilton 1997; Beedy 2008; Meese 2013; Airola et al. 2015). There are approximately 2,100 acres of suitable grassland, agricultural, and alkali scrub foraging habitat in the project vicinity within the United States and up to an additional 4,400 acres of suitable habitat in Mexico within the 3-mile radius. Of the 2,100 acres of suitable available habitat, approximately 530 acres are within BLM, State, and other conserved and managed lands. Aerial review of land within the 3-mile radius buffer shows open flatter land suitable for tricolored blackbird foraging in Mexico. Additionally, biologists observed tricolored blackbirds flying back and forth between the United States and Mexico side of the border.

The proposed project will impact potential foraging habitat (refer to Table 5-3), approximately half of which is in the northern portion of the BSA where tricolored blackbirds were not observed. Of the total impacts to foraging

habitat, 48.52 acres of suitable foraging habitat would be hardscape (i.e., access roads and substation). Given the amount of available foraging habitat within 3 miles of the nest location in the United States, and additional foraging habitat within Mexico, impacts to potential foraging habitat in the Project site would not likely preclude this species from successfully nesting in the region.

A total of approximately 424.8 acres of suitable foraging habitat for tricolored blackbird occurs within the proposed biological open space easement within the Project site, including desert saltbush scrub, desert sink scrub, disturbed freshwater marsh, mesquite bosque, sonoran mixed woody and succulent scrub unvegetated channel, and fallow agriculture.

In addition, post-construction studies for solar projects have shown species that are known to forage in an area are likely to continue to forage in the area after construction (Sinha et al. 2018). Therefore, tricolored blackbirds may forage in areas within the proposed solar facility where seeding allows for herb growth and habitat for insects on which they forage.

A total of 593.5 acres of suitable foraging habitat would be directly impacted as a result of the Proposed Project (refer to Table 5-3). While potential direct impacts to tricolored blackbird are expected to be minimal, the County's guidelines state that any impact to a listed species is considered a significant impact, absent mitigation (**Impact W-2**). The proposed project includes habitat preservation (**M-BI-3**), which protects a biological open space easement to conserve special-status plant species and habitat for special-status species, and an RMP (**M-BI-4**), which provides the long-term management of the proposed on-site open space to conserve habitat. Permanent direct impacts on habitat for County Group 1 or state SSC species would be **less than significant with mitigation** because available foraging habitat in the surrounding area ensures food sources to sustain nesting birds.

6.2.2 Project Effects Relevant to Guideline 4.1.B (County-Designated Sensitive Species)

Special-Status Plant Species (County List A and B Species)

Impact SP-1: Temporary Direct Impacts on Special-Status Plant Species

Short-term, construction-related, or temporary direct impacts on special-status plants at the edge of the development footprint and non-impacted areas interface could primarily result from construction activities. There are no planned temporary impacts associated with the project. In the absence of avoidance and mitigation measures, impacts on special-status plants outside designated construction zones could occur from clearing, trampling, or grading. Potential temporary direct impacts on special-status plant species would be significant, absent mitigation (**Impact SP-1**). These short-term direct impacts would be mitigated to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur; and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits. The full text of these mitigation measures is presented in Section 6.4.

Impact SP-2: Permanent Direct Impacts on Special-Status Plant Species

There are direct impacts to two special-status species (see Table 5-2): pygmy lotus and sticky geraea. Direct impacts to pygmy lotus (1 individual) and sticky geraea (21 individuals) would be a significant impact, absent mitigation (**Impact SP-2**). Per County guidelines, impacts to County List A species can be mitigated at a 2:1 or 3:1 ratio, and impacts to County List B species will be mitigated at a 1:1 ratio (Table 6-1). Mitigation lands that support these species are designated for habitat preservation (**M-BI-3**) through a biological open space easement, which conserves special-status plant species and habitat for special-status species, and management through an RMP (**M-BI-4**), which provides the long-term management of the proposed on-site open space preserve to conserve sensitive biological resources, including special-status plant species. Additionally, in order to achieve the required mitigation ratio for pygmy lotus, **M-BI-3** requires mitigation for plants through a combination of (1) salvaging the plants located in proposed impact areas and replanting in suitable mitigation lands, and (2) establishment of additional plants to meet the mitigation requirements. Through mitigation measures **M-BI-3** and **M-BI-4**, permanent direct impacts to special-status plants are **less than significant**.

Table 6-1. Summary of Permanent Project Impacts to Special-Status Plants

Species	Regulatory Status: Federal/State/CRPR	Impacts to Number of Individuals	Mitigation Ratio	Mitigation Required (Individuals)	Plants in Proposed Open Space
County List A					
Pygmy lotus	None/None/1B.3	1	3:1	3	0
County List B					
Sticky geraea	None/None/2B.2	21	1:1	21	20
County List D					
Palmer's grapplinghook	None/None/4.2	--	--	0	4,446
Colorado Desert larkspur	None/None/4.3	--	--	0	250
Other Status					
Higgins' barberry	None/None/3.2	--	--	0	1

Notes:
CRPR (California Rare Plant Rank):
- CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
- CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
- CRPR 3: Plants about which more information is needed – a review list
- CRPR 4: Plants of limited distribution – a watch list

Threat Rank:
- .2: moderately threatened in California (20%–80% of occurrences threatened/moderate degree and immediacy of threat)
- .3: not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Special-Status Wildlife Species (County Group 1 or State SSC)

Impact W-1: Temporary Direct Impacts on Habitat for Special-Status Wildlife Species

Loss of County Group 1 or state SSC animals (i.e., California glossy snake, San Diego tiger whiptail, San Diego banded gecko, red diamond rattlesnake, Blainville's horned lizard, Cooper's hawk, sharp-shinned hawk [foraging habitat], Southern California rufous-crowned sparrow, burrowing owl, golden eagle, Bell's sage sparrow, Swainson's hawk, turkey vulture, Vaux's swift, northern harrier, loggerhead shrike, pallid bat, northwestern San Diego pocket

mouse, pallid San Diego pocket mouse, San Diego black-tailed jackrabbit, San Diego desert woodrat, Jacumba pocket mouse, and American badger) and/or suitable habitat from construction-related activities would result in short-term direct impacts that would be significant, absent mitigation (**Impact W-1**). The proposed project would include biological monitoring to avoid unintentional impacts on species and habitat (**M-BI-1**) and temporary construction fencing (**M-BI-2**), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits. Therefore, temporary direct impacts on habitat for County Group 1 or state SSC species would be **less than significant with mitigation**.

Impact W-2: Permanent Direct Impacts on Habitat for Special-Status Wildlife Species

Long-term or permanent direct impacts on special-status wildlife species (i.e., California glossy snake, San Diego tiger whiptail, San Diego banded gecko, red diamond rattlesnake, Blainville's horned lizard, Cooper's hawk, sharp-shinned hawk [foraging habitat], Southern California rufous-crowned sparrow, burrowing owl, golden eagle, Bell's sage sparrow, Swainson's hawk, turkey vulture, Vaux's swift, northern harrier, loggerhead shrike, northwestern San Diego pocket mouse, pallid San Diego pocket mouse, San Diego black-tailed jackrabbit, San Diego desert woodrat, Jacumba pocket mouse, and American badger) were quantified by comparing the MUP boundary with suitable habitat for wildlife species (Table 5-3). Implementation of the proposed project would result in the direct loss of habitat, including foraging habitat, for some of the County Group 1, Group 2, and/or SSC species, resulting in a significant impact, absent mitigation (**Impact W-2**). The proposed project includes habitat preservation (**M-BI-3**), which protects a biological open space easement to conserve habitat for special-status species, and an RMP (**M-BI-4**), which provides the long-term management of the proposed on-site open space preserve to conserve sensitive biological resources, including habitat for special-status wildlife species. The potential mitigation lands are shown on Figure 5-3, Potential Mitigation Areas. With preservation of on-site habitat, permanent direct impacts on habitat for County Group 1 or state SSC species would be **less than significant with mitigation**.

Golden Eagle

Two golden eagles were observed flying over the site during the 2019 Quino checkerspot butterfly surveys. They did not circle, forage, or land on any part of the project site. Golden eagles are known to nest in the region, including at Table Mountain, which is approximately 2 miles northeast of the BSA (USFWS 2019). The eastern portion of Round Mountain is located within the BSA and there is a golden eagle nest record on the northern side of Round Mountain. This nest was described as an intact cliff nest occupied by common ravens in 2012 (USFWS 2019). This nest location, along with other crags on Round Mountain, was surveyed in April 2018 and February 2019; ravens and red-tailed hawks were observed nesting in these areas. As described in Section 4.6, seven or more years with no nesting is a strong indicator that this territory has been abandoned. Aside from Round Mountain, there is no suitable nesting habitat (i.e., large trees or cliffs) in the BSA. Accordingly, there would be no impacts to nesting habitat associated with the proposed project. The proposed project would impact 642.0 acres of suitable foraging habitat for the species (Table 5-3).

Burrowing Owl

Burrowing owls were not found occupying the site during the breeding season. As described in Section 4.6.1, the two observations during 2018 and 2019 surveys indicate that the species may use a portion of the Project site in the winter. Both of the observations were located in the southeastern portion of the project site. The County defines occupied burrowing owl habitat as "any land that is used by burrowing owls for any reason, including foraging, or that is known to have been used at any time during the past three years. If burrowing owls are using

the habitat, it is considered Occupied Habitat for the calendar year of the observation or survey and the following three years." (County of San Diego 2010b). Therefore, the Proposed Project would result in impacts to 14.2 acres of occupied burrowing owl habitat (Figure 5-2), which are considered significant, absent mitigation. (**Impact W-2**) The proposed project includes habitat preservation (**M-BI-3**), which requires 1:1 mitigation for impacts to occupied burrowing owl habitat, and burrowing owl burrow avoidance (**M-BI-5**), which will avoid burrowing owl burrows and provide appropriate buffers as defined in CDFG 2012 and requires a burrowing owl management plan if burrowing owls are detected. With avoidance of habitat and active owl burrows, impacts would be **less than significant with mitigation**.

While the Project would impact existing suitable undeveloped foraging habitat, post-construction, burrowing owls potentially may still forage within the developed solar facility. The vegetation within the solar facility would be maintained at six inches for fire protection purposes. Thus, there is the potential burrowing owls may forage within the solar facility. For example, burrowing owls were observed perching on the ground and are likely to use some of the existing solar facility sites for foraging according to the Western Burrowing Owl Relocation Plan for the Maricopa Sun Solar Project in Kern County, California (Quad Knof 2014). Additionally, burrowing owls were detected during post-construction monitoring for the California Valley Solar Ranch (H.T. Harvey & Associates 2014) and Topaz Solar Farms (Althouse and Meade 2014) solar facilities.

The habitat assessment along the southern boundary of the Jacumba airport in 2020 (Appendix F) as well as aerial review of the land south of the border fence into Mexico indicates that burrowing owl would be more likely to occur in these areas compared to the disturbed habitat areas north of the occupied habitat. The lack of observations elsewhere within the BSA indicate that the southeast corner is at the outer edge of where they occur in this area. However, there are approximately 22 acres of disturbed habitat and other open, relatively flat habitat consisting of Sonoran mixed woody and succulent scrub, desert saltbush scrub and Sonoran mixed woody scrub in the southwest corner of the Project site that is being avoided and could be suitable habitat for burrowing owl based on the general flat topography and similar vegetation communities as the southeast corner. No signs of burrowing owls were recorded in this area during the focused surveys. This area is not being impacted by the Project and will be included within the mitigation lands (**M-BI-3**) providing more than a 1:1 mitigation for impacts to occupied burrowing owl habitat.

Impact W-3: Permanent Direct Impacts on Nesting Birds

As described in Section 5.3.1, Direct Impacts on Special-Status Wildlife Species, if any active nests or the young of nesting County Group 1 and/or SSC bird species are impacted through direct grading, these impacts would be significant, absent mitigation, based on the MBTA and Fish and Game Code (**Impact W-3**). It is recommended that clearing of vegetation occur outside of the typical nesting period for most bird species and raptors (i.e., clearing should occur outside the period of February 1–August 31, and as early as January 15 for some raptor species) to limit impacts on nesting birds and raptors. If clearing is required within the nesting period, a nesting bird survey would be conducted within 72 hours of proposed project implementation, as described in **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests. The proposed project could also result in direct impacts on birds during clearing and grubbing of vegetation in preparation for construction. A biological monitor would be required to be on site to flush wildlife from occupied habitat areas immediately prior to brush-clearing and earthmoving activities, thus reducing the potential for direct impacts (**M-BI-1**), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur. With these mitigation measures, impacts on nesting birds and raptors and other special-status species would be less than significant. Therefore, impacts to County Group 1 and/or SSC bird species would be **less than significant with mitigation**.

Impact W-4: Permanent Direct Impacts on Maternity Bat Roosts

Yuma myotis, pallid bat, and western small-footed myotis have a high potential to roost in the abandoned buildings on site, which will be demolished as part of the proposed project. If there were a maternity roost in a building, impacts on that roost site would be significant, absent mitigation (**Impact W-4**). The proposed project would include bat surveys and roost avoidance during the maternity roost season (March through August) or an exclusion plan (**M-BI-6**), which prevents direct loss of maternity roosts and indirect disturbance to active maternity roosts. Implementation of this measure would avoid potential impacts on a maternity roost; therefore, impacts would be **less than significant** with mitigation.

6.2.3 Project Effects Relevant to Guideline 4.1.C (County Designated Special-Status Species)

Special-Status Plant Species (County List C and D Species)

Impact SP-1: Temporary Direct Impacts on Special-Status Plant Species

There are no planned temporary impacts associated with the project. Short-term, construction-related, or temporary direct impacts on one special-status plant—Palmer's grapplinghook—could occur at the edge of the development footprint and the non-impacted areas interface could primarily result from construction activities such as dust. Palmer's grapplinghook is the only special-status plant that occurs within 300 feet of the development footprint. In the absence of avoidance and mitigation measures, impacts on Palmer's grapplinghook outside designated construction zones could occur from clearing, trampling, or grading. Potential temporary direct impacts on special-status plant species would be significant, absent mitigation (**Impact SP-1**). These short-term direct impacts would be mitigated to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits. The full text of these mitigation measures is presented in Section 6.4.

Impact SP-2: Permanent Direct Impacts on Special-Status Plant Species

No County List C plants were observed on site. There are no impacts to County List D plants (see Table 5-2).

Special-Status Wildlife Species (County Group 2 Species)

Impact W-1: Temporary Direct Impacts on Habitat for Special-Status Wildlife Species

Loss of County Group 2 or other special-status species (i.e., rosy boa, Costa's hummingbird, California horned lark, merlin, black-tailed gnatcatcher, western small-footed myotis, Yuma myotis, and mule deer) and/or suitable habitat from construction-related activities would result in short-term direct impacts that would be significant, absent mitigation (**Impact W-1**). The proposed project would include biological monitoring to avoid unintentional impacts on species and habitat (**M-BI-1**) and temporary construction fencing (**M-BI-2**), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits. With these mitigation measures, temporary direct impacts on habitat for County Group 2 would be reduced to **less than significant**.

Impact W-2: Permanent Direct Impacts on Habitat for Special-Status Wildlife Species

Long-term or permanent direct impacts on County Group 2 or other special-status wildlife species (i.e., rosy boa, Costa's hummingbird, California horned lark, merlin, black-tailed gnatcatcher, western small-footed myotis, Yuma myotis, and mule deer) were quantified by comparing the MUP boundary with suitable habitat for wildlife species (Table 5-3). Implementation of the proposed project would result in the direct loss of habitat, including foraging habitat, for some of the County of San Diego Group 2 or other special-status species, which would be a significant impact, absent mitigation (**Impact W-2**). The proposed project includes habitat preservation (**M-BI-3**), which protects a biological open space easement to conserve habitat for special-status wildlife species, and an RMP (**M-BI-4**), which provides the long-term management of the proposed on-site open space preserve to conserve sensitive biological resources, including special-status wildlife species. With preservation of on-site habitat, permanent direct impacts on habitat for County Group 2 and other special-status species would be **less than significant**.

Impact W-3: Permanent Direct Impacts on Nesting Birds

As described in Section 5.3.1, Direct Impacts on Special-Status Wildlife Species, if any active nests or the young of nesting County Group 2 or other special-status bird species are impacted through direct grading, these impacts would be significant, absent mitigation, based on the MBTA mitigation (**Impact W-3**). It is recommended that clearing of vegetation occur outside of the typical nesting period for most bird species and raptors (i.e., clearing should occur outside the period of February 1–August 31, and as early as January 15 for some raptor species) to limit impacts on nesting birds and raptors. If clearing is required within the nesting period, a nesting bird survey would be conducted within 72 hours of proposed project implementation, as described in **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests. The proposed project could also result in direct impacts on birds during clearing and grubbing of vegetation in preparation for construction. A biological monitor would be required to be on site to flush wildlife from occupied habitat areas immediately prior to brush-clearing and earthmoving activities, thus reducing the potential for direct impacts (**M-BI-1**), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur. With these mitigation measures, impacts on nesting birds and raptors and other special-status species would be less than significant. Therefore, impacts to County Group 2 or other special-status bird species would be **less than significant**.

Impact W-4: Permanent Direct Impacts on Maternity Bat Roosts

Yuma myotis, pallid bat, and western small-footed myotis have a high potential to roost in the abandoned buildings on site, which will be demolished as part of the proposed project. If there were a maternity roost in a building, impacts on that roost site would be significant, absent mitigation (**Impact W-4**). The proposed project would include bat surveys and roost avoidance during the maternity roost season (March through August) or an exclusion plan (**M-BI-6**), which prevents direct loss of maternity roosts and indirect disturbance to active maternity roosts. Implementation of this measure would avoid potential impacts on a maternity roost; therefore, impacts would be **less than significant** with mitigation.

6.2.4 Project Effects Relevant to Guideline 4.1.D (Arroyo Toad)

There are no known arroyo toad records in the BSA or vicinity, and there are no third-order stream channels present in the BSA. Therefore, the proposed project would not have an impact on arroyo toad aestivation, foraging, or breeding habitat.

6.2.5 Project Effects Relevant to Guideline 4.1.E (Golden Eagle)

There is a golden eagle nest record on the northern side of Round Mountain. This nest was described as an intact cliff nest in 2012 occupied by common ravens (USFWS 2019). This nest location, along with other crags on Round Mountain, was surveyed in April 2018 and February 2019. No golden eagles were observed on site; ravens and red-tailed hawks were observed nesting in these areas. As described in Section 4.6, seven or more years with no nesting is a strong indicator that this territory has been abandoned. Golden eagles are known to nest at Table Mountain, which is approximately 2 miles northeast of the BSA (USFWS 2019). Due to lack of recent nesting by golden eagles in this area, there would be **no project-related impacts** within 4,000 feet of an active golden eagle nest.

6.2.6 Project Effects Relevant to Guideline 4.1.F (Raptor Foraging Habitat)

Impact W-2: Permanent Direct Impacts on Habitat for Special-Status Wildlife Species

Foraging habitat for raptors is present throughout the BSA. The proposed project would result in impacts on more than 5% of the raptor foraging habitat, as shown in Table 5-3. Therefore, impacts on raptor foraging habitat would be a significant impact, absent mitigation (**Impact W-2**). Impacts on raptor foraging habitat would be mitigated to **less than significant** through habitat preservation (**M-BI-3**), which protects a biological open space easement to conserve habitat for special-status species including the out-of-kind mitigation for the vegetation communities that have similar species composition and habitat structure to provide suitable raptor foraging habitat (discussed further in Section 7.2.1), and management of suitable habitat for foraging raptors (**M-BI-4** (RMP)), which provides the long-term management of the proposed on-site open space preserve to conserve sensitive biological resources, including habitat for special-status wildlife species.

6.2.7 Project Effects Relevant to Guideline 4.1.G (Core Wildlife Area)

Impact WLC-1: Temporary Direct Impacts on Habitat Connectivity and Wildlife Corridors

Short-term, construction-related, or temporary direct impacts on potential foraging and breeding habitat for species that use the BSA (e.g., special-status birds) would primarily result from construction activities. In the absence of avoidance and mitigation measures, impacts on foraging and breeding habitat outside designated construction zones could occur from clearing, trampling, or grading. Potential temporary direct impacts on foraging and breeding habitat on site would be significant, absent mitigation (**Impact WLC-1**). However, these short-term, direct impacts would be mitigated to a **less than significant** level through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact WLC-2: Permanent Direct Impacts on Habitat Connectivity and Wildlife Corridors

The project site is included within a Core Wildlife Area (a large block of habitat that supports multiple wildlife species), even though the 1,355-acre property is bordered by the U.S./Mexico international border fence, which may exclude some larger wildlife from moving directly through the project area. The project site is also a linkage between two blocks of habitat located on either side of the project site.

The project would impact up to 643.13 acres of land within the 1,355-acre project site. This impact on a core wildlife area would be significant, absent mitigation (**Impact WLC-2**) (see Appendix E1 for the special-status wildlife species that were observed or have potential to occur on site). **M-BI-3** (habitat preservation a biological open space easement to conserve sensitive vegetation communities, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, would conserve suitable habitat through an on-site biological open space easement. The biological open space will preserve in perpetuity 435 acres of continuous habitat, located immediately to preserve lands located the west of the project site. The special-status wildlife species commonly observed on site and the non-special-status wildlife species that occur are relatively common in the area (e.g., San Diego black-tailed jackrabbit and loggerhead shrike), and conservation of habitat would reduce potential adverse effects on a core area and the species it supports to **less than significant** .As discussed in Section 5.5.1, the wide SDG&E easements located within the central portion of the site allow for wildlife to continue to move through the area. Additionally, there will be a 50 to 100-foot wide opening in the fence north of the easement to allow for wildlife moving southeast through the site to access the easement corridor (**M-BI-3**). See Section 9 for expanded discussion on wildlife corridors.

6.2.8 Project Effects Relevant to Guideline 4.1.H (Indirect Impacts)

Special-Status Plant Species

Impact SP-3: Temporary Indirect Impacts on Special-Status Plant Species

Most of the indirect impacts on vegetation communities described in Section 5.1.2 can also affect special-status plants. Potential short-term or temporary indirect impacts on special-status plant species in the project site would primarily result from construction activities and would include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants (including herbicides). These impacts would be significant, absent mitigation (**Impact SP-3**). **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-7** (biological monitoring of SWPPP), which requires a variety of BMPs which would protect open space habitat, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, and **M-AQ-2** (fugitive dust control plan) which prevents construction-related impacts to the viability of special-status plants by requiring soil stabilizers, watering, and other dust-control methods during construction activities, described in Section 6.4, would mitigate these impacts to **less than significant**.

Impact SP-4: Permanent Indirect Impacts on Special-Status Plant Species

Permanent indirect impacts could result from the proximity of the proposed project to special-status plants after construction. Permanent indirect impacts that could affect special-status plant species include generation of chemical pollutants, altered hydrology, non-native invasive species, increased human activity, and alteration of the natural fire regime. Each of these potential indirect impacts is discussed in Section 5.1.2.2. Special-status plant species at the edge of the preserve/development interface could be impacted by permanent indirect impacts such as those previously listed.

These impacts would be significant, absent mitigation (**Impact SP-4**). Mitigation measures **M-BI-3** (habitat preservation), which protects a biological open space easement to conserve special-status plant species and habitat for special-status species, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space preserve to conserve sensitive biological resources, including special-status plant species, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, and **M-BI-10** (Operations and Maintenance [O&M] signage), which requires signage prohibiting operation and maintenance personnel from activities that could indirectly affect wildlife or plants, and **M-WF-1** (fire protection plan [FPP]), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance, described in Section 6.4, would mitigate these impacts to **less than significant**.

Special-Status Wildlife Species

Impact W-5: Temporary Indirect Impacts on Special-Status Wildlife Species

Short-term, construction-related, or temporary indirect impacts on avian foraging and wildlife access to foraging or nesting would primarily result from construction activities. These impacts would be significant, absent mitigation (**Impact W-5**). Indirect impacts on sensitive bird species may occur if clearing of vegetation is conducted during the nesting season for MBTA protected species (generally January 15 through August 31). **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests, **M-BI-7** (biological monitoring of SWPPP), which requires monitoring of a variety of BMPs to protect open space habitat and limits vehicle speeds to reduce potential collisions with wildlife species, and **M-BI-11** (noise reduction), which prevents disruption of wildlife species' behavior and indirect disturbance to active nests, and **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of vegetation communities by requiring soil stabilizers, watering, and other dust-control methods during construction activities, described in Section 6.4, would mitigate these impacts to **less than significant**.

Impact W-6: Permanent Indirect Impacts on Special-Status Wildlife Species

Potential long-term or permanent indirect impacts on special-status wildlife species would include non-native, invasive plant and animal species introduction; habitat fragmentation; increased human activity; alteration of the natural fire regime; altered hydrology; and lighting. Lighting for the project would be limited to motion detector lighting at the substation and site entry ways and would be shielded and directed downward. Therefore, lighting would have a **less than significant** impact on wildlife. As described in Section 5.3.2, only four proposed utility poles would provide perches from which avian species may forage, this is considered a minor risk for collision due to the small number of poles and **less than significant** impacts.

All special-status wildlife species at the open space/development interface would potentially be impacted by indirect impacts. These impacts would be significant, absent mitigation (**Impact W-6**). **M-BI-3** (habitat preservation), which protects a biological open space easement to conserve habitat for special-status species, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including habitat for special-status wildlife species, **M-BI-8** (prevention of chemical

pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, **M-BI-10** (O&M signage), which requires signage prohibiting operation and maintenance personnel from activities that could indirectly affect wildlife or plants, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance, described in Section 6.4, would mitigate these impacts to **less than significant**.

6.2.9 Project Effects Relevant to Guideline 4.1.I (Burrowing Owl)

Impact W-2: Permanent Direct Impacts to Occupied Burrowing Owl Habitat

As described in Section 3.3.2, Burrowing Owl Habitat Assessment and Focused Surveys, a habitat assessment and subsequent focused surveys for burrowing owl were conducted on the project site in 2018 by Dudek biologists. During these surveys, one dead burrowing owl was observed in the vicinity of a burrow showing burrowing owl activity (e.g., pellets, whitewash, claw marks at the entrance). Biologists did not detect any other fresh burrowing owl sign or activity at/near the burrow or around the site during subsequent focused surveys. One burrowing owl was observed once in March 2019 during the Quino checkerspot butterfly surveys, and a burrow was observed in April 2019 in the same area. Therefore, the southeast corner of the project site is considered occupied burrowing owl habitat. However, it should be noted that subsequent visits to the occupied habitat in January 2020 did not detect any burrowing owls or burrowing owl sign.

There are impacts to 14.2 acres of occupied burrowing owl habitat (see Section 5.3.1), which are considered significant, absent mitigation (**Impact W-2**). The proposed project includes habitat preservation (**M-BI-3**), which requires 1:1 mitigation for impacts to occupied burrowing owl habitat. Pre-construction surveys for nesting birds or wintering birds (see **M-BI-5**), prevents direct loss of active nests and indirect disturbance to active nests, and requires a burrowing owl management plan if burrowing owls are detected. This mitigation measure also requires take avoidance surveys during the non-breeding season, and implementation of avoidance and minimization measures. This measure will ensure there are no impacts to individuals and/or additional suitable burrows that may have developed. If owls are discovered within the CDFW's 2012 guideline buffer limits during the pre-construction surveys, then a burrowing owl management plan would need to be written and approved by the County and CDFW. Table 6-2 provides the recommended restricted activity dates and setback distances around occupied burrowing owl burrows for varying levels of disturbance (CDFG 2012). These mitigation measures would mitigate these impacts to **less than significant**.

Table 6-2. Recommended Restricted Activity Dates and Setback Distances by Level of Disturbance for Burrowing Owls

Location	Time of Year	Level of Disturbance (Meters)		
		Low	*Medium*	*High*
Nesting sites	April 1–August 15	200	500	500
Nesting sites	August 16–October 15	200	200	500
Nesting sites	October 16–March 31	50	100	500

Source: CDFG 2012.

6.2.10 Project Effects Relevant to Guideline 4.1.J (Coastal Cactus Wren)

The project site is outside of the' range for coastal cactus wren. Therefore, no impacts relating to this guideline would occur.

6.2.11 Project Effects Relevant to Guideline 4.1.K (Hermes Copper Butterfly)

No Hermes copper butterflies (*Lycaena hermes*) have been detected in the project area. The larval host plant (i.e., true limiting factor), spiny redberry (*Rhamnus crocea*), has not been detected during biological surveys. Based on the lack of suitable habitat for this species, the project area is not considered occupied Hermes copper butterfly habitat. Therefore, no impacts related to this guideline would occur.

6.2.12 Project Effects Relevant to Guideline 4.1.L (Sensitive Bird Nesting)

Impact W-2: Permanent Direct Impacts on Habitat for Special-Status Wildlife Species

The BSA contains moderately suitable habitat for tree-nesting raptors (mesquite bosque), as well as some rocky outcrops and poles. Red-tailed hawks were observed nest building on one of the telephone poles and have also been observed nesting in the rocky outcrops on Round Mountain (see Figure 5-2 for nest locations). Impacts on the nesting success of tree-nesting raptors (i.e., red-tailed hawk) as a result of habitat removal associated with the proposed project are anticipated. There is moderate potential nesting for ground-nesting raptors (i.e., northern harrier), but this species has only been observed foraging on site and the habitat is marginal and composed primarily of Russian thistle and other weeds. Northern harriers typically nest in tall grasses and forbs in marsh/wetland type habitats (Zeiner et al. 1990a; Unitt 2004). Permanent direct impacts on vegetation communities are described in Table 5-1. Potential impacts on the nesting success of tree- and/or ground-nesting raptors associated with the loss of suitable nesting habitat would be significant, absent mitigation (**Impact W-2**). The loss of suitable nesting habitat would be mitigated to **less than significant** by habitat preservation and management of suitable nesting habitat for wildlife species by providing large areas of diverse habitat types where birds can nest away from short-term construction activities (**M-BI-3,** which protects a biological open space easement to conserve habitat for special-status wildlife species, and **M-BI-4** [RMP], which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including special-status wildlife species).

Impact W-5: Temporary Indirect Impacts on Special-Status Wildlife Species

Temporary indirect impacts on avian foraging and wildlife access to foraging or nesting would primarily result from construction activities (**Impact W-5**); these impacts are discussed in Sections 5.3.2 and 6.2.8, and are significant, absent mitigation. Mitigation measures for temporary indirect impacts include **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring of a variety of BMPs to protect open space habitat and limits vehicle speeds which would reduce potential

collisions with wildlife species, **M-BI-10** (O&M signage), which requires signage prohibiting operation and maintenance personnel from activities that could indirectly affect wildlife or plants, and **M-BI-11** (noise reduction), which prevents disruption of wildlife species' behavior and indirect disturbance to active nests, and **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of vegetation communities by requiring soil stabilizers, watering, and other dust-control methods during construction activities. These measures would mitigate these impacts to **less than significant.**

Due to lack of suitable habitat or range for coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), coastal California gnatcatcher (*Polioptila californica californica*), and light-footed clapper rail (*Rallus longirostris levipes*), these species are not expected to nest in the BSA (including the MUP boundary); therefore, **no impact** on the nesting success of those species would result. See Appendix E2 for potential to occur determinations. Impacts on burrowing owl are addressed in Section 6.2.2.

6.3 Cumulative Impact Analysis

Cumulative impacts are not assessed in this document; they are discussed thoroughly in the proposed project's EIR.

6.4 Mitigation Measures and Design Considerations

M-BI-1 Biological Monitoring.

(a) In order to prevent inadvertent disturbance to sensitive resource areas outside the approved area of impact, a County of San Diego (County)-approved biologist (Project Biologist) shall be contracted to perform biological monitoring during all grading, clearing, grubbing, trenching, and construction activities.

1. The Project Biologist shall perform the monitoring duties before, during, and after construction pursuant to the most current version of the County *Biological Report Format and Requirement Guidelines*. The contract provided to the County shall include an agreement that this will be completed, and a memorandum of understanding between the biological consulting company and the County shall be executed. The contract shall include a cost estimate for the monitoring work and reporting. In addition to performing monitoring duties pursuant to the most current version of the County *Biological Report Format and Requirement Guideline*s, the Project Biologist shall also perform the following duties:
    a. Attend the pre-construction meeting with the contractor and other key construction personnel prior to clearing, grubbing, or grading to reduce conflict between the timing and location of construction activities with other mitigation requirements (e.g., seasonal surveys for nesting birds).
    b. Conduct meetings with the contractor and other key construction personnel describing the importance of restricting work to designated areas prior to clearing, grubbing, or grading and clarifying that the Project Biologist has the authority to halt work that could harm or harass a protected species.
    c. Review and/or designate the construction area in the field with the contractor in accordance with the final grading plan prior to clearing, grubbing, or grading.

d. Discuss procedures/training for minimizing harm to or harassment of wildlife encountered during construction with the contractor and other key construction personnel prior to clearing, grubbing, or grading.

e. Conduct a field review of the staking to be set by the surveyor, designating the limits of all construction activity prior to clearing, grubbing, or grading.

f. Supervise and monitor vegetation clearing, grubbing, and grading to ensure against direct and indirect impacts on biological resources that are intended to be protected and preserved.

g. Flush special-status species (i.e., avian or other mobile species) from occupied habitat areas immediately prior to brush-clearing and earthmoving activities. If brush-clearing and earth-moving activities take place within the bird breeding season, flushing shall not occur in an area identified as having an active nest and thus resulting in a potential take of a species.

h. Verify that grading plans include a stormwater pollution prevention plan (SWPPP) (if required pursuant to provisions of the State Water Resources Control Board 2009-0009-DWQ Construction General Permit, or equivalent applying the standards set forth in the County of San Diego Stormwater Standards Manual) to address hydrology impacts; see **M-BI-7**.

i. Periodically monitor the construction site to see that dust is minimized according to the fugitive dust control plan and that temporarily impacted areas are revegetated as soon as possible.

j. Periodically monitor the construction site to verify that artificial security light fixtures are directed away from open space and are shielded.

k. Oversee the construction site so that cover and/or escape routes for wildlife from excavated areas are provided on a daily basis during vegetation clearing, grubbing, and grading. All steep trenches, holes, and excavations during construction shall be covered at night with backfill, plywood, metal plates, or other means, and the edges covered with soils and plastic sheeting such that small wildlife cannot access them. Soil piles shall be covered at night to prevent wildlife from burrowing in. The edges of the sheeting shall be weighted down with sandbags. These areas may also be fenced to prevent wildlife from gaining access. Exposed trenches, holes, and excavations shall be inspected twice daily (i.e., each morning and prior to sealing the exposed area at the end of the day) by a qualified biologist to monitor for wildlife entrapment. Excavations shall provide an earthen ramp to allow for a wildlife escape route.

l. Except as stated otherwise herein, biological monitoring is daily during vegetation clearing, grubbing and grading. Once the PV field construction commences, the monitoring shall be weekly.

2. The cost of the monitoring shall be added to the grading bonds or bonded separately with the County Planning and Development Service (PDS).

Documentation: The Applicant shall provide a copy of the biological monitoring contract, cost estimate, and MOU to the PDS. Additionally, the cost amount of the monitoring work shall be added to the grading bond cost estimate.

Timing: Prior to approval of any grading and or improvement plans and issuance of any grading or construction permits.

Monitoring: The PDS shall review the contract, MOU, and cost estimate or separate bonds for compliance with this condition. The cost estimate should be forwarded to the Project

manager, for inclusion in the grading bond cost estimate, and grading bonds. The DPW/PDS shall add the cost of the monitoring to the grading bond costs.

(b) In order to ensure that the biological monitoring occurred during the grading phase of the Project, a final biological monitoring report shall be prepared. The Project Biologist shall prepare a final biological monitoring report. The report shall substantiate the supervision of the grading activities, and confirm that grading or construction activities did not impact any additional areas or any other sensitive biological resources. The report shall conform to the County *Report Format Guidelines for Biological Resources*, and include the following items:

a. Photos of the fencing or temporary flagging that was installed during the trenching, grading, or clearing activities

b. Monitoring logs showing the date and time that the monitor was on site

c. Photos of the site after the grading and clearing activities.

Documentation: The Project Biologist shall prepare the final report and submit it to the PDS for review and approval.

Timing: Prior to any occupancy, final grading release, or use of the premises in reliance of this permit, the final report shall be approved.

Monitoring: The PDS shall review the final report for compliance with this condition and the report format guidelines. Upon approval of the report, PDS shall inform DPW that the requirement is complete and the bond amount can be relinquished. If the monitoring was bonded separately, then PDS shall inform the applicant to release the bond back to the Applicant.

(c) Compliance with this measure shall be required during decommissioning activities.

M-BI-2 **Temporary Construction Fencing.** Prior to issuance of permits, including clearing, grubbing, grading, and/or construction permits, the project applicant or its designee shall install fencing wherever the limits of grading are adjacent to sensitive vegetation communities or other biological resources, as identified by the Project Biologist. Fencing shall remain in place during all construction activities. All temporary fencing shall be shown on plans. Prior to release of grading and/or improvement bonds, a qualified biologist shall provide evidence to the satisfaction of the Director of the San Diego County Department of Planning and Development Services (or his/her designee) that work was conducted as authorized under the approved permits and associated plans.

M-BI-3 **Habitat Preservation.** In order to mitigate for impacts to loss of sensitive vegetation communities, plant and wildlife species habitat, special status plant species, burrowing owl occupied habitat, and wildlife movement, the applicant shall provide an on-site biological open space easement.

(a) In order to protect sensitive biological resources, pursuant to the Resource Protection Ordinance (RPO) and California Environmental Quality Act, a biological open space easement will be granted over up to 435.00 acres of sensitive vegetation communities, special-status plant species, and habitat for special-status species. The project is estimated to impact sensitive vegetation communities that require mitigation as summarized in the following table.

Vegetation Community/Land Cover	Ratio	Permanent Direct Impacts (Acres)	Required Mitigation (Acres)	Biological Open Space Easement (Acres)
*Desert saltbush scrub	2:1	50.39	100.78	4.69
*Desert sink scrub	3:1	—	—	12.43
*Disturbed freshwater marsh	3:1	—	—	0.08
*Mesquite bosque	3:1	2.64	7.92	126.12
*Sonoran mixed woody scrub	1:1	—	—	139.33
*Sonoran mixed woody and succulent scrub	1:1	72.85	72.85	132.05
*Tamarisk scrub	3:1	1.11	3.33	—
*Non-wetland waters of the United States/state	1:1	—	—	0.78
Fallow agriculture[1]	0.5:1	467.63	233.82	9.35
Disturbed habitat	N/A	27.27	—	10.17
Urban/developed	N/A	21.24	—	<0.01
Total	—	**643.13**	**418.70**	**435.00**

Note: An asterisk (*) marks land cover types for which the County of San Diego (2010a) requires mitigation.
[1] The fallow agriculture is considered raptor foraging habitat mitigated at a 0.5:1 mitigation ratio.

This biological open space easement shall mitigate for project impacts to sensitive vegetation communities and habitat for wildlife species, thereby preserving compensatory habitat that provides equal or greater benefit to plant and wildlife species. This biological open space easement will be granted to the County of San Diego (County). Granting of this open space authorizes the County and its agents to periodically access the land to perform management and monitoring activities for the purposes of species and habitat conservation. This easement is for the protection of biological resources and prohibits all of the following on any portion of the land subject to said easement: grading; excavation; placement of soil, sand, rock, gravel, or other material; clearing of vegetation; construction, erection, or placement of any building or structure; vehicular activities; trash dumping; or use for any purpose other than as open space. Granting of this open space authorizes the County and its agents to periodically access the land to perform management and monitoring activities for the purposes of species and habitat conservation. The only exceptions to this prohibition are (1) vegetation clearing by hand, by written order of the fire authority for reduction of an identified fire hazard; (2) activities conducted pursuant to an approved revegetation or resource management plan; (3) vector control by written order of the County; and (4) construction, use, and maintenance of approved multi-use, non-motorized trails. No trails have been approved as part of this Project and would require subsequent environmental review and approval by PDS. Permanent signage indicating the area is a biological open space will be required and will be installed by the developer.

Documentation: The applicant shall prepare the draft plats and legal descriptions of the easements, then submit them for preparation and recordation with the DGS, and concurrence with PDS, and pay all applicable fees associated with preparation of the documents.

Timing: Prior to approval of any plan or issuance of any permit, and prior to use of the premises in reliance of this permit the easements shall be recorded.

Monitoring: The DGS shall prepare and approve the easement documents and send them to PDS for pre-approval. The PDS shall pre-approve the language and estimated location of the easements before they are released to the applicant for signature and subsequent recordation. Upon Recordation of the easements, DGS shall forward a copy of the recorded documents to PDS for satisfaction of the condition.

(b) **Special-Status Plants.** Mitigation shall be provided for one pygmy lotus (County List A) and 21 sticky geraea individuals (County List B). County List A plant species will be mitigated at a 3:1 ratio, and County List B species will be mitigated at a 1:1 mitigation ratio. Mitigation for these plants shall be achieved through a combination of (1) salvaging the plants located in proposed impact areas and replanting in suitable mitigation lands, and (2) establishment of additional plants to meet the mitigation requirements. The Resource Management Plan (RMP) for the biological open space easement shall include the required measures to ensure viability of the transplanted and established individuals. The RMP (see M-BI-4) will include the locations of the plant restoration. The RMP will be the basis for monitoring and mitigation activities for the entire biological open space, including locations of plant mitigation.

Documentation: The applicant shall prepare an RMP and submit it to PDS and pay all applicable review fees.

Timing: Prior to approval of any plan or issuance of any permit, and prior to use of the premises in reliance of this permit the easements shall be recorded.

Monitoring: A RMP Annual Report will be submitted to the County along with the submittal fee to cover County staff review time.

(c) **Burrowing owl occupied habitat**. Based on mitigation ratios provided in Table 1 of the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County (Attachment A, County of San Diego 2010b), the project is required to provide 1:1 mitigation ratio for impacts to occupied burrowing owl habitat. Impacts to burrowing owl habitat will be mitigated by dedicating 22 acres of suitable burrowing owl habitat as an on-site biological open space easement. This acreage is included in the overall up to 435-acre biological open space easement. This area is comprised of open, relatively flat habitat which contains similar vegetation communities as the impacted habitat. This biological open space easement shall mitigate for project impacts to occupied burrowing owl habitat. Refer to M-BI-3(a) which describes the biological open space easement requirements.

(d) **Wildlife Corridor Access.** The project shall provide a 50 to 100 foot opening in the perimeter fence north of the SDG&E easement to allow for wildlife moving within the easement corridor or north of the easement to move in and out of the easement. The opening in the fence will allow wildlife traveling along the fence line to find a break in the fencing leading them into the larger wildlife corridor. This opening in the fence shall be provided and maintained for the life of the project.

Documentation: The fencing on the construction plans shall show an opening in the perimeter fencing as described above. The applicant shall install the project fencing or walls as indicated

above and provide site photos and a statement from a California Registered Engineer, or licensed surveyor that the fencing has been installed to provide the required opening.

Timing: Prior to approval of any plan or issuance of any permit, and prior to use of the premises in reliance of this permit the easements shall be recorded.

Monitoring: The *[PDS, PCC]* shall review the photos and statement for compliance with this condition.

M-BI-4 **Resource Management Plan (RMP).** In order to provide for the long-term management of the proposed on-site biological open space, an RMP will be prepared and implemented. The final RMP cannot be approved until the following has been completed to the satisfaction of the Director of the San Diego County Department of Planning & Development Services as follows:

1. The plan will be prepared and approved pursuant to the most current version of the County of San Diego (County) Biological Report Format and Content Requirements.
1. The habitat land to be managed will be owned by a land conservancy or equivalent.
2. Open space easements will be dedicated to the County in perpetuity, unless conveyed to another public agency subject to approval by the Director of PDS.
3. A resource manager will be selected and approved, with evidence provided demonstrating acceptance of this responsibility.
4. The RMP funding mechanism to fund annual costs for basic stewardship shall be identified and approved by the County. The RMP funding mechanism will be identified and adequate to fund annual costs for implementation; typically determined by a Property Analysis Record as a non-wasting endowment.
5. A contract between the applicant and County will be executed for the implementation of the RMP.

Documentation: The applicant shall prepare an RMP and submit it to PDS and pay all applicable review fees.

Timing: Prior to approval of any plan or issuance of any permit, and prior to use of the premises in reliance on this permit, the RMP shall be approved.

Monitoring:: The PDS shall review the RMP for compliance with the content guidelines, the conceptual RMP, and this condition.

M-BI-5 This mitigation measure serves to avoid take of birds protected under the Migratory Bird Treaty Act and California Fish and Game Code during the nesting season (M-BI-5(a)) and take avoidance for burrowing owls during the breeding (and non-breeding season (M-BI-5(b)).

(a) **Nesting Bird Survey.** To avoid any direct impacts on raptors and/or any migratory birds protected under the Migratory Bird Treaty Act and California Fish and Game Code, removal of habitat that supports active nests on the proposed area of disturbance shall occur outside the nesting season for these species (which is January 15 through August 31, annually). If construction work must occur during the avian breeding season (January 15 to August 31, annually), the applicant shall:

1. Work with the County, CDFW and the USFWS to prepare a Nesting Bird Management, Monitoring, and Reporting Plan (NBMMRP) to address avoidance of impacts to nesting birds.
    a. The applicant(s) will submit to the agencies the NBMMRP (see following for details) for review and approval prior to commencement of the project during the breeding season. The NBMMRP should include the following:
    b. Nest survey protocols describing the nest survey methodologies
    c. A management plan describing the methods to be used to avoid nesting birds and their nests, eggs, and chicks
    d. A monitoring and reporting plan detailing the information to be collected for incorporation into a regular Nest Monitoring Log (NML) with sufficient details to enable USFSW and CDFW to monitor the applicant's compliance with Fish and Game Code Sections 3503, 3503.5, 3511, and 3513
    e. A schedule for the submittal (usually weekly) of the NML
    f. Standard buffer widths deemed adequate to avoid or minimize significant project-related edge effects (disturbance) on nesting birds and their nests, eggs, and chicks
    g. A detailed explanation of how the buffer widths were determined.
    h. All measures the applicant will implement to preclude birds from utilizing project-related structures (i.e., construction equipment, facilities, or materials) for nesting.
6. Conduct preconstruction nesting bird surveys within 72 hours of construction-related activities; conduct preconstruction survey sweeps immediately prior to ground-disturbing activities; and implement appropriate avoidance measures for identified nesting birds in the NBMMRP. Resurvey, if construction activities are halted for ten consecutive days.
7. To determine presence of nesting birds that the project activities may affect, surveys shall be conducted beyond the project area—300 feet for passerine birds and 500 feet for raptors. The survey protocols shall include a detailed description of methodologies utilized by CDFW-approved avian biologists to search for nests and describe avian behaviors that indicate active nests. The protocols shall include but are not limited to the size of the project area being surveyed, method of search, and behavior that indicates active nests.
8. Each nest identified in the project area shall be included in the NML. The NMLs should be updated daily and submitted to the CDFW weekly. Since the purpose of the NMLs is to allow the CDFW to track compliance, the NMLs shall include information necessary to allow comparison between nests protected by standard buffer widths recommended for the project (300 feet for passerine birds, 500 feet for raptors) and nests whose standard buffer width was reduced by encroachment of project-related activities. The NMLs shall provide a summary of each nest identified, including the species, status of the nest, buffer information, and fledge or failure data. The NMLs shall allow for tracking the success and failure of the buffers and will provide data on the adequacy of the buffers for certain species.
9. The applicant(s) will rely on its avian biologists to determine the appropriate standard buffer widths for nests within the project corridor/footprint to employ based on the sensitivity levels of specific species or guilds of avian species. The determination of the standard buffer widths shall be site- and species-/guild-specific and data-driven and not

based on generalized assumptions regarding all nesting birds. The determination of the buffer widths shall consider the following factors:

a. Nesting chronologies
b. Geographic location
c. Existing ambient conditions (human activity within line of sight—cars, bikes, pedestrians, dogs, noise)
d. Type and extent of disturbance (e.g., noise levels and quality— punctuated, continual, ground vibrations—blasting-related vibrations proximate to tern colonies are known to make the ground-nesting birds flush the nests)
e. Visibility of disturbance
f. Duration and timing of disturbance
g. Influence of other environmental factors
h. Species' site-specific level of habituation to the disturbance.

10. Application of the standard buffer widths shall avoid the potential for project-related nest abandonment and failure of fledging and minimize any disturbance to the nesting behavior. If project activities cause or contribute to a bird being flushed from a nest, the buffer must be widened. This measure does not apply to nests that are started on construction equipment or panels or supporting structures.

Documentation: The Project Biologist shall prepare the final report and submit it to the PDS for review and approval.

Timing: Prior to any occupancy, final grading release, or use of the premises in reliance of this permit, the final report shall be approved.

Monitoring: The PDS shall review the final report for compliance with this condition and the report format guidelines. Upon approval of the report, PDS shall inform the applicant that the requirement is complete and the bond amount can be relinquished. If the monitoring was bonded separately, then the PDS shall inform DPW to release the bond back to the applicant.

(b) **Burrowing Owl Take Avoidance Surveys.** Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed (CDFG 2012). Surveys must be completed no less than 14 days prior to the initiating ground disturbance activities.

1. If burrowing owls are detected during the breeding season (February 1 through August 1) surveys, a Burrowing Owl Management Plan will need to be written and approved by the County and the California Department of Fish and Wildlife before construction continues. The Plan shall include, at a minimum: 1) measures to protect burrowing owls during grading; 2) description of passive or active burrowing relocation during the non-breeding season; and 3) description of BMPs to implement during construction (e.g., ensure that the ends of all pipes and culverts are covered when they are not being worked on, and covering rubble piles, dirt piles, ditches, and berms). Table 6-2, Recommended Restricted

Activity Dates and Setback Distances by Level of Disturbance for Burrowing Owls, provides the CDFW-recommended restricted activity dates and setback distances around occupied burrowing owl nests for varying levels of disturbance (CDFG 2012).

2. If construction activities occur during the non-breeding season for burrowing owl (1 September – 31 January), a biologist shall conduct a take avoidance survey, following the methods described in the Burrowing Owl Staff Report (CDFG 2012). The take avoidance survey(s) can be conducted between 14 days and 24 hours prior to initiating ground disturbance activities; however, time lapses between project activities may require subsequent surveys within 24 hours prior to ground disturbance. If any burrowing owls are found during these surveys, avoidance and minimization measures must be implemented.

   The following avoidance and minimization measures shall be implemented:

   a. Avoid working within 50 meters (160 feet) from the occupied burrow during the non-breeding season;
   b. Avoid direct destruction of occupied burrows during the non-breeding season until the burrowing owl has vacated the burrow (determined through monitoring of the burrow);

   If these measures cannot be implemented, the applicant shall obtain written approval of an accepted plan (written or verbal) from the County and the California Department of Fish and Wildlife before construction continues. The plan shall include 1) identification of artificial burrow sites, 2) passive relocation methods, 3) monitoring and management of the artificial burrow site, and 4) reporting.

   Documentation: The Project Biologist shall prepare the final survey report and/or Burrowing Owl Management Plan and submit it to the PDS for review and approval.

   Timing: Prior to final grading release, or use of the premises in reliance of this permit, the final survey report and/or Burrowing Owl Management Plan shall be approved.

   Monitoring: The PDS shall review the final survey report and/or Burrowing Owl Management Plan for compliance with this condition and the report format guidelines. Upon approval of the report, PDS shall inform the applicant that the requirement is complete and the bond amount can be relinquished.

(c) In order to avoid impacts to nesting birds and burrowing owls during decommissioning the Project operator shall be required to implement the measures outlined in subsections (a) and (b) prior to undertaking decommissioning activities.

M-BI-6 **Bat Surveys and Roost Avoidance or Exclusion.** To determine whether there is an active maternity roost within the buildings and other structures to be demolished, a bat biologist shall conduct surveys prior to demolition of the buildings or any other areas that provide suitable roosting habitat for bats. If a potential maternity roost is present, the following measures shall be implemented to reduce the potential impact on special-status bat species to a less than significant level:

a. **Maternity Roosting Season Avoidance.** All demolition activities, or bat roost exclusion, shall occur outside the general bat maternity roosting season of March through August to reduce any potentially significant impact to maternity roosting bats. If the maternity roosting season

cannot be avoided, then roost exclusion can occur outside the maternity roosting season (September through February) to exclude bats from the demolition area prior to the start of demolition during the maternity roosting season. Items b and c below will be required to ensure no impacts occur to roosting bats during the exclusion process.

b. **Replacement Roost Installation.** If there is a potential or known maternity roost within a structure to be demolished, a replacement roost installation shall occur outside of the maternity roosting season within the biological open space easement. At least one month prior to the exclusion of bats from the roost(s), the project applicant will procure and install two bat boxes from a reputable vendor, such as Bat Conservation and Management, to allow bats sufficient time to acclimate to a new potential roost location. The bat boxes shall be installed in an area that is close to suitable foraging habitat as determined by a biologist who specializes in bats in consultation with County staff. Additionally, the bat boxes will be oriented to the south or southwest, and the area chosen for the bat boxes must receive sufficient sunlight (at least 6 hours daily) to allow the bat boxes to reach an optimum internal temperature (approximately 90°F) to mimic the existing bat roost. The bat boxes will be suitable to house crevice-roosting bat species, and large enough to contain a minimum of 50 bats (e.g., Four Chamber Premium Bat House or Bat Bunker Plus). The bat boxes shall be installed on a 20-foot-tall steel pole. Should the bat boxes be required, maintenance of the boxes will be included in the RMP to ensure long-term use/functionality.

c. **Roost Exclusion.** Roost exclusion must only occur September through February to increase the potential to exclude all bats from roosts and minimize the potential for a significant impact to occur by avoiding the maternity roosting season. Approximately one month after bat boxes have been installed, exclusion of the existing roost within the buildings will occur. The primary exit points for roosting bats will be identified, and all secondary ingress/egress locations on the buildings will be covered with a tarp or wood planks to prevent bats from leaving from other locations. The primary exit point will remain uncovered to allow exclusion devices to be installed. Exclusion devices will consist of a screen (e.g., poly netting, window screen, or fiberglass screening) with mesh 1/6 of an inch or smaller, installed at the top of the roost location and sealed and passing 2 feet below the bottom of the primary exit point. The exclusion devices will be installed at night to increase the potential that bats will have already left the roost and are less likely to return. Exclusion devices will be left in place for one week to ensure that any remaining bats in the roost(s) are excluded. A passive acoustic monitoring detector will also be deployed during the exclusion period in order to verify excluded species and monitor whether bat activity has decreased during the exclusion period. Periodic monitoring should also be conducted during the exclusion period to observe whether any bats are still emerging from additional areas within the impact footprint, and an active monitoring survey should be conducted on the final night of exclusion to ensure that no bats are emerging from the buildings and determine whether exclusion has been successful. Any continued presence of roosting bats will require an adjustment to the exclusion devices and schedule. The exclusion devices may remain in place until the start of demolition activities. If any bats are found roosting in any proposed demolition areas prior to demolition, additional exclusion will be required and follow the same methodology described in this mitigation measure. This will occur until all bats are excluded.

d. **Survey Report**. Following completion of the survey the bat biologist will complete a survey report which records the findings. If active roosts are observed, and the maternity roosting season

cannot be avoided, and bats must be removed, the report will also document the replacement roost installation and roost exclusion.

Documentation: The Project Biologist shall prepare the final report and submit it to the PDS for review and approval.

Timing: Prior to final grading release, or use of the premises in reliance of this permit, the final report shall be approved.

Monitoring: The PDS shall review the final report for compliance with this condition and the report format guidelines. Upon approval of the report, PDS shall inform the applicant that the requirement is complete and the bond amount can be relinquished.

M-BI-7 **Biological Monitoring of Stormwater Pollution Prevention Plan (SWPPP) Implementation.** During construction monitoring, the Project Biologist shall verify the following are implemented:

a. No planting or seeding of invasive plant species on the most recent version of the California Invasive Plant Council's California Invasive Plant Inventory for the project region.
b. Dust-control fencing is in place and intact if fencing is required.
c. Construction activity is located outside of jurisdictional waters of the United States/state except as authorized by applicable law and permit(s), including permits and authorizations approved by the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board.
d. Silt-settling basins installed during the construction process are located away from areas of ponded or flowing water to prevent discolored, silt-bearing water from reaching areas of ponded or flowing water during normal flow regimes. Design of drainage facilities shall incorporate long-term control of pollutants and stormwater flow to minimize pollution and hydrologic changes.
e. Temporary structures, staging, and storage areas for construction equipment and/or materials are located outside of jurisdictional waters, including wetlands and riparian areas.
f. No material stockpiles, debris, bark, slash sawdust, rubbish, cement, concrete or washing thereof, oil, or petroleum products are stored where they may be washed by rainfall or runoff into jurisdictional waters of the United States/state.
g. When construction operations are completed, excess materials or debris have been removed from the work area.
h. No equipment maintenance is performed within or near jurisdictional waters of the United States/state where petroleum products or other pollutants from the equipment may enter these areas.
i. Fully covered trash receptacles that are animal-proof and weather-proof are installed and used by the operator to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Littering is prohibited and removal of trash from construction areas daily is required. All food-related trash and garbage are removed from construction sites on a daily basis.
j. There are no pets on or adjacent to construction sites.

k. Speed limits in and around all construction areas are enforced so that vehicles do not exceed 15 miles per hour on unpaved roads and the right-of-way accessing the construction site, or 10 miles per hour during the night.

M-BI–8 **Prevention of Chemical Pollutants.** Weed control treatments shall include all legally permitted chemical, manual, and mechanical methods applied with the authorization of the County of San Diego (County) agriculture commissioner. The application of herbicides shall be in compliance with all federal and state laws and regulations under the prescription of a licensed Pest Control Adviser with at least 2-years' experience and implemented by a licensed applicator. Where manual and/or mechanical methods are used, disposal of the plant debris shall follow the regulations set by the County agriculture commissioner. The timing of the weed control treatment shall be determined for each plant species in consultation with the Pest Control Adviser, the County agriculture commissioner, and the California Invasive Plant Council, with the goal of controlling populations before they start producing seeds.

During project operation, all areas that use chemicals that are potentially toxic or impactive to sensitive habitats or plants shall incorporate best management practices (e.g., avoid applications during or before rain events and avoid placing materials close to sensitive habitats) on site to reduce impacts caused by the application and/or drainage of such materials within the development footprint. In addition, use of rodenticides shall not be allowed. Weed treatment shall occur at least once per year throughout the life of the project.

M-BI–9 **Prevention of Invasive Plant Species.** A County of San Diego-approved plant list shall be used for areas immediately adjacent to open space. A hydroseed mix that incorporates native species, is appropriate to the area, and is free from invasive species shall be used for landscaped areas adjacent to the biological open space. The San Diego County Planning & Development Services landscape architect shall require that all final landscape plans comply with the following: no invasive plant species, as included on the most recent version of the California Invasive Plant Council's California Invasive Plant Inventory for the project region shall be included, and the plant palette shall be composed of native species that do not require high irrigation rates. The Project Biologist shall periodically check landscape products for compliance with these requirements.

M-BI-10 **Operations and Maintenance Signage**. Signage shall be posted at all entrances to the facility stating that operations and maintenance personnel shall be prohibited from the following:

- Harming, harassing, or feeding wildlife and/or collecting special-status plant or wildlife species
- Smoking
- Traveling (either on foot or in a vehicle) outside of the solar facility undisturbed portions of the Project site
- No pets
- No Littering
- No persons not conducing operations and maintenance activities shall remain at the facility after daylight hours or exceed normal nighttime operational noise or lighting

M-BI-11 **Noise Reduction.** Construction-related activities that are excessively noisy (e.g., clearing, grading, or grubbing) adjacent to breeding/nesting areas shall incorporate noise-reduction measures (described below) or be curtailed during the breeding/nesting season of sensitive bird species.

1. Trucks and other engine-powered equipment shall be equipped with noise reduction features, such as mufflers and engine shrouds, which are no less effective than those originally installed by the manufacturer.
2. Trucks and other engine-powered equipment shall be operated in accordance with posted speed limits and limited engine idling requirements.
3. Usage of truck engine exhaust compression braking systems shall be limited to emergencies.
4. Back-up beepers for all construction equipment and vehicles shall be adjusted to the lowest noise levels possible, provided that Occupational Safety and Health Administration (OSHA) and Cal OSHA's safety requirements are not violated. These settings shall be retained for the duration of construction activities.
5. Vehicle horns shall be used only when absolutely necessary, as specified in the contractor's specifications.
6. Radios and other noise-generating "personal equipment" shall be prohibited

If construction-related activities that are excessively noisy (e.g., clearing, grading, grubbing, or blasting) occur during the period of January 15 through August 31, a County of San Diego-approved biologist shall conduct preconstruction surveys in suitable nesting habitat adjacent to the construction area to determine the location of any active nests in the area (see **M-BI-5**).

M-AQ-2 **Fugitive Dust Control Plan.** Refer to **M-AQ-2**, Fugitive Dust Control Plan of the EIR.

M-WF-1 **Fire Protection Plan (FPP).** Refer to **M-WF-1**, Fire Protection Plan, of the EIR.

M-WF-2 **Construction Fire Protection Plan (CFPP).** Refer to **M-WF-2**, Construction Fire Protection Plan, of the EIR.

6.5 Conclusions: Level of Significance After Mitigation

6.5.1 Sensitive Plant Species

Impact SP-1: Temporary Direct Impacts on Special-Status Plant Species

Short-term, construction-related, or temporary direct impacts on special-status plant species would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas were special-status species may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact SP-2: Permanent Direct Impacts on Special-Status Plant Species

Permanent direct impacts on special-status plant species would be reduced to **less than significant** through **M-BI-3** (habitat conservation), a biological open space easement to conserve special-status plant species and habitat for

special-status species, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including special-status plant species.

Impact SP-3: Temporary Indirect Impacts on Special-Status Plant Species

Short-term or temporary indirect impacts on special status plant species would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring of a variety of BMPs to protect open space habitat, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, and **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of special-status plants by requiring soil stabilizers, watering, and other dust-control methods during construction activities.

Impact SP-4: Permanent Indirect Impacts on Special-Status Plant Species

Permanent indirect impacts on special-status plant species would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve special-status plant species and habitat for special-status species, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including special-status plant species, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, and **M-BI-10** (O&M signage), which prohibit operation and maintenance personnel from activities that could indirectly affect wildlife or plants, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance.

6.5.2 Sensitive Wildlife Species

Impact W-1: Temporary Direct Impacts on Habitat for Special-Status Wildlife Species

Potential significant short-term direct impacts on sensitive wildlife species would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact W-2: Permanent Direct Impacts on Foraging Habitat for Tricolored Blackbird

As stated in Section 6.2, the project would have direct impacts on foraging habitat for tricolored blackbird. These impacts would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a

biological open space easement to conserve habitat for special-status species, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site biological open space to conserve sensitive biological resources, including foraging habitat for tricolored blackbird.

Impact W-2: Permanent Direct Impacts to Occupied Burrowing Owl Habitat

As stated in Section 6.2, the project would have direct impacts on 14.2 acres of occupied burrowing owl habitat. These impacts would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), which requires 1:1 mitigation for impacts to occupied burrowing owl habitat, and burrowing owl burrow avoidance (**M-BI-5**), which will avoid burrowing owl burrows and provide appropriate buffers as defined in CDFG 2012 and requires a burrowing owl management plan if burrowing owls are detected. This mitigation measure also requires take avoidance surveys during the non-breeding season, and implementation of avoidance and minimization measures.

Impact W-2: Permanent Direct Impacts on Habitat for Special-Status Wildlife Species

As stated in Section 6.2, the project would have direct impacts on habitat supporting several special-status wildlife species. These impacts would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve habitat for special-status species, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including habitat for special-status wildlife species.

Impact W-3: Permanent Direct Impacts on Nesting Birds

The proposed project could impact nesting birds protected under the MBTA and CFGC. These impacts would be reduced to **less than significant** through **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests.

Impact W-4: Permanent Direct Impacts on Maternity Bat Roosts

The proposed project could impact bat maternity roosts protected under the CFGC. These impacts would be reduced to **less than significant** through implementation of **M-BI-6** (bat surveys and roost avoidance or exclusion), which prevents direct loss of maternity roosts and indirect disturbance to active maternity roosts.

Impact W-5: Temporary Indirect Impacts on Special-Status Wildlife Species

Significant short-term indirect impacts on avian foraging and wildlife access to foraging or nesting habitat would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring of a variety of BMPs to protect open space habitat and limits vehicle speeds to reduce potential collisions with wildlife species, **M-BI-11** (noise reduction), which prevents disruption of wildlife species' behavior and indirect disturbance to active nests, because the mitigation would prevent construction impacts beyond the impact area and minimize construction-related indirect impacts, and **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of vegetation communities by requiring soil stabilizers, watering, and other dust-control methods during construction activities, and.

Impact W-6: Permanent Indirect Impacts on Special-Status Wildlife Species

Significant long-term indirect impacts on special-status wildlife species would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve habitat for special-status species, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including habitat for special-status wildlife species, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, **M-BI-10** (O&M signage), which prohibits operation and maintenance personnel from activities that could indirectly affect wildlife or plants, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance.

6.5.3 Habitat Connectivity and Wildlife Corridors

Impact WLC-1: Temporary Direct Impacts on Habitat Connectivity and Wildlife Corridors

Potential significant short-term direct impacts on potential foraging and breeding habitat for sensitive wildlife species would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact WLC-2: Permanent Direct Impacts on Habitat Connectivity and Wildlife Corridors

As stated in Section 6.2.7, the proposed project would have direct impacts on habitat supporting several special-status wildlife species and it would also constrain free movement throughout the site to two dedicated corridors. These impacts would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve sensitive vegetation communities, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources.

7 Riparian Habitat or Sensitive Natural Community

7.1 Guidelines for the Determination of Significance

The County Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources (County of San Diego 2010a) are based on the criteria in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) and were used to analyze potential direct and indirect impacts on biological resources. The following guidelines for the determination of significance come directly from the County's guidelines (County of San Diego 2010a).

Guideline 4.2: Riparian Habitat or Sensitive Natural Community

The project would have a substantial adverse effect on riparian habitat or another sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game [now California Department of Fish and Wildlife] or U.S. Fish and Wildlife Service.

The following information should be evaluated to provide evidence to support a determination of impact significance.

A. Project-related grading, clearing, construction, or other activities would temporarily or permanently remove sensitive native or naturalized habitat (as listed in Table 5 [County of San Diego 2010a] excluding those without a mitigation ratio) on or off the project site. This Guideline would not apply to small remnant pockets of habitat that have a demonstrated limited biological value. No de minimus standard is specified under which an impact would not be significant; however, minor impacts on native or naturalized habitat that is providing essentially no biological habitat or wildlife value can be evaluated on a case-by-case basis to determine whether the projected impact may be less than significant. For example, an impact to native or naturalized upland habitat under 0.1 acres in an existing urban setting may be considered less than significant (depending on a number of factors). An evaluation of this type should consider factors including, but not limited to, type of habitat, relative presence or potential for sensitive species, relative connectivity with other native habitat, wildlife species and activity in the project vicinity, and current degree of urbanization and edge effects in project vicinity, etc. Just because a particular habitat area is isolated, for example, does not necessarily mean that impacts on the area would not be significant (e.g., vernal pools). An area that is disturbed or partially developed may provide a habitat "island" that would serve as a functional refuge area "stepping stone" or "archipelago" for migratory species.

B. Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats as defined by U.S. Army Corps of Engineers (ACOE), CDFG [now CDFW] and the County of San Diego: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity, and abundance.

C. The project would draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of 3 feet or more from historical low groundwater levels.

D. The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing undeveloped lands or other natural habitat areas, to levels that would likely harm sensitive habitats over the long term. The following issues should be addressed in determining the significance of indirect impacts: increasing human access; increasing predation or competition from domestic animals, pests, or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown by the best available science to adversely affect the functioning of sensitive habitats.

E. The project does not include a wetland buffer adequate to protect the functions and values of existing wetlands. If the project is subject to the Resource Protection Ordinance, buffers of a minimum of 50 feet and a maximum of 200 feet to protect wetlands are required based on the best available science available to the County at the time of adoption of the ordinance. The following examples provide guidance on determining appropriate buffer widths.

- A 50-foot wetland buffer would be appropriate for lower quality RPO wetlands where the wetland has been assessed to have low physical and chemical functions, vegetation is not dominated by hydrophytes, soils are not highly erosive, and slopes do not exceed 25%.
- A wetland buffer of 50–100 feet is appropriate for moderate- to high-quality RPO wetlands which support a predominance of hydrophytic vegetation or wetlands within steep slope areas (greater than 25%) with highly erosive soils. Within the 50–100-foot range, wider buffers are appropriate where wetlands connect upstream and downstream, where the wetlands serve as a local wildlife corridor, or where the adjacent land use(s) would result in substantial edge effects that could not be mitigated.
- Wetland buffers of 100 to 200 feet are appropriate for RPO wetlands within regional wildlife corridors or wetlands that support significant populations of wetland-associated sensitive species, or where stream meander, erosion, or other physical factors indicate a wider buffer is necessary to preserve wildlife habitat.
- Buffering of greater than 200 feet may be necessary when an RPO wetland is within a regional corridor or supports significant populations of wetland-associated sensitive species and lies adjacent to land use(s) that could result in a high degree of edge effects within the buffer. Although the RPO stipulates a maximum of 200 feet for RPO wetland buffers, actions may be subject to other laws and regulations (such as the Endangered Species Act) that require greater wetland buffer widths.

7.2 Analysis of Project Effects

7.2.1 Project Effects Relevant to Guideline 4.2.A (Impacts on Sensitive Habitat)

Impact V-1: Temporary Direct Impacts on Riparian Habitat or Sensitive Vegetation Communities

Short-term, construction-related, or temporary direct impacts on special-status upland vegetation communities would primarily result from construction activities. In the absence of avoidance and mitigation measures, impacts on special-status vegetation communities outside designated construction zones could occur from clearing, trampling, or grading. Temporary direct impacts on special-status vegetation communities on site would be significant, absent mitigation (**Impact V-1**). However, these short-term direct impacts would be mitigated to a **less than significant** level through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where sensitive vegetation communities may

occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact V-2: Permanent Direct Impacts on Riparian Habitat or Sensitive Vegetation Communities

The proposed project would result in permanent direct impacts on 126.99 acres of riparian habitat or sensitive vegetation communities and 467.63 acres of fallow agriculture (Table 7-1), which are considered significant, absent mitigation (**Impact V-2**). Implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve sensitive vegetation communities, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, as described in Sections 6.4 and 7.4, would mitigate for this impact through habitat preservation and agency permitting for impacts on jurisdictional resources. With implementation of these measures, potentially significant impacts on sensitive vegetation communities as a result of the proposed project would be mitigated to **less than significant**.

As shown in Table 7-1, mitigation for some of the vegetation communities being impacted will be out-of-kind. The project site has an excess of desert sink scrub, disturbed freshwater marsh, mesquite bosque, Sonoran mixed woody scrub, Sonoran mixed woody and succulent scrub and unvegetated stream channel. These vegetation communities will be conserved as mitigation for impacts to desert saltbush scrub, tamarisk scrub and fallow agriculture. The 100.78 acres of mitigation required for impacts to 50.39 acres of desert saltbush scrub will be met through the preservation of 4.69 acres of like habitat, desert sink scrub (12.43 acres), mesquite bosque (24.46 acres), and Sonoran mixed woody and succulent scrub (59.20 acres). Both desert sink scrub and desert saltbush scrub vegetation communities have similar species composition and are both classified as Chenopod Scrub (36000) and therefore desert sink scrub is a suitable replacement vegetation for desert saltbush scrub. Sonoran mixed woody and succulent scrub has the same habitat structure as desert saltbush scrub and all of the special-status wildlife species present or with a high potential to occur, which would utilize desert saltbush scrub would also utilize Sonoran mixed woody and succulent scrub (see Table 5-3). The mesquite bosque provides habitat for several wildlife species which may also utilize desert saltbush scrub such as San Diegan tiger whiptail, Blainville's horned lizard, Cooper's hawk and mule deer (see Table 5-3). Mitigation for tamarisk scrub will be provided by the preservation of mesquite bosque (3.33 acres) which provides the same habitat structure as tamarisk scrub. The fallow agriculture is foraging habitat for raptors and other sensitive species observed and with the potential to occur on-site; therefore, it will be mitigated at a 0.5:1 mitigation ratio. Impacts to 467.63 acres of fallow agriculture will be mitigated through the preservation of 233.82 acres of the following vegetation communities: fallow agriculture (9.35 acres), mesquite bosque (90.41 acres), Sonoran mixed woody scrub (133.27 acres), and unvegetated streambed (0.78 acres). Each of these communities is expected to provide foraging habitat for various wildlife species, such as California glossy snake, San Diegan tiger whiptail, tri-colored blackbird, Vaux's swift and Jacumba pocket mouse, including any raptors which may currently utilize the site (see Table 5-3). Therefore, the various habitats included in the biological open space easement will provide a similar biological function and value as the habitat being impacted.

Table 7-1. Proposed On-Site Mitigation for Impacts to Vegetation Communities and Land Covers (Acres)

Habitat Types/ Vegetation Communities	Existing	Total Impacts	Mitigation Ratio	Mitigation Required	Conservation Easement	Mitigation Excess or (Deficit)
Sensitive Vegetation Communities and Land Covers						
Big sagebrush scrub	0.26	—	2:1	0	0	N/A
Desert saltbush scrub	77.39	50.39	2:1	100.78	4.69	(96.09 acres)[1]
Desert sink scrub	12.43	—	3:1	0	12.43	12.43 acres. Applied excess 12.43 acres to desert saltbush scrub deficit
Disturbed freshwater marsh	0.08	—	3:1	0	0.08	0.08 acres.
Mesquite bosque	133.61	2.64	3:1	7.92	126.12	118.20 acres. Applied excess 24.46 acres to desert saltbush scrub deficit, 3.33 acres to tamarisk scrub deficit, and 90.41 acres to fallow agriculture (raptor foraging habitat) deficit
Sonoran mixed woody scrub	139.34	—	1:1	0	139.34	139.33 acres. Applied 133.27 acres to fallow agriculture (raptor foraging habitat) deficit
Sonoran mixed woody and succulent scrub	390.34	72.85	1:1	72.85	132.05	59.20 acres. Applied excess 59.20 acres to desert saltbush scrub deficit
Tamarisk scrub	2.11	1.11	3:1	3.33	0	(3.33 acres)[2]
Unvegetated streambed (non-wetland water of the U.S./state)	10.56	—	1:1	0	0.78	0.78 acres. Applied 0.78 acres to fallow agriculture (raptor foraging habitat) deficit
Subtotal[3]	*766.11*	*126.99*	—	*184.88*	*415.47*	*6.86*

Table 7-1. Proposed On-Site Mitigation for Impacts to Vegetation Communities and Land Covers (Acres)

Habitat Types/ Vegetation Communities	Existing	Total Impacts	Mitigation Ratio	Mitigation Required	Conservation Easement	Mitigation Excess or (Deficit)
Non-Sensitive Land Covers						
Fallow agriculture (raptor foraging habitat)	508.46	467.63	0.5:1[4]	233.82	9.35	(224.46 acres)[5]
Disturbed habitat	55.00	27.27	0	0	10.17	N/A
Urban/developed	26.00	21.24	0	0	<0.01	N/A
Subtotal[3]	*598.47*	*516.14*	*N/A*	*233.82*	*19.52*	*0*
Total[3]	**1,355.58**	**643.13**	**N/A**	**418.70**	**435.00**	**6.86**

1 This deficit is mitigated through the preservation of desert sink scrub (12.43 acres), mesquite bosque (24.46 acres), and Sonoran mixed woody and succulent scrub (59.20 acres).
2 This deficit is mitigated through the preservation of mesquite bosque (3.33 acres).
3 May not total due to rounding.
4 While fallow agriculture is not defined by Oberbauer or the County, the fallow agriculture is considered raptor foraging habitat mitigated at a 0.5:1 mitigation ratio, which is the mitigation ratio for non-native grassland and extensive agriculture – field/pasture.
5 This deficit is mitigated through the preservation of mesquite bosque (90.41 acres), Sonoran mixed woody scrub (133.27 acres), and unvegetated streambed (0.78 acres).

7.2.2 Project Effects Relevant to Guideline 4.2.B (Impacts on Wetlands and Riparian Habitats)

Any adverse change to jurisdictional aquatic resources (i.e., wetlands and riparian habitat under the jurisdiction of ACOE, RWQCB, CDFW, and/or RPO wetlands) resulting from construction activities, as analyzed in Section 5.4, would be significant. For this project, RPO wetlands are a subset of the ACOE, RWQCB, and CDFW jurisdiction.

Impact JAR-1: Temporary Direct Impacts on Jurisdictional Aquatic Resources

Short-term, construction-related, or temporary direct impacts on jurisdictional aquatic resources would primarily result from construction activities. In the absence of avoidance and mitigation measures, impacts on jurisdictional aquatic resources outside designated construction zones could occur from clearing, trampling, or grading. Potential temporary direct impacts on jurisdictional aquatic resources within the BSA would be significant, absent mitigation (**Impact JAR-1**).

Short-term direct impacts would be mitigated to a **less than significant** level through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where jurisdictional aquatic resources may occur and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits. These mitigation measures would prevent and document that construction would not cause additional impacts outside the development footprint. The above mitigation measures are described in Sections 6.4 and 7.4.

Permanent Direct Impacts on Jurisdictional Aquatic Resources

The proposed project would result in **no impacts** to potential ACOE and RWQCB non-wetland waters or CDFW streambed; therefore, no mitigation is required.

Impact JAR-2: Temporary Indirect Impacts on Jurisdictional Aquatic Resources

Potential short-term or temporary indirect impacts on jurisdictional aquatic resources in the BSA would primarily result from construction activities and would include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants, including herbicides. Potential short-term indirect impacts on jurisdictional aquatic resources that occur within the BSA would be significant, absent mitigation (**Impact JAR-2**). **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where jurisdictional aquatic resources may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring of a variety of BMPs to protect open space habitat, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, and **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of jurisdictional aquatic resources by requiring soil stabilizers, watering, and other dust-control methods during construction activities. The above mitigation measures are described in Sections 6.4 and 7.4 and would mitigate these impacts to **less than significant**. The measures would mitigate for this impact through implementation of construction-related measures to reduce impacts outside the MUP boundary, biological monitoring of the SWPPP, prevention of chemical spills, and implementation of a fugitive dust control plan.

Impact JAR-3: Permanent Indirect Impacts on Jurisdictional Aquatic Resources

Long-term or permanent indirect impacts (e.g., from road maintenance) could result from the proximity of the proposed project to jurisdictional aquatic resources after construction. Permanent indirect impacts that could affect jurisdictional aquatic resources include generation of fugitive dust, chemical pollutants, altered hydrology, non-native invasive species, increased human activity, and alteration of the natural fire regime. Potential long-term indirect impacts on jurisdictional aquatic resources that occur outside the impact area would be significant, absent mitigation (**Impact JAR-3**). **M-BI-3** (habitat preservation), which protects a biological open space easement to conserve jurisdictional aquatic resources, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space preserve to conserve sensitive biological resources, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance. The above mitigation measures are described in Sections 6.4 and 7.4 and would mitigate these impacts to **less than significant**. These measures would mitigate for these impacts through measures to reduce impacts outside the MUP boundary, implementation if habitat preservation and RMP, prevention of chemical spills, minimization of release of non-native plants and animals, and implementation of an FPP.

7.2.3 Project Effects Relevant to Guideline 4.2.C (Impacts on Groundwater Table)

Estimated drawdown at the nearest groundwater-dependent habitat from pumping Well No. 2 and Well No. 3 would be less than 3 feet (Dudek 2019b). Further, current groundwater levels in Well No. 3 are at least 12 feet higher than the historical low groundwater level recorded in the Jacumba Valley alluvial aquifer (Dudek 2019b). Therefore, drawdown as a result of project groundwater use would be unlikely to exceed the historical low groundwater level and impacts on the groundwater table are anticipated to be **less than significant**.

7.2.4 Project Effects Relevant to Guideline 4.2.D (Indirect Impacts on Sensitive Habitat)

Impact V-3: Temporary Indirect Impacts on Riparian Habitat or Sensitive Vegetation Communities

Potential short-term or temporary indirect impacts on sensitive vegetation communities in the BSA would primarily result from construction activities and would include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants, including herbicides. Potential short-term indirect impacts on special-status vegetation communities outside the impact area would be significant, absent mitigation (**Impact V-3**). **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where sensitive vegetation communities may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-7** (biological monitoring of SWPPP), which requires a variety of BMPs to protect open space habitat, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, and **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of jurisdictional aquatic resources by requiring soil stabilizers, watering, and other dust-control methods during construction activities. The above mitigation measures are described in Sections 6.4 and 7.4 and would mitigate these impacts to **less than significant**. The measures would mitigate for these impacts through implementation of construction-related measures to reduce impacts outside the MUP boundary, implementation of biological monitoring of the SWPPP, prevention of chemical spills, and implementation of a dust control plan.

Impact V-4: Permanent Indirect Impacts on Riparian Habitat or Sensitive Vegetation Communities

Long-term or permanent indirect impacts (e.g., from maintenance of roads, fencing, and landscaping) could result from the proximity of the proposed project to sensitive vegetation communities after construction. Permanent indirect impacts that could affect special-status vegetation communities include generation of fugitive dust, chemical pollutants, altered hydrology, non-native invasive species, increased human activity, and alteration of the natural fire regime. Potential long-term indirect impacts on special-status vegetation communities that occur outside the impact area would be significant, absent mitigation (**Impact V-4**). **M-BI-3** (habitat preservation), a biological open space easement to conserve sensitive vegetation communities, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring of a variety of BMPs to protect open space habitat, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance

with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance. The above mitigation measures are described in Sections 6.4 and 7.4 and would mitigate these impacts to **less than significant**. These measures would mitigate for these impacts through construction-related measures to reduce impacts outside of the MUP boundary, implementation of biological monitoring of the SWPPP, prevention of chemical spills, minimization of release of exotic plants and animals, and implementation of an FPP.

7.2.5 Project Effects Relevant to Guideline 4.2.E (Resource Protection Ordinance Buffers)

The 0.08 acre patch of disturbed freshwater marsh located in the southwestern portion of the site is the only RPO wetlands within the project site. The small disturbed freshwater marsh is fed from subsurface water seasonally and lacks consistent water sources. The disturbed freshwater marsh includes tamarisk which occurs equally in wetland and non-wetland areas and does not meet the County's definition of a hydrophyte (Lichvar et al. 2012; County of San Diego 2012). This area comprises 50% of tamarisk and other non-native species. The soils associated with this RPO wetland are not erosive and the slopes no do exceed 25%. Therefore, in accordance with the County's guidelines, a 50-foot buffer is appropriate for this area. The proposed project includes wetland buffers, as shown on Figure 5-1, adequate to protect the functions and values of the existing RPO wetlands.

The project is designed to avoid RPO wetlands and the 50-foot RPO wetland buffer. Therefore, **no impacts** relating to Guideline 4.2.E are anticipated.

7.3 Cumulative Impact Analysis

Cumulative impacts are not assessed in this document; they are discussed thoroughly in the proposed project's EIR.

7.4 Mitigation Measures and Design Considerations

M-BI-1 through **M-BI-14** are described in Section 6.4.

7.5 Conclusions

Impact V-1: Temporary Direct Impacts on Riparian Habitat or Sensitive Vegetation Communities

Short-term, construction-related, or temporary direct impacts on sensitive vegetation communities would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where sensitive vegetation communities may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact V-2: Permanent Direct Impacts on Riparian Habitat or Sensitive Vegetation Communities

Permanent direct impacts on sensitive vegetation communities would be reduced to **less than significant** through implementation **M-BI-3** (habitat preservation), a biological open space easement to conserve sensitive vegetation communities and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources.

Impact V-3: Temporary Indirect Impacts on Riparian Habitat or Sensitive Vegetation Communities

Short-term or temporary indirect impacts on jurisdictional aquatic resources would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where sensitive vegetation communities may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring of a variety of BMPs to protect open space habitat, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, and **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of biological resources by requiring soil stabilizers, watering, and other dust-control methods during construction activities.

Impact V-4: Permanent Indirect Impacts on Riparian Habitat or Sensitive Vegetation Communities

Permanent indirect impacts on sensitive vegetation communities would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve sensitive vegetation communities, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance.

Impact JAR-1: Temporary Direct Impacts on Jurisdictional Aquatic Resources

Short-term, construction-related, or temporary direct impacts on jurisdictional aquatic resources would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where jurisdictional aquatic resources may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Permanent Direct Impacts on Jurisdictional Aquatic Resources

There are no permanent direct impacts on jurisdictional aquatic resources.

Impact JAR-2: Temporary Indirect Impacts on Jurisdictional Aquatic Resources

Short-term or temporary indirect impacts on jurisdictional aquatic resources would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where jurisdictional aquatic resources may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring a variety of BMPs to protect open space habitat, watering, and other dust-control methods during construction activities, and **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, and **M-AQ-2** (fugitive dust control plan) which prevents construction-related impacts to the viability of jurisdictional aquatic resources by requiring soil stabilizers .

Impact JAR-3: Permanent Indirect Impacts on Jurisdictional Aquatic Resources

Permanent indirect impacts on jurisdictional aquatic resources would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve jurisdictional aquatic resources, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance.

8 Jurisdictional Wetlands and Waterways

8.1 Guidelines for the Determination of Significance

The County Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources (County of San Diego 2010a) are based on the criteria in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) and were used to analyze potential direct and indirect impacts on biological resources. The following guideline for the determination of significance comes directly from the County's guidelines and refers only to federally protected wetlands (County of San Diego 2010a).

Guideline 4.3: Federal Wetlands

The project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

This Guideline refers only to federally protected wetlands. The significance of impacts are determined under Guideline 4.2B, C, and E.

8.2 Analysis of Project Effects Relevant to Guideline 4.3 (Federally Protected Wetlands)

As described in Section 7.2, Analysis of Project Effects, the proposed project would have potential temporary direct impacts and potential temporary and permanent indirect impacts on jurisdictional aquatic resources as defined by Section 404 of the Clean Water Act if grading occurred outside the approved limits of disturbance, (**Impacts JAR-1, JAR-2** and **JAR-3**). There are no direct impacts to federally regulated waters. Potential significant **impacts JAR-1, JAR-2,** and **JAR-3** would be mitigated to a **less than significant** level through **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where jurisdictional aquatic resources may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-3** (habitat preservation), a biological open space easement to conserve jurisdictional aquatic resources, **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, **M-BI-7** (biological monitoring of SWPPP), which requires a variety of BMPs to protect open space habitat, **M-BI-8** (prevention of chemical pollutants), which minimizes potential herbicide effects to plants through compliance with federal, state, and local laws, as well as requires weed control to minimize the spread of non-native species that can compete with natives for resources and alter habitat, **M-BI-9** (prevention of invasive plant species), which prohibits planting of invasive plants that can compete with native plants for resources, **M-AQ-2** (fugitive dust control plan), which prevents construction-related impacts to the viability of jurisdictional aquatic resources by requiring soil stabilizers, watering, and other dust-control methods during construction activities, and **M-WF-1** (FPP), which reduces potential loss of suitable habitat from increased fire risk through managed fuel clearing and maintenance.

8.3 Cumulative Impact Analysis

Cumulative impacts are not assessed in this document; they are discussed thoroughly in the EIR.

8.4 Mitigation Measures and Design Considerations

Mitigation measures applicable to County Guideline 4.3 are discussed in Section 7.4 of this report.

8.5 Conclusions

Refer to Section 7.5 for the conclusions related to **Impacts JAR-1** through **JAR-3**.

9 Wildlife Movement and Nursery Sites

9.1 Guidelines for the Determination of Significance

The County Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources (County of San Diego 2010a) are based on the criteria in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) and were used to analyze potential direct and indirect impacts on biological resources. The following guidelines for the determination of significance come directly from the County's guidelines (County of San Diego 2010a).

Guideline 4.4: Wildlife Movement and Nursery Sites

The project would interfere substantially with the movement of a native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

The following information should be evaluated to provide evidence to support a determination of impact significance.

A. The project would impede wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.
B. The project would substantially interfere with connectivity between blocks of habitat, or would potentially block or substantially interfere with a local or regional wildlife corridor or linkage. For example, if the project proposes roads that cross corridors, fencing that channels wildlife to underpasses located away from interchanges will be required to provide connectivity. Wildlife underpasses shall have dimensions (length, width, height) suitable for passage by the affected species based on a site-specific analysis of wildlife movement. Another example is increased traffic on an existing road that would result in significant road-kill or interference with an existing wildlife corridor/linkage.
C. The project would create artificial wildlife corridors that do not follow natural movement patterns; for example, constraining a corridor for mule deer or mountain lion to an area that is not well-vegetated or that runs along the face of a steep slope instead of through the valley or along the ridgeline.
D. The project would increase noise and/or nighttime lighting in a wildlife corridor or linkage to levels likely to affect the behavior of the animals identified in a site-specific analysis of wildlife movement.
E. The project does not maintain an adequate width for an existing wildlife corridor or linkage and/or would further constrain an already narrow corridor through activities such as (but not limited to) reduction of corridor width, removal of available vegetative cover, placement of incompatible uses adjacent to it, and placement of barriers in the movement path. The adequacy of the width shall be based on the biological information for the target species, the quality of the habitat within and adjacent to the corridor, topography, and adjacent land uses. Where there is limited topographic relief, the corridor should be well-vegetated and adequately buffered from adjacent development. Corridors for bobcats, deer, and other large animals should reach rim-to-rim along drainages.
F. The project does not maintain adequate visual continuity (i.e., long lines of site) within wildlife corridors or linkage. For example, development (such as homes or structures) sited along the rim of a corridor could present a visual barrier to wildlife movement. For stepping-stone/archipelago corridors, a project does not maintain visual continuity between habitat patches.

9.2 Analysis of Project Effects

9.2.1 Project Effects Relevant to Guideline 4.4.A (Wildlife Access to Key Habitat Areas)

Impact WLC-1: Temporary Direct Impacts on Habitat Connectivity and Wildlife Corridors

Short-term, construction-related, or temporary direct impacts on potential foraging and breeding habitat for species that use the BSA (e.g., special-status birds) would primarily result from construction activities. In the absence of avoidance and mitigation measures, impacts on foraging and breeding habitat outside designated construction zones could occur from clearing, trampling, or grading. Potential temporary direct impacts on foraging and breeding habitat on site would be significant, absent mitigation (**Impact WLC-1**). However, these short-term, direct impacts would be mitigated to a **less than significant** level through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact WLC-2: Permanent Direct Impacts on Habitat Connectivity and Wildlife Corridors

Permanent direct impacts on 643 acres of potential foraging and breeding habitat for species that use the BSA would occur as a result of the proposed project. Permanent direct impacts on foraging and breeding habitat would be considered significant, absent mitigation (**Impact WLC-2**). These impacts would be mitigated to a **less than significant** level through implementation of **M-BI-3** (habitat preservation and wildlife corridor access), a biological open space easement to conserve sensitive vegetation communities, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, to preserve open space. Potential mitigation lands are shown on Figure 5-3. Table 7-1 summarizes the impacts and required mitigation for vegetation communities.

Impact WLC-3: Temporary Indirect Impacts on Habitat Connectivity and Wildlife Corridors

Short-term, construction-related, or temporary indirect impacts on avian foraging and wildlife access to foraging or nesting would primarily result from construction activities. These impacts would be significant, absent mitigation (**Impact WLC-3**). Indirect impacts on sensitive bird species may occur if clearing of vegetation is conducted during the nesting season for MBTA-protected species (generally, the nesting season is defined as January 15 through August 31). **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests, **M-BI-7** (biological monitoring of SWPPP), which requires biological monitoring of a variety of BMPs to protect open space habitat and limits vehicle speeds to reduce potential collisions with wildlife species, and **M-BI-11** (noise reduction), which prevents disruption of wildlife species' behavior and indirect disturbance to active nests, described in Section 6.4, would mitigate these impacts to **less than significant**.

Permanent Indirect Impacts on Habitat Connectivity and Wildlife Corridors

Lighting and noise are the long-term indirect impacts identified for habitat connectivity and wildlife corridors are the same as those described in detail in Section 9.2.2. With the current design and proposed mitigation areas, impacts on habitat connectivity and wildlife corridors would be **less than significant**.

9.2.2 Project Effects Relevant to Guideline 4.4.B (Connectivity between Blocks of Habitat)

As shown on Figure 4-5, the project site is located between high to very high habitat value areas. Much of the land that would be impacted by the proposed project is mapped as "agriculture" or "developed" in the Habitat Evaluation Model layer (see Figure 4-5). The Project was historically used for dairy and agricultural operations but has been fallow since 2014.

As discussed in Section 5.2.1, the project site currently functions as a large block of habitat which, after project development, would be converted to two dedicated wildlife corridors and a 435-acre biological open space easement (**Impact WLC-2**). The project would require permanent fencing around five separate areas within the MUP boundary. The areas of the solar facility would be fenced separately to accommodate existing easements on site for Carrizo Gorge Road, Old Highway 80, and an SDG&E easement. The fencing would be 7 feet in height total, with a 6-foot-high chain-link perimeter fence and 1 foot of three-strand barbed wire along the top. Fencing would still allow small reptiles, amphibians, and mammals to pass through, but would not provide movement for larger species. Although the fencing would limit the ability of particularly large wildlife to access and traverse the solar facility, the undeveloped SDG&E easement between the fence lines is approximately 700 to 1,100 feet wide and more than 4,000 feet long and would allow uninterrupted wildlife movement from Boundary Creek to currently undeveloped land to the east (Figure 5-3). The habitat to the west of the easement corridor would be placed within a biological open space easement which expands upon existing conserved lands located west of the project, and protects the only north/south movement corridor across I-8 (**M-BI-3**). Additionally, there would be a 50-100 foot opening in the fence north of the easement to allow for wildlife moving within the SDG&E easement corridor or north of the easement to move in and out of the easement (Figures 4-4 and 5-3). Without this opening wildlife traveling west to east north of the project could be funneled toward the I-8 and forced to cross the highway at grade. The opening in the fence would allow wildlife traveling along the fence line to find a break in the fencing leading them into the larger wildlife corridor.

Wildlife currently are able to traverse the project site and surrounding undeveloped areas in an unencumbered manner until arriving at the international border fence south of the site. Since openings in the border fence are located off site, approximately 1.2 miles to the east and 2 miles to the west, north–south wildlife movement is anticipated to be higher near these openings. These breaks in the border fence are located in areas of steep terrain; however, this topography does not pose difficulties for most wildlife use. Coyote, cougar, bobcat, and other species are readily able to scale steep slopes. Further, the project site is situated adjacent to State Park lands and federal lands managed by Bureau of Land Management, which allows for unhindered wildlife movement. Figure 4-4 shows the border fence openings, conserved lands, and adjacent land ownership; Figure 4-5 shows the Habitat Evaluation Model.

Small wildlife species (e.g., lizards and small mammals) would be able to access the site through openings in the fence. Larger wildlife (e.g., coyotes, bobcats, cougars) could still move along the mesquite-dominated floodplain and unvegetated portion of Boundary Creek to access undeveloped lands to the west as well as crossing into

Mexico at the open border to the west. Wildlife movement would be more restricted along the eastern side since there are fewer topographic features for cover; however, the undeveloped SDG&E easement between the fence lines, which is approximately 700 to 1,100 feet wide and more than 4,000 feet long, would allow uninterrupted movement from Boundary Creek to currently undeveloped land to the east. The land between Carrizo Gorge Road and I-8 would also allow movement for some wildlife species, particularly nocturnal wildlife.

Absent mitigation the project would substantially interfere with a local linkage and connectivity between blocks of habitat and would impact wildlife movement between the east and west core habitat areas. However, the existing SDG&E easement and the proposed opening in the project fence line (**M-BI-3**) and preservation of the habitat between the project site and conserved lands to the west, would facilitate continued movement for wildlife moving between east and west core habitat. Suitable movement areas between the north and south and within the BSA, such as creeks and drainages and the mesquite-dominated floodplain will be included within the proposed biological open space easement (**M-BI-3**). These non-impacted areas would allow movement between the Jacumba Peaks area to the west and the mountains to the north (via the floodplain). Therefore, with proposed mitigation (**M-BI-3**), impacts on connectivity between blocks of habitat (**Impact WLC-2**) would be **less than significant**.

9.2.3 Project Effects Relevant to Guideline 4.4.C (Creation of Unnatural Movement Corridors)

Impact WLC-2: Permanent Direct Impacts on Habitat Connectivity and Wildlife Corridors

There would be permanent direct impacts on habitat connectivity and wildlife corridors, which is a significant impact, absent mitigation (**Impact WLC-2**). Through the biological open space easement (**M-BI-3**) and the existing SDG&E easements, the proposed project would maintain movement along well-vegetated areas (i.e., the mesquite-dominated floodplain) as well as along the creeks and drainages that serve as natural wildlife movement areas between the Jacumba Peaks area to the west and the mountains to the north. Although the fencing would limit the ability of some wildlife species to access and traverse the solar facility site, the undeveloped SDG&E easement between the fence lines, which is approximately 700 – 1,100 feet wide and more than 4,000 feet long, would allow uninterrupted wildlife movement from Boundary Creek to currently undeveloped land to the east (Figure 5-3). The proposed project has the potential to create a "dead-end" for wildlife traveling west to east along the northern portion of the site. This could funnel wildlife towards I-8 and result in increased mortality of wildlife forced to cross at grade. To ensure that wildlife traversing that area are directed towards the SDG&E easement, the project will provide a 50 to 100-foot opening in the fence north of the easement (**M-BI-3**) (see inset map on Figure 4-4). This opening will allow for wildlife, which may be moving along the northern portion of the site, to enter into the easement corridor and move through the site to habitat located on either side of the proposed project. Therefore, with mitigation measure (**M-BI-3**) and the SDG&E easement, the proposed project would provide for natural movement corridors and impacts to wildlife would be **less than significant**.

9.2.4 Project Effects Relevant to Guideline 4.4.D (Noise and Lighting Impacts on Wildlife Corridors)

Impact WLC-3: Temporary Indirect Impacts on Habitat Connectivity and Wildlife Corridors

There would be short-term construction-related noise, as described in Section 5.5.2, which is a significant impact, absent mitigation (**Impact WLC-3**). **M-BI-14** (noise reduction), which prevents disruption of wildlife species' behavior and indirect disturbance to active nests, described in Section 6.4, would mitigate this impact to **less than significant**.

Permanent Indirect Impacts on Habitat Connectivity and Wildlife Corridors

Noise associated with the proposed project would include inverters/transformers and HVAC units cooling energy storage equipment—all of which would be distributed across twenty-five (25) locations throughout the Project site. The electrical transformer located within the collector substation, and to a much lesser degree the smaller transformers within the switchyard, would also generate relatively steady-state sources of continuous noise. Permanent lighting associated with the proposed project includes security lighting designed to minimize light pollution and preserve dark skies, while enhancing safety, security, and functionality. Nighttime lighting would comply with the County of San Diego Light Pollution Code, also known as the Dark Sky Ordinance, Section 59.101 et seq. Additionally, lighting for the proposed project would be designed in accordance with the San Diego County Zoning Ordinance, Performance Standards, Sections 6320, 6322, and 6324, which guide performance standards for glare and control excessive or unnecessary outdoor light emissions. Therefore, long-term (permanent) indirect impacts from noise and lighting would be **less than significant**.

9.2.5 Project Effects Relevant to Guideline 4.4.E (Width of Wildlife Corridors)

As described previously, larger wildlife (e.g., coyotes, bobcats, cougars) could still move along the mesquite-dominated floodplain and the unvegetated portion of Boundary Creek to access undeveloped lands to the west and cross into Mexico at the open border to the west. Wildlife movement between the east and west core habitat areas would be more restricted by the proposed development; however, the undeveloped SDG&E easement between the fence lines, which is approximately 700 – 1,100 feet wide and 4,000 feet long, would allow uninterrupted wildlife movement from Boundary Creek to currently undeveloped land to the east. The land between Carrizo Gorge Road and I-8 would also allow movement for some wildlife species, particularly nocturnal wildlife. A 50-100 foot break in the fence (**M-BI-3**) will be provided to facilitate movement from this open space to the SDG&E easement (see Figure 4-4). Without this opening wildlife traveling west to east north of the project could be funneled toward the I-8 and forced to cross the highway at grade. The opening in the fence will allow wildlife traveling along the fence line to find a break in the fencing leading them into the larger wildlife corridor. The project site is situated adjacent to State Park lands and federal lands managed by the Bureau of Land Management, which allows for unhindered wildlife movement. The preservation of habitat between the project site and these preserved lands to the west would expand upon a large preserve system and ensure that the north/south movement corridor along Boundary Creek and under the 1-8 would be preserved and managed (**M-BI-3**). Further, the fence would be raised off the ground in some areas due to terrain allowing for small wildlife species to move through the solar facility areas. Vegetation will be maintained at 6 inches within the fuel modification areas, which allows for some cover and habitat for wildlife species.

There is a potential for birds to collide with the gen-tie during migration, but that risk was assessed to be low due to the minimal overhead line. Certain types of solar panels may create a “pseudo-lake effect,” and birds may collide with solar panels that appear like a body of water due to the sky’s reflection. However, there is little scientific information available regarding the pseudo-lake effect, and a detailed discussion of the impacts would be speculative. Further, the following factors would minimize the risk of collision due to sky reflection: (1) the project is not located near bodies of water that would attract wetland-associated birds; (2) the locale is not considered to be a major contributor to the Pacific Flyway; and (3) the solar units would be uniformly dark in color, coated to be non-reflective, and designed to be highly absorptive of all light that strikes their glass surfaces, and may not appear like water from above, as water displays different properties by both reflecting and absorbing light waves. Therefore, glare and pseudo-lake effect are deemed to be a low risk due to a number of factors, including the

Proposed Project solar facility design and the Project site location. The fenced solar panels and facilities would be unstaffed and therefore would be compatible with adjacent wildlife movement since human activity would be limited. While fencing is proposed around the solar facility, wildlife movement could still occur within the SDG&E easement which transects the project site and drainage corridor along the western portion of the proposed solar facility. Therefore, with the incorporation of mitigation, the proposed project would result in a **less than significant** impact on corridor widths.

9.2.6 Project Effects Relevant to Guideline 4.4.F (Visual Continuity within Wildlife Corridors)

While focused wildlife corridor studies have not been completed within the vicinity, based on knowledge of the area, probable key wildlife species, and typical wildlife movement patterns, the following discussion applies. Large mammals, such as deer, are not likely to utilize the fallow agricultural areas as movement corridors due to lack of cover, however, it is likely that they utilize the open space on the western side of the railroad tracks which is dominated by mesquite. Movements of migrating avian species are typically oriented in a north–south direction, are broad-fronted, and are not focused on this site. Broader regional wildlife corridors likely connect between the Laguna Mountains to the west and north, and to the east, the Anza-Borrego Desert and the eastern slope of the Peninsular Range. Connections to the east likely occur north of the site and possibly along I-8 corridor, which provides the most direct and obvious potential corridor route between the proposed project and habitats east of the Peninsular Range. Much of this area is large, core blocks of habitat through which wildlife are free to move with minimal constraint. The site does not exist between lakes/ponds, loafing spots, foraging areas, or nesting sites that might entice local movement of birds or larger wildlife. However, as previously described, the project site does function as a movement corridor between large blocks of habitat located east and west of the project site and the placement of fencing and the solar facility within the project site could disrupt the visual continuity of wildlife utilizing the site as a movement corridor (**Impact WLC-2**).

The existing U.S./Mexico border fence along the southern boundary of the Project site already creates a visual and structural barrier to north and south wildlife movement in the Project site. The Proposed Project would be situated adjacent to the border fencing (there is an approximately 100 to 330 foot buffer from the existing border fence to the proposed project fencing), Although visual continuity within the project area would be negatively impacted by the addition of the solar facility and fencing. The proposed project would disrupt visual continuity for larger terrestrial wildlife attempting to move from the northern portion of the site to the east/southeast. However, the existing SDG&E easements within the center of the project site provide an east/west corridor to facilitate wildlife movement through the site. The easement corridor is largely comprised of native habitat and a large channel which provides better coverage for wildlife moving through the site as well as visual continuity between patches of habitat west of the easement and contiguous habitat located east of the easement. The drainages and mesquite-lined floodplain along the western boundary of the project are located outside of the fenced areas within the proposed biological open space, and would maintain visual continuity for wildlife moving between the areas north, south and west of the project (**M-BI-3**).

In summary, the placement of fencing and the solar facility within the project site could disrupt the visual continuity of the project site as a wildlife movement corridor. This impact is **potentially significant** (**Impact WLC-2**). **M-BI-3** would reduce this impact to less than significant by providing visual continuity for wildlife moving between the areas north, south and west of the project.

9.3 Cumulative Impact Analysis

Cumulative impacts are not assessed in this document; they are discussed in the proposed project's EIR.

9.4 Mitigation Measures and Design Considerations

Mitigation measures applicable to County Guideline 4.4 are discussed in Section 6.4 of this report.

9.5 Conclusions

Impact WLC-1: Temporary Direct Impacts on Habitat Connectivity and Wildlife Corridors

Potential significant short-term direct impacts on potential foraging and breeding habitat for sensitive wildlife species would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits.

Impact WLC-2: Permanent Direct Impacts on Habitat Connectivity and Wildlife Corridors

As stated in Section 6.2, the proposed project would have direct impacts on habitat supporting several special-status wildlife species. The project site, which currently functions as a large block of habitat which, would be converted to two dedicated wildlife corridors and a 435-acre biological open space easement following project construction. This conversion, along with fencing and the development of the solar facility, has the potential to funnel wildlife north towards I-8 and creates a visual impediment for wildlife traversing the site. Absent mitigation the project would substantially interfere with a local linkage and connectivity between blocks of habitat and would impact wildlife movement between the east and west core habitat areas. These impacts would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation) and **M-BI-4** (RMP), which provide for a biological open space easement to conserve sensitive vegetation communities and wildlife corridors, and the long-term management of the proposed on-site open space to conserve sensitive biological resources.

Impact WLC-3: Temporary Indirect Impacts on Habitat Connectivity and Wildlife Corridors

The significant short-term indirect impacts on avian foraging and wildlife access to foraging or nesting would be reduced to **less than significant** through implementation of **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, **M-BI-2** (temporary construction fencing), which requires installation of fencing wherever the limits of grading are adjacent to sensitive biological resources, including areas where special-status species may occur, and prohibits inadvertent clearing, grubbing, and grading to areas outside of the limits, **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests, **M-BI-7** (biological monitoring of SWPPP), which requires a variety of BMPs to protect open space habitat and limits vehicle speeds to reduce potential collisions with wildlife species, and **M-BI-11** (noise reduction), which prevents disruption of wildlife species' behavior and indirect disturbance to active nests, which would prevent construction impacts beyond the impact area and minimize construction-related indirect impacts.

Permanent Indirect Impacts on Habitat Connectivity and Wildlife Corridors

The long-term indirect impacts from noise and lighting on habitat connectivity and wildlife corridors are considered **less than significant**.

10 Local Policies, Ordinances, and Adopted Plans

10.1 Guidelines for the Determination of Significance

The County Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources (County of San Diego 2010a) are based on the criteria in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) and were used to analyze potential direct and indirect impacts on biological resources. The following guidelines for the determination of significance come directly from the County's guidelines (County of San Diego 2010a).

Guideline 4.5: Local Policies, Ordinances, Adopted Plans

The project would conflict with one or more local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and/or would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

The following information should be evaluated to provide evidence to support a determination of impact significance.

A. For lands outside of the MSCP, the project would impact coastal sage scrub (CSS) vegetation in excess of the County's 5% habitat loss threshold as defined by the Southern California Coastal Sage Scrub Natural Communities Conservation Planning Process (NCCP) Guidelines.
B. The project would preclude or prevent the preparation of the subregional Natural Communities Conservation Planning Process (NCCP). For example, the project proposes development within areas that have been identified by the County or resource agencies as critical to future habitat preserves.
C. The project will impact any amount of wetlands or sensitive habitat lands as outlined in the Resource Protection Ordinance (RPO).
D. The project would not minimize and/or mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the Natural Communities Conservation Planning Process (NCCP) Guidelines.
E. The project does not conform to the goals and requirements as outlined in any applicable Habitat Conservation Plan (HCP), Habitat Management Plan (HMP), Special Area Management Plan (SAMP), Watershed Plan, or similar regional planning effort.
F. For lands within the Multiple Species Conservation Program (MSCP), the project would not minimize impacts to Biological Resource Core Areas (BRCAs), as defined in the Biological Mitigation Ordinance (BMO).
G. The project would preclude connectivity between areas of high habitat values, as defined by the Southern California Coastal Sage Scrub Natural Communities Conservation Planning Process (NCCP) Guidelines.
H. The project does not maintain existing movement corridors and/or habitat linkages as defined by the Biological Mitigation Ordinance (BMO).
I. The project does not avoid impacts to MSCP narrow endemic species and would impact core populations of narrow endemics.
J. The project would reduce the likelihood of survival and recovery of listed species in the wild.

K. The project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (Migratory Bird Treaty Act).

L. The project would result in the take of eagles, eagle eggs or any part of an eagle (Bald and Golden Eagle Protection Act).

10.2 Analysis of Project Effects

10.2.1 Project Effects Relevant to Guideline 4.5.A (Coastal Sage Scrub Habitat Loss)

The BSA does not support coastal sage scrub; therefore, **no impacts** would occur under this threshold.

10.2.2 Project Effects Relevant to Guideline 4.5.B (NCCP Planning)

The proposed project would not preclude or prevent the preparation of an NCCP because the project has been planned in accordance with the planning principles of the MSCP and in consideration of preparation of a future MSCP East County Plan. As described in Section 4.8, the proposed development footprint would be located areas identified as "Agriculture or Natural Upland outside Focused Conservation Area" and "Other Public/Semi-Public Lands". The proposed development footprint avoids the major mapped drainages, as well as the following Preliminary MSCP map designations: "Land Managed as Open Space" and "Land managed with Ecological Protection."

Although a preliminary draft map of the focused conservation areas has been prepared, the future MSCP East County Plan currently has no schedule for completion. The Proposed Project would not conflict with the draft MSCP East County planning effort. Therefore**, no impacts** would occur.

10.2.3 Project Effects Relevant to Guideline 4.5.C (RPO Wetlands or Sensitive Habitat Lands)

While there are RPO wetlands that are located in the BSA, the Proposed Project would avoid RPO wetlands and the wetland buffer. Therefore, **no impacts** would occur to RPO wetlands or wetland buffers. The County also regulates sensitive habitat lands, which include lands that support unique vegetation communities or the habitats of rare or endangered species or subspecies of animals or plants as defined by CEQA Section 15380.

Per County guidelines, the occupied burrowing owl habitat is considered sensitive habitat lands. Thus, the impacts to occupied burrowing owl habitat would be **potentially significant** (see **Impact W-2**). The proposed project includes habitat preservation (**M-BI-3**), which requires 1:1 mitigation for impacts to occupied burrowing owl habitat, and burrowing owl burrow avoidance (**M-BI-5**), which will avoid burrowing owl burrows and provide appropriate buffers as defined in CDFG 2012 and requires a burrowing owl management plan if burrowing owls are detected. This mitigation measure also requires take avoidance surveys during the non-breeding season, and implementation of avoidance and minimization measures. With preservation of habitat and avoidance of active owl burrows, impacts would be **less than significant**.

10.2.4 Project Effects Relevant to Guideline 4.5.D (Coastal Sage Scrub)

The BSA does not support coastal sage scrub; therefore, **no impacts** would occur under this threshold.

10.2.5 Project Effects Relevant to Guideline 4.5.E (Regional Planning Efforts)

The proposed project conforms to the goals and requirements as outlined in all applicable regional planning efforts as indicated in Table 10-1; therefore, **no impacts** would occur.

10.2.6 Project Effects Relevant to Guideline 4.5.F (Biological Mitigation Ordinance)

The proposed project is located approximately 30 miles east of the approved South County MSCP. Since there is no approved MSCP East County Plan and no associated BMO, this guideline does not apply to the proposed project; therefore, **no impact** would occur.

10.2.7 Project Effects Relevant to Guideline 4.5.G (Connectivity between Areas of High Habitat Value)

As shown on Figure 4-5, the project site is located between high to very high habitat value areas. Project development would occur within lands mapped as "agriculture" or "developed" in the Habitat Evaluation Model layer (see Figure 4-5). As discussed in Sections 5.5.2 and 9.2,2 development of the proposed project would convert the project site from a large open space available for unimpeded wildlife movement to two dedicated wildlife corridors and a 435-acre biological open space easement (**Impact WLC-2**). The project will also ensure the preservation of a north/south movement corridor for wildlife traversing under the I-8 (**M-BI-3**) and provides an east/west movement corridor along the SDG&E easement with a dedicated access point north of the easement (**M-BI-3**). Therefore, with implementation of **M-BI-3**, the project will ensure that movement across the site and between high habitat value areas is maintained and impacts related to this guideline would be **less than significant.**

10.2.8 Project Effects Relevant to Guideline 4.5.H (Movement Corridors Defined in the BMO)

Since there is no approved MSCP East County Plan and no associated BMO, this guideline does not apply to the proposed project; therefore, **no impact** would occur.

10.2.9 Project Effects Relevant to Guideline 4.5.I (Narrow Endemics)

This guideline only applies to areas with an adopted MSCP Plan. Since there is no approved East County MSCP Plan, this guideline does not apply to the proposed project; therefore, **no impact** would occur.

10.2.10 Project Effects Relevant to Guideline 4.5.J (Listed Species)

One federally listed wildlife species was observed in the southwestern portion of the Project site (Quino checkerspot butterfly) and one state-listed species was observed within the BSA (tricolored blackbird). These species are described in detail in Section 6.2.1. The Proposed Project is designed to avoid the location where the Quino checkerspot butterfly was observed as well as the two locations of Chinese houses (i.e., host plants). Therefore, there are no permanent direct impacts to Quino checkerspot butterfly. Due to the lack of host plants near the Quino checkerspot butterfly sighting, and the distance of the proposed solar facility from the hill (approximately 150 feet), no significant indirect impacts (such as dust, construction noise, lighting, etc.) to this species is anticipated. No work will be conducted within this area, and the hill is situated at an elevation higher than the impact area, which provides an additional buffer. Based on this analysis, the project would not reduce the likelihood of survival or recovery of Quino checkerspot butterfly in the wild. Therefore, the Project would have **no impacts** (direct or indirect) on Quino checkerspot butterfly, including host plants.

Impact W-2 Permanent Direct Impacts on Foraging Habitat for Tricolored Blackbird

One state-listed species, tricolored blackbird, was observed within the Project site. Tricolored blackbirds were observed foraging, but not nesting, in the southern portion of the BSA in April 2019. No tricolored blackbirds were observed in 2018 despite surveys conducted along the southern portion of the BSA. Tricolored blackbirds nest occasionally at the pond in Jacumba, approximately 0.5 miles west of the BSA. According to Beedy et al. (2018), tricolored blackbirds typically forage within 5 kilometers (3 miles) of a colony site.

Dudek reviewed the vegetation data (SANGIS 2019) available within a 3-mile radius of the nesting site (located west of the BSA). Based on potential foraging habitat described in Beedy et al. (2018) (e.g., grasslands, irrigated pasture, grain fields, shallow wetlands, and alkali scrub habitats), there are approximately 2,100 acres of suitable foraging habitat within the United States in the vicinity of the Project site. In addition, up to an additional 4,400 acres of suitable habitat is located in Mexico within the 3-mile radius from the tricolored blackbird colony site. Aerial review of land within the 3-mile radius buffer shows open, flatter land suitable for tricolored blackbird foraging in Mexico. Additionally, biologists observed tricolored blackbirds flying back and forth between the United States and Mexico side of the border.

The Proposed Project will impact potential foraging habitat, approximately half of which is in the northern portion of the BSA where tricolored blackbirds were not observed. that provide habitat for insects on which they forage. They may also forage outside of the MUP boundary in the open space and other non-impacted lands. Of the total impacts, there are 48.52 acres of suitable foraging habitat that will be hardscape (i.e., access roads and substation). It may be possible that tricolored blackbirds would forage in and around the solar panels since there would be herb growth underneath the panels and could provide habitat for insects on which they forage. Given the amount of available foraging habitat within 3 miles of the nest location, impacts to potential foraging habitat on the Project site would not preclude this species from successfully nesting in the region.

While potential direct and indirect impacts to tricolored blackbird are minimal, the County's guidelines state that any impact to a listed species is considered a significant impact, absent mitigation (**Impact W-2**). The proposed project includes habitat preservation (**M-BI-3**), a biological open space easement to conserve special-status plant species and habitat for special-status species, and an RMP (**M-BI-4**), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including special-status plant species. Potential mitigation lands are shown on Figure 5-3, Potential Mitigation Areas. A portion of the southwest corner of the site (where the tricolored blackbirds were observed) will be avoided. With avoidance and preservation of on-site habitat, the project

would not reduce the likelihood of survival and recovery of this species and would be **less than significant** because conserved on-site foraging habitat adds to the available foraging habitat in the surrounding area, and ensures food sources to sustain nesting birds. Based on the incorporation of mitigation measures, the project would not reduce the likelihood of survival or recovery of tricolored blackbirds in the wild.

10.2.11 Project Effects Relevant to Guideline 4.5.K (Migratory Birds)

Impacts to migratory birds (**Impact W-3**) are discussed in Section 6.2.2 of this report.

10.2.12 Project Effects Relevant to Guideline 4.5.L (Eagles)

Two golden eagles were observed on site during the 2019 Quino checkerspot butterfly surveys. Golden eagles are known to nest in the region, including at Table Mountain, which is approximately 2 miles northeast of the BSA (USFWS 2019). The eastern portion of Round Mountain is located within the BSA and there is a golden eagle nest record on the northern side of Round Mountain. This nest was described as an intact cliff nest occupied by common ravens in 2012 (USFWS 2019). This nest location, along with other crags on Round Mountain, was surveyed in April 2018 and February 2019; ravens and red-tailed hawks were observed nesting in these areas. As described in Section 4.6, seven or more years with no nesting is a strong indicator that this territory has been abandoned by golden eagles. Aside from Round Mountain, there is no suitable nesting habitat (i.e., large trees or cliffs) within the BSA. Based on the limited use on site by golden eagles, the proposed project would not result in the take of eagles, eagle eggs, or any part of an eagle.

10.3 Cumulative Impact Analysis

Cumulative impacts are not assessed in this document; they are discussed thoroughly in the proposed project's EIR.

10.4 Mitigation Measures and Design Considerations

Mitigation measures applicable to County Guideline 4.5 are discussed in Section 6.4 of this report.

10.5 Conclusions

Impact W-2: Permanent Direct Impacts to Occupied Burrowing Owl Habitat

As stated in Section 6.2, the project would have direct impacts on 14.2 acres of occupied burrowing owl habitat (**Impact W-2**). These impacts would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), which requires 1:1 mitigation for impacts to occupied burrowing owl habitat, and burrowing owl burrow avoidance, and **M-BI-5** (nesting bird survey and take avoidance surveys), which prevents direct loss of active nests and indirect disturbance to active nests through implementation of buffers and setbacks according to CDFG 2012. This mitigation measure also requires take avoidance surveys during the non-breeding season, and implementation of avoidance and minimization measures. With avoidance of habitat and active owl burrows, impacts would be **less than significant**.

Impact W-2: Permanent Direct Impacts on Foraging Habitat for Tricolored Blackbird

As stated in Section 6.2, the project would have direct impacts on foraging habitat for tricolored blackbird (**Impact W-2**). These impacts would be reduced to **less than significant** through implementation of **M-BI-3** (habitat preservation), a biological open space easement to conserve habitat for special-status species, and **M-BI-4** (RMP), which provides the long-term management of the proposed on-site open space to conserve sensitive biological resources, including foraging habitat for tricolored blackbird.

Impact W-3: Permanent Direct Impacts on Nesting Birds

The proposed project could impact nesting birds protected under the MBTA and CFGC (**Impact W-5**). These impacts would be reduced to **less than significant** through **M-BI-1** (biological monitoring), which prevents inadvertent disturbance to areas outside of the limits of grading, including areas where special-status species may occur, and **M-BI-5** (nesting bird survey), which prevents direct loss of active nests and indirect disturbance to active nests.

11 Summary of Project Impacts and Mitigation

Sections 6.5, 7.5, 8.5, 9.5, and 10.5 summarize the impacts and associated mitigation for each significant impact that may occur as a result of the proposed project. Table 11-1 summarizes the impacts and mitigation required for impacts on special-status species, vegetation communities, and jurisdictional areas.

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
Guideline 4.1: The project would have a substantial adverse effect, either directly or through habitat modifications, on a candidate, sensitive, or special status species listed in local or regional plans, policies, or regulations, or by California Department of Fish and Game or U.S. Fish and Wildlife Service.					
4.1.A. The project would impact one or more individuals of a species listed as federally or state endangered or threatened.					
6.2.1	Impact W-2	State-listed wildlife species (Tricolored blackbird)	Direct and indirect	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
4.1.B. The project would impact an on-site population of a County List A or B plant species, or a County Group I animal species, or a species listed as a state Species of Special Concern [SSC]. Impacts to these species are considered significant; however, impacts of less than 5 percent of the individual plants or of the sensitive species' habitat on a project site may be considered less than significant if a biologically-based determination can be made that the project would not have a substantial adverse effect on the local long-term survival of that plant or animal taxon.					
6.2.2	Impact SP-1	Special-status plants	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
6.2.2	Impact SP-2	Special-status plants	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
6.2.2	Impact W-1	Special-status wildlife	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
6.2.2	Impact W-2	Special-status wildlife	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP) **M-BI-5** (nesting bird survey)	Less than significant
6.2.2	Impact W-3	Nesting birds	Permanent direct	**M-BI-1** (biological monitoring) **M-BI-5** (nesting bird survey)	Less than significant
6.2.2	Impact W-4	Special-status wildlife (bats)	Permanent direct	**M-BI-6** (bat surveys and roost avoidance or exclusion)	Less than significant

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
4.1.C. The project would impact the local long-term survival of a County List C or D plant species or a County Group II animal species.					
6.2.3	Impact SP-1	Special-status plants	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
6.2.3	Impact W-1	Special-status wildlife	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
6.2.3	Impact W-2	Special-status wildlife	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
6.2.3	Impact W-3	Nesting birds	Permanent direct	**M-BI-1** (biological monitoring) **M-BI-5** (nesting bird survey)	Less than significant
6.2.3	Impact W-4	Special-status wildlife (bats)	Permanent direct	**M-BI-6** (bat surveys and roost avoidance or exclusion)	Less than significant
4.1.F. The project would result in the loss of functional foraging habitat for raptors. Impacts to raptor foraging habitat is considered significant; however, impacts of less than 5 percent of the raptor foraging habitat on a project site may be considered less than significant if a biologically-based determination can be made that the project would not have a substantial adverse effect on the local long-term survival of any raptor species					
6.2.6	Impact W-2	Special-status wildlife (raptor foraging habitat)	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
4.1.G. The project would impact the viability of a core wildlife area, defined as a large block of habitat (typically 500 acres or more not limited to project boundaries, though smaller areas with particularly valuable resources may also be considered a core wildlife area) that supports a viable population of a sensitive wildlife species or supports multiple wildlife species. Alteration of any portion of a core habitat could only be considered less than significant if a biologically-based determination can be made that the project would not have a substantially adverse effect on the core area and the species it supports.					
6.2.7	Impact WLC-1	Wildlife movement	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
6.2.7	Impact WLC-2	Core wildlife area	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
4.1.H. The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would likely harm sensitive species over the long term. The following issues should be addressed in determining the significance of indirect impacts: increasing human access; increasing predation or competition from domestic animals, pests or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown to adversely affect sensitive species.					
6.2.8	Impact SP-3	Special-status plants	Temporary indirect	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing) **M-BI-7** (biological monitoring of SWPPP) **M-BI-8** (prevention of chemical pollutants) **M-AQ-2** (fugitive dust control plan)	Less than significant
6.2.8	Impact SP-4	Special-status plants	Permanent indirect	**M-BI-3** (habitat preservation) **M-BI-4** (RMP) **M-BI-8** (prevention of chemical pollutants) **M-BI-9** (prevention of invasive plant species) **M-BI-0** (O&M signage) **M-WF-1** (FPP)	Less than significant
6.2.8	Impact W-5	Special-status wildlife	Temporary indirect	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing) **M-BI-5** (nesting bird survey) **M-BI-7** (biological monitoring of SWPPP) **M-BI-11** (noise reduction) **M-AQ-2** (fugitive dust control plan)	Less than significant
6.2.8	Impact W-6	Special-status wildlife	Permanent indirect	**M-BI-3** (habitat preservation) **M-BI-4** (RMP) **M-BI-8** (prevention of chemical pollutants) **M-BI–9** (prevention of invasive plant species) **M-BI-10** (O&M signage) **M-WF-1** (FPP)	Less than significant
4.1.I. The project would impact occupied burrowing owl habitat.					
6.2.9	Impact W-2	Special-status wildlife (burrowing owl)	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-5** (nesting bird survey and take avoidance surveys)	Less than significant

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
4.1.L. The project would impact nesting success of the following sensitive bird species through grading, clearing, fire fuel modification, and/or other noise generating activities such as construction: coastal cactus wren, coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, tree-nesting raptors, ground-nesting raptors, golden eagle, and light-footed clapper rail.					
6.2.12	Impact W-2	Special-status wildlife (sensitive bird nesting)	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
6.2.12	Impact W-5	Special-status wildlife (sensitive bird nesting)	Temporary indirect	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing) **M-BI-5** (nesting bird survey) **M-BI-7** (biological monitoring of SWPPP) **M-BI-10** (O&M signage) **M-BI-11**(noise reduction) **M-AQ-2** (fugitive dust control plan)	Less than significant
Guideline 4.2: The project would have a substantial adverse effect on riparian habitat or another sensitive natural community identified in local or regional plans, policies, regulations or by California Department of Fish and Game or U.S. Fish and Wildlife Service.					
4.2.A. Project-related grading, clearing, construction, or other activities would temporarily or permanently remove sensitive native or naturalized habitat (as listed in Table 5 [County of San Diego 2010a] excluding those without a mitigation ratio) on or off the project site. This Guideline would not apply to small remnant pockets of habitat that have a demonstrated limited biological value. No de minimus standard is specified under which an impact would not be significant; however, minor impacts to native or naturalized habitat that is providing essentially no biological habitat or wildlife value can be evaluated on a case-by-case basis to determine whether the projected impact may be less than significant. For example, an impact to native or naturalized upland habitat under 0.1 acres in an existing urban setting may be considered less than significant (depending on a number of factors). An evaluation of this type should consider factors including, but not limited to, type of habitat, relative presence or potential for sensitive species, relative connectivity with other native habitat, wildlife species and activity in the project vicinity, and current degree of urbanization and edge effects in project vicinity, etc. Just because a particular habitat area is isolated, for example, does not necessarily mean that impacts to the area would not be significant (e.g., vernal pools). An area that is disturbed or partially developed may provide a habitat "island" that would serve as a functional refuge area "stepping stone" or "archipelago" for migratory species.					
7.2.1	Impact V-1	Riparian habitat or sensitive vegetation communities	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
7.2.1	Impact V-2	Riparian habitat or sensitive vegetation communities	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
4.2.B. Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats as defined by U.S. Army Corps of Engineers (ACOE), CDFG [now CDFW] and the County of San Diego: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity, and abundance.					
7.2.2	Impact JAR-1	Jurisdictional resources	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
7.2.2	Impact JAR-2	Jurisdictional resources	Temporary indirect	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing) **M-BI-7** (biological monitoring of SWPPP) **M-BI–8** (prevention of chemical pollutants) **M-AQ-2** (fugitive dust control plan)	Less than significant
7.2.2	Impact JAR-3	Jurisdictional resources	Permanent indirect	**M-BI-3** (habitat preservation) **M-BI-4** (RMP) **M-BI–8** (prevention of chemical pollutants) **M-BI-9** (prevention of invasive plant species) **M-WF-1** (FPP)	Less than significant
4.2.D. The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing undeveloped lands or other natural habitat areas, to levels that would likely harm sensitive habitats over the long term. The following issues should be addressed in determining the significance of indirect impacts: increasing human access; increasing predation or competition from domestic animals, pests, or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown by the best available science to adversely affect the functioning of sensitive habitats.					
7.2.4	Impact V-3	Riparian habitat or sensitive vegetation communities	Temporary indirect	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing) **M-BI-7** (biological monitoring of SWPPP) **M-BI-8** (prevention of chemical pollutants) **M-AQ-2** (fugitive dust control plan)	Less than significant

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
7.2.4	Impact V-4	Riparian habitat or sensitive vegetation communities	Permanent indirect	**M-BI-3** (habitat preservation) **M-BI-4** (RMP) **M-BI-8** (prevention of chemical pollutants) **M-BI-9** (prevention of invasive plant species) **M-WF-1** (FPP)	Less than significant
Guideline 4.3: The project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means.					
8.2	Impact JAR-1, Impact JAR-2, and Impact JAR-3	Jurisdictional resources	Temporary direct; temporary and permanent indirect	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing) **M-BI-3** (habitat preservation) **M-BI-4** (RMP) **M-BI-7** (biological monitoring of SWPPP) **M-BI-8** (prevention of chemical pollutants) **M-BI-9** (prevention of invasive plant species) **M-AQ-2** (fugitive dust control plan) **M-WF-1** (FPP)	Less than significant
Guideline 4.4: The project would interfere substantially with the movement of a native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.					
4.4.A. The project would impede wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.					
9.2.1	Impact WLC-1	Wildlife movement	Temporary direct	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing)	Less than significant
9.2.1	Impact WLC-2	Wildlife movement	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
9.2.1	Impact WLC-3	Wildlife movement	Temporary indirect	**M-BI-1** (biological monitoring) **M-BI-2** (temporary construction fencing) **M-BI-5** (nesting bird survey) **M-BI-7** (biological monitoring of SWPPP) **M-BI-11** (noise reduction)	Less than significant

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
4.4.B. The project would substantially interfere with connectivity between blocks of habitat, or would potentially block or substantially interfere with a local or regional wildlife corridor or linkage.					
9.2.2	Impact WLC-2	Wildlife movement	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
4.4.C. The project would create artificial wildlife corridors that do not follow natural movement patterns.					
9.2.3	Impact WLC-2	Wildlife movement	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
4.4.D. The project would increase noise and/or nighttime lighting in a wildlife corridor or linkage to levels likely to affect the behavior of the animals identified in a site-specific analysis of wildlife movement.					
9.2.4	Impact WLC-3	Wildlife movement	Temporary indirect	**M-BI-11** (noise reduction)	Less than significant
4.4.E. The project does not maintain an adequate width for an existing wildlife corridor or linkage and/or would further constrain an already narrow corridor.					
9.2.5	Impact WLC-2	Wildlife movement	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
4.4.F. The project would create artificial wildlife corridors that do not follow natural movement patterns.					
9.2.6	Impact WLC-2	Wildlife movement	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant
Guideline 4.5: The project would conflict with one or more local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and/or would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.					
4.5.C. The project will impact any amount of wetlands or sensitive habitat lands as outlined in the Resource Protection Ordinance (RPO).					
10.2.3	Impact W-2	Sensitive habitat lands (occupied burrowing owl habitat)	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-5** (nesting bird survey and take avoidance surveys)	Less than significant
4.5.G. The project would preclude connectivity between areas of high habitat values.					
10.2.7	Impact W-2	Sensitive habitat lands (occupied burrowing owl habitat)	Permanent direct	**M-BI-3** (habitat preservation) **M-BI-5** (nesting bird survey and take avoidance surveys)	Less than significant
4.5.J. The project would reduce the likelihood of survival and recovery of listed species in the wild.					
10.2.10	Impact W-2	State-listed wildlife species (Tricolored blackbird)	Direct and indirect	**M-BI-3** (habitat preservation) **M-BI-4** (RMP)	Less than significant

Table 11-1. Summary of Significant Impacts and Mitigation

Section of Report Where Analysis Is Described	Impact Number	Impacted Resource	Impact Type	Proposed Mitigation	Level of Significance After Mitigation
4.5.K. The project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (Migratory Bird Treaty Act).					
10.2.11	Impact W-3	Nesting birds	Permanent direct	**M-BI-1** (biological monitoring) **M-BI-5** (nesting bird survey)	Less than significant

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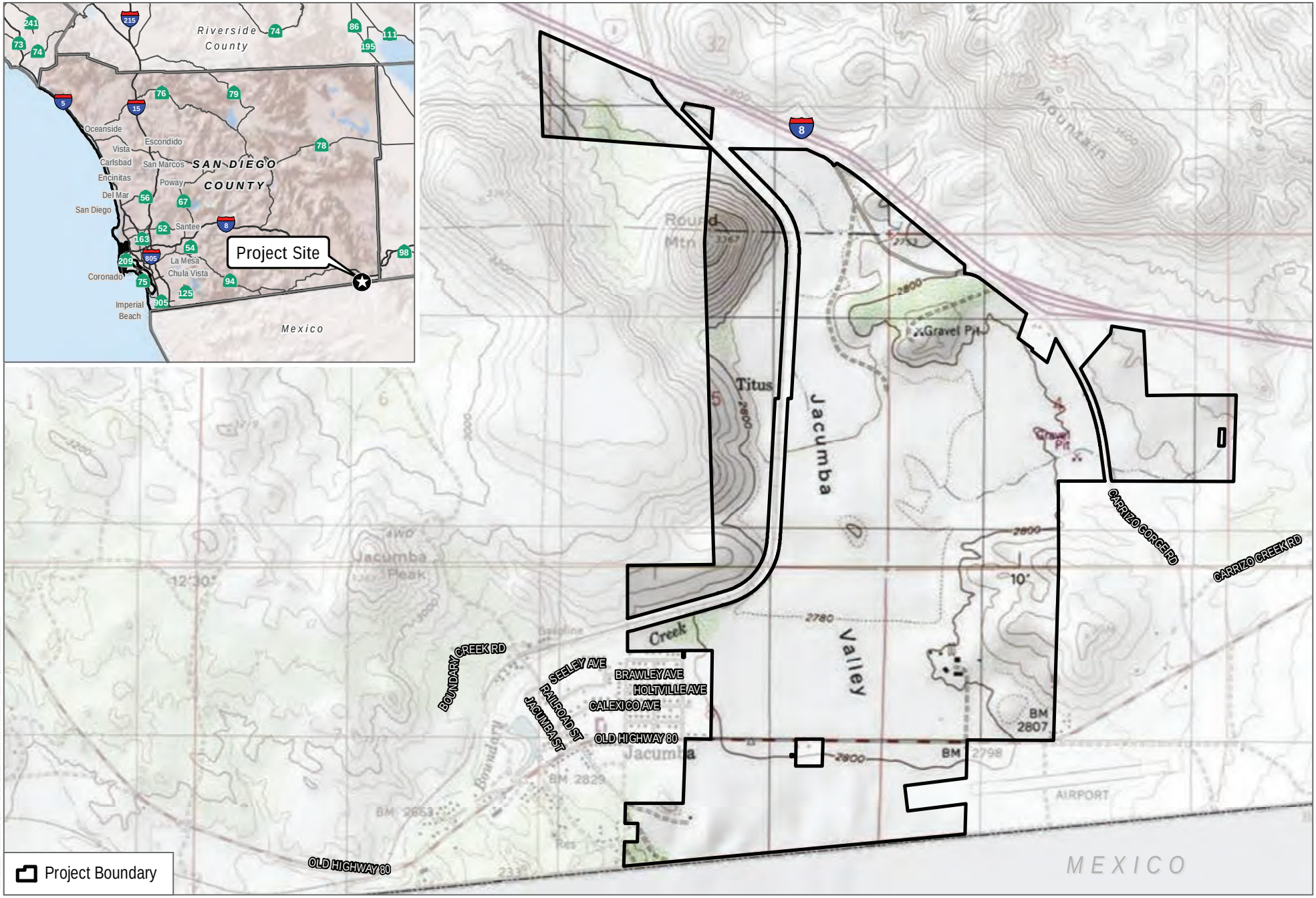

SOURCE: USGS 7.5-Minute Series Jacumba, Jacumba OE S Quadrangles; SANGIS 2020

DUDEK

0 1,000 2,000 Feet

FIGURE 1-1

Project Location

JVR Energy Park Project

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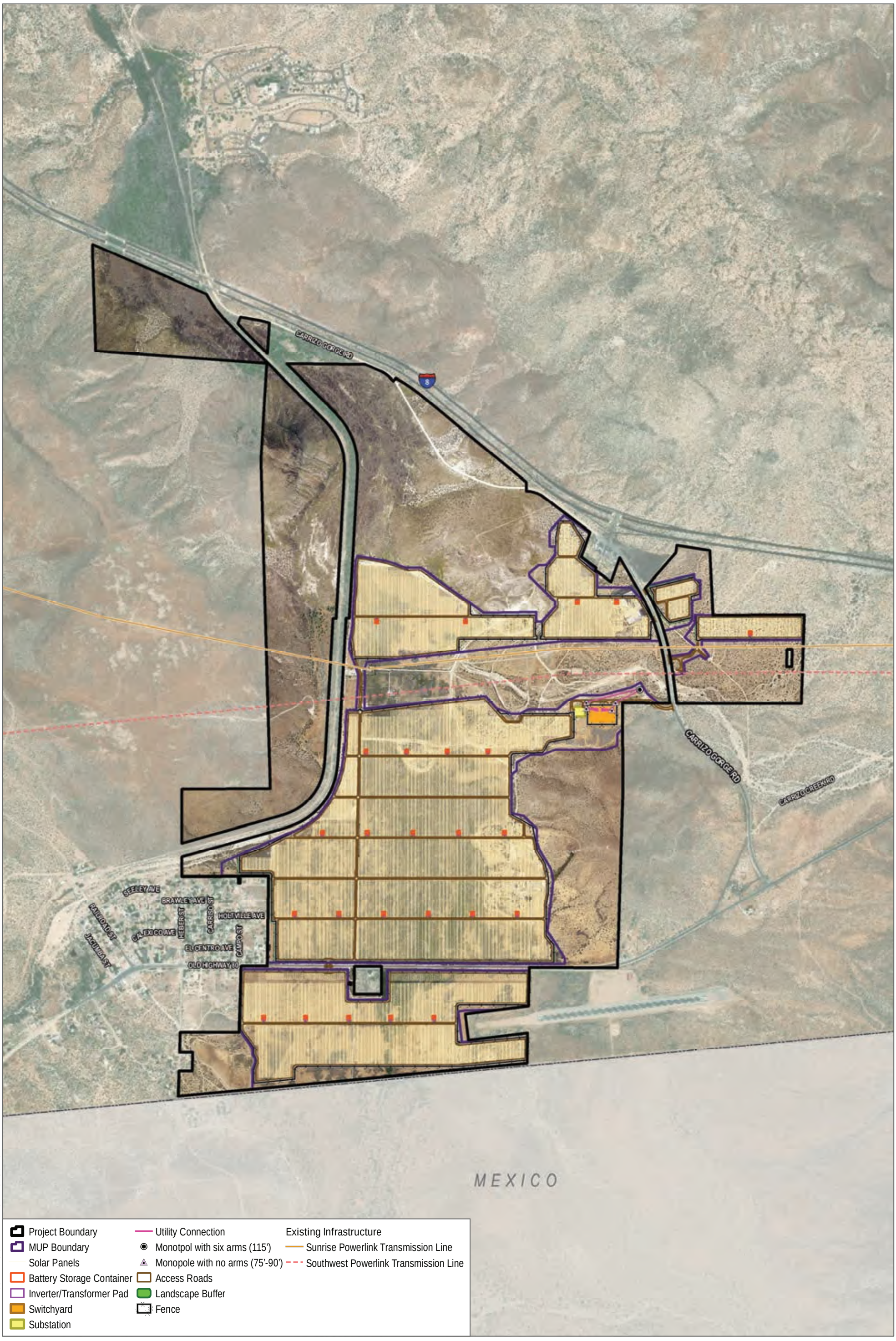

SOURCE: Kimley-Horn 2020; SANGIS 2017, 2020

DUDEK

0 500 1,000 Feet

FIGURE 1-2

Project Components

JVR Energy Park Project

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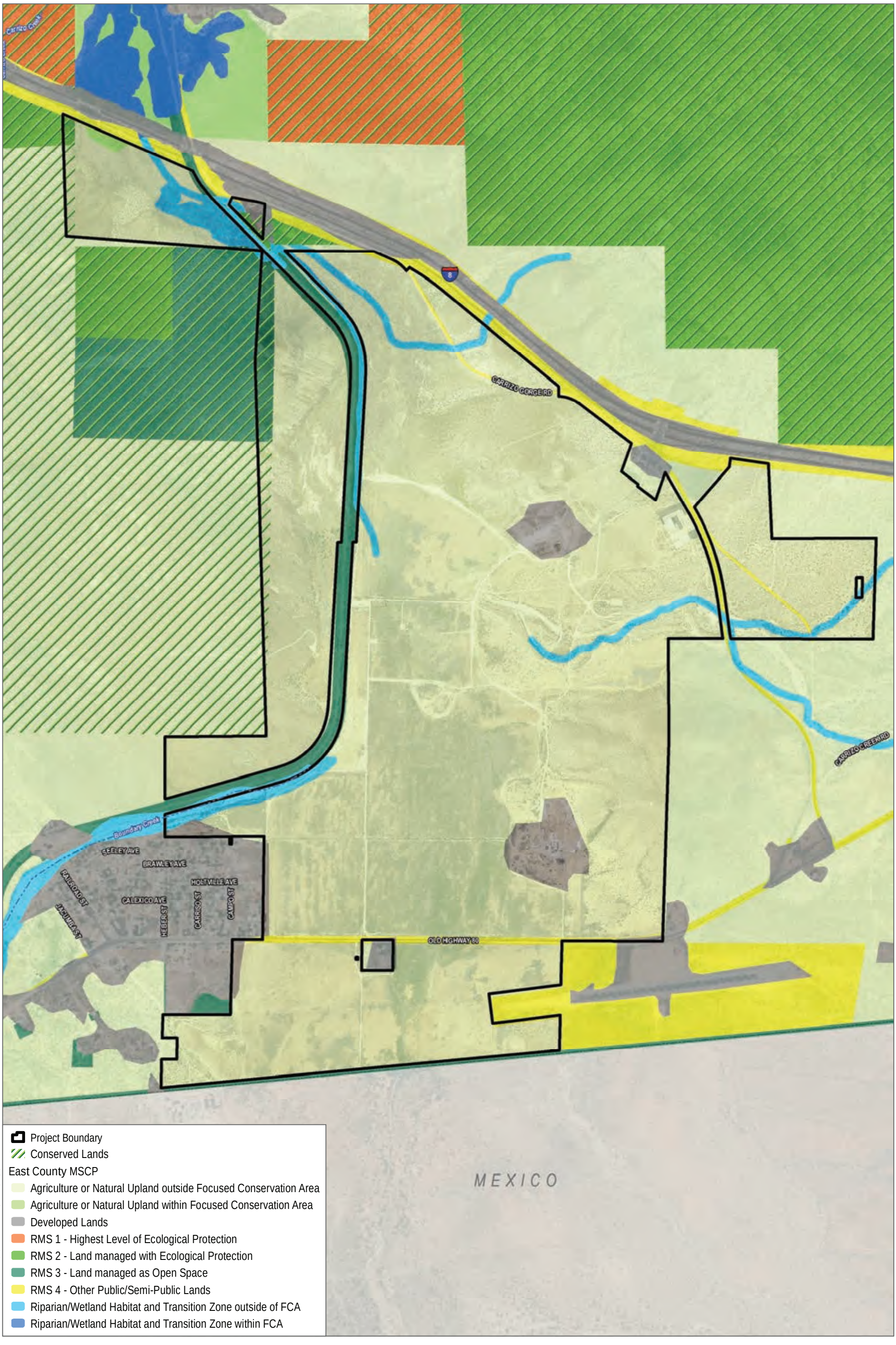

SOURCE: SANGIS 2017, 2020

DUDEK

0 500 1,000 Feet

FIGURE 2-1

Regional Context

JVR Energy Park Project

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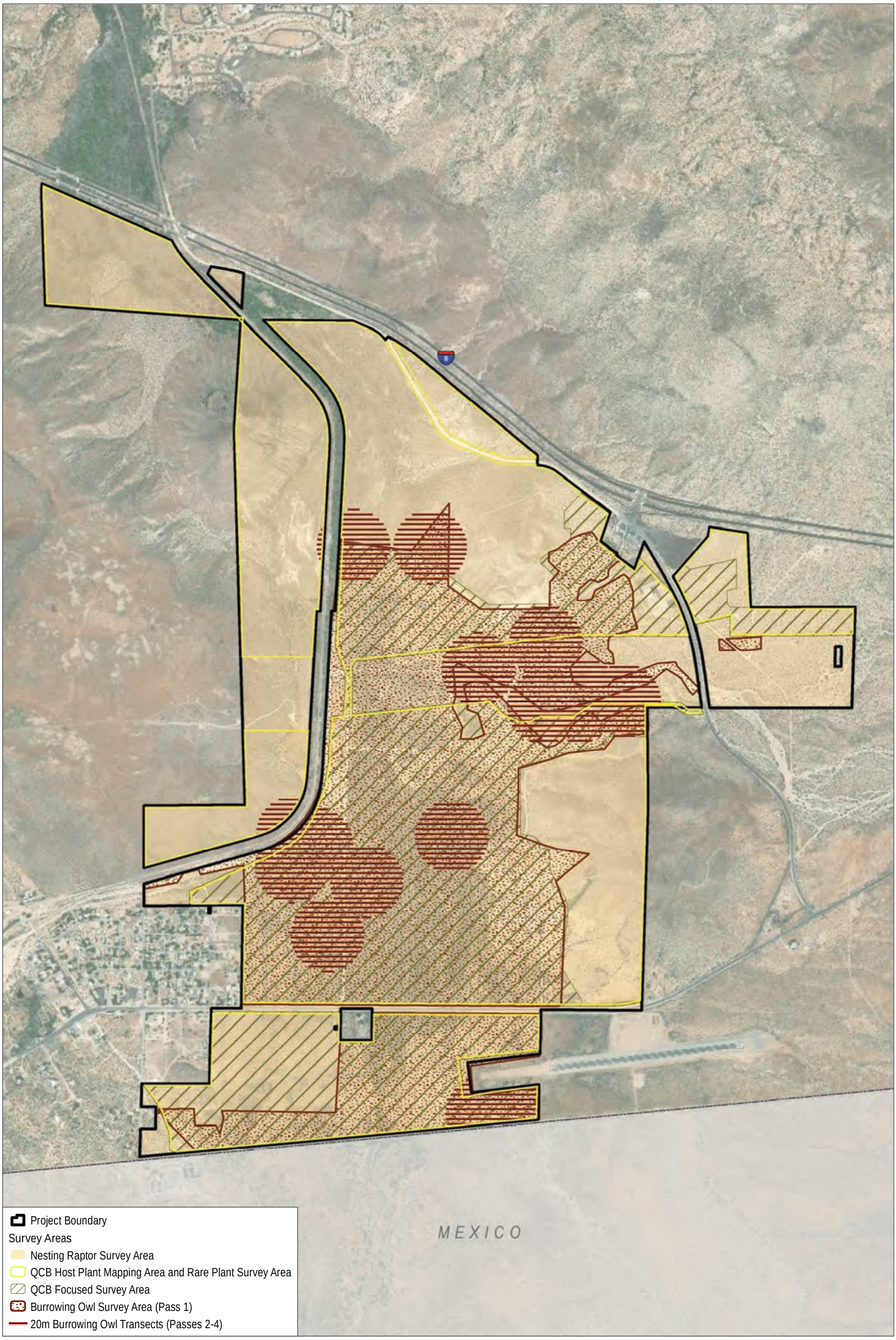

SOURCE: Baywa 2019; SANGIS 2017, 2019

DUDEK

FIGURE 3-1

Survey Areas

JVR Energy Park Project

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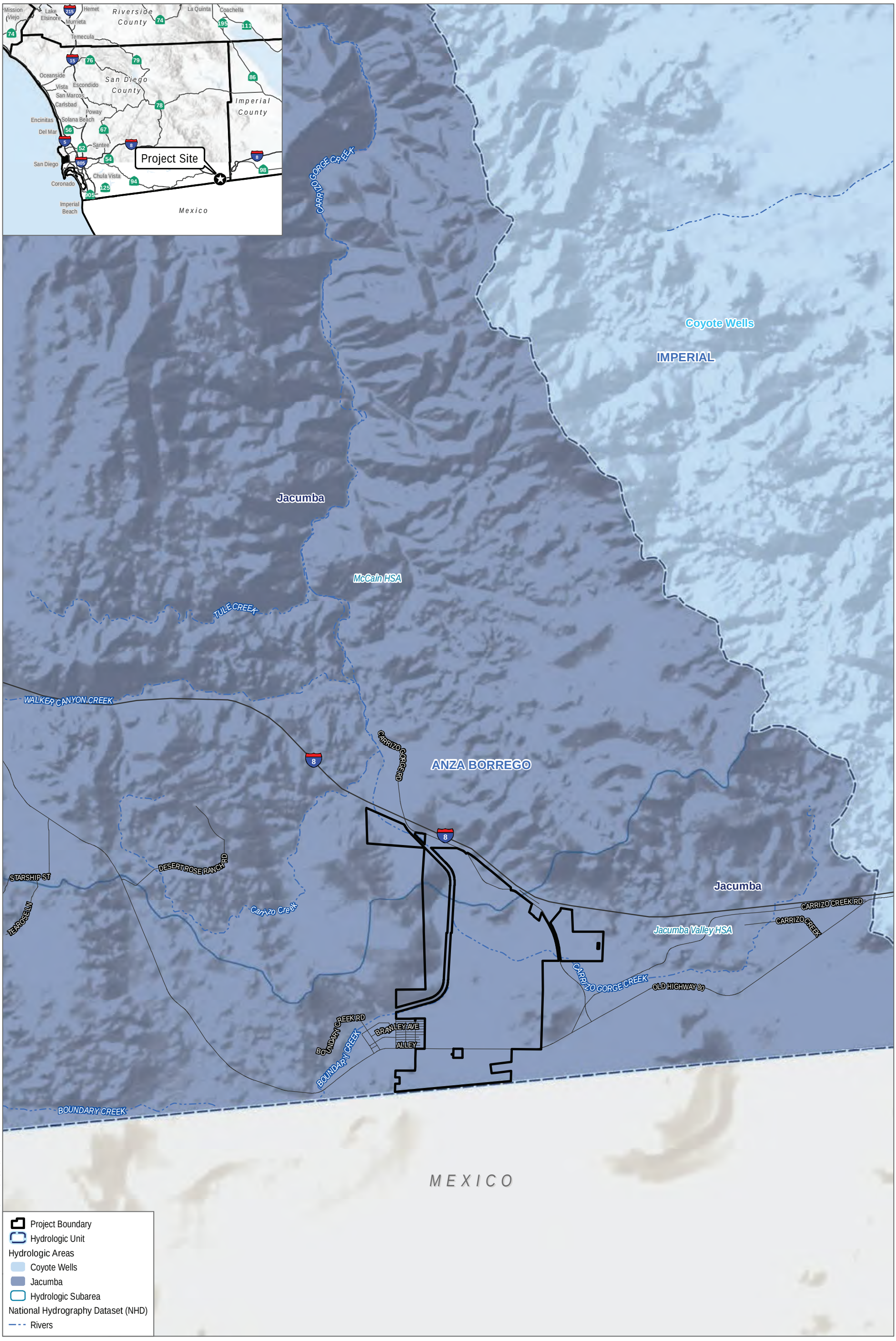

SOURCE: USGS 2020; SANGIS 2017, 2020

DUDEK

0 0.5 1 Miles

FIGURE 4-1

Hydrologic Setting

JVR Energy Park Project

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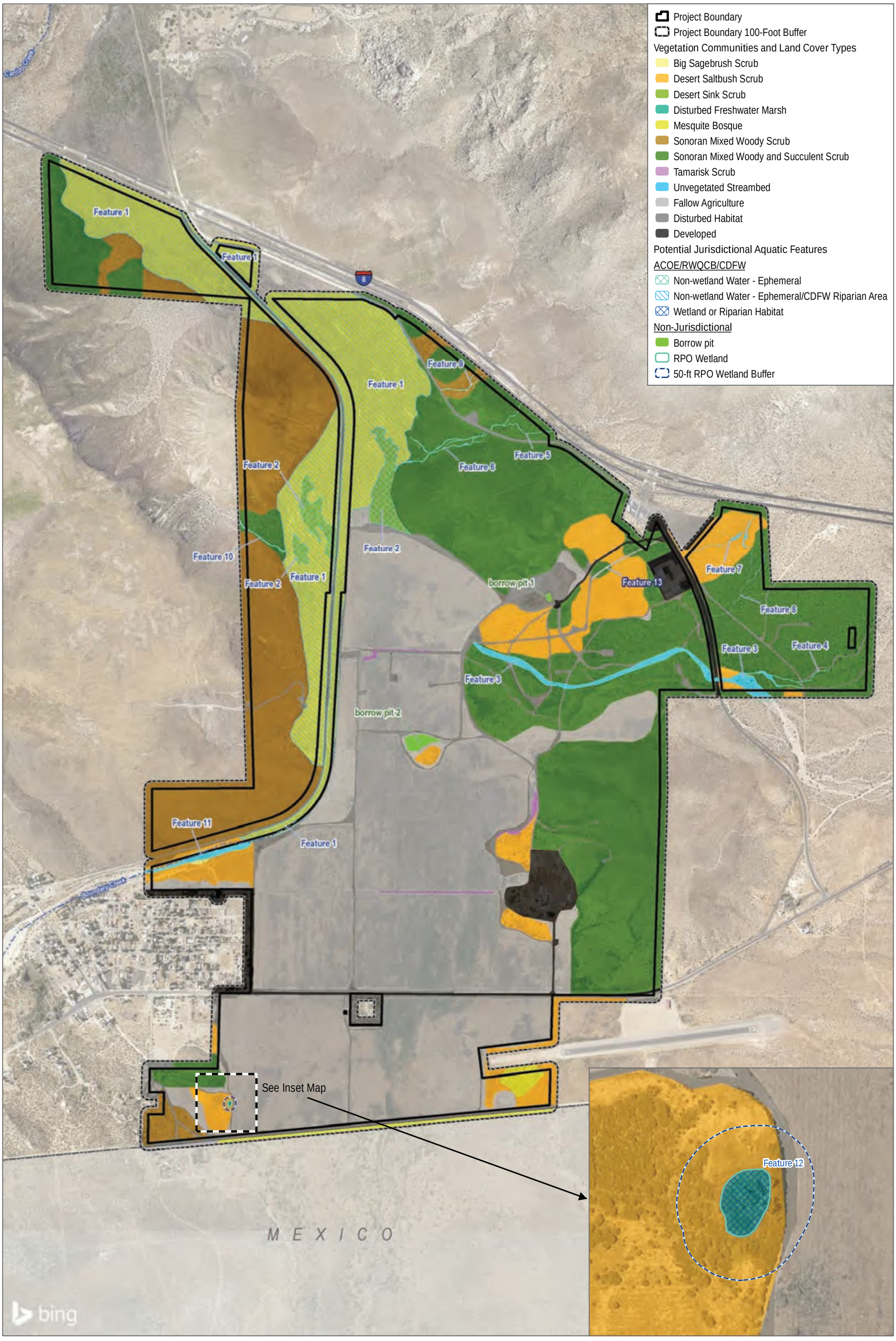

SOURCE: SANGIS 2017, 2020

DUDEK

0 500 1,000 Feet

FIGURE 4-2

Vegetation Communities and Land Covers and Jurisdictional Delineation

JVR Energy Park Project

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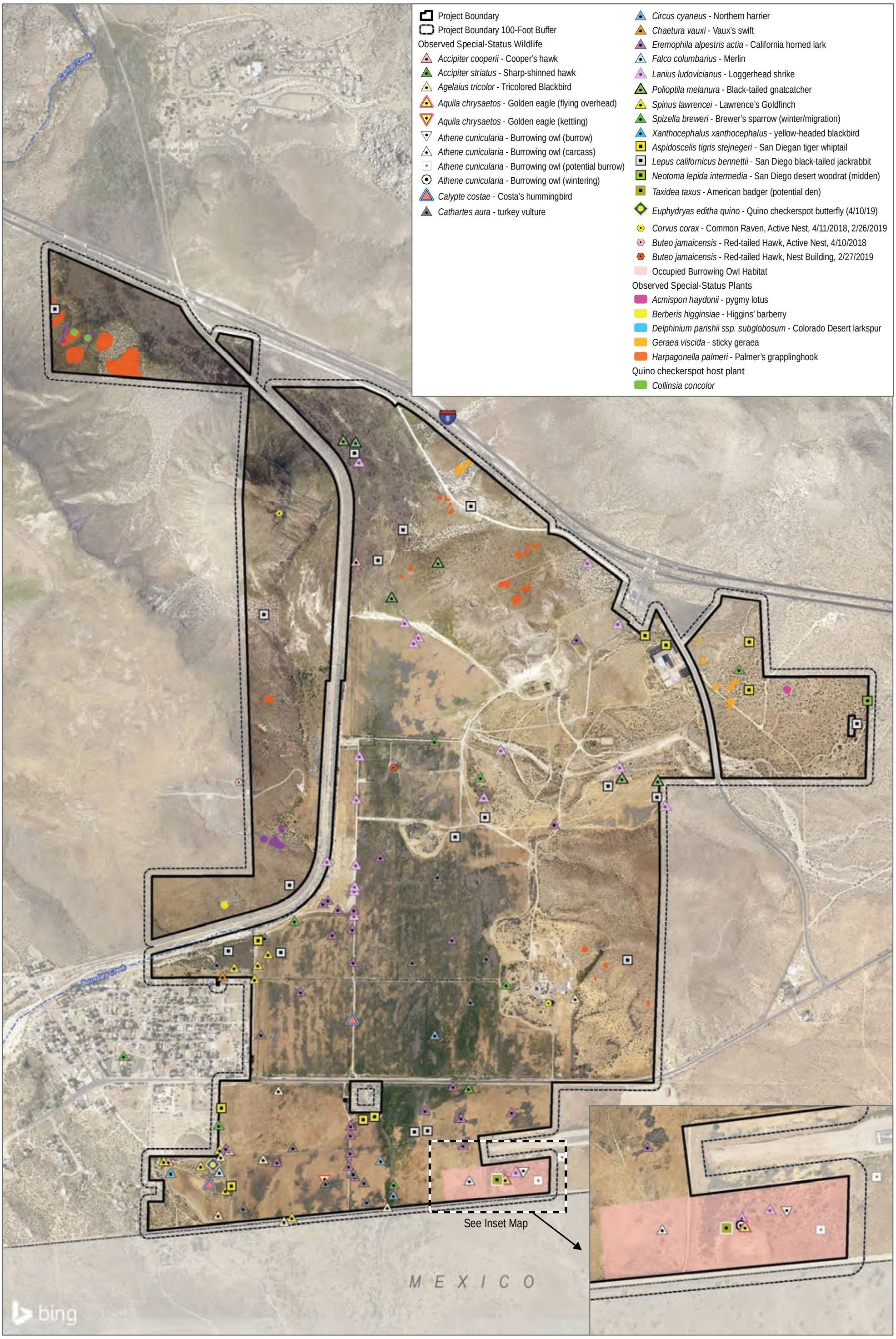

SOURCE: SANGIS 2017, 2020

DUDEK

0 500 1,000 Feet

FIGURE 4-3

Special-Status Wildlife and Plants

JVR Energy Park Project

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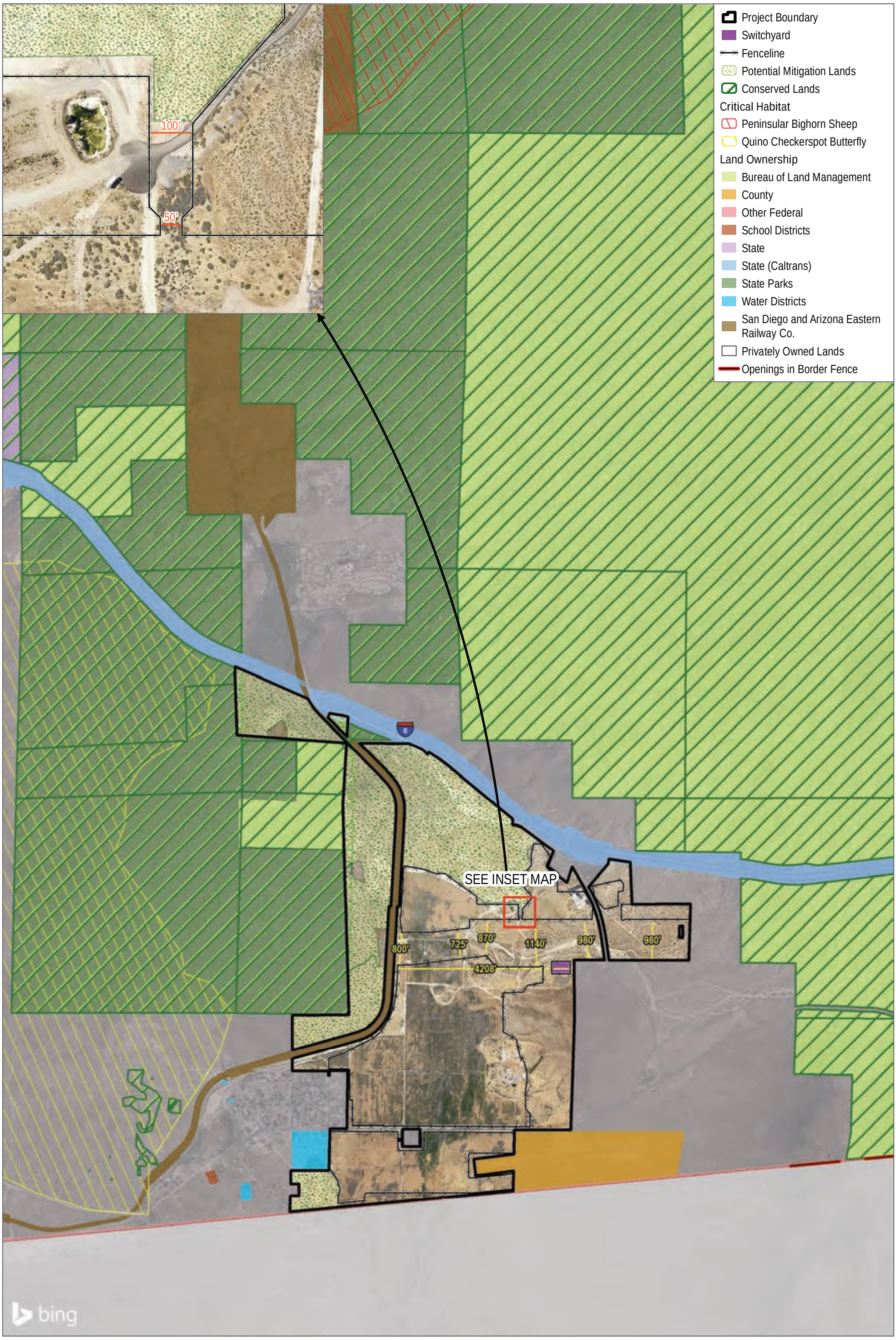

SOURCE: Kimley-Horn 2020; SANGIS 2017, 2020

DUDEK

0 1,000 2,000 Feet

FIGURE 4-4

Habitat Connectivity and Wildlife Movement

JVR Energy Park Project

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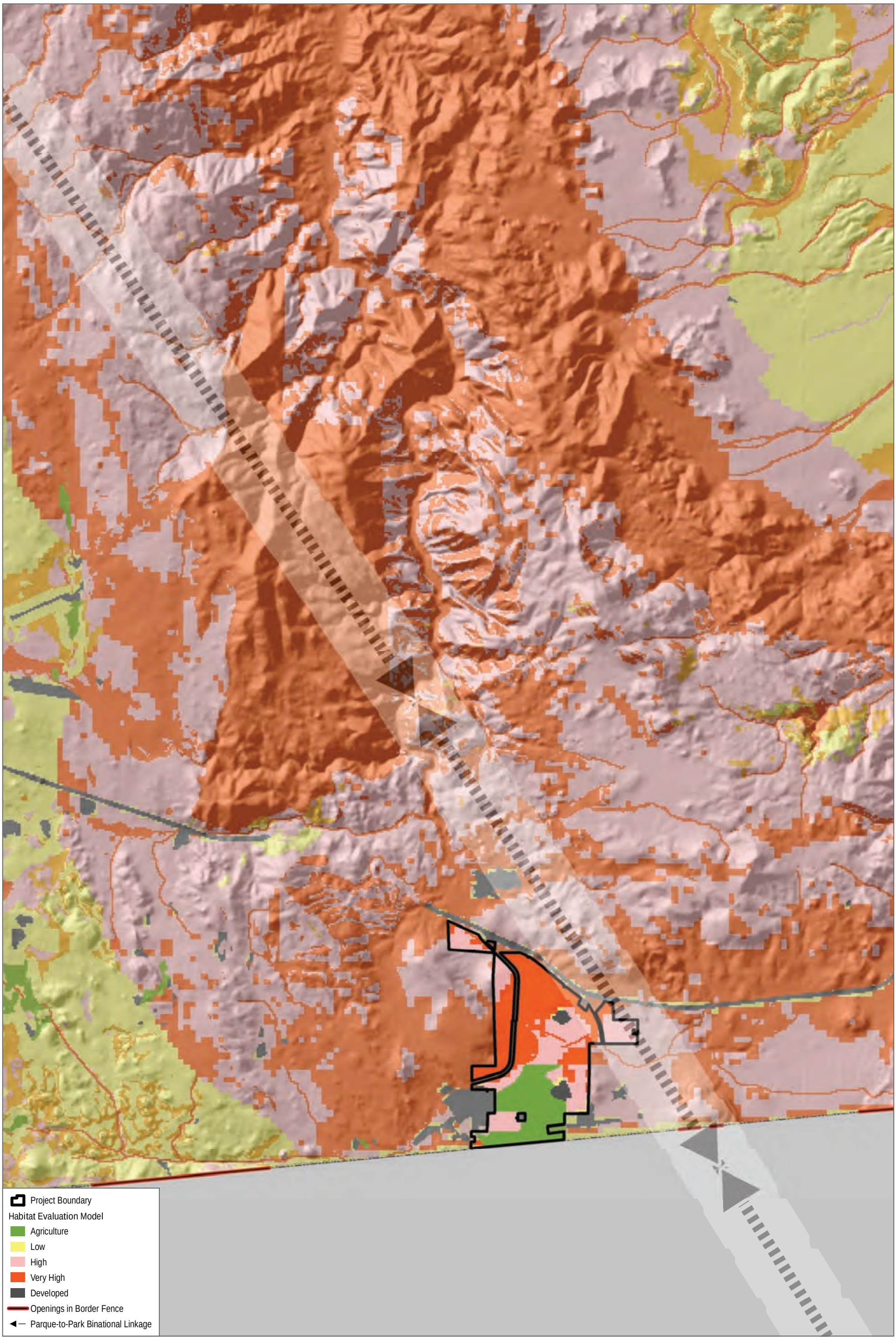

SOURCE: Stallcup et. al. 2015; SANGIS 2020

DUDEK

0 0.5 1 Miles

FIGURE 4-5

Habitat Evaluation Model

JVR Energy Park Project

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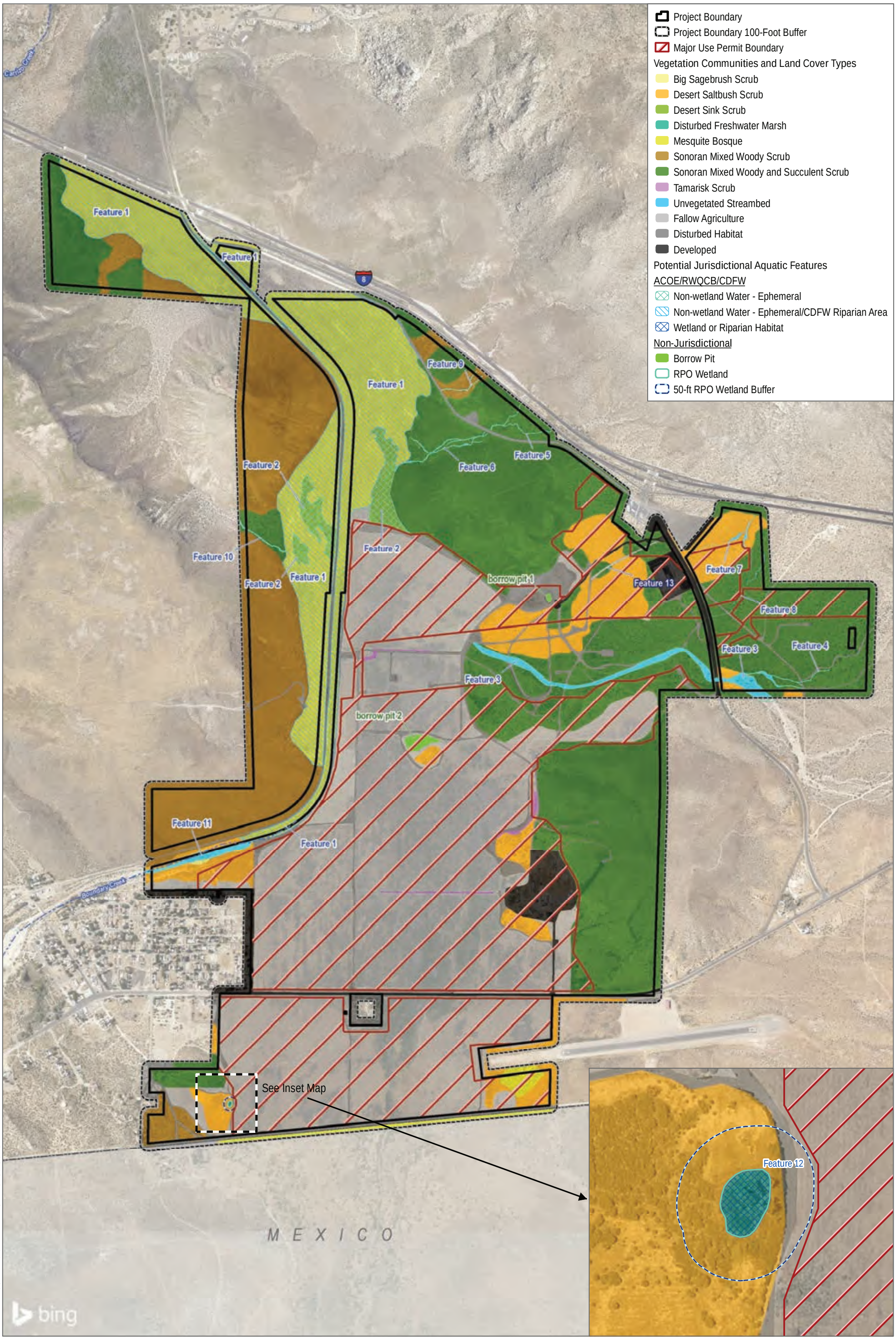

SOURCE: Kimley-Horn 2020; SANGIS 2017, 2020

FIGURE 5-1

Impacts to Vegetation Communities and Land Covers and Jurisdictional Delineation

JVR Energy Park Project

DUDEK

0 500 1,000 Feet

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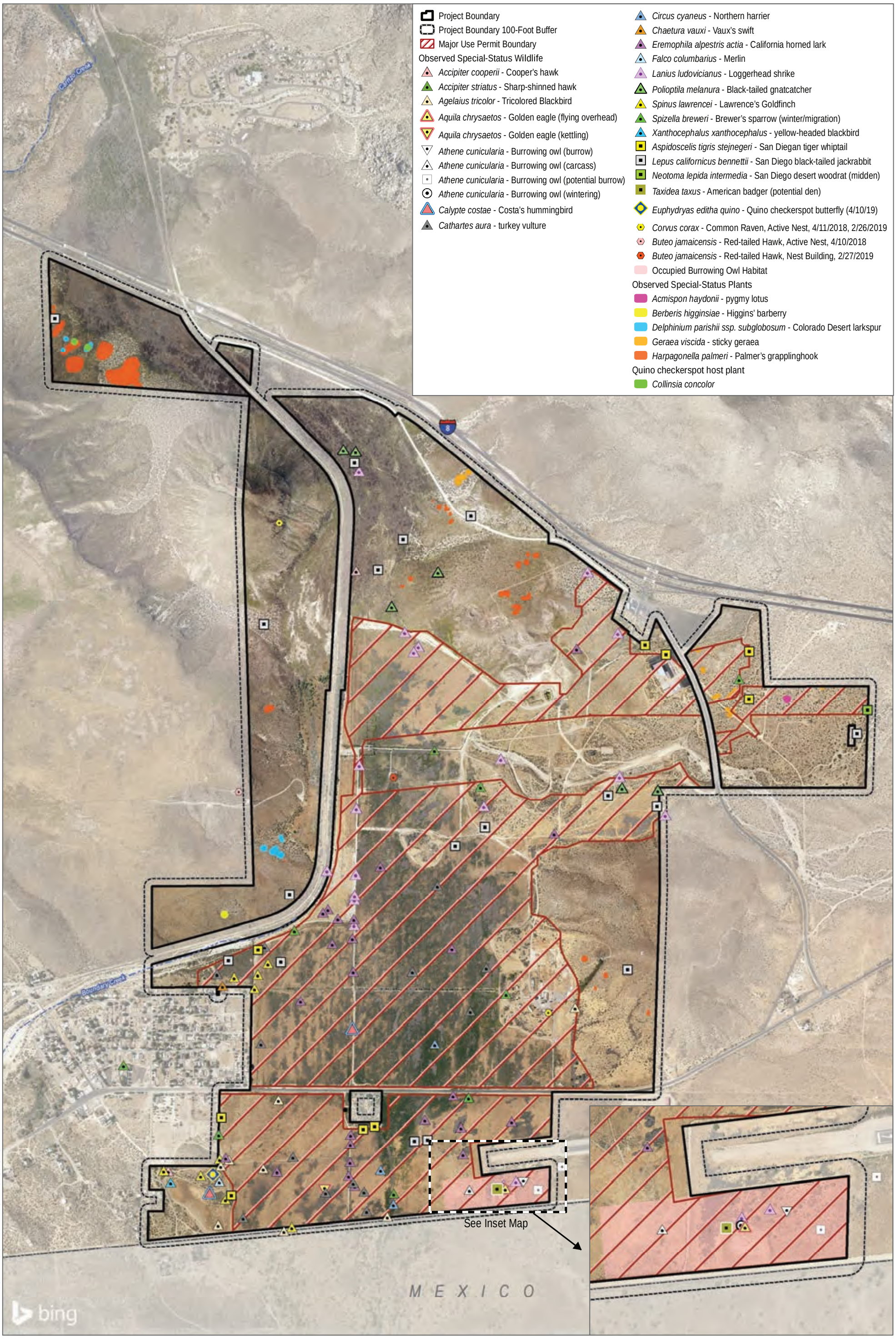

SOURCE: Kimley-Horn 2020; SANGIS 2017, 2020

DUDEK

0 500 1,000 Feet

FIGURE 5-2

Impacts to Special-Status Wildlife and Plants

JVR Energy Park Project

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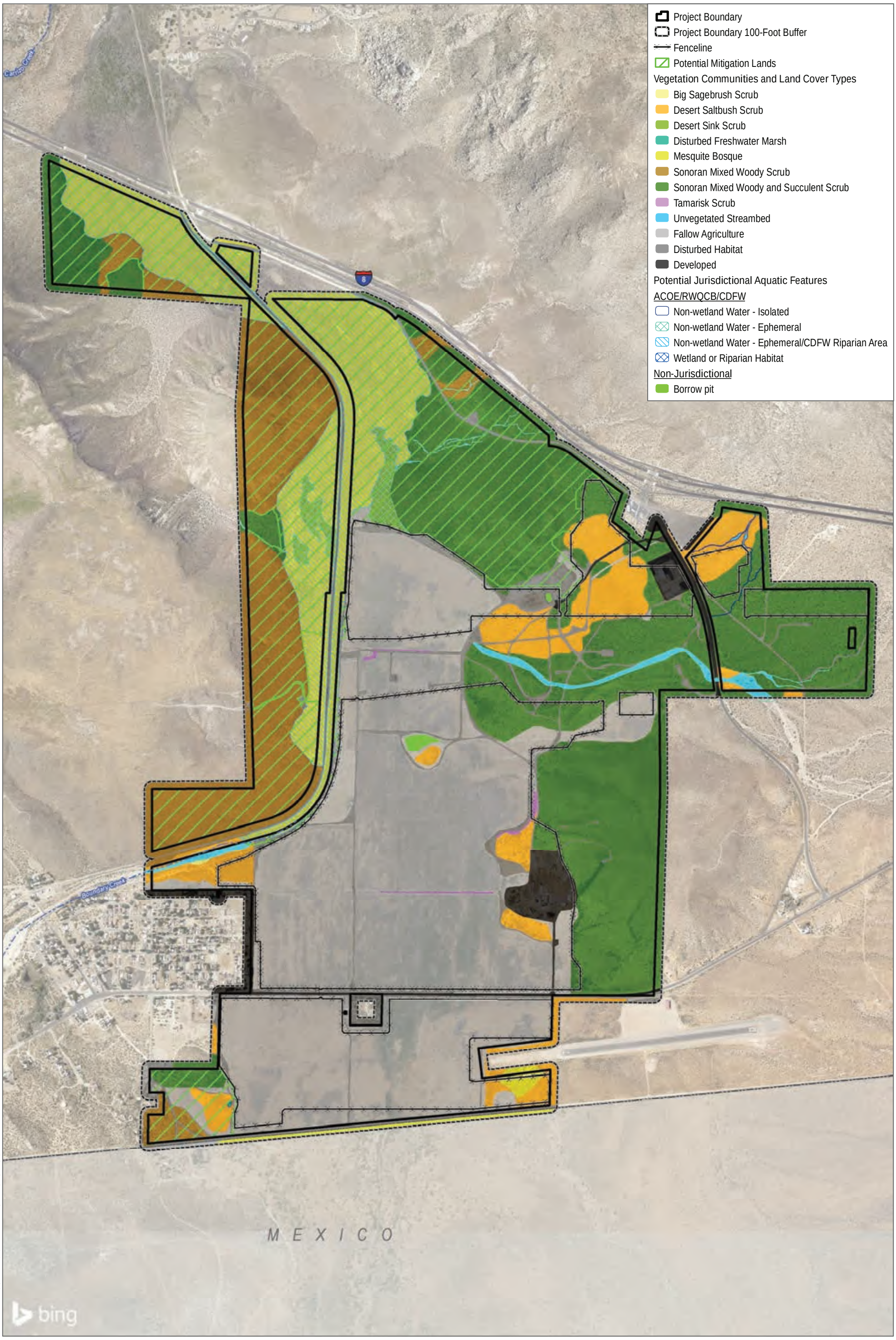

SOURCE: Kimley-Horn 2020; SANGIS 2017, 2020

DUDEK

0 500 1,000 Feet

FIGURE 5-3

Potential Mitigation Areas

JVR Energy Park Project

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Appendix A

2019 Focused Quino Checkerspot Butterfly Survey Report for the JVR Energy Park Project, Jacumba, San Diego County, California

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

June 24, 2019 (Revised June 26, 2019) 10743

U.S. Fish and Wildlife Service
Attention: Stacey Love, Recovery Permit Coordinator
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

Subject: 2019 Focused Quino Checkerspot Butterfly Survey Report for the Jacumba Valley Ranch Energy Project, Jacumba, San Diego County, California

Dear Ms. Love:

This letter report documents the spring 2019 results of a focused survey conducted by Dudek for the federally listed endangered Quino checkerspot butterfly (*Euphydryas editha quino*) (Quino). This survey was conducted in support of the Jacumba Valley Ranch Energy Project (Project), a proposed solar energy facility project located within the community of Jacumba Hot Springs, San Diego County, California. This report is intended to satisfy reporting requirements for the following Quino-permitted biologists: Anita Hayworth (TE-781084-9.1), Antonette Gutierrez (TE-50992-B), Brock Ortega (TE-813545-6), Callie Amoaku (TE-36118B-1), Darin Busby (TE-115373-3), David Erik LaCoste (TE-027736-6), Diana Saucedo (TE-221287-1), Erin Bergman (TE53771B-2), Jeff Priest (TE-840619-6), John Dicus (TE-839960-7), Lindsay Willrick (TE-61175B-0), Melanie Dicus (TE-049175-4), Patricia Schuyler (TE-27502B-1), Paul M. Lemons (TE-051248-5), Tara Baxter (TE-87004B-0), Tricia Wotipka (working under TE-840619-6), and Victor Novik (TE-069534).

Study Area and Existing Conditions

The study area is located south of Interstate 8 within private lands located immediately east of the community of Jacumba Hot Springs and adjacent to the United States-Mexico International Border in eastern San Diego County, California (Figure 1, Survey Results – Index). The study area consisted of the anticipated Project disturbance areas (Figure 2, Survey Results).

The study area is situated south and west of Carrizo Gorge Road and immediately north of the United States-Mexico border. The Project site lies within the Jacumba U.S. Geological Survey 7.5-minute quadrangle, Townships 17 South and 18 South, Range 8 East, Sections 4, 5, 8, 9, 32, and 33. The elevation range within the Project site is from 2,720 feet to 3,360 feet above mean sea level.

The general topography of the site is gently rolling with some steeper hillslopes along the western and eastern sides. The site has been previously disturbed for agricultural purposes.

Existing land uses within the vicinity of the study area can be characterized as predominantly rural, large-lot ranches and single-family homes, with a mixture of small-scale agriculture, recreational, and open space, with the exception of the Campo Band of Kumeyaay Indians Reservation, wind turbines to the north of Interstate 8, and the Tule Wind Project.

According to the U.S. Department of Agriculture, Natural Resources Conservation Service, the following seven soil series were mapped within the study area: Carrizo (very gravelly sand, 0% to 9% slopes); Indio (silt loam, 0% to 2%

slopes, 2% to 5% slopes, and saline, 0% to 2% slopes); La Posta (rocky loamy coarse sand, 5% to 30% slopes, eroded); Ramona (sandy loam, 5% to 9% slopes, and 9% to 15% slopes, eroded); Reiff (fine sandy loam, 0% to 2% slopes); Rositas (loamy coarse sand, 2% to 9% slopes; sloping gullied land); and stony land (USDA 2019).

Vegetation Communities

The study area is primarily disturbed habitat that was previously an agricultural area, and also supports desert scrub and mesquite bosque communities. Dirt roads traverse much of the study area.

Quino Checkerspot Butterfly Survey

Background Information

The Quino subspecies was added to the federal Endangered Species List by the U.S. Fish and Wildlife Service (USFWS) on January 16, 1997 (62 FR 2313–2322). The species, Edith's checkerspot (*E. editha*), has a range extending from British Columbia and Alberta, Canada, south through Colorado and Utah, and west along the coast to northern Baja California. It is divided into 20 subspecies, each of which has its own range and biological and morphological characteristics. In California, there are 12 subspecies (Garth and Tilden 1986), three of which are currently known to occur in Southern California. The Quino is the southwestern most subspecies of *E. editha* (Mattoni et al. 1997).

The Quino is known to occur in association with a variety of plant communities, soil types, and elevations (up to 5,000 feet above mean sea level). The plant communities include clay soil meadows, open grasslands, coastal sage scrub, chamise chaparral, red shank chaparral, juniper woodlands, and semi-desert scrub (Ballmer et al. 2001). The Quino is also associated with clay soils that possess cryptogamic crusts and vernal pools (USFWS 2002).

The Quino is a medium-sized butterfly (approximately 0.8-inch to 1.1-inch wingspan) belonging to the family Nymphalidae. The adults are primarily orange-red with white and black markings on the dorsal wing surface. They are active primarily in March and April, but this active period may vary depending on weather conditions (Ballmer et al. 2001). The adult butterfly feeds on nectar, which it obtains from spring annuals such as popcorn flower (*Plagiobothrys* spp., *Cryptantha* spp.), whitedaisy tidytips (*Layia glandulosa*), goldenbush (*Ericameria* spp.), pincushion (*Chaenactis* spp.), fiddleneck (*Amsinckia* spp.), chia (*Salvia columbariae*), and bluedicks (*Dichelostemma capitatum*), among others.

Adult males and virgin females sometimes "hilltop," or travel to elevated locations to find mates. While waiting for females to arrive, the males will often exhibit territorial behavior and will chase other butterflies that approach them. Frequently, the butterflies are observed in meadows or clearings where their host plants occur (Ballmer et al. 2001).

A female may lay 20 to 75 eggs at one time and may produce up to 1,200 eggs in her lifetime. The eggs hatch in approximately 10 days under favorable weather conditions and the young larvae will immediately begin to feed upon a host plant. As of 2014, the USFWS considers the following as larval host plants: dwarf plantain (*Plantago erecta*), woolly plantain (*P. patagonica*), Coulter's snapdragon (*Antirrhinum coulterianum*), purple Chinese houses (*Collinsia*

heterophylla), stiffbranch bird's beak (*Cordylanthus rigidus*), and exserted Indian paintbrush (*Castilleja exserta*) (USFWS 2014). In addition, Chinese houses (*Collinsia concolor*) is a potential larval host plant (Pratt and Pierce 2009).

After feeding, the early larva enters an obligatory aestival diapause (dormant stage), which may be broken after fall or winter rains (Murphy and White 1984; Osborne 1998). If adverse weather conditions occur, the emergent larva may reenter a diapause stage repeatedly, for up to 5 or 6 years, until favorable weather conditions permit sufficient growth of the host plant to allow the larva to complete its development.

The Quino was once common in Southern California. It ranged north into Ventura County, California, west to the Pacific Ocean, east to the deserts, and south into northern Baja California, Mexico. Currently, it is known to occur only in a few, probably isolated, colonies in southwestern Riverside County, San Diego County in California, and in northern Baja California, Mexico.

Reasons for the butterfly's reduction in population are not well understood. Habitat loss due to degradation and fragmentation caused by urban and rural development, agricultural conversion, off-road vehicular use, the invasion of non-native plants and insects, fire management practices, over collecting, and adverse weather conditions have likely contributed to the species' decline (62 FR 2313–2322).

Methods – Habitat Assessment and Host Plant Mapping

Prior to the focused surveys, Dudek biologists conducted a habitat assessment within the study area in order to identify suitable habitat and exclude unsuitable habitat. Excluded areas consisted of developed areas and densely vegetated scrub habitat with tall shrubs forming closed canopies. While host plant surveys were performed in concert with the habitat assessment, surveyors also looked for host plants during the focused surveys to document any changes from the initial host plant mapping effort.

Additionally, Dudek biologists conducted two passes of Quino host plant mapping surveys between February 25, 2019 and April 9, 2019, in accordance with the schedule provided in Table 1. Botanical surveys were conducted by biologists Callie Amoaku, Erin Bergman, Olivia Koziel, and Shana Carey. The survey was conducted on foot. Approximately 7 person-days were spent conducting host plant mapping within the study area.

The host plant mapping survey focused on the identification and location of six recognized host plants and one potential host plant for Quino: dwarf plantain, woolly plantain, Coulter's snapdragon, stiffbranch bird's beak, exserted Indian paintbrush, purple Chinese houses, and Chinese houses (USFWS 2014; Pratt and Pierce 2009). However, purple Chinese houses do not have an eastern San Diego county distribution. Nectar plants were recorded each week of surveys.

Table 1 Schedule of Host Plant Mapping Surveys

Date	Hours	Personnel	Conditions (temperature, cloud cover, wind speed)
2019-02-25	9:15 a.m.–1:45 p.m.	Callie Amoaku, Erin Bergman	64°F; 0% cloud cover; 0–1 mph wind
2019-02-28	10:20 a.m.–5:30 p.m.	Olivia Koziel, Shana Carey	55°F–62°F; 20%–40% cloud cover; 5 mph wind

Date	Hours	Personnel	Conditions (temperature, cloud cover, wind speed)
2019-03-01	9:15 a.m.–1:45 p.m.	Olivia Koziel, Shana Carey	67°F–69°F; 10%–20% cloud cover; 3–15 mph wind
2019-04-09	7:00 a.m.–2:15 p.m.	Olivia Koziel	59°F–74°F; 10%–30% cloud cover; 3–25 mph wind

Dudek biologist recorded locations of Quino host plants using a mobile application. Data collected included the surveyor(s), date, species of host plant, and density of the host plant at the point at which the host plant was found. All host plant occurrences were mapped as points. Density was assessed per square meter and was collected using the following classes:

- Very Low: 1–19 plants per square meter
- Low: 20–100 plants per square meter
- Medium: 100–1,000 plants per square meter
- High: 1,000–10,000+ plants per square meter

Points were collected within patches of host plant at least as close as every 3 meters (10 feet). At the conclusion of survey, Dudek geographic information systems (GIS) analysts created a GIS coverage for host plants. After review by a biologist, a geodatabase was created to ensure this data is topologically correct and met final quality control and assurance procedures.

Methods – Quino Protocol Surveys

The 2014 USFWS protocol states that focused Quino surveys should begin the third week of February and end the second Saturday in May, unless otherwise approved by USFWS. Surveys are to be conducted during the adult flight season by biologists possessing a recovery permit for this species pursuant to Section 10(a)(1)(A) of the federal Endangered Species Act (USFWS 2014). The 2019 focused surveys followed the 2014 USFWS protocol with the exception of an approved amendment included in the 2019 notification. The amendment allowed surveys to begin the week of March 4 to account for the location's high elevation, generally colder and windier conditions, and later start of Quino emergence.

Focused Quino surveys were conducted over nine visits from March 5, 2019, through May 10, 2019, per the 2014 USFWS Quino Checkerspot Butterfly Survey Guidelines (see Table 2). The survey area consisted of suitable habitat for Quino (Figure 2). Surveys were conducted by Quino-permitted biologists Anita Hayworth (TE-781084-9.1), Antonette Gutierrez (TE-50992-B), Brock Ortega (TE-813545-6), Callie Amoaku (TE-36118B-1), Darin Busby (TE-115373-3), David Erik LaCoste (TE-027736-6), Diana Saucedo (TE-221287-1), Erin Bergman (TE53771B-2), Jeff Priest (TE-840619-6), John Dicus (TE-839960-7), Lindsay Willrick (TE-61175B-0), Melanie Dicus (TE-049175-4), Patricia Schuyler (TE-27502B-1), Paul M. Lemons (TE-051248-5), Tara Baxter (TE-87004B-0), Tricia Wotipka (working under TE-840619-6), and Victor Novik (TE-069534).

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
N/A	Habitat Assessment	2019-02-25	CA	12:00 p.m.–3:33 p.m.	Air Temp: 62°F; Ground Temp: 64°F; 0% cc; 0–1 mph wind; Clear	
1	1	2019-03-05	JP	12:42 p.m.–2:30 p.m.	Air Temp: 75°F–76°F; Ground Temp: 76°F; 10% cc; 1–5 mph wind; Patchy	
	1	2019-03-05	PL	9:10 a.m.–2:30 p.m.	Air Temp: 60°F–75°F; Ground Temp: 60°F–76°F; 0–10% cc; 0–5 mph wind; Clear	
	2	2019-03-13	JP	10:00 a.m.–4:15 p.m.	Air Temp: 52°F–53°F; Ground Temp: 52°F–54°F; 60–70% cc; 1–7 mph wind; Patchy	
	2	2019-03-13	PL	12:30 p.m.–4:45 p.m.	Air Temp: 58°F–64°F; Ground Temp: 62°F–66°F; 40–80% cc; 1–5 mph wind; Clear to Patchy	
	3	2019-03-19	CA, PS	9:15 a.m.–12:47 p.m.	Air Temp: 65°F–81°F; Ground Temp: 63°F–80°F; 0% cc; 0–4 mph wind; Clear	
	4	2019-03-25	PL	8:20 a.m.–3:40 p.m.	Air Temp: 71°F–76°F; Ground Temp: 70°F–74°F; 0–10% cc; 0–5 mph wind; Clear	
	5	2019-04-07	JP, PL	9:30 a.m.–4:45 p.m.	Air Temp: 64°F–80°F; Ground Temp: 64°F–83°F; 10% cc; 0–10 mph wind; Clear	
	6	2019-04-09	JP, PL	8:40 a.m.–4:00 p.m.	Air Temp: 65°F–77°F; Ground Temp: 64°F–80°F; 20–40% cc; 2–15 mph wind; Patchy to Clear	
	7	2019-04-17	JP	9:15 a.m.–4:30 p.m.	Air Temp: 61°F–72°F; Ground Temp: 64°F–78°F; 0% cc; 1–12 mph wind; Clear	
	8	2019-04-22	PL	8:15 a.m.–3:40 p.m.	Air Temp: 62°F–73°F; Ground Temp: 60°F–77°F; 0% cc; 0–12 mph wind; Clear	
	9	2019-05-01	PL	8:40 a.m.–4:00 p.m.	Air Temp: 65°F–73°F; Ground Temp: 63°F–72°F; 10% cc; 0–5 mph wind; Clear	
	10 (Portion)	2019-05-07	JP	9:30 a.m.–9:45 a.m.	Air Temp: 56°F; Ground Temp: 60°F; 100% cc; 2–7 mph wind; Overcast	

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
	10 (Finish)	2019-05-08	CA, EB, PS	2:52 p.m.–5:38 p.m.	Air Temp: 63°F–71°F; Ground Temp: 65°F–81°F; 10–40% cc; 2–9 mph wind; Clear to Patchy	
2	1	2019-03-05	CA, EB, PS	12:32 p.m.–3:01 p.m.	Air Temp: 73°F–78.8°F; Ground Temp: 71.6°F–75.2°F; 10% cc; 0–4 mph wind; Clear	
	2	2019-03-16	PL	9:40 a.m.–5:00 p.m.	Air Temp: 61°F–65°F; Ground Temp: 60°F–64°F; 0% cc; 3–12 mph wind; Clear	
	3	2019-03-19	PL	8:20 a.m.–3:40 p.m.	Air Temp: 58°F–74°F; Ground Temp: 60°F–72°F; 0–10% cc; 0–15 mph wind; Clear	
	4	2019-03-26	PL	8:20 a.m.–3:45 p.m.	Air Temp: 69°F–82°F; Ground Temp: 70°F–79°F; 100% cc; 1–5 mph wind	
	5	2019-04-07	JP, PL	9:30 a.m.–4:45 p.m.	Air Temp: 64°F–81°F; Ground Temp: 66°F–83°F; 0–10% cc; 0–10 mph wind; Clear	
	6	2019-04-11	JP, PL	8:30 a.m.–3:45 p.m.	Air Temp: 64°F–74°F; Ground Temp: 63°F–72°F; 0–30% cc; 6–12 mph wind; Clear	
	7	2019-04-17	PL	8:30 a.m.–3:45 p.m.	Air Temp: 60°F–75°F; Ground Temp: 60°F–74°F; 0% cc; 0–9 mph wind; Clear	
	8	2019-04-24	PL	8:15 a.m.–3:40 p.m.	Air Temp: 65°F–84°F; Ground Temp: 64°F–85°F; 1–8 mph wind; Clear	
	9	2019-05-04	PL	8:00 a.m.–3:15 p.m.	Air Temp: 64°F–84°F; Ground Temp: 63°F–83°F; 0–10% cc; 1–15 mph wind; Clear	
	10	2019-05-08	CA, EB, PS	12:30 p.m.–2:50 p.m.	Air Temp: 66°F–71°F; Ground Temp: 80°F–81°F; 10–20% cc; 2–9 mph wind; Clear	
3	1	2019-03-05	CA, EB, PS	9:15 a.m.–12:15 p.m.	Air Temp: 63°F–67.3°F; Ground Temp: 60°F–71.4°F; 0% cc; 0–8.3 mph wind; Clear	
	2	2019-03-13	CA, PS	12:10 p.m.–4:13 p.m.	Air Temp: 52°F–60.5°F; Ground Temp: 62°F–70°F;	

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
3					30–50% cc; 1–8 mph wind; Patchy	
	3	2019-03-19	CA, PS	12:50 p.m.–4:17 p.m.	Air Temp: 81°F–82°F; Ground Temp: 80°F–81°F; 0% cc; 1–10 mph wind; Clear	
	4	2019-03-28	CA, PS	9:30 a.m.–12:57 p.m.	Air Temp: 69°F–70°F; Ground Temp: 63°F–73°F; 10% cc; 1–12 mph wind; Clear	
	5	2019-04-06	AG, VN	9:55 a.m.–1:30 p.m.	Air Temp: 63°F–71°F; Ground Temp: 62°F–71°F; 0–10% cc; 3–10 mph wind; Clear to Patchy	
	6	2019-04-11	CA, EB, PS	9:26 a.m.–11:53 a.m.	Air Temp: 73°F–75°F; Ground Temp: 70.7°F–77.2°F; 10–30% cc; 0–2 mph wind; Clear to Patchy	
	7	2019-04-18	PS	8:57 a.m.–3:52 p.m.	Air Temp: 75.7°F–80.1°F; Ground Temp: 71.1°F–83.8°F; 0–10% cc; 2–8 mph wind; Clear	
	8	2019-04-24	CA, PS	9:12 a.m.–12:48 p.m.	Air Temp: 79.3°F–88°F; Ground Temp: 76.3°F–92°F; 0–2 mph wind; Clear	
	9	2019-05-02	PS	9:15 a.m.–4:20 p.m.	Air Temp: 67°F–77°F; Ground Temp: 70°F–82°F; 60–70% cc; Patchy	
	10	2019-05-08	CA, EB, PS	9:41 a.m.–12:25 p.m.	Air Temp: 57°F–66°F; Ground Temp: 70°F–80°F; 50–100% cc; 1–7 mph wind; Overcast to Patchy	
4	1	2019-03-05	EB, LW	9:15 a.m.–1:00 p.m.	60°F–70°F; 0–90% cc; 0–16 mph wind; Clear	
	2	2019-03-16	JP	9:00 a.m.–4:40 p.m.	Air Temp: 58°F; Ground Temp: 56°F–57°F; 0% cc; 5–12 mph wind; Clear	
	3	2019-03-22	AG, TB	1:30 p.m.–5:00 p.m.	Air Temp: 69°F; Ground Temp: 69°F; 0% cc; 4–11 mph wind; Clear	
	4	2019-03-28	CA, PS	12:59 p.m.–4:32 p.m.	Air Temp: 67°F–70°F; Ground Temp: 68°F–73°F; 0–20% cc; 1–12 mph wind; Clear	
	5 (Portion)	2019-04-05	DS, LW	10:00 a.m.–11:00 a.m.	58°F; 90–100% cc; 5–11.5 mph wind; Overcast	

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
	5 (Finish)	2019-04-06	AG, VN	1:30 p.m.–5:00 p.m.	Air Temp: 71°F–74°F; Ground Temp: 71°F–72°F; Water Temp: null; 10–20% cc; 0–10 mph wind; Clear	
	6	2019-04-11	CA, EB, PS	2:28 p.m.–4:56 p.m.	Air Temp: 72°F; Ground Temp: 75°F–79°F; 50–70% cc; 0–8 mph wind; Patchy to Clear	
	7	2019-04-17	DS, LW	9:00 a.m.–12:30 p.m.	Air Temp: 63°F–76°F; Ground Temp: 62°F–80°F; 0% cc; 0–5 mph wind; Clear	
	8	2019-04-24	CA, PS	1:02 p.m.–4:29 p.m.	Air Temp: 86°F–88°F; Ground Temp: 89°F–92°F; 0% cc; 0–6 mph wind; Clear	
	9	2019-05-01	DS, LW	8:40 a.m.–3:55 p.m.	62°F–65°F; 0% cc; 4–6 mph wind; Clear	Survey includes Survey Area 5
	10	2019-05-09	EL, TB	11:15 a.m.–2:15 p.m.	Air Temp: 62°F–65°F; Ground Temp: 66°F–69°F; 10–50% cc; 4–8 mph wind; Patchy to Clear	
5	1	2019-03-05	AH	9:05 a.m.–4:15 p.m.	Air Temp: 50°F–73°F; Ground Temp: 60°F–73°F; 0–70% cc; 0–5 mph wind; Clear to	
	2	2019-03-17	LW	10:00 a.m.–5:00 p.m.	Air Temp: 79°F–80°F; Ground Temp: 75°F–78°F; 0% cc; 5–12 mph wind; Clear	
	3	2019-03-24	LW	9:30 a.m.–4:30 a.m.	60°F–70°F; 0–30% cc; 0–3 mph wind; Clear	
	3	2019-03-24	LW	9:30 a.m.–4:30 p.m.	Air Temp: 60°F–70°F; Ground Temp: 60°F; 0–30% cc; 0–2 mph wind; Clear	
	4	2019-03-30	LW	9:30 a.m.–5:00 p.m.	61°F–72°F; 0% cc; 3–11 mph wind; Clear	
	5	2019-04-04	LW	9:00 a.m.–4:45 p.m.	60°F–64°F; 10–20% cc; 3–10 mph wind; Clear	
	6	2019-04-11	LW	8:35 a.m.–3:55 p.m.	61°F–70°F; 0% cc; 0–8 mph wind; Clear	
	7	2019-04-17	DS, LW	12:30 p.m.–4:00 p.m.	Air Temp: 76°F; Ground Temp: 80°F; 3–5 mph wind; Clear	
	8	2019-04-26	LW	8:04 a.m.–3:16 p.m.	65°F–83°F; 0% cc; 1–7 mph wind; Clear	

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
	9	2019-04-30	DS, LW	8:40 a.m.–3:55 p.m.	62°F–65°F; 0% cc; 4–6 mph wind; Clear	Survey includes Survey Area 4
	10	2019-05-08	EL, TB	11:30 a.m.–3:00 p.m.	Air Temp: 60°F–66°F; Ground Temp: 60°F–74°F; 10–40% cc; 8–12 mph wind; Patchy to Clear	
6	1	2019-03-05	DB, EL	9:10 a.m.–12:45 p.m.	Air Temp: 60°F–79°F; Ground Temp: 60°F–79°F; 0–10% cc; 1–5 mph wind; Clear	
	2	2019-03-15	AG, TB	10:30 a.m.–2:00 p.m.	Air Temp: 61°F–64°F; Ground Temp: 61°F–64°F; 40% cc; 8–12 mph wind; Patchy	
	3	2019-03-19	EL, TB	1:00 p.m.–4:30 p.m.	Air Temp: 77°F–80°F; Ground Temp: 77°F–80°F; 0–10% cc; 5–10 mph wind; Clear to Patchy	
	4	2019-03-25	DB, TB	1:00 p.m.–4:30 p.m.	Air Temp: 78°F–79.5°F; Ground Temp: 81°F–83°F; 0% cc; 1–8 mph wind; Clear	
	5	2019-04-02	TB	8:30 a.m.–3:30 p.m.	Air Temp: 66°F–72°F; Ground Temp: 68°F–75°F; 0–20% cc; 5–12 mph wind; Clear to Patchy	
	6	2019-04-10	TB	9:00 a.m.–4:00 p.m.	Air Temp: 61°F–71°F; Ground Temp: 63°F–74°F; 0% cc; 1–7 mph wind; Clear	
	7	2019-04-15	EL, TB	1:00 p.m.–4:30 p.m.	Air Temp: 68°F–71°F; Ground Temp: 70°F–76°F; 20–30% cc; 10°F–15 mph wind; Patchy	
	8	2019-04-22	DS, TB	12:30 p.m.–4:00 p.m.	Air Temp: 74°F–78°F; Ground Temp: 76°F–85°F; 0–20% cc; 4–8 mph wind; Clear to Patchy	
	9	2019-05-01	EL, TB	12:30 p.m.–4:00 p.m.	Air Temp: 78°F; Ground Temp: 78°F; 0% cc; 0–7 mph wind; Clear	
	10 (Portion)	2019-05-08	EL, TB	3:00 p.m.–2:13 p.m.	Air Temp: 62°F–66°F; Ground Temp: 69°F–74°F; 10–40% cc; 8–12 mph wind; Clear to Patchy	

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
	10 (Finish)	2019-05-09	EL, TB	2:45 a.m.–4:15 p.m.	Air Temp: 65°F–70°F; Ground Temp: 69°F–72°F; 10–30% cc; 5–13 mph wind; Clear to Patchy	
7	1	2019-03-05	DB, EL	12:45 p.m.–4:20 p.m.	Air Temp: 67°F–74°F; Ground Temp: 70°F–79°F; 0–90% cc; 3–18 mph wind; Clear to Overcast	
	2	2019-03-15	AG, TB	2:00 p.m.–5:30 p.m.	Air Temp: 62°F–64°F; Ground Temp: 62°F–64°F; 20–40% cc; 6–12 mph wind; Overcast to Patchy	
	3	2019-03-19	EL, TB	9:30 a.m.–1:00 p.m.	Air Temp: 67°F–77°F; Ground Temp: 67°F–77°F; 0% cc; 1–10 mph wind; Clear	
	4	2019-03-25	DS, TB	9:30 a.m.–1:00 p.m.	Air Temp: 63°F–78°F; Ground Temp: 64°F–83°F; 0% cc; 0–8 mph wind; Clear	
	5	2019-04-01	TB	9:00 a.m.–4:00 p.m.	Air Temp: 70°F–79°F; Ground Temp: 70°F–79°F; 10–20% cc; 2–7 mph wind; Clear	
	6	2019-04-08	TB	8:30 a.m.–3:30 p.m.	Air Temp: 73°F–87°F; Ground Temp: 73°F–87°F; 10–30% cc; 0–3 mph wind; Clear to Patchy	
	7	2019-04-15	EL, TB	9:30 a.m.–1:00 p.m.	Air Temp: 64°F–70°F; Ground Temp: 68°F–76°F; 20–30% cc; 5–15 mph wind; Patchy	
	8	2019-04-22	DS, TB	9:00 a.m.–12:35 p.m.	Air Temp: 63°F–74°F; Ground Temp: 70°F–76°F; 0% cc; 1–8 mph wind; Clear	
	9	2019-05-01	EL, TB	9:00 a.m.–12:30 p.m.	Air Temp: 65°F–78°F; Ground Temp: 65°F–78°F; 0% cc; 0–1 mph wind; Clear	
	10[a] (Portion)	2019-05-06	DS, TB	9:45 a.m.–10:46 a.m.	Air Temp: 55°F; Ground Temp: 58.5°F–59°F; 50–80% cc; 10–15 mph wind; Drizzle	
	10[a] (Portion)	2019-05-07	TB	12:00 p.m.–5:00 p.m.	Air Temp: 64°F–68°F; Ground Temp: 64°F–68°F; 40–100% cc; 8–13 mph wind; Patchy	

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
	10 (Finish)	2019-05-08	DS	11:00 a.m.–1:00 p.m.	Air Temp: 60°F–61°F; Ground Temp: 61°F–65°F; 40–50% cc; Patchy	
8	1	2019-03-05	JD, MD	9:00 p.m.–12:35 p.m.	Air Temp: 60°F–72°F; Ground Temp: 61°F–73°F; 0–10% cc; 0–4 mph wind; Clear	
	2	2019-03-16	JD, MD	9:40 a.m.–4:40 p.m.	Air Temp: 60°F–65°F; Ground Temp: 61°F–67°F; 0% cc; 1–10 mph wind; Clear	
	3	2019-03-22	AG, TB	10:00 a.m.–1:30 p.m.	Air Temp: 60°F–69°F; Ground Temp: 60°F–69°F; 0% cc; 1–8 mph wind; Clear	
	4	2019-03-31	LW	10:15 a.m.–5:25 p.m.	68°F–73°F; 0% cc; 2–10 mph wind; Clear	
	5 (Portion)	2019-04-05	DS, LW	10:00 a.m.–11:00 a.m.	58°F; 90–100% cc; 5–11.5 mph wind; Overcast	
	5 (Portion)	2019-04-09	LW	8:15 a.m.–2:15 p.m.	61.5°F–82°F; 10–30% cc; 0–13 mph wind; Patchy to Clear	
	5 (Finish)	2019-04-10	CA	11:17 a.m.–12:23 p.m.	Air Temp: 69°F–78°F; Ground Temp: 78°F–82°F; 0% cc; 0–4 mph wind; Clear	
	6	2019-04-14	LW	9:15 a.m.–4:30 p.m.	69°F–74°F; 0% cc; 0–5 mph wind; Clear	
	7	2019-04-20	LW	8:05 a.m.–3:15 p.m.	64°F–74°F; 0% cc; 4–11 mph wind; Clear	
	8	2019-04-28	LW	8:30 a.m.–3:45 p.m.	64°F–71°F; 30–40% cc; 2–5 mph wind; Patchy	
	9	2019-05-05	LW	8:45 a.m.–3:55 p.m.	63°F–72°F; 0% cc; 5–11 mph wind; Clear	
	10	2019-05-10	EL	10:30 a.m.–5:35 p.m.	Air Temp: 60°F–65°F; Ground Temp: 67°F–72°F; 30–50% cc; 4–10 mph wind; Patchy	
9	1	2019-03-05	JP, TW	8:45 a.m.–1:10 p.m.	Air Temp: 60°F–63°F; Ground Temp: 56°F–60°F; 0% cc; 0–1 mph wind; Clear	
	2	2019-03-16	JD, MD	9:40 a.m.–4:40 p.m.	Air Temp: 60°F–65°F; Ground Temp: 61°F–67°F; 0% cc; 1–10 mph wind; Clear	
	3	2019-03-22	JP	9:30 a.m.–4:35 p.m.	Air Temp: 53°F–60°F; Ground Temp: 60°F–66°F; 0% cc; 0–6 mph wind; Clear	

Table 2 Schedule of Focused Quino Checkerspot Butterfly Surveys

Survey Area	Survey Pass	Survey Date	Biologist	Survey Time	Conditions	Notes
	4	2019-03-26	BO	8:55 a.m.–4:05 p.m.	Air Temp: 59°F–73°F; Ground Temp: 60°F–73°F; 10% cc; 0–10 mph wind; Patchy	
	5	2019-04-01	AH	8:20 a.m.–3:52 p.m.	Air Temp: 60°F–78°F; Ground Temp: 60°F–76°F; 20–50% cc; 0–5 mph wind; Patchy to	
	6	2019-04-11	CA, EB, PS	12:03 p.m.–2:22 p.m.	Air Temp: 74°F–77°F; Ground Temp: 81°F; 20–50% cc; 2–13 mph wind; Patchy to Clear	
	7	2019-04-18	VN	8:30 a.m.–3:45 p.m.	Air Temp: 71°F–84°F; Ground Temp: 69°F–87°F; 10–20% cc; 4–11 mph wind; Clear	
	8	2019-04-24	EB	8:11 a.m.–4:12 p.m.	Air Temp: 73°F–87°F; Ground Temp: 89°F; 0% cc; 0–3 mph wind; to Clear	
	9	2019-05-01	EB	8:44 a.m.–4:16 p.m.	Air Temp: 67°F–69°F; Ground Temp: 72°F–76°F; 0% cc; 0–3 mph wind; Clear	
	10	2019-05-07	EB	10:06 a.m.–5:08 p.m.	Air Temp: 64°F–68°F; Ground Temp: 70°F–71°F; 20% cc; 0–3 mph wind; Clear	

Notes: CA = Callie Amoaku (TE-36118B-1); JP = Jeffrey Priest (TE-840619-6); PL = Paul Lemons (TE-051248-5); PS = Patricia Schuyler (TE-27502B-1); EB = Erin Bergman (TE53771B-2); VN = Victor Novik (TE-069534); LW = Lindsay Willrick (TE-61175B-0); AG = Antonette Gutierrez (TE-50992-B); TB = Tara Baxter (TE-87004B-0); DS = Diana Saucedo (TE-221287-1); EL = David Erik LaCoste (TE-027736-6); AH = Anita Hayworth (TE-781084-9.1); DB = Darin Busby (TE-115373-3); JD = John Dicus (TE-839960-7); MD = Melanie Dicus (TE-049175-4); TW = Tricia Wotipka (TE-840619-6); BO = Brock Ortega (TE-813545-6).
cc = cloud cover
[a] Surveys terminated early due to non-protocol weather conditions.

The biologists were provided with 200-scale (1 inch = 200 feet) aerial maps of the study area. Binoculars were used to aid in detecting and identifying butterfly and other wildlife species.

The survey methods consisted of slowly walking roughly parallel transects spaced approximately 30 feet (10 meters) apart throughout all suitable habitats within the 653-acre study area. The study area was divided into nine survey areas, ranging from 69 acres to 71 acres each (Figure 2). Survey routes were arranged to thoroughly cover the survey area at a rate of no more than 10 acres per person-hour. All wildlife species were recorded and are included in Appendix A.

Surveys were conducted only during acceptable weather conditions (i.e., surveys were not conducted during fog, drizzle, or rain; winds greater than 15 miles per hour measured 4 to 6 feet above ground level for more than 30 seconds; temperature in the shade at ground level less than 60°F on a clear, sunny day; or temperature in the

shade at ground level less than 70°F on an overcast or cloudy day). Survey times, personnel, and conditions during the Quino survey are shown in Table 2. Copies of the surveyors' field notes are included as Appendix B.

Weather conditions varied throughout the survey season, and numerous surveys were postponed or ended early/began late due to high winds, cloud cover, and/or low temperatures. Because of these weather conditions, some areas were surveyed over 2 days to complete the survey. If a survey pass was missed due to sustained inclement weather, a makeup survey was performed on non-consecutive days the following week, in accordance with the 2014 USFWS protocol.

Results – Quino Protocol Survey

No Quino were observed during the 2019 focused surveys. One Quino was observed in the southern portion of the Project site during a focused rare plant survey on April 10, 2019, by Callie Amoaku (Figure 2). The Quino was observed in an area with open decomposed granite soils, hilltops, ridges, numerous granitic rock outcrops, and various nectar sources. This Quino was the only one observed during surveys in the study area. No Quino were observed during protocol surveys.

A total of 36 butterfly species were observed during the focused surveys. The weeks in which these butterflies were observed are shown in Tables 3A and 3B.

Table 3A Butterflies Observed On Site Weeks 1–5

Scientific Name	Common Name	Week				
		1	2	3	4	5
Hesperiidae – Skippers						
Erynnis funeralis	funereal duskywing	X	X	X	X	X
Hesperia juba	Juba skipper	–	–	–	–	–
Pyrgus albescens	white checkered-skipper	–	–	X	X	X
	duskywing sp.	–	–	X	–	–
Nymphalidae – Brush-Footed Butterflies						
Danaus gilippus	queen	–	X	X	X	–
Nymphalis californica	California tortoiseshell	X	X	–	X	–
Vanessa annabella	west coast lady	X	X	X	X	X
Vanessa atalanta	red admiral	–	X	–	–	–
Vanessa cardui	painted lady	X	X	X	X	X
	lady sp.	X	X	X	X	X
Lycaenidae – Blues and Hairstreaks						
Atlides halesus	great purple hairstreak	–	–	–	–	X
Brephidium exile	western pygmy-blue	–	X	X	X	X

Table 3A Butterflies Observed On Site Weeks 1–5

Scientific Name	Common Name	Week				
		1	2	3	4	5
Glaucopsyche lygdamus australis	southern blue	–	–	–	–	X
Hemiargus ceraunus gyas	Edward's blue	–	–	–	X	–
Hemiargus isola	Reakirt's blue	–	–	–	–	–
Icaricia acmon acmon	Acmon blue	–	–	–	–	–
Leptotes marina	marine blue	–	–	–	–	–
Ministrymon leda	Leda ministreak	–	–	–	–	–
Strymon melinus	gray hairstreak	–	–	–	–	–
	blue sp.	–	–	X	–	–
Pieridae – Whites and Sulfurs						
Anthocharis cethura	desert orangetip	X	X	X	X	X
Anthocharis sara	Pacific Sara orangetip	X	X	X	X	–
Colias eurydice	California dogface	–	–	X	X	X
Colias eurytheme	orange sulphur	X	X	X	X	X
Colias harfordii	Harford's sulphur	X	–	–	–	–
Euchloe hyantis lotta	desert pearly marble	–	–	–	X	X
Eurema nicippe	sleepy orange	–	–	–	–	–
Nathalis iole	dainty sulphur	–	X	X	X	X
Phoebis sennae	cloudless sulphur	–	–	X	–	X
Pieris rapae	cabbage white	X	–	X	X	X
Pontia beckerii	Becker's white	–	–	–	X	–
Pontia protodice	checkered white	X	X	X	X	X
Pontia sisymbrii	spring white	X	X	X	X	X
	sulphur sp.	–	–	X	X	X
	white sp.	X	–	X	X	–
Riodinidae – Metalmarks						
Apodemia mormo virgulti	Behr's metalmark	–	–	–	–	–

Table 3B Butterflies Observed On Site Weeks 6–10

Scientific Name	Common Name	Week				
		6	7	8	9	10
Hesperiidae – Skippers						
Erynnis funeralis	funereal duskywing	X	X	X	X	X
Hesperia juba	Juba skipper	–	–	X	–	–

Table 3B Butterflies Observed On Site Weeks 6–10

Scientific Name	Common Name	Week				
		6	7	8	9	10
Pyrgus albescens	white checkered-skipper	X	X	X	X	X
	duskywing sp.	–	–	–	–	–
Nymphalidae – Brush-Footed Butterflies						
Danaus gilippus	queen	–	–	X	X	X
Nymphalis californica	California tortoiseshell	–	–	–	–	–
Vanessa annabella	west coast lady	X	X	X	X	X
Vanessa atalanta	red admiral	–	–	–	–	–
Vanessa cardui	painted lady	X	X	X	X	X
	lady sp.	X	X	X	X	–
Lycaenidae – Blues and Hairstreaks						
Atlides halesus	great purple hairstreak	X	–	–	–	–
Brephidium exile	western pygmy-blue	X	X	X	X	X
Glaucopsyche lygdamus australis	southern blue	–	–	–	–	–
Hemiargus ceraunus gyas	Edward's blue	–	–	–	X	X
Hemiargus isola	Reakirt's blue	–	–	–	X	X
Icaricia acmon acmon	Acmon blue	–	–	–	–	X
Leptotes marina	marine blue	–	X	X	X	X
Ministrymon leda	Leda ministreak	–	–	–	–	X
Strymon melinus	gray hairstreak	X	X	X	X	X
	blue sp.	–	X	–	X	X
Pieridae – Whites and Sulfurs						
Anthocharis cethura	desert orangetip	X	–	X	X	–
Anthocharis sara	Pacific Sara orangetip	–	–	X	X	X
Colias eurydice	California dogface	X	–	X	–	–
Colias eurytheme	orange sulphur	X	X	X	–	X
Colias harfordii	Harford's sulphur	X	X	X	–	–
Euchloe hyantis lotta	desert pearly marble	X	X	X	–	–
Eurema nicippe	sleepy orange	–	–	X	–	–
Nathalis iole	dainty sulphur	–	X	X	–	X
Phoebis sennae	cloudless sulphur	–	–	–	–	–
Pieris rapae	cabbage white	X	X	X	X	X
Pontia beckerii	Becker's white	X	–	X	X	–
Pontia protodice	checkered white	X	X	X	X	X
Pontia sisymbrii	spring white	X	X	X	–	–

Table 3B Butterflies Observed On Site Weeks 6–10

Scientific Name	Common Name	Week				
		6	7	8	9	10
	sulphur sp.	–	–	X	X	X
	white sp.	–	X	X	–	X
Riodinidae – Metalmarks						
Apodemia mormo virgulti	Behr's metalmark	–	–	–	X	X

Results – Host Plant Mapping

No Quino larval host plants were observed within the study area during the habitat assessment or focused surveys. The Quino survey area is made up of previous agriculture areas that have disturbed the soils, as well as desert scrub communities that do not appear to support host plants. However, one larval host plant, Chinese houses, was observed in two locations with Very Low density (1 to 19 plants) approximately 1 mile northwest from the Quino survey area during a focused rare plant survey (Figure 2).

Table 4 includes the known and observed adult Quino nectar plants (according to Mattoni et al. 1997; USFWS 2002, 2003; 67 FR 18355–18395). Larval host plants are also included in Table 4 and are shown in bold print. All plant species that were in bloom were documented in the field notes.

Table 4 Quino Adult Nectar Plants and Larval Food Plants

Scientific Name	Common Name	Observed During Focused Survey
Apiaceae – Carrot Family		
Lomatium dasycarpum ssp. *dasycarpum*	woollyfruit desertparsley	X[1]
Lomatium utriculatum	common lomatium	—
Asteraceae – Sunflower Family		
Achillea millefolium	common yarrow, milfoil	—
Lasthenia californica or *Lasthenia gracilis*	California goldfields or needle goldfields	X
Lasthenia coronaria	royal goldfields	X
Layia platyglossa	coastal tidytips, common tidytips	X
Boraginaceae – Borage Family		
Amsinckia menziesii	Menzies' fiddleneck, rancher's fireweed	X
Amsinckia menziesii var. *intermedia*	rancher's fiddleneck	—
Amsinckia menziesii var. *menziesii*	rigid fiddleneck	—
Cryptantha spp. or *Plagiobothrys* spp.	cryptantha or popcorn flower	X
Phacelia distans	distant phacelia, wild-heliotrope	X

Table 4 Quino Adult Nectar Plants and Larval Food Plants

Scientific Name	Common Name	Observed During Focused Survey
Fabaceae – Pea Family		
Acmispon (=Lotus) spp.	deerweed, spanishclover, lotus	X
Hydrophyllaceae – Waterleaf Family		
Eriodictyon crassifolium var. *crassifolium*	thickleaf yerba santa	X[1]
Eriodictyon trichocalyx var. *trichocalyx*	hairy yerba santa	X[1]
Lamiaceae – Mint Family		
Salvia columbariae	chia	X
Plantaginaceae – Plantain Family		
Antirrhinum coulterianum	**Coulter's snapdragon**	—
Collinsia concolor	**Chinese houses**	X
Keckiella antirrhinoides var. *antirrhinoides*	snapdragon penstemon	—
Keckiella cordifolia	heartleaf keckiella, climbing bush penstemon	—
Plantago erecta	**dwarf plantain**	—
Plantago patagonica	**woolly plantain**	—
Polemoniaceae – Phlox Family		
Gilia angelensis	chaparral gilia	X
Gilia capitata ssp. *abrotanifolia*	bluehead gilia	—
Linanthus spp.	ground pink	—
Polygonaceae – Buckwheat Family		
Eriogonum fasciculatum	California buckwheat	X
Orobanchaceae – Broom-Rape Family		
Castilleja exserta	**exserted Indian paintbrush, common owl's-clover**	—
Scrophulariaceae – Figwort Family		
Cordylanthus rigidus	**stiffbranch bird's-beak**	—
Liliaceae – Lily Family		
Allium haematochiton	redskin onion	—
Allium peninsulare	Mexicali onion, red-flower onion	—
Allium praecox	early onion	—
Bloomeria clevelandii	San Diego goldenstar	—
Dichelostemma capitatum	bluedicks	X
Muilla maritima	sea muilla, common muilla	—

Sources: List derived from Mattoni et al. 1997; USFWS 2002, 2003; 67 FR 18355–18395 (for *Euphydryas editha*).
Notes: Plants listed in **bold print** are known Quino larval host plant species.
[1] These species were not mapped to the subspecies or variety.

Dudek certifies that the information in this survey report and the attached figures and appendices fully and accurately represents the work conducted by the Quino-permitted biologists who conducted this focused survey.

Please feel free to contact Callie Amoaku at cford@dudek.com if you have any questions regarding the contents of this report.

Sincerely,

Anita Hayworth
Permit #TE-781084-9.1

Antonette Gutierrez
Permit #TE-50992-B

Brock Ortega
Permit #TE-813545-6

Callie Amoaku
Permit #TE-36118B-1

Darin Busby
Permit #TE-115373-3

David Erik LaCoste
Permit #TE-027736-6

Diana Saucedo
Permit #TE-221287-1

Erin Bergman
Permit #TE53771B-2

Jeffrey Priest
Permit #TE-840619-6

John Dicus
Permit #TE-839960-7

Lindsay Willrick
Permit #TE-61175B-0

Melanie Dicus
Permit #TE-049175-4

Patricia Schuyler
Permit #TE-27502B-1

Paul Lemons
Permit #TE-051248-5

Tara Baxter
Permit # TE-87004B-0

Tricia Wotipka
Permit #TE-840619-6

Victor Novik
Permit #TE-069534

Att: *Figure 1, Survey Results – Index Map*
Figure 2, Survey Results
Appendix A – List of Wildlife Species Observed during the 2019 Jacumba Valley Ranch Energy Project Quino Survey
Appendix B – 2019 Jacumba Valley Ranch Energy Project Quino Survey Field Notes

cc: *Brock Ortega, Dudek*
David Hochart, Dudek

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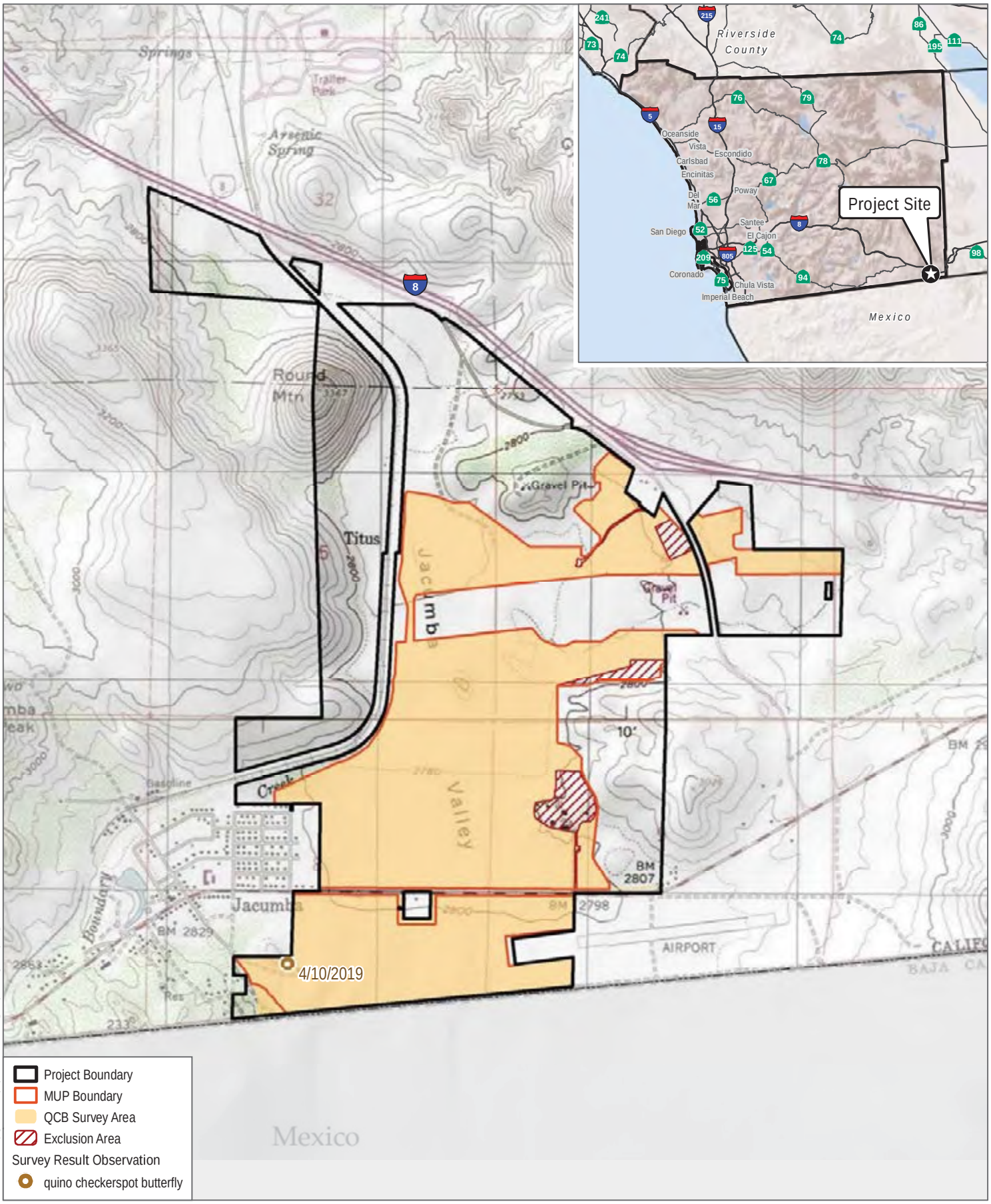


SOURCE: USGS 7.5-Minute Series Jacumba, Jacumba OE S Quadrangles

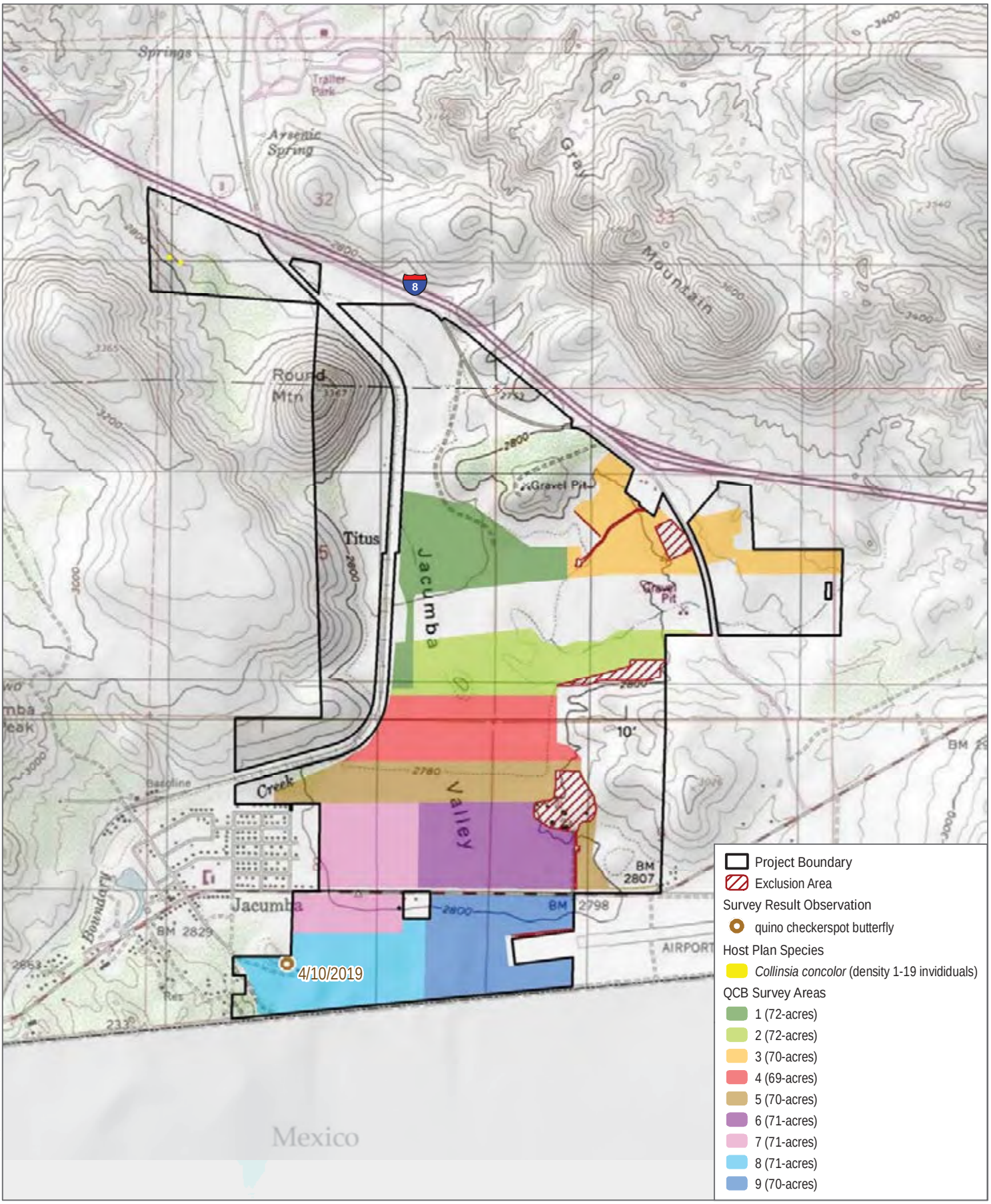
DUDEK

0 1,000 2,000 Feet

FIGURE 1

Survey Results - Index

Jacumba Valley Ranch Energy Project - Results of 2019 Quino Checkerspot Survey



SOURCE: USGS 7.5-Minute Series Jacumba, Jacumba OE S Quadrangles

DUDEK

0 1,000 2,000 Feet

FIGURE 2

Survey Results

Jacumba Valley Ranch Energy Project - Results of 2019 Quino Checkerspot Survey

APPENDIX A

List of Wildlife Species Observed during the 2019 Jacumba Valley Ranch Energy Project Quino Survey

BIRD

BLACKBIRDS, ORIOLES, AND ALLIES

ICTERIDAE—BLACKBIRDS

Agelaius phoeniceus—red-winged blackbird
Agelaius tricolor—tricolored blackbird
Euphagus cyanocephalus—Brewer's blackbird
Icterus bullockii—Bullock's oriole
Icterus cucullatus—hooded oriole
Icterus parisorum—Scott's oriole
Quiscalus mexicanus—great-tailed grackle
Sturnella neglecta—western meadowlark
Xanthocephalus xanthocephalus—yellow-headed blackbird
* *Molothrus ater*—brown-headed cowbird

BUSHTITS

AEGITHALIDAE—LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus—bushtit

CARDINALS, GROSBEAKS, AND ALLIES

CARDINALIDAE—CARDINALS AND ALLIES

Pheucticus melanocephalus—black-headed grosbeak
Piranga ludoviciana—western tanager

FALCONS

FALCONIDAE—CARACARAS AND FALCONS

Falco columbarius—merlin
Falco sparverius—American kestrel

FINCHES

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus—house finch
Spinus lawrencei—Lawrence's goldfinch
Spinus psaltria—lesser goldfinch

FLYCATCHERS

TYRANNIDAE—TYRANT FLYCATCHERS

Myiarchus cinerascens—ash-throated flycatcher
Sayornis nigricans—black phoebe
Sayornis saya—Say's phoebe
Tyrannus verticalis—western kingbird
Tyrannus vociferans—Cassin's kingbird

HAWKS

ACCIPITRIDAE—HAWKS, KITES, EAGLES, AND ALLIES

Aquila chrysaetos—golden eagle
Buteo jamaicensis—red-tailed hawk
Circus hudsonius—northern harrier

HUMMINGBIRDS

TROCHILIDAE—HUMMINGBIRDS

Calypte anna—Anna's hummingbird
Calypte costae—Costa's hummingbird

JAYS, MAGPIES, AND CROWS

CORVIDAE—CROWS AND JAYS

Aphelocoma californica—California scrub-jay
Corvus brachyrhynchos—American crow
Corvus corax—common raven

LARKS

ALAUDIDAE—LARKS

Eremophila alpestris—horned lark

MOCKINGBIRDS AND THRASHERS

MIMIDAE—MOCKINGBIRDS AND THRASHERS

Mimus polyglottos—northern mockingbird
Toxostoma redivivum—California thrasher

NEW WORLD QUAIL

ODONTOPHORIDAE—NEW WORLD QUAIL

Callipepla californica—California quail

NEW WORLD VULTURES

CATHARTIDAE—NEW WORLD VULTURES

Cathartes aura—turkey vulture

OLD WORLD SPARROWS

PASSERIDAE—OLD WORLD SPARROWS

* *Passer domesticus*—house sparrow

OWLS

STRIGIDAE—TYPICAL OWLS

Athene cunicularia—burrowing owl

Bubo virginianus—great horned owl

PIGEONS AND DOVES

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove

* *Columba livia*—rock pigeon (rock dove)

* *Streptopelia decaocto*—Eurasian collared-dove

Zenaida asiatica—white-winged dove

ROADRUNNERS AND CUCKOOS

CUCULIDAE—CUCKOOS, ROADRUNNERS, AND ANIS

Geococcyx californianus—greater roadrunner

SHOREBIRDS

CHARADRIIDAE—LAPWINGS AND PLOVERS

Charadrius vociferus—killdeer

SHRIKES

LANIIDAE—SHRIKES

Lanius ludovicianus—loggerhead shrike

SILKY FLYCATCHERS

PTILOGONATIDAE—SILKY-FLYCATCHERS

Phainopepla nitens—phainopepla

STARLINGS AND ALLIES

STURNIDAE—STARLINGS

* *Sturnus vulgaris*—European starling

SWALLOWS

HIRUNDINIDAE—SWALLOWS

Hirundo rustica—barn swallow

Stelgidopteryx serripennis—northern rough-winged swallow

Tachycineta bicolor—tree swallow

SWIFTS

APODIDAE—SWIFTS

Aeronautes saxatalis—white-throated swift

Chaetura vauxi—Vaux's swift

WATERFOWL

ANATIDAE—DUCKS, GEESE, AND SWANS

Anas platyrhynchos—mallard

WOOD WARBLERS AND ALLIES

PARULIDAE—WOOD-WARBLERS

Cardellina pusilla—Wilson's warbler

Geothlypis trichas—common yellowthroat

Oreothlypis celata—orange-crowned warbler

Setophaga coronata—yellow-rumped warbler
Setophaga nigrescens—black-throated gray warbler

WOODPECKERS

PICIDAE—WOODPECKERS AND ALLIES

Dryobates nuttallii—Nuttall's woodpecker
Dryobates scalaris—ladder-backed woodpecker

WRENS

TROGLODYTIDAE—WRENS

Campylorhynchus brunneicapillus—cactus wren
Salpinctes obsoletus—rock wren
Thryomanes bewickii—Bewick's wren

WRENTITS

TIMALIIDAE—BABBLERS

Chamaea fasciata—wrentit

NEW WORLD SPARROWS

PASSERELLIDAE—NEW WORLD SPARROWS

Amphispiza bilineata—black-throated sparrow
Chondestes grammacus—lark sparrow
Melospiza lincolnii—Lincoln's sparrow
Melozone crissalis—California towhee
Passerculus sandwichensis—savannah sparrow
Pooecetes gramineus—vesper sparrow
Spizella breweri—Brewer's sparrow
Zonotrichia leucophrys—white-crowned sparrow

INVERTEBRATE

BUTTERFLIES

LYCAENIDAE—BLUES, HAIRSTREAKS, AND COPPERS

Atlides halesus—great purple hairstreak
Brephidium exile—western pygmy-blue

Glaucopsyche lygdamus australis—southern blue
Hemiargus ceraunus gyas—Edward's blue
Hemiargus isola—Reakirt's blue
Icaricia acmon acmon—Acmon blue
Leptotes marina—marine blue
Ministrymon leda—Leda ministreak
Strymon melinus—gray hairstreak
Blue sp.

NYMPHALIDAE—BRUSH-FOOTED BUTTERFLIES

Danaus gilippus—queen
Nymphalis californica—California tortoiseshell
Vanessa annabella—west coast lady
Vanessa atalanta—red admiral
Vanessa cardui—painted lady
Lady sp.

RIODINIDAE—METALMARKS

Apodemia mormo virgulti—Behr's metalmark

HESPERIIDAE—SKIPPERS

Erynnis funeralis—funereal duskywing
Hesperia juba—Juba skipper
Pyrgus albescens—white checkered-skipper
Duskywing sp.

PIERIDAE—WHITES AND SULFURS

Anthocharis cethura—desert orangetip
Anthocharis sara sara—Pacific sara orangetip
Colias eurydice—California dogface
Colias eurytheme—orange sulphur
Colias harfordii—Harford's sulphur
Euchloe hyantis lotta—desert pearly marble
Eurema nicippe—sleepy orange
Nathalis iole—dainty sulphur
Phoebis sennae—cloudless sulphur
Pieris rapae—cabbage white
Pontia beckerii—Becker's white

Pontia protodice—checkered white
Pontia sisymbrii—spring white
Sulphur sp.
White sp.

MOTHS

SPHINGIDAE—HAWK MOTHS

Hyles lineata—white-lined sphinx moth

ANTS

FORMICIDAE—ANTS

Harvester ant

MAMMAL

CANIDS

CANIDAE—WOLVES AND FOXES

Canis latrans—coyote

CATS

FELIDAE—CATS

Lynx rufus—bobcat

DOMESTIC

EQUIDAE—HORSES AND BURROS

* *Equus caballus*—domestic horse

BOVIDAE—BISON, GOATS, AND SHEEP

* *Boa taurus*—domestic cattle

HARES AND RABBITS

LEPORIDAE—HARES AND RABBITS

Lepus californicus bennettii—San Diego black-tailed jackrabbit
Lepus californicus—black-tailed jackrabbit

Sylvilagus audubonii—desert cottontail
Sylvilagus bachmani—brush rabbit

KANGAROO RATS

HETEROMYIDAE—POCKET MICE AND KANGAROO RATS

Dipodomys sp.—kangaroo rat

MUSTELIDS

MUSTELIDAE—WEASELS, SKUNKS, AND OTTERS

Taxidea taxus—American badger (signs of den)

POCKET GOPHERS

GEOMYIDAE—POCKET GOPHERS

Thomomys bottae—Botta's pocket gopher

SQUIRRELS

SCIURIDAE—SQUIRRELS

Ammospermophilus leucurus—white-tailed antelope squirrel
Spermophilus (Otospermophilus) beecheyi—California ground squirrel

UNGULATES

CERVIDAE—DEERS

Odocoileus hemionus—mule deer

RATS, MICE, AND VOLES

CRICETIDAE—RATS, MICE, AND VOLES

Neotoma lepida intermedia—San Diego desert woodrat

REPTILE

LIZARDS

PHRYNOSOMATIDAE—IGUANID LIZARDS

Callisaurus draconoides—zebra-tailed lizard
Sceloporus magister—desert spiny lizard

Sceloporus occidentalis—western fence lizard
Uta stansburiana—common side-blotched lizard

TEIIDAE—WHIPTAIL LIZARDS

Aspidoscelis tigris stejnegeri—San Diegan tiger whiptail
Aspidoscelis tigris—tiger whiptail

SNAKES

COLUBRIDAE—COLUBRID SNAKES

Pituophis catenifer—gophersnake

*Signifies introduced (non-native) species

INTENTIONALLY LEFT BLANK

Appendix B

2019 Jacumba Valley Ranch Energy Project
Quino Survey Field Notes

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-02-25
Biologist(s)	Callie Amoaku
Survey Area	Entire Site
Survey Pass	Host Plant Mapping/Site Assessment

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:00:00	62	64	0	1	clear	
End	15:33:00	62	64	0	1	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
painted lady (1+)	west coast lady (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
northern harrier (1+)	common raven (1+)	red-tailed hawk (1+)
California scrub-jay (1+)	mourning dove (1+)	western meadowlark (1+)
California towhee (1+)	phainopepla (1+)	white-crowned sparrow (1+)

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Jeffrey Priest
Survey Area	1
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:37:00	76	76	10	5	patchy	
End	14:30:00	75	76	10	5	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
Pacific sara orangetip (1)	painted lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
California quail (1+)	western meadowlark (1+)	
California scrub-jay (1+)	white-crowned sparrow (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Erodium cicutarium*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Paul Lemons
Survey Area	1
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:10:00	60	60	0	1	clear	
End	14:30:00	75	76	10	5	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
funereal duskywing (1+)	Pacific sara orangetip (1+)	painted lady (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Bewick's wren (1+)	California scrub-jay (1+)	western meadowlark (1+)
Botta's pocket gopher (1+)	California thrasher (1+)	white-crowned sparrow (1+)
California quail (1+)	coyote (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Erodium cicutarium*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Erin Bergman
Survey Area	2, 3, 4
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:29:00	60	60	10	3	clear	
End	16:00:00	73	0	0	2	clear	See Callie's notes- I was just keeping nectar list for group

BUTTERFLY LIST *SPECIES (COUNT)*		
painted lady (1+)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	turkey vulture (1+)	western meadowlark (1+)
Brewer's blackbird (1+)	vesper sparrow (1+)	

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Draba cuneifolia*	*Lupinus concinnus*
Atriplex rosea	*Erodium cicutarium*	*Pectocarya linearis ssp. ferocula*
Caulanthus lasiophyllus	*Ferocactus cylindraceus*	*Sisymbrium altissimum*
Cryptantha species	*Lasthenia gracilis*	*Sisymbrium irio*
Descurainia pinnata	*Lomatium mohavense*	*Yucca schidigera*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	2
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:32:00	73	71.6	10	2	clear	
End	15:01:00	78.8	75.2	10	4	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (2)	funereal duskywing (4)	painted lady (53)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	northern mockingbird (1+)	western meadowlark (1+)
American kestrel (1+)	red-tailed hawk (1+)	white-tailed antelope squirrel (1+)
cactus wren (1+)	turkey vulture (1+)	
desert cottontail (1+)	vesper sparrow (1+)	

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	3
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:15:00	63	60	0	1	clear	
Midday	11:35:00	67.3	71.4	0	8.3	clear	
End	12:15:00	73	71.6	10	2	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
desert orangetip (5)	Lady spp. (1+)	painted lady (131)
funereal duskywing (11)	Pacific sara orangetip (4)	west coast lady (2)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	California scrub-jay (1+)	turkey vulture (1+)
San Diego black-tailed jackrabbit (1+)	common raven (1+)	western meadowlark (1+)
black-throated sparrow (1+)	Harvester ants (1+)	white-crowned sparrow (1+)
cactus wren (1+)	phainopepla (1+)	White-lined sphinx moth (2)

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Erodium cicutarium*	*Sisymbrium sp.*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Erin Bergman, Lindsay Willrick
Survey Area	4
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:15:00	60	0	0	1	clear	
Midday	13:00:00	78	0	10	1	clear	
End	16:15:00	70	0	90	16	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (1)	funereal duskywing (4)	
desert orangetip (2)	painted lady (75)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	California thrasher (1+)	rock wren (1+)
American kestrel (1+)	common raven (1+)	turkey vulture (2)
Brewer's blackbird (1+)	horned lark (1+)	western meadowlark (1+)
California ground squirrel (1+)	mule deer (1+)	
California quail (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Heliotropium curassavicum*	*Senegalia greggii*
Atriplex canescens	*Hirschfeldia incana*	*Sisymbrium sp.*
Baccharis salicifolia	*Pectocarya sp.*	*Solanum elaeagnifolium*
Descurainia sp.	*Salsola tragus*	*Tamarix sp.*
Erodium cicutarium	*Schismus barbatus*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Anita Hayworth
Survey Area	5
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:05:00	50	60	0	3	clear	
End	16:15:00	73	73	70	5		

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (1+)	painted lady (1+)	
funereal duskywing (1+)	spring white (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	common raven (1+)	western meadowlark (1+)
San Diego black-tailed jackrabbit (1+)	house finch (1+)	white-crowned sparrow (1+)
Brewer's blackbird (1+)	savannah sparrow (1+)	
California thrasher (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Darin Busby, Erik LaCoste
Survey Area	6
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:10:00	60	60	0	3	clear	
End	12:45:00	79	79	10	5	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
funereal duskywing (2)	painted lady (80)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. brachycarpa	*Erodium cicutarium*	*Plagiobothrys sp.*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Darin Busby, Erik LaCoste
Survey Area	7
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:45:00	74	79	0	5	clear	
End	16:20:00	67	70	90	18	overcast	Average wind: 14mph

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (4)	painted lady (58)	
funereal duskywing (16)	White sp. (11)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Plagiobothrys sp.*	
Erodium cicutarium	*Sisymbrium altissimum*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	John Dicus, Melanie Dicus
Survey Area	8
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
End	12:35:00	72	73	10	4	clear	
Start	21:00:00	60	61	0	0	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
California tortoiseshell (2)	Harford's sulphur (1)	painted lady (250)
checkered white (2)	orange sulphur (2)	west coast lady (1)
funereal duskywing (10)	Pacific sara orangetip (5)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
northern harrier (1+)	common raven (1+)	red-tailed hawk (1+)
Bewick's wren (1+)	European starling (1+)	savannah sparrow (1+)
black-tailed jackrabbit (1+)	greater roadrunner (1+)	Say's phoebe (1+)
bushtit (1+)	horned lark (1+)	turkey vulture (1+)
California quail (1+)	house finch (1+)	western meadowlark (1+)
California scrub-jay (1+)	mourning dove (1+)	white-crowned sparrow (1+)
California thrasher (1+)	northern mockingbird (1+)	

INCIDENTAL PLANT LIST		
Descurainia sp.	*Lasthenia gracilis*	
Erodium cicutarium	*Sisymbrium irio*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Jeffrey Priest, Tricia Wotipka
Survey Area	9
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Not protocol ground temp yet.	08:40:00	60	56	0	1	clear	Not protocol ground temperature yet.
Start	09:05:00	63	60	0	1	clear	
Mid-survey	10:32:00	72	82	0	2	clear	
End	12:05:00	70	80	10	9	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
funereal duskywing (3)	Pacific sara orangetip (1)	west coast lady (3)
Lady sp. fly-by (50)	painted lady (9)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
American crow (1+)	common raven (1+)	turkey vulture (1+)
American kestrel (1+)	coyote (1+)	western meadowlark (1+)
Botta's pocket gopher (1+)	domestic horse (1+)	white-crowned sparrow (1+)
California quail (1+)	Kangaroo rat sp. (tail-drag sign) (1+)	

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Erodium cicutarium*	*Sisymbrium altissimum*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-05
Biologist(s)	Jeffrey Priest, Tricia Wotipka
Survey Area	9
Survey Pass	1

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Non-protocol temp	08:45:00	60	56	0	1	clear	Currently non-protocol conditions for ground temperature.
Start	09:10:00	63	60	0	1	clear	
Mid-survey	10:33:00	72	82	0	3	clear	
3/4 survey complete conditiond	12:10:00	70	80	10	9	patchy	
End	13:10:00	69	80	10	6	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
funereal duskywing (5)	painted lady (60)	
Pacific sara orangetip (2)	west coast lady (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
American kestrel (1+)	lesser goldfinch (1+)	western meadowlark (1+)
common raven (1+)	turkey vulture (1+)	white-crowned sparrow (1+)

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Erodium cicutarium*	*Solanum elaeagnifolium*
Atriplex canescens	*Salsola tragus*	
Descurainia pinnata	*Sisymbrium altissimum*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-13
Biologist(s)	Jeffrey Priest
Survey Area	1
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Not protocol temperatures yet.	09:55:00	52	52	70	3	patchy	
Not protocol temperatures yet.	10:17:00	53	54	60	7	patchy	
Not protocol yet.	10:47:00	52	56	50	7	patchy	
Not protocol yet.	11:05:00	52	58	60	7	patchy	
Not protocol yet	11:18:00	53	58	50	5	patchy	
Start	11:40:00	54	60	50	8	patchy	
End	13:40:00	58	66	80	7	patchy	Conditions went out of protocol for a half hour.
Start	14:10:00	60	70	80	7	patchy	In protocol again.
End	16:10:00	58	60	40	7	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
Lady sp. butterfly fly-by (28)	painted lady (14)	spring white (4)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	California thrasher (1+)	mourning dove (1+)
Bewick's wren (1+)	common raven (1+)	northern mockingbird (1+)
brush rabbit (1+)	coyote (1+)	turkey vulture (1+)
California quail (1+)	lesser goldfinch (1+)	western meadowlark (1+)
California scrub-jay (1+)	mallard (1+)	white-crowned sparrow (1+)

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Erodium cicutarium*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-13
Biologist(s)	Paul Lemons
Survey Area	1
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:30:00	58	62	40	4	clear	
End	13:45:00	64	66	80	5	patchy	
Start	14:15:00	66	70	80	5	patchy	
End	16:45:00	58	60	40	7	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
painted lady (1+)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	California scrub-jay (1+)	western meadowlark (1+)
Bewick's wren (1+)	California thrasher (1+)	
California quail (1+)	common raven (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Erodium cicutarium*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-16
Biologist(s)	Paul Lemons
Survey Area	2
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:40:00	61	60	0	7	clear	
Midday	13:20:00	65	64	0	12	clear	
End	17:00:00	66	65	0	12	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (1+)	painted lady (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	California scrub-jay (1+)	western meadowlark (1+)
Bewick's wren (1+)	California thrasher (1+)	white-crowned sparrow (1+)
black-tailed jackrabbit (1+)	common raven (1+)	
California quail (1+)	desert cottontail (1+)	

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Descurainia pinnata ssp. glabra*	*Erodium cicutarium*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-13
Biologist(s)	Callie Amoaku, Patricia Schuyler
Survey Area	3
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:10:00	52	62	30	5	patchy	
Cloud cover increased so we did a weather check	13:20:00	60.5	70	50	8	patchy	
End	13:41:00	58	67.4	70	3	patchy	
End	14:06:00	65	70	70	4	patchy	
Temp change protocol check	15:10:00	63	75	40	6	patchy	
End	16:13:00	64	67	30	4	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
desert orangetip (6)	painted lady (72)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
San Diego desert woodrat (1+)	cactus wren (1+)	western meadowlark (1+)
black-tailed jackrabbit (1+)	desert cottontail (1+)	white-tailed antelope squirrel (1+)
black-throated sparrow (1+)	horned lark (1+)	

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-16
Biologist(s)	Jeffrey Priest
Survey Area	4
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Not protocol temperatures yet.	08:55:00	58	56	0	12	clear	
Not protocol temperatures yet.	09:21:00	58	57	0	12	clear	
Not protocol temperatures yet.	09:33:00	60	57	0	12	clear	
Start	09:40:00	60	60	0	12	clear	
Mid survey	12:07:00	65	64	0	12	clear	Wind 8-12 with gusts 12-18
End	14:31:00	66	68	0	12	clear	Wind 6-12 with gusts 12-15.
End	16:40:00	64	66	0	12	clear	Wind 3-12 gusts 10-15

BUTTERFLY LIST *SPECIES (COUNT)*		
Lady sp. butterfly fly-by (45)	painted lady (13)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Bewick's wren (1+)	common raven (1+)	turkey vulture (1+)
black-tailed jackrabbit (1+)	common side-blotched lizard (1+)	western meadowlark (1+)
brush rabbit (1+)	coyote (1+)	white-crowned sparrow (1+)
California quail (1+)	mourning dove (1+)	
California thrasher (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Erodium cicutarium*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-17
Biologist(s)	Lindsay Willrick
Survey Area	5
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:00:00	79	75	0	10	clear	
Midday	13:30:00	80	78	0	12	clear	
End	17:00:00	80	74	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (19)	painted lady (135)	western pygmy-blue (1)
dainty sulphur (5)	queen (2)	
desert orangetip (4)	Sulphur sp. (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
American kestrel (1+)	common raven (1+)	savannah sparrow (1+)
Bewick's wren (1+)	Eurasian collared-dove (1+)	tree swallow (1+)
bushtit (1+)	European starling (1+)	western kingbird (1+)
California quail (1+)	horned lark (1+)	western meadowlark (1+)
California scrub-jay (1+)	Nuttall's woodpecker (1+)	white-crowned sparrow (1+)
California thrasher (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Erodium moschatum*	*Sisymbrium irio*
Descurainia sp.	*Malva neglecta*	
Erodium cicutarium	*Pectocarya sp.*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-15
Biologist(s)	Tara Baxter
Survey Area	6
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:30:00	61	61	40	10	patchy	
End	14:00:00	64	64	40	12	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
painted lady (1+)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
American kestrel (1+)	desert cottontail (1+)	Say's phoebe (1+)
black-tailed jackrabbit (1+)	greater roadrunner (1+)	turkey vulture (1+)
California quail (1+)	house finch (1+)	western meadowlark (1+)
common raven (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	
Descurainia pinnata	*Sisymbrium irio*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-15
Biologist(s)	Antonette Gutierrez, Tara Baxter
Survey Area	6
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:30:00	61	61	40	10	patchy	
End	14:00:00	64	64	40	12	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
painted lady (33)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
American kestrel (1+)	desert cottontail (1+)	Say's phoebe (1+)
black-tailed jackrabbit (1+)	greater roadrunner (1+)	turkey vulture (1+)
California quail (1+)	house finch (1+)	Vanessa sp. (46)
common raven (1+)	red-tailed hawk (1+)	western meadowlark (1+)

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	
Descurainia pinnata	*Sisymbrium irio*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-15
Biologist(s)	Antonette Gutierrez, Tara Baxter
Survey Area	7
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	14:00:00	64	64	40	12	overcast	
End	17:30:00	62	62	20	10	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
painted lady (44)	spring white (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Erodium cicutarium*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-16
Biologist(s)	John Dicus, Melanie Dicus
Survey Area	8, 9
Survey Pass	2

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:40:00	60	61	0	10	clear	
End	16:40:00	65	67	0	7	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
California tortoiseshell (1)	funereal duskywing (2)	painted lady (500)
checkered white (3)	orange sulphur (5)	red admiral (1)
dainty sulphur (1)	Pacific sara orangetip (1)	west coast lady (26)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
burrowing owl (1)	California towhee (1+)	mourning dove (1+)
northern harrier (1+)	common raven (1+)	red-tailed hawk (1+)
American kestrel (1+)	Eurasian collared-dove (1+)	savannah sparrow (1+)
Bewick's wren (1+)	European starling (1+)	turkey vulture (1+)
black-throated sparrow (1+)	horned lark (1+)	western meadowlark (1+)
California quail (1+)	house finch (1+)	white-crowned sparrow (1+)

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Erodium cicutarium*	*Raphanus sp.*
Descurainia pinnata	*Lasthenia gracilis*	
Descurainia sophia	*Pectocarya penicillata*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-19
Biologist(s)	Callie Amoaku, Patricia Schuyler
Survey Area	1
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:15:00	65	63	0	1	clear	
End	12:47:00	81	80	0	4	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (35)	painted lady (33)	White sp. (1+)
dainty sulphur (4)	western pygmy-blue (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
California quail (1+)	northern mockingbird (1+)	vesper sparrow (1+)
desert cottontail (1+)	Suphur sp. (1+)	western meadowlark (1+)
Duskywing sp. (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-19
Biologist(s)	Paul Lemons
Survey Area	2
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:20:00	58	60	10	1	clear	
Midday	12:00:00	74	72	0	15	clear	
End	15:40:00	72	71	10	15	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	checkered white (1+)	painted lady (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
cactus wren (1+)	mourning dove (1+)	western meadowlark (1+)
California quail (1+)	northern mockingbird (1+)	
horned lark (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Descurainia pinnata*	*Erodium cicutarium*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-19
Biologist(s)	Callie Amoaku, Patricia Schuyler
Survey Area	3
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:50:00	81	80	0	4	clear	
End	16:17:00	82	81	0	10	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
Blue sp. (1+)	desert orangetip (3)	queen (1)
cabbage white (17)	funereal duskywing (3)	Sulphur sp. (1+)
California dogface (3)	Pacific sara orangetip (1)	western pygmy-blue (9)
dainty sulphur (9)	painted lady (23)	White sp. (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
San Diego black-tailed jackrabbit (1+)	California quail (1+)	western kingbird (1+)
black-throated sparrow (1+)	desert cottontail (1+)	white-crowned sparrow (1+)
cactus wren (1+)	phainopepla (1+)	white-tailed antelope squirrel (1+)

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-22
Biologist(s)	Antonette Gutierrez, Tara Baxter
Survey Area	4
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	13:30:00	69	69	0	8	clear	
End	17:00:00	69	69	0	11	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (13)	painted lady (19)	western pygmy-blue (1)
dainty sulphur (1)	spring white (26)	White sp. (32)
funereal duskywing (2)	Sulphur sp. (4)	
Lady sp. (3)	west coast lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Pectocarya heterocarpa*	
Erodium botrys	*Sisymbrium irio*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-24
Biologist(s)	Lindsay Willrick
Survey Area	5
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:30:00	60	60	0	1	clear	
Midday	12:00:00	70	0	30	2		
End	16:30:00	69	69	10	3		

BUTTERFLY LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	common side-blotched lizard (1+)	red-tailed hawk (1+)
American crow (1+)	coyote (1+)	rock wren (1+)
Anna's hummingbird (1+)	desert cottontail (1+)	savannah sparrow (1+)
Bewick's wren (1+)	Eurasian collared-dove (1+)	turkey vulture (1+)
black phoebe (1+)	European starling (1+)	western kingbird (1+)
cactus wren (1+)	horned lark (1+)	western meadowlark (1+)
California quail (1+)	house finch (1+)	white-crowned sparrow (1+)
California scrub-jay (1+)	ladder-backed woodpecker (1+)	White-winged dove (1+)
California thrasher (1+)	northern mockingbird (1+)	yellow-rumped warbler (1+)
common raven (1+)	northern rough-winged swallow (1+)	

INCIDENTAL PLANT LIST		
Descurainia sp.	*Malva neglecta*	*Sisymbrium irio*
Erodium cicutarium	*Pectocarya sp.*	
Lasthenia sp.	*Platystemon californicus*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-24
Biologist(s)	Lindsay Willrick
Survey Area	5
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
End	04:30:00	69	0	10	3	clear	High clouds
Start	09:30:00	60	0	0	1	clear	
Midday	12:00:00	70	0	30	3	clear	High clouds

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (75)	painted lady (205)	white checkered-skipper (1)
dainty sulphur (3)	Sulphur sp. (1+)	
funereal duskywing (3)	western pygmy-blue (12)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	common side-blotched lizard (1+)	red-tailed hawk (1+)
American crow (1+)	coyote (1+)	rock wren (1+)
Anna's hummingbird (1+)	desert cottontail (1+)	savannah sparrow (1+)
Bewick's wren (1+)	Eurasian collared-dove (1+)	western kingbird (1+)
black phoebe (1+)	European starling (1+)	western meadowlark (1+)
cactus wren (1+)	horned lark (1+)	white-crowned sparrow (1+)
California quail (1+)	house finch (1+)	White-winged dove (1+)
California scrub-jay (1+)	ladder-backed woodpecker (1+)	yellow-rumped warbler (1+)
California thrasher (1+)	northern mockingbird (1+)	
common raven (1+)	northern rough-winged swallow (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Erodium moschatum*	*Pectocarya sp.*

INCIDENTAL PLANT LIST		
Descurainia sophia	*Lasthenia sp.*	*Platystemon californicus*
Erodium cicutarium	*Malva neglecta*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-19
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	6
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	13:00:00	77	77	0	10	clear	
End	16:30:00	80	80	10	8	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
dainty sulphur (6)	painted lady (10)	Sulphur sp. (1+)
funereal duskywing (1)	spring white (50)	western pygmy-blue (2)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium sp.*	
Descurainia pinnata	*Pectocarya heterocarpa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-19
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	7
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:30:00	67	67	0	2	clear	
End	13:00:00	77	77	0	10	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
dainty sulphur (1)	painted lady (20)	white checkered-skipper (1)
funereal duskywing (1)	spring white (54)	
Pacific sara orangetip (2)	Sulphur sp. (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium sp.*	*Pectocarya sp.*
Descurainia pinnata	*Lasthenia californica*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-22
Biologist(s)	Antonette Gutierrez, Tara Baxter
Survey Area	8
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:00:00	60	60	0	4	clear	
End	13:30:00	69	69	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (3)	painted lady (38)	west coast lady (3)
dainty sulphur (3)	spring white (22)	western pygmy-blue (9)
funereal duskywing (8)	Sulphur sp. (15)	White sp. (11)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	*Sisymbrium irio*
Descurainia pinnata	*Pectocarya heterocarpa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-22
Biologist(s)	Jeffrey Priest
Survey Area	9
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:25:00	53	60	0	2	clear	
Late morning	11:05:00	60	66	0	6	clear	Less than 5%cc
Mid day	14:07:00	66	74	0	10	clear	Clouds less than 5%
End	16:35:00	66	66	30	10	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (2)	orange sulphur (2)	west coast lady (3)
checkered white (11)	painted lady (29)	western pygmy-blue (2)
cloudless sulphur (2)	spring white (2)	
Lady sp. butterfly (fly-by) (53)	Sulphur sp. butterfly (fly-by) (5)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
golden eagle (1+)	horned lark (1+)	western meadowlark (1+)
brush rabbit (1+)	K-rat sp. (1+)	white-crowned sparrow (1+)
California quail (1+)	mourning dove (1+)	White butterfly sp. (fly-by) (12)
common raven (1+)	red-tailed hawk (1+)	
coyote (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Descurainia pinnata*	*Erodium cicutarium*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-26
Biologist(s)	Brock Ortega
Survey Area	9
Survey Pass	3

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:55:00	59	60	10	0	patchy	
End	16:05:00	73	73	10	10	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
Blue sp (3)	funereal duskywing (8)	west coast lady (5)
cabbage white (4)	orange sulphur (2)	western pygmy-blue (7)
checkered white (36)	painted lady (80)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
American badger (1+)	coyote (1+)	Kangaroo rat (1+)
American kestrel (1+)	desert cottontail (1+)	killdeer (1+)
black-tailed jackrabbit (1+)	domestic cattle (1+)	mourning dove (1+)
Botta's pocket gopher (1+)	European starling (1+)	savannah sparrow (1+)
cactus wren (1+)	Harvester ant (1+)	turkey vulture (1+)
California quail (1+)	horned lark (1+)	western meadowlark (1+)

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-25
Biologist(s)	Paul Lemons
Survey Area	1
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:20:00	71	70	0	3	clear	
Midday	12:20:00	76	74	10	5	clear	
End	15:40:00	73	73	10	7	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	funereal duskywing (1+)	
checkered white (1+)	painted lady (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
common raven (1+)	red-tailed hawk (1+)	western kingbird (1+)
mourning dove (1+)	turkey vulture (1+)	western meadowlark (1+)

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Erodium cicutarium*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-26
Biologist(s)	Paul Lemons
Survey Area	2
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:20:00	69	70	100	3		Hazy
Midday	11:00:00	82	79	100	5		Hazy
End	15:45:00	75	78	100	12		Hazy

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	checkered white (1+)	painted lady (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
American kestrel (1+)	horned lark (1+)	turkey vulture (1+)
California ground squirrel (1+)	mourning dove (1+)	western meadowlark (1+)
California quail (1+)	northern mockingbird (1+)	
desert cottontail (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Descurainia pinnata ssp. glabra*	*Erodium cicutarium*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-28
Biologist(s)	Callie Amoaku, Patricia Schuyler
Survey Area	3
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:30:00	69	63	10	6	clear	
End	12:57:00	70	73	10	12	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1)	funereal duskywing (1)	western pygmy-blue (2)
California dogface (1)	Pacific sara orangetip (2)	
desert pearly marble (1)	painted lady (16)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Brewer's sparrow (1+)	mule deer (1+)	Scott's oriole (1+)
black-tailed jackrabbit (1+)	northern mockingbird (1+)	turkey vulture (1+)
black-throated sparrow (1+)	phainopepla (1+)	western fence lizard (1+)
desert cottontail (1+)	Say's phoebe (1+)	white-tailed antelope squirrel (1+)

INCIDENTAL PLANT LIST		
Astragalus sp	*Salvia columbariae*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-28
Biologist(s)	Callie Amoaku, Patricia Schuyler
Survey Area	4
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:59:00	70	73	0	12	clear	Gusts but no sustained high winds
End	16:32:00	67	68	20	4	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (55)	painted lady (4)	
funereal duskywing (1)	western pygmy-blue (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
San Diego black-tailed jackrabbit (1+)	California quail (1+)	turkey vulture (1+)
ash-throated flycatcher (1+)	horned lark (1+)	western meadowlark (1+)
California ground squirrel (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Camissoniopsis pallida	*Lasthenia gracilis*	*Sisymbrium officinale*
Descurainia pinnata	*Lomatium dasycarpum*	
Erodium cicutarium	*Sisymbrium irio*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-30
Biologist(s)	Lindsay Willrick
Survey Area	5
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:30:00	61	0	0	11	clear	Gusts to 13MPH, butterflies still active
Midday	12:44:00	72	0	0	8	clear	Gusts to 12, butterflies still active
End	17:00:00	71	0	0	5	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
California tortoiseshell (2)	Edward's blue (1)	western pygmy-blue (12)
checkered white (38)	painted lady (175)	
dainty sulphur (7)	west coast lady (3)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Anna's hummingbird (1+)	California towhee (1+)	rock wren (1+)
Bewick's wren (1+)	common yellowthroat (1+)	savannah sparrow (1+)
Bullock's oriole (1+)	Eurasian collared-dove (1+)	turkey vulture (1+)
cactus wren (1+)	European starling (1+)	western kingbird (1+)
California ground squirrel (1+)	horned lark (1+)	western meadowlark (1+)
California quail (1+)	house finch (1+)	white-crowned sparrow (1+)
California scrub-jay (1+)	lesser goldfinch (1+)	White-winged dove (1+)
California thrasher (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Erodium moschatum*	*Pectocarya penicillata*
Descurainia sophia	*Lasthenia gracilis*	*Platystemon californicus*
Erodium cicutarium	*Malva neglecta*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-25
Biologist(s)	Diana Saucedo, Tara Baxter
Survey Area	6
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	13:00:00	78	83	0	8	clear	
End	16:30:00	79.5	81	0	5	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (39)	Lady sp. (5)	west coast lady (15)
desert orangetip (1)	painted lady (19)	western pygmy-blue (4)
funereal duskywing (1)	Sulphur sp. (1)	White sp. (8)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	*Sisymbrium irio*
Descurainia pinnata	*Pectocarya heterocarpa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-25
Biologist(s)	Diana Saucedo, Tara Baxter
Survey Area	7
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:30:00	63	64	0	1	clear	
End	13:00:00	78	83	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (67)	painted lady (24)	western pygmy-blue (9)
desert orangetip (1)	spring white (21)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Unknown Sulfur (7)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium moschatum*	*Pectocarya spp*
Descurainia pinnata	*Lasthenia californica*	*Sisymbrium irio*
Erodium cicutarium	*Malva neglecta*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-03-31
Biologist(s)	Lindsay Willrick
Survey Area	8
Survey Pass	4

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:15:00	68	0	0	10	clear	
Midday	13:15:00	73	0	0	4	clear	Gusts to 7 MPH
End	17:25:00	75	0	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
Becker's white (10)	orange sulphur (8)	white checkered-skipper (1)
checkered white (35)	painted lady (80)	
desert pearly marble (2)	queen (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	common raven (1+)	turkey vulture (1+)
merlin (1+)	European starling (1+)	western kingbird (1+)
tricolored blackbird (1+)	horned lark (1+)	western meadowlark (1+)
Bewick's wren (1+)	house finch (1+)	white-crowned sparrow (1+)
California quail (1+)	savannah sparrow (1+)	White-winged dove (1+)

INCIDENTAL PLANT LIST		
Astragalus didymocarpus	*Erodium moschatum*	*Malva neglecta*
Descurainia sophia	*Eschscholzia californica*	*Pectocarya penicillata*
Dichelostemma capitatum	*Lasthenia gracilis*	*Sisymbrium irio*
Erodium cicutarium	*Layia platyglossa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-07
Biologist(s)	Jeffrey Priest, Paul Lemons
Survey Area	1, 2
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:30:00	64	66	0	2	clear	
midday	13:00:00	81	83	10	10	clear	
End	16:45:00	86	85	10	12	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (1+)	funereal duskywing (1+)	painted lady (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
California ground squirrel (1+)	northern mockingbird (1+)	yellow-rumped warbler (1+)
California quail (1+)	turkey vulture (1+)	
horned lark (1+)	western meadowlark (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Lasthenia californica*	
Erodium cicutarium	*Sisymbrium altissimum*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-07
Biologist(s)	Jeffrey Priest, Paul Lemons
Survey Area	1, 2
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:25:00	64	64	10	3	clear	
Mid day	13:09:00	80	83	10	10	clear	Wind 3-8 with gusts to 10.
End	16:45:00	86	86	10	12	clear	Wind 3-10 with gusts to 12.

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (3)	funereal duskywing (3)	
checkered white (7)	painted lady (10)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Bewick's wren (1+)	coyote (1+)	turkey vulture (1+)
brush rabbit (1+)	house finch (1+)	western fence lizard (1+)
California quail (1+)	mourning dove (1+)	western meadowlark (1+)
California scrub-jay (1+)	northern mockingbird (1+)	white-crowned sparrow (1+)
common raven (1+)	phainopepla (1+)	yellow-rumped warbler (1+)
common side-blotched lizard (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Erodium cicutarium	*Sisymbrium altissimum*	
Lasthenia sp. (goldfields)	*Yellow fiddleneck sp.*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-06
Biologist(s)	Antonette Gutierrez, Victor Novik
Survey Area	3, 4
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:55:00	63	62	0	7	clear	
End	13:30:00	71	71	10	10	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (32)	painted lady (22)	Unidentified lady (33)
funereal duskywing (2)	spring white (4)	western pygmy-blue (7)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Acmispon strigosus	*Dichelostemma capitatum*	*Phacelia distans*
Amsinckia menziesii	*Erodium cicutarium*	*Plagiobothryus sp.*
Astragalus palmeri	*Filago sp.*	*Salvia columbariae*
Brassica nigra	*Lasthenia californica*	*Sisymbrium irio*
Chamaesyce sp.	*Lupinus concinnus*	*Yucca schidigera*
Descurainia pinnata	*Oenothera californica*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-05
Biologist(s)	Diana Saucedo, Lindsay Willrick
Survey Area	4, 8 Cancelled
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:00:00	58	0	100	11.5	overcast	
End	11:00:00	58	0	90	10	overcast	

BUTTERFLY LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-06
Biologist(s)	Antonette Gutierrez, Victor Novik
Survey Area	4
Survey Pass	5null

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	13:30:00	71	71	10	10	clear	
End	17:00:00	74	72	20	10	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	funereal duskywing (1+)	sulphur sp (1+)
checkered white (1+)	painted lady (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Vaness sp. (1+)		

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Erodium cicutarium*	*Pectocarya sp.*
Descurainia pinnata	*Logfia gallica*	*Sisymbrium irio*
Emmenanthe penduliflora	*Malacothrix californica*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-04
Biologist(s)	Lindsay Willrick
Survey Area	5
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:00:00	60	0	20	10	clear	
Midday	13:30:00	64	0	10	8	clear	
End	16:45:00	63	0	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (37)	painted lady (5)	western pygmy-blue (4)
funereal duskywing (1)	west coast lady (2)	white checkered-skipper (11)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	California thrasher (1+)	orange-crowned warbler (1+)
Vaux's swift (1+)	Eurasian collared-dove (1+)	phainopepla (1+)
American kestrel (1+)	European starling (1+)	rock wren (1+)
Anna's hummingbird (1+)	hooded oriole (1+)	turkey vulture (1+)
Bewick's wren (1+)	horned lark (1+)	western kingbird (1+)
black-throated sparrow (1+)	house sparrow (1+)	western meadowlark (1+)
Bullock's oriole (1+)	ladder-backed woodpecker (1+)	white-crowned sparrow (1+)
California quail (1+)	lesser goldfinch (1+)	wrentit (1+)
California scrub-jay (1+)	northern rough-winged swallow (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Euphorbia albomarginata*	*Pectocarya penicillata*
Descurainia sophia	*Lasthenia gracilis*	*Sisymbrium irio*
Erodium cicutarium	*Malva neglecta*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-02
Biologist(s)	Tara Baxter
Survey Area	6
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:30:00	66	68	0	10	clear	
Mid	12:00:00	72	75	20	12	patchy	
End	15:30:00	76	79	30	12	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (50)	painted lady (2)	western pygmy-blue (2)
desert orangetip (2)	spring white (3)	white checkered-skipper (1)
funereal duskywing (2)	Sulphur sp. (1)	
Lady sp. (2)	west coast lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	*Sisymbrium irio*
Descurainia pinnata	*Lasthenia gracilis*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-01
Biologist(s)	Tara Baxter
Survey Area	7
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:00:00	70	70	20	6	clear	
Mid	12:30:00	79	79	10	7	clear	
End	16:00:00	81	81	10	7	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (50)	Lady sp. (8)	west coast lady (7)
dainty sulphur (1)	orange sulphur (2)	western pygmy-blue (2)
desert orangetip (3)	painted lady (4)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	*Pectocarya heterocarpa*
Descurainia pinnata	*Lasthenia gracilis*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-09
Biologist(s)	Lindsay Willrick
Survey Area	8
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:15:00	61.5	0	30	1	patchy	
Midday	11:45:00	82	0	10	13	clear	Gusts to 18mph occasional but not sustained. No more than 10 seconds in duration. Butterflies active.
End	14:15:00	88	0	0	15	clear	Gusts to 24mph, sustained at +15mph for more than 30seconds. Ended survey one hr early. Callie to cover last 10acres tomorrow.

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (19)	painted lady (12)	
orange sulphur (1)	western pygmy-blue (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	horned lark (1+)	Say's phoebe (1+)
tricolored blackbird (1+)	house finch (1+)	turkey vulture (1+)
Bewick's wren (1+)	house sparrow (1+)	western kingbird (1+)
Bullock's oriole (1+)	lesser goldfinch (1+)	western meadowlark (1+)
California quail (1+)	Lincoln's sparrow (1+)	white-crowned sparrow (1+)
common raven (1+)	mourning dove (1+)	White-winged dove (1+)
Eurasian collared-dove (1+)	red-tailed hawk (1+)	
European starling (1+)	savannah sparrow (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Erodium moschatum*	*Layia platyglossa*
Descurainia sophia	*Eruca vesicaria*	*Malva neglecta*
Dichelostemma capitatum	*Euphorbia albomarginata*	*Pectocarya penicillata*
Erodium cicutarium	*Lasthenia gracilis*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-10
Biologist(s)	Callie Amoaku
Survey Area	8
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	11:17:00	69	78	0	4	clear	
End	12:23:00	78	82	0	3	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (44)	orange sulphur (3)	white checkered-skipper (7)
California dogface (2)	painted lady (41)	
great purple hairstreak (1)	southern blue (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
tricolored blackbird (1+)	European starling (1+)	western meadowlark (1+)

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-01
Biologist(s)	Anita Hayworth
Survey Area	9
Survey Pass	5

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:20:00	60	60	50	1	patchy	High whispy
End	15:52:00	78	76	20	5		

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	dainty sulphur (1+)	spring white (1+)
checkered white (1+)	desert pearly marble (1+)	western pygmy-blue (1+)
cloudless sulphur (1+)	painted lady (1+)	white checkered-skipper (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Brewer's sparrow (1+)	European starling (1+)	turkey vulture (1+)
Botta's pocket gopher (1+)	horned lark (1+)	western meadowlark (1+)
California quail (1+)	northern mockingbird (1+)	
common raven (1+)	savannah sparrow (1+)	

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-09
Biologist(s)	Paul Lemons, Jeff Priest
Survey Area	1
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:40:00	65	64	40	6	patchy	
midday	12:00:00	77	80	20	15	clear	Gusts to 20mph
End	16:00:00	75	74	10	15	clear	Gusts to 20mph

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	funereal duskywing (1+)	
checkered white (1+)	painted lady (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	mourning dove (1+)	western fence lizard (1+)
California quail (1+)	northern mockingbird (1+)	western meadowlark (1+)
desert cottontail (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Lasthenia californica*	
Erodium cicutarium	*Sisymbrium altissimum*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-11
Biologist(s)	Paul Lemons, Jeff Priest
Survey Area	2
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:30:00	64	63	0	3	clear	
midday	12:30:00	74	72	30	12	clear	
End	15:45:00	75	75	60	15	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	funereal duskywing (1+)	
checkered white (1+)	painted lady (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	mourning dove (1+)	western meadowlark (1+)
black-tailed jackrabbit (1+)	northern mockingbird (1+)	white-crowned sparrow (1+)
California quail (1+)	turkey vulture (1+)	
desert cottontail (1+)	western fence lizard (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra	*Lasthenia californica*	*Salvia columbariae*
Erodium cicutarium	*Malacothrix glabrata*	*Sisymbrium altissimum*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-11
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	3
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:26:00	73	70.7	10	1	clear	
End	11:53:00	75	77.2	30	2	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (6)	desert orangetip (2)	painted lady (3)
California dogface (1)	desert pearly marble (10)	western pygmy-blue (6)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
cactus wren (1+)	Scott's oriole (1+)	
phainopepla (1+)	western meadowlark (1+)	

INCIDENTAL PLANT LIST		
Acmispon strigosus	*Eulobus californicus*	*Pectocarya penicillata*
Allium fimbriatum	*Euphorbia albomarginata*	*Phacelia distans*
Astragalus didymocarpus var. didymocarpus	*Malacothrix glabrata*	*Raphanus raphanistrum*
Descurainia pinnata	*Mentzelia montana*	*Stylocline gnaphaloides*
Emmenanthe penduliflora	*Oenothera californica ssp. avita*	*Uropappus lindleyi*
Eriophyllum wallacei	*Pectocarya linearis ssp. ferocula*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-11
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	4
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	14:28:00	72	79	50	6	patchy	
End	16:56:00	72	75	70	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (29)	great purple hairstreak (3)	white checkered-skipper (20)
checkered white (24)	Harford's sulphur (4)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
California quail (1+)	horned lark (1+)	western meadowlark (1+)
common raven (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
Erodium cicutarium	*Pectocarya penicillata*	*Sisymbrium irio*
Lasthenia gracilis	*Sisymbrium altissimum*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-11
Biologist(s)	Lindsay Willrick
Survey Area	5
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:35:00	61	0	0	1	clear	
Midday	12:00:00	70	0	0	8	clear	
End	15:55:00	68	0	0	13	clear	Gusts to 17, not sustained.

BUTTERFLY LIST *SPECIES (COUNT)*		
Becker's white (3)	orange sulphur (1)	white checkered-skipper (6)
checkered white (75)	painted lady (11)	
desert pearly marble (9)	western pygmy-blue (6)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	California thrasher (1+)	red-tailed hawk (1+)
American kestrel (1+)	common raven (1+)	turkey vulture (1+)
Anna's hummingbird (1+)	desert spiny lizard (1+)	western fence lizard (1+)
Bewick's wren (1+)	Eurasian collared-dove (1+)	western kingbird (1+)
black phoebe (1+)	European starling (1+)	western meadowlark (1+)
Bullock's oriole (1+)	horned lark (1+)	white-crowned sparrow (1+)
California quail (1+)	house finch (1+)	White-winged dove (1+)
California scrub-jay (1+)	ladder-backed woodpecker (1+)	

INCIDENTAL PLANT LIST		
Descurainia sophia	*Lupinus concinnus*	*Pectocarya penicillata*
Erodium cicutarium	*Malacothrix glabrata*	*Sisymbrium altissimum*
Lasthenia gracilis	*Malva neglecta*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-10
Biologist(s)	Tara Baxter
Survey Area	6
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:00:00	61	63	0	5	clear	
Mid	12:30:00	71	74	0	7	clear	
End	16:00:00	72	74	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (85)	Lady sp. (4)	western pygmy-blue (2)
funereal duskywing (5)	orange sulphur (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	*Sisymbrium irio*
Descurainia pinnata	*Pectocarya heterocarpa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-08
Biologist(s)	Tara Baxter
Survey Area	7
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:30:00	73	73	10	3	clear	
Mid	12:00:00	87	87	30	3	patchy	
End	15:30:00	92	92	40	8	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (75)	orange sulphur (2)	western pygmy-blue (6)
desert orangetip (2)	spring white (2)	
Lady sp. (5)	west coast lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	*Pectocarya heterocarpa*
Descurainia pinnata	*Lasthenia gracilis*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-14
Biologist(s)	Lindsay Willrick
Survey Area	8
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
End	09:15:00	69	0	0	1	clear	High thin clouds
End	16:30:00	74	0	0	5	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
Becker's white (13)	Harford's sulphur (3)	western pygmy-blue (8)
checkered white (42)	orange sulphur (4)	white checkered-skipper (2)
desert pearly marble (4)	painted lady (22)	
gray hairstreak (2)	west coast lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
golden eagle (1+)	California ground squirrel (1+)	red-tailed hawk (1+)
tricolored blackbird (1+)	California quail (1+)	savannah sparrow (1+)
yellow-headed blackbird (1+)	common raven (1+)	turkey vulture (1+)
American kestrel (1+)	coyote (1+)	western kingbird (1+)
Anna's hummingbird (1+)	Eurasian collared-dove (1+)	western meadowlark (1+)
black-throated sparrow (1+)	European starling (1+)	White-winged dove (1+)
bobcat (1+)	horned lark (1+)	
Bullock's oriole (1+)	house finch (1+)	

INCIDENTAL PLANT LIST		
Descurainia sophia	*Euphorbia albomarginata*	*Pectocarya penicillata*
Dichelostemma capitatum	*Lasthenia gracilis*	*Sisymbrium altissimum*
Erodium cicutarium	*Layia platyglossa*	*Sisymbrium irio*
Eruca vesicaria	*Malva neglecta*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-11
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	9
Survey Pass	6

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:03:00	77	81	50	6	patchy	
Mid	13:01:00	74	81	20	13	clear	
End	14:22:00	75	82	40	10	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (100)	desert pearly marble (2)	western pygmy-blue (4)
California dogface (4)	Harford's sulphur (5)	white checkered-skipper (4)
checkered white (36)	painted lady (60)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
San Diego black-tailed jackrabbit (1+)	horned lark (1+)	
European starling (1+)	western meadowlark (1+)	

INCIDENTAL PLANT LIST		
Ambrosia acanthicarpa	*Geranium molle*	*Pectocarya penicillata*
Amsinckia intermedia	*Hirschfeldia incana*	*Phacelia distans*
Amsinckia menziesii	*Hordeum murinum*	*Salsola tragus*
Bromus hordeaceus	*Lasthenia gracilis*	*Schismus barbatus*
Bromus madritensis	*Malacothrix glabrata*	*Sisymbrium altissimum*
Erodium cicutarium	*Malva neglecta*	*Sisymbrium irio*
Eruca vesicaria ssp. sativa	*Malva parviflora*	*Solanum elaeagnifolium*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-17
Biologist(s)	Jeffrey Priest
Survey Area	1
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:15:00	61	64	0	4	clear	
Winds variable	10:59:00	72	78	0	12	clear	Wind variable, 1-9 mph with gusts 9-12.
Mid afternoon	14:26:00	79	84	0	10	clear	
End	16:30:00	75	82	0	10	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (63)	painted lady (2)	white checkered-skipper (5)
orange sulphur (1)	western pygmy-blue (3)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Brewer's sparrow (1+)	Cassin's kingbird (1+)	house finch (1+)
American crow (1+)	common raven (1+)	lesser goldfinch (1+)
Anna's hummingbird (1+)	common side-blotched lizard (1+)	mourning dove (1+)
black-headed grosbeak (1+)	coyote (1+)	red-tailed hawk (1+)
brush rabbit (1+)	European starling (1+)	turkey vulture (1+)
California scrub-jay (1+)	gophersnake (1+)	western meadowlark (1+)
California thrasher (1+)	hooded oriole (1+)	

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-17
Biologist(s)	Paul Lemons
Survey Area	2
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:30:00	60	60	0	3	clear	
midday	12:20:00	75	74	0	9	clear	
End	15:45:00	79	81	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	western pygmy-blue (1+)	
painted lady (1+)	white checkered-skipper (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Brewer's sparrow (1+)	cactus wren (1+)	northern mockingbird (1+)
black-tailed jackrabbit (1+)	California quail (1+)	turkey vulture (1+)
black-throated gray warbler (1+)	lark sparrow (1+)	

INCIDENTAL PLANT LIST		
Descurainia pinnata ssp. glabra		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-18
Biologist(s)	Patricia Schuyler
Survey Area	3
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:57:00	75.7	71.1	10	8	clear	
End	15:52:00	80.1	83.8	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (12)	Harford's sulphur (2)	western pygmy-blue (2)
desert pearly marble (6)	painted lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-17
Biologist(s)	Diana Saucedo, Lindsay Willrick
Survey Area	4
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:55:00	63	62	0	1	clear	
End	12:25:00	76	80	0	5	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (31)	Harford's sulphur (3)	white checkered-skipper (1)
funereal duskywing (1)	painted lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium cicutarium*	*Malva neglecta*
Descurainia pinnata	*Lasthenia gracilis*	*Sisymbrium altissimum*
Descurainia sophia	*Malacothrix glabrata*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-17
Biologist(s)	Diana Saucedo, Lindsay Willrick
Survey Area	5
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:25:00	76	80	0	5	clear	
End	15:55:00	80	80	0	7	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (31)	orange sulphur (1)	white checkered-skipper (1)
funereal duskywing (1)	painted lady (1)	
Harford's sulphur (1)	western pygmy-blue (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium cicutarium*	*Pectocarya penicillata*
Cryptantha micrantha	*Lasthenia gracilis*	*Sisymbrium altissimum*
Descurainia pinnata	*Malacothrix glabrata*	
Descurainia sophia	*Malva neglecta*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-15
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	6
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	13:00:00	71	76	20	10	patchy	
End	16:30:00	68	70	30	15	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (36)	funereal duskywing (2)	western pygmy-blue (2)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium botrys*	*Pectocarya heterocarpa*
Descurainia pinnata	*Lasthenia gracilis*	*Sisymbrium irio*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-15
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	7
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:30:00	64	68	30	10	patchy	
End	13:00:00	70	76	20	15	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (29)	Lady sp. (1)	White sp. (3)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Lasthenia gracilis*	*Sisymbrium irio*
Descurainia pinnata	*Layia platyglossa*	
Erodium botrys	*Pectocarya heterocarpa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-20
Biologist(s)	Lindsay Willrick
Survey Area	8
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:05:00	64	0	0	8	clear	
Midday	12:30:00	74	0	0	11	clear	
End	15:15:00	76	0	0	13	clear	Gusts to 19mph, not sustained.

BUTTERFLY LIST *SPECIES (COUNT)*		
San Diegan tiger whiptail (1+)	funereal duskywing (1)	west coast lady (2)
checkered white (53)	orange sulphur (7)	white-lined sphinx moth (1+)
dainty sulphur (2)	painted lady (13)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Lawrence's goldfinch (1+)	common raven (1+)	savannah sparrow (1+)
tricolored blackbird (1+)	common side-blotched lizard (1+)	Scott's oriole (1+)
Anna's hummingbird (1+)	coyote (1+)	turkey vulture (1+)
black-throated sparrow (1+)	desert cottontail (1+)	western fence lizard (1+)
brown-headed cowbird (1+)	European starling (1+)	western kingbird (1+)
bushtit (1+)	horned lark (1+)	western meadowlark (1+)
California quail (1+)	house finch (1+)	

INCIDENTAL PLANT LIST		
Allium fimbriatum	*Gilia sp.*	*Pectocarya penicillata*
Amsinckia sp.	*Heliotropium curassavicum*	*Sisymbrium altissimum*
Dichelostemma capitatum	*Lasthenia gracilis*	*Sisymbrium irio*
Erodium cicutarium	*Layia platyglossa*	

INCIDENTAL PLANT LIST		
Eruca vesicaria	*Malva neglecta*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-18
Biologist(s)	Victor Novik
Survey Area	9
Survey Pass	7

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:30:00	71	69	20	9	clear	
End	15:45:00	84	87	10	11	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (150)	Harford's sulphur (6)	Unidentified blue (1)
checkered white (9)	marine blue (1)	Unidentified lady (15)
dainty sulphur (1)	painted lady (17)	west coast lady (5)
gray hairstreak (1)	spring white (1)	white checkered-skipper (12)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-22
Biologist(s)	Paul Lemons
Survey Area	1
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:15:00	62	60	0	4	clear	
Midday	11:40:00	73	77	0	12	clear	
End	15:40:00	78	76	10	15		

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	funereal duskywing (1+)	
checkered white (1+)	western pygmy-blue (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
California quail (1+)	common raven (1+)	
Cassin's kingbird (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
Brassica nigra	*Descurainia pinnata ssp. glabra*	*Sisymbrium altissimum*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-24
Biologist(s)	Paul Lemons
Survey Area	2
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:15:00	65	64	0	4	clear	
Midday	11:50:00	84	85	0	8	clear	
End	15:40:00	86	85	0	13		

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	funereal duskywing (1+)	
checkered white (1+)	western pygmy-blue (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
ash-throated flycatcher (1+)	Cassin's kingbird (1+)	western fence lizard (1+)
black-tailed jackrabbit (1+)	common raven (1+)	western meadowlark (1+)
Botta's pocket gopher (1+)	horned lark (1+)	zebra-tailed lizard (1+)
Bullock's oriole (1+)	mourning dove (1+)	
California quail (1+)	turkey vulture (1+)	

INCIDENTAL PLANT LIST		
Brassica nigra	*Descurainia pinnata ssp. glabra*	*Sisymbrium altissimum*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-24
Biologist(s)	Callie Amoaku, Patricia Schuyler
Survey Area	3
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:12:00	79.3	76.3		2	clear	
End	12:48:00	88	92	0	2	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
San Diegan tiger whiptail (1+)	desert orangetip (3)	Sulphur sp (1)
cabbage white (9)	desert pearly marble (6)	western pygmy-blue (2)
California dogface (1+)	funereal duskywing (1)	White sp. (4)
checkered white (10)	Pacific sara orangetip (1)	
dainty sulphur (4)	painted lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
cactus wren (1+)	western kingbird (1+)	
phainopepla (1+)	western meadowlark (1+)	

INCIDENTAL PLANT LIST		
Acmispon glaber	*Ephedra californica*	*Loeseliastrum schottii*
Allium fimbriatum	*Eriophyllum wallacei*	*Malacothrix glabrata*
Camissoniopsis micrantha	*Erodium cicutarium*	*Yucca schidigera*
Echinocereus engelmannii	*Lasthenia gracilis*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-24
Biologist(s)	Callie Amoaku, Patricia Schuyler
Survey Area	4
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	13:02:00	88	92	0	3	clear	
End	16:29:00	86	89	0	6	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (173)	gray hairstreak (27)	White spp. (1+)
checkered white (10)	queen (2)	
funereal duskywing (5)	western pygmy-blue (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
ash-throated flycatcher (1+)	desert cottontail (1+)	western meadowlark (1+)
California quail (1+)	horned lark (1+)	
common raven (1+)	Say's phoebe (1+)	

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Lasthenia gracilis*	
Erodium cicutarium	*Sisymbrium irio*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-26
Biologist(s)	Lindsay Willrick
Survey Area	5
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:04:00	65	0	0	4	clear	
Midday	11:53:00	83	0	0	7	clear	
End	15:16:00	85	0	0	10	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
San Diegan tiger whiptail (1+)	desert orangetip (4)	sleepy orange (1)
Becker's white (9)	Harford's sulphur (1)	western pygmy-blue (6)
checkered white (108)	Juba skipper (2)	white checkered-skipper (6)
dainty sulphur (4)	painted lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
ash-throated flycatcher (1+)	common raven (1+)	Nuttall's woodpecker (1+)
Bewick's wren (1+)	desert spiny lizard (1+)	western kingbird (1+)
black-throated sparrow (1+)	Eurasian collared-dove (1+)	western meadowlark (1+)
black phoebe (1+)	European starling (1+)	white-crowned sparrow (1+)
Bullock's oriole (1+)	great-tailed grackle (1+)	White-winged dove (1+)
California quail (1+)	horned lark (1+)	
California scrub-jay (1+)	house finch (1+)	

INCIDENTAL PLANT LIST		
Cryptantha micrantha	*Lupinus concinnus*	*Sisymbrium altissimum*
Erodium cicutarium	*Malacothrix glabrata*	*Sisymbrium irio*
Heliotropium curassavicum	*Malva neglecta*	*Tamarix ramosissima*
Hirschfeldia incana	*Oncosiphon piluliferum*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-22
Biologist(s)	Diana Saucedo, Tara Baxter
Survey Area	6
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:30:00	74	76	0	8	clear	
End	16:00:00	78	85	20	8	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (55)	Lady sp. (1)	western pygmy-blue (4)
dainty sulphur (1)	orange sulphur (1)	
Harford's sulphur (1)	Pacific sara orangetip (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Glebionis coronaria*	*Sisymbrium irio*
Descurainia pinnata	*Lasthenia gracilis*	
Erodium botrys	*Pectocarya heterocarpa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-22
Biologist(s)	Diana Saucedo, Tara Baxter
Survey Area	7
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:55:00	63	70	0	2	clear	
End	12:30:00	74	76	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (120)	painted lady (1)	
dainty sulphur (1)	western pygmy-blue (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Descurainia sophia*	*Sisymbrium irio*
Brassica nigra	*Erodium cicutarium*	
Descurainia pinnata	*Lasthenia gracilis*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-28
Biologist(s)	Lindsay Willrick
Survey Area	8
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:30:00	64	0	40	5	patchy	
Midday	11:30:00	71	0	30	4	patchy	
End	15:45:00	73	0	70	8	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
Becker's white (6)	gray hairstreak (1)	sleepy orange (1)
checkered white (55)	marine blue (1)	west coast lady (1)
dainty sulphur (5)	orange sulphur (3)	western pygmy-blue (6)
funereal duskywing (2)	painted lady (3)	white checkered-skipper (2)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
tricolored blackbird (1+)	Eurasian collared-dove (1+)	red-winged blackbird (1+)
Anna's hummingbird (1+)	European starling (1+)	rock pigeon (rock dove) (1)
black-throated sparrow (1+)	great-tailed grackle (1+)	savannah sparrow (1+)
brown-headed cowbird (1+)	horned lark (1+)	turkey vulture (1+)
Bullock's oriole (1+)	house sparrow (1+)	western kingbird (1+)
California quail (1+)	mourning dove (1+)	western meadowlark (1+)
common raven (1+)	red-tailed hawk (1+)	

INCIDENTAL PLANT LIST		
Eriogonum fasciculatum	*Lasthenia gracilis*	*Sisymbrium altissimum*
Eschscholzia californica	*Malva neglecta*	*Sisymbrium irio*
Heliotropium curassavicum	*Pectocarya penicillata*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-04-24
Biologist(s)	Erin Bergman
Survey Area	9
Survey Pass	8

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:11:00	73	0	0	3		
	10:56:00	87	89	0	3	clear	Temp check
End	16:12:00	82	80	0	2	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (21)	gray hairstreak (8)	spring white (2)
checkered white (104)	Harford's sulphur (7)	western pygmy-blue (10)
dainty sulphur (11)	orange sulphur (20)	white checkered-skipper (7)
desert pearly marble (5)	Pacific sara orangetip (8)	White species (1+)
funereal duskywing (4)	painted lady (10)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
California quail (1+)	mourning dove (1+)	turkey vulture (1+)
common raven (1+)	Say's phoebe (1+)	western meadowlark (1+)

INCIDENTAL PLANT LIST		
Descurainia pinnata	*Eruca vesicaria ssp. sativa*	*Sisymbrium irio*
Eremalche exilis	*Lasthenia gracilis*	*Sisymbrium officinale*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-01
Biologist(s)	Paul Lemons
Survey Area	1
Survey Pass	9

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:40:00	65	63	10	1	clear	
Midday	12:00:00	73	72	10	5	clear	
End	16:00:00	77	75	20	10		

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	funereal duskywing (1+)	
checkered white (1+)	western pygmy-blue (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
ash-throated flycatcher (1+)	Cassin's kingbird (1+)	turkey vulture (1+)
black-tailed jackrabbit (1+)	common raven (1+)	western fence lizard (1+)
Botta's pocket gopher (1+)	horned lark (1+)	western meadowlark (1+)
Bullock's oriole (1+)	mourning dove (1+)	
California quail (1+)	northern mockingbird (1+)	

INCIDENTAL PLANT LIST		
Brassica nigra	*Descurainia pinnata ssp. glabra*	*Sisymbrium altissimum*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-04
Biologist(s)	Paul Lemons
Survey Area	2
Survey Pass	9

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:00:00	64	63	10	4	clear	
Midday	11:20:00	84	83	0	15	clear	
End	15:15:00	86	84	20	15		gusts to 20mph

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (1+)	checkered white (1+)	tiger whiptail (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Bewick's wren (1+)	Cassin's kingbird (1+)	turkey vulture (1+)
black-tailed jackrabbit (1+)	common raven (1+)	western fence lizard (1+)
Botta's pocket gopher (1+)	desert cottontail (1+)	western meadowlark (1+)
Bullock's oriole (1+)	horned lark (1+)	white-tailed antelope squirrel (1+)
California quail (1+)	mourning dove (1+)	

INCIDENTAL PLANT LIST		
Brassica nigra	*Descurainia pinnata ssp. glabra*	*Sisymbrium altissimum*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-02
Biologist(s)	Patricia Schuyler
Survey Area	3
Survey Pass	9

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:15:00	67	70	70	2	patchy	
End	16:20:00	77	82	60	2	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (50)	desert orangetip (3)	western pygmy-blue (2)
checkered white (4)	Pacific sara orangetip (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-01
Biologist(s)	Diana Saucedo, Lindsay Willrick
Survey Area	4, 5
Survey Pass	9

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:40:00	62	0	0	6	clear	
Midday	11:30:00	65	0	0	6	clear	
End	15:55:00	71	0	0	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
Becker's white (7)	Edward's blue (2)	painted lady (3)
Behr's metalmark (2)	gray hairstreak (9)	western pygmy-blue (6)
checkered white (60)	Pacific sara orangetip (11)	white checkered-skipper (4)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Brewer's sparrow (1+)	California quail (1+)	house finch (1+)
Lawrence's goldfinch (1+)	California scrub-jay (1+)	house sparrow (1+)
loggerhead shrike (1+)	California thrasher (1+)	mourning dove (1+)
American kestrel (1+)	California towhee (1+)	orange-crowned warbler (1+)
Anna's hummingbird (1+)	common raven (1+)	red-tailed hawk (1+)
ash-throated flycatcher (1+)	desert cottontail (1)	Say's phoebe (1+)
barn swallow (1+)	Eurasian collared-dove (1+)	turkey vulture (1+)
Bell’s/sagebrush sparrow (1+)	European starling (1+)	western kingbird (1+)
Bewick's wren (1+)	great-tailed grackle (1+)	western meadowlark (1+)
black-throated sparrow (1+)	great horned owl (1+)	western tanager (1+)
Bullock's oriole (1+)	horned lark (1+)	Wilson's warbler (1+)

INCIDENTAL PLANT LIST		
Erodium cicutarium	*Lupinus concinnus*	*Sisymbrium altissimum*

INCIDENTAL PLANT LIST		
Heliotropium curassavicum	*Malacothrix glabrata*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-01
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	6
Survey Pass	9

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:30:00	78	78	0	2	clear	
End	16:00:00	78	78	0	7	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (100)	Sulphur sp. (1+)	western pygmy-blue (5)
Lady sp. (1+)	west coast lady (2)	white checkered-skipper (1)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Glebionis coronaria*	*Phacelia cicutaria*
Descurainia pinnata	*Heliotropium curassavicum*	*Solanum elaeagnifolium*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-01
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	7
Survey Pass	9

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:00:00	65	65	0	1	clear	
End	12:30:00	78	78	0	1	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
Blue sp. (1+)	queen (1)	western pygmy-blue (5)
checkered white (90)	Sulphur sp. (1+)	
desert orangetip (1)	west coast lady (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium sp.*	*Pectocarya heterocarpa*
Descurainia pinnata	*Layia platyglossa*	*Solanum sp.*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-01
Biologist(s)	Erin Bergman
Survey Area	9
Survey Pass	9

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:44:00	67	72	0	3	clear	
End	16:16:00	69	76	0	3	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (14)	gray hairstreak (10)	painted lady (37)
checkered white (112)	marine blue (11)	western pygmy-blue (9)
Edward's blue (25)	Pacific sara orangetip (17)	white checkered-skipper (23)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
black-tailed jackrabbit (1+)	common raven (1+)	mourning dove (1+)
California quail (1+)	European starling (1+)	

INCIDENTAL PLANT LIST		
Amsinckia intermedia	*Erodium cicutarium*	*Sisymbrium altissimum*
Atriplex canescens	*Malacothrix glabrata*	*Sisymbrium irio*
Eremalche exilis	*Pectocarya linearis ssp. ferocula*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-07
Biologist(s)	Jeffrey Priest
Survey Area	1
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Not protocol conditions yet	09:30:00	56	60	100	7	overcast	
Not protocol conditions. Survey cancelled.	09:45:00	56	60	100	7	overcast	Wind out of the SW. Conditions do not look like they will reach protocol requirements today. Survey cancelled.

BUTTERFLY LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-08
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	1
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	14:52:00	71	81	10	9	clear	
End	17:38:00	63	65	40	7	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (12)	gray hairstreak (13)	western pygmy-blue (4)
checkered white (25)	west coast lady (1)	White sp (133)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
loggerhead shrike (1+)	Wilson's warbler (1+)	

INCIDENTAL PLANT LIST		
Erodium cicutarium	*Sisymbrium altissimum*	
Hirschfeldia incana	*Sphaeralcea ambigua*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-08
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	2
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:30:00	66	80	20	7	clear	
End	14:50:00	71	81	10	9	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
cabbage white (29)	funereal duskywing (1)	white checkered-skipper (1)
checkered white (60)	marine blue (1)	White sp (38)
Edward's blue (14)	western pygmy-blue (15)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
ash-throated flycatcher (1+)	northern mockingbird (1+)	Scott's oriole (1+)
California thrasher (1+)	Say's phoebe (1+)	

INCIDENTAL PLANT LIST		
Allium fimbriatum	*Heliotropium curassavicum*	*Salvia carduacea*
Brassica nigra	*Lepidium lasiocarpum ssp. lasiocarpum*	
Erodium cicutarium	*Malacothrix glabrata*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-08
Biologist(s)	Callie Amoaku, Erin Bergman, Patricia Schuyler
Survey Area	3
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:41:00	57	70	100	3	overcast	
Midday	11:46:00	66	80	50	7	patchy	
End	12:25:00	66	80	20	7	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
San Diegan tiger whiptail (1+)	checkered white (18)	painted lady (2)
cabbage white (9)	Pacific sara orangetip (2)	White spp. (1+)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
San Diego black-tailed jackrabbit (1+)	turkey vulture (1+)	
desert cottontail (1+)	white-tailed antelope squirrel (1+)	

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Euphorbia albomarginata*	*Sisymbrium altissimum*
Calochortus splendens	*Larrea tridentata*	*Sisymbrium irio*
Echinocereus engelmannii	*Lasthenia gracilis*	*Sisymbrium orientale*
Erodium cicutarium	*Loeseliastrum schottii*	*Sphaeralcea ambigua*
Eulobus californicus	*Pectocarya penicillata*	***Geraea viscida***

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-09
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	4
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	11:15:00	62	66	50	8	patchy	
End	14:15:00	65	69	10	8	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (140)	orange sulphur (1)	western pygmy-blue (2)
Edward's blue (1)	painted lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium sp*	*Pectocarya heterocarpa*
Descurainia pinnata	*Heliotropium curassavicum*	*Tamarix ramosissima*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-08
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	5
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	11:30:00	60	60	40	10	patchy	
End	15:00:00	66	74	10	12	clear	Few clouds

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (220)	Pacific sara orangetip (1)	west coast lady (1)
Edward's blue (2)	painted lady (2)	western pygmy-blue (1)
funereal duskywing (1)	queen (1)	
orange sulphur (3)	Sulphur sp. (1+)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Astragalus douglasii	*Erodium sp.*	*Pectocarya heterocarpa*
Brassica nigra	*Euphorbia sp.*	*Sisymbrium sp*
Calycoseris parryi	*Heliotropium curassavicum*	*Solanum sp.*
Descurainia pinnata	*Larrea tridentata*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-08
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	6
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
End	14:13:00	62	69	40	12	patchy	
Start	15:00:00	66	74	10	12	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (120)	dainty sulphur (1)	orange sulphur (4)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Descurainia pinnata*	*Solanum sp.*
Brassica nigra	*Erodium sp.*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-09
Biologist(s)	Erik LaCoste, Tara Baxter
Survey Area	6
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	02:45:00	65	69	10	8	clear	
End	16:15:00	70	72	30	13	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (60)	white checkered-skipper (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-06
Biologist(s)	Diana Saucedo, Tara Baxter
Survey Area	7
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	09:45:00	55	58.5	50	13	drizzle	
End	10:46:00	55	59	80	15	drizzle	

BUTTERFLY LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
(none)		

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-07
Biologist(s)	Tara Baxter
Survey Area	7
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	12:00:00	68	68	40	12	patchy	
End	17:00:00	64	64	100	13	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (31)	painted lady (1)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Erodium sp*	*Layia platyglossa*
Descurainia pinnata	*Lasthenia gracilis*	*Pectocarya heterocarpa*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-08
Biologist(s)	Diana Saucedo
Survey Area	7
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	11:00:00	61	61	50	8	patchy	
End	13:00:00	67	64	10	6	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
checkered white (35)		

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Amsinckia menziesii	*Lasthenia gracilis*	*Pectocarya heterocarpa*
Descurainia pinnata	*Layia platyglossa*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-05
Biologist(s)	Lindsay Willrick
Survey Area	8
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	08:45:00	63	0	0	10	clear	Haze
Midday	11:30:00	72	0	0	11	clear	Haze
End	15:55:00	69	0	0	13	clear	Haze, gusts to 18+ not sustained.

BUTTERFLY LIST *SPECIES (COUNT)*		
San Diegan tiger whiptail (1+)	Edward's blue (3)	Reakirt's blue (6)
Becker's white (4)	marine blue (2)	western pygmy-blue (2)
checkered white (28)	painted lady (1)	white checkered-skipper (1)

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
Costa's hummingbird (1+)	California quail (1+)	house sparrow (1+)
Lawrence's goldfinch (1+)	California thrasher (1+)	phainopepla (1+)
tricolored blackbird (1+)	common raven (1+)	Say's phoebe (1+)
Anna's hummingbird (1+)	common side-blotched lizard (1+)	turkey vulture (1+)
ash-throated flycatcher (1+)	desert spiny lizard (1+)	western kingbird (1+)
black-throated sparrow (1+)	Eurasian collared-dove (1+)	white-throated swift (1+)
brown-headed cowbird (1+)	European starling (1+)	White-winged dove (1+)
Bullock's oriole (1+)	horned lark (1+)	
California ground squirrel (1+)	house finch (1+)	

INCIDENTAL PLANT LIST		
Calochortus splendens	*Erodium cicutarium*	*Lasthenia gracilis*
Emmenanthe penduliflora	*Eruca vesicaria*	*Melilotus indicus*

INCIDENTAL PLANT LIST		
Eriodictyon crassifolium	*Heliotropium curassavicum*	*Pectocarya penicillata*
Eriogonum fasciculatum	*Hirschfeldia incana*	*Sisymbrium altissimum*

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-10
Biologist(s)	Erik LaCoste
Survey Area	8
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:30:00	60	67	30	8	patchy	
Mid check	14:00:00	65	72	50	10	patchy	
End	17:35:00	68	71	40	6	patchy	

BUTTERFLY LIST *SPECIES (COUNT)*		
Blue sp. (1+)	orange sulphur (4)	
checkered white (85)	painted lady (2)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
(none)		

INCIDENTAL PLANT LIST		
Brassica nigra	*Descurainia pinnata*	*Erodium cicutarium*
Calochortus splendens	*Dudleya pulverulenta*	*Krameria bicolor*
Cylindropuntia ganderi	*Echinocereus engelmannii*	

Quino Checkerspot Butterfly Survey Data Form

GENERAL SURVEY INFORMATION	
Project Name	JVR
Survey Date	2019-05-07
Biologist(s)	Erin Bergman
Survey Area	9
Survey Pass	10

SURVEY CONDITIONS							
Status	**Time**	**Air Temp. (F)**	**Ground Temp. (F)**	**Cloud Cover (%)**	**Wind (mph)**	**Sky**	**Notes**
Start	10:06:00	64	70	20	3	clear	
Temp check	11:26:00	68	71	20	3	clear	
Temp check	13:15:00	74	79	10	3	clear	
End	15:34:00	67	74	20	3	clear	
End	17:08:00	63	68	20	2	clear	

BUTTERFLY LIST *SPECIES (COUNT)*		
Acmon blue (9)	Edward's blue (21)	Reakirt's blue (32)
Behr's metalmark (1)	gray hairstreak (11)	western pygmy-blue (38)
Blue species (1+)	Leda ministreak (3)	white checkered-skipper (12)
cabbage white (10)	marine blue (18)	White species (1+)
checkered white (89)	Pacific sara orangetip (8)	
dainty sulphur (24)	painted lady (22)	

INCIDENTAL WILDLIFE LIST *SPECIES (COUNT)*		
California quail (1+)	common raven (1+)	turkey vulture (1+)

INCIDENTAL PLANT LIST		
Eremalche exilis	*Malacothrix glabrata*	*Sisymbrium orientale*
Erodium cicutarium	*Sisymbrium altissimum*	
Lasthenia gracilis	*Sisymbrium irio*	

Appendix B

List of Plant Species Observed

Eudicots

Vascular Species

ADOXACEAE—MUSKROOT FAMILY

Sambucus nigra ssp. *caerulea*—blue elderberry

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Rhus ovata—sugarbush

APIACEAE—CARROT FAMILY

Apiastrum angustifolium—mock parsley
Bowlesia incana—hoary bowlesia
Lomatium mohavense—Mojave desertparsley

APOCYNACEAE—DOGBANE FAMILY

Asclepias erosa—desert milkweed

ASTERACEAE—SUNFLOWER FAMILY

Adenophyllum porophylloides—San Felipe dogweed
Ambrosia acanthicarpa—flatspine bur ragweed
Ambrosia confertiflora—weakleaf bur ragweed
Ambrosia salsola var. *salsola*—burrobrush
Anisocoma acaulis—scalebud
Artemisia dracunculus—wild tarragon
Artemisia tridentata—big sagebrush
Baccharis salicifolia—mulefat
Baccharis sarothroides—desertbroom
Baccharis sergiloides—broom baccharis
Calycoseris parryi—yellow tackstem
Chaenactis fremontii—pincushion flower
Chaenactis stevioides—Esteve's pincushion
Dieteria asteroides var. *asteroides*—fall tansyaster
Encelia actoni—Acton's brittlebush
Ericameria brachylepis—chaparral goldenbush
Ericameria linearifolia—narrowleaf goldenbush
Eriophyllum wallacei—woolly easterbonnets
Geraea viscida—sticky geraea
* *Glebionis coronaria*—crowndaisy
Gutierrezia sarothrae—broom snake weed
Helianthus annuus—common sunflower

Isocoma acradenia var. *eremophila*—alkali goldenbush
Isocoma menziesii—Menzies's golden bush
* *Lactuca serriola*—prickly lettuce
Laennecia coulteri—Coulter's horseweed
Layia platyglossa—coastal tidytips
Leptosyne californica—California tickseed
Logfia arizonica—Arizona cottonrose
Logfia filaginoides—California cottonrose
* *Logfia gallica*—narrowleaf cottonrose
Malacothrix californica—California desertdandelion
Malacothrix coulteri—snake's head
Malacothrix glabrata—smooth desertdandelion
* *Oncosiphon piluliferum*—stinknet
Rafinesquia californica—California plumeseed
Senecio flaccidus var. *monoensis*—smooth threadleaf ragwort
* *Sonchus oleraceus*—common sowthistle
Stephanomeria exigua—small wirelettuce
Stephanomeria pauciflora—brownplume wirelettuce
Stephanomeria virgata ssp. *pleurocarpa*—wand wirelettuce
Stylocline gnaphaloides—mountain neststraw
* *Taraxacum officinale*—common dandelion
Uropappus lindleyi—Lindley's silverpuffs
Xanthium strumarium—cocklebur

BERBERIDACEAE—BARBERRY FAMILY

Berberis higginsiae—Higgins? barberry

BIGNONIACEAE—BIGNONIA FAMILY

Chilopsis linearis—desert willow

BORAGINACEAE—BORAGE FAMILY

Amsinckia intermedia—common fiddleneck
Amsinckia menziesii—Menzies' fiddleneck
Cryptantha micrantha—redroot cryptantha
Cryptantha muricata var. *jonesii*—pointed cryptantha
Cryptantha pterocarya—wingnut cryptantha
Emmenanthe penduliflora var. *penduliflora*—whisperingbells
Eriodictyon trichocalyx var. *lanatum*—hairy yerba santa
Eucrypta chrysanthemifolia var. *bipinnatifida*—spotted hideseed
Eucrypta chrysanthemifolia var. *chrysanthemifolia*—spotted hideseed
Harpagonella palmeri—Palmer's grapplinghook

Heliotropium curassavicum var. *oculatum*—seaside heliotrope
Pectocarya heterocarpa—chuckwalla combseed
Pectocarya linearis ssp. *ferocula*—sagebrush combseed
Pectocarya penicillata—sleeping combseed
Pectocarya recurvata—curvenut combseed
Pectocarya setosa—moth combseed
Phacelia cicutaria—caterpillar phacelia
Phacelia distans—distant phacelia
Plagiobothrys sp.—popcorn flower

BRASSICACEAE—MUSTARD FAMILY

Boechera pulchra—beautiful rockcress
* *Brassica tournefortii*—Asian mustard*
Caulanthus lasiophyllus—California mustard
Descurainia pinnata ssp. *brachycarpa*—western tansymustard
Descurainia pinnata ssp. *glabra*—western tansymustard
* *Descurainia sophia*—herb sophia*
Draba cuneifolia—wedgeleaf draba
* *Eruca vesicaria* ssp. *sativa*—rocketsalad*
* *Hirschfeldia incana*—shortpod mustard*
Lepidium lasiocarpum ssp. *lasiocarpum*—shaggyfruit pepperweed
* *Raphanus raphanistrum*—wild radish*
* *Sisymbrium altissimum*—tall tumblemustard*
* *Sisymbrium irio*—London rocket*
* *Sisymbrium officinale*—hedgemustard*
* *Sisymbrium orientale*—Indian hedgemustard*
Thysanocarpus curvipes ssp. *eradiatus*—sand fringepod

CACTACEAE—CACTUS FAMILY

Cylindropuntia echinocarpa—Wiggins' cholla
Cylindropuntia ganderi—Gander's buckhorn cholla
Echinocereus engelmannii—Engelmann's hedgehog cactus
Ferocactus cylindraceus—California barrel cactus
Mammillaria tetrancistra—common fishhook cactus
Opuntia chlorotica—dollarjoint pricklypear
* *Opuntia ficus-indica*—Barbary fig
Opuntia phaeacantha—tulip pricklypear

CHENOPODIACEAE—GOOSEFOOT FAMILY

Allenrolfea occidentalis—iodine bush
Atriplex canescens—fourwing saltbush

Atriplex lentiformis—quailbush
* *Atriplex rosea*—tumbling saltweed
* *Bassia hyssopifolia*—fivehorn smotherweed
Chenopodium californicum—California goosefoot
Chenopodium fremontii—Fremont's goosefoot
* *Salsola australis*—Russian thistle
* *Salsola tragus*—prickly Russian thistle
Suaeda nigra—bush seepweed

CISTACEAE—ROCK-ROSE FAMILY

Crocanthemum scoparium—no common name

CONVOLVULACEAE—MORNING-GLORY FAMILY

Cuscuta californica var. *californica*—chaparral dodder

CRASSULACEAE—STONECROP FAMILY

Dudleya arizonica—chalk dudleya
Dudleya pulverulenta—chalk dudleya

EUPHORBIACEAE—SPURGE FAMILY

Euphorbia albomarginata—whitemargin sandmat
Euphorbia melanadenia—red-gland spurge
Stillingia linearifolia—queen's-root

FABACEAE—LEGUME FAMILY

Acmispon argophyllus var. *argophyllus*—silver bird's-foot trefoil
Acmispon brachycarpus—foothill deervetch
Acmispon glaber var. *brevialatus*—western bird's-foot trefoil
Acmispon haydonii—pygmy lotus
Acmispon strigosus—strigose bird's-foot trefoil
Astragalus coccineus—scarlet milkvetch
Astragalus didymocarpus var. *didymocarpus*—dwarf white milkvetch
Astragalus didymocarpus var. *obispoensis*—San Obispo milkvetch
Astragalus palmeri—Palmer's milkvetch
Lupinus concinnus—bajada lupine
* *Medicago polymorpha*—burclover
* *Melilotus indicus*—annual yellow sweetclover
Prosopis glandulosa var. *torreyana*—western honey mesquite
Prosopis pubescens—screwbean mesquite bosques
Senegalia greggii—Catclaw acacia thorn
Trifolium willdenovii—tomcat clover

GERANIACEAE—GERANIUM FAMILY

* *Erodium cicutarium*—redstem stork's bill
Geranium californicum—California cranesbill
* *Geranium molle*—dovefoot geranium

KRAMERIACEAE—RHATANY FAMILY

Krameria bicolor—white ratany
Krameria erecta—littleleaf ratany

LAMIACEAE—MINT FAMILY

Salvia carduacea—thistle sage
Salvia columbariae—chia

LOASACEAE—LOASA FAMILY

Mentzelia albicaulis—whitestem blazingstar
Mentzelia montana—variegated-bract blazingstar
Mentzelia veatchiana—Veatch's blazingstar

MALVACEAE—MALLOW FAMILY

Eremalche exilis—white mallow
* *Malva neglecta*—common mallow
* *Malva parviflora*—cheeseweed mallow
Sphaeralcea ambigua var. *ambigua*—apricot globemallow

MONTIACEAE—MONTIA FAMILY

Calyptridium monandrum—common pussypaws
Claytonia parviflora ssp. *viridis*—streambank springbeauty

NYCTAGINACEAE—FOUR O'CLOCK FAMILY

Boerhavia triquetra—slender spiderling
Mirabilis laevis var. *crassifolia*—California four o'clock
Mirabilis laevis var. *retrorsa*—wishbone-bush

OLEACEAE—OLIVE FAMILY

Fraxinus velutina—velvet ash

ONAGRACEAE—EVENING PRIMROSE FAMILY

Camissonia strigulosa—sandysoil suncup
Camissoniopsis micrantha—miniature suncup
Camissoniopsis pallida—paleyellow suncup
Eulobus californicus—California suncup
Oenothera californica ssp. *avita*—California evening primrose
Oenothera deltoides—birdcage evening primrose

OROBANCHACEAE—BROOM-RAPE FAMILY

Castilleja foliolosa—Texas Indian paintbrush
Cordylanthus rigidus—stiffbranch bird's beak

PAPAVERACEAE—POPPY FAMILY

Argemone munita—flatbud pricklypoppy
Eschscholzia californica—California poppy
Eschscholzia minutiflora—pygmy poppy
Papaver heterophyllum—windpoppy
Platystemon californicus—creamcups

PLANTAGINACEAE—PLANTAIN FAMILY

Collinsia concolor—Chinese houses
Penstemon centranthifolius—scarlet bugler

POLEMONIACEAE—PHLOX FAMILY

Eriastrum densifolium ssp. *elongatum*—giant woollystar
Eriastrum eremicum ssp. *eremicum*—desert woollystar
Gilia stellata—star gilia
Gilia transmontana—transmontane gilia
Linanthus bigelovii—Bigelow's linanthus
Loeseliastrum schottii—Schott's calico

POLYGONACEAE—BUCKWHEAT FAMILY

Centrostegia thurberi—red triangles
Chorizanthe fimbriata—fringed spineflower
Chorizanthe staticoides—turkish rugging
Eriogonum clavatum—Hoover's deserttrumpet
Eriogonum davidsonii—Davidson's buckwheat
Eriogonum elongatum var. *elongatum*—longstem buckwheat
Eriogonum fasciculatum var. *polifolium*—California buckwheat
Eriogonum wrightii var. *membranaceum*—bastardsage
Pterostegia drymarioides—woodland pterostegia

RANUNCULACEAE—BUTTERCUP FAMILY

Anemone tuberosa—tuber anemone
Delphinium parishii ssp. *subglobosum*—Colorado Desert larkspur

RHAMNACEAE—BUCKTHORN FAMILY

Ziziphus parryi var. *parryi*—Parry's jujube

RUBIACEAE—MADDER FAMILY

Galium aparine—stickywilly

RUTACEAE—RUE FAMILY

Thamnosma montana—turpentinebroom

SALICACEAE—WILLOW FAMILY

Populus fremontii ssp. *fremontii*—Fremont cottonwood
Salix exigua—sandbar willow
Salix gooddingii—black willow
Salix laevigata—red willow

SIMMONDSIACEAE—JOJOBA FAMILY

Simmondsia chinensis—jojoba

SOLANACEAE—NIGHTSHADE FAMILY

Datura wrightii—sacred thorn-apple
Lycium andersonii—Anderson's boxthorn
Nicotiana attenuata—coyote tobacco
* *Solanum elaeagnifolium*—silverleaf nightshade

TAMARICACEAE—TAMARISK FAMILY

* *Tamarix ramosissima*—tamarisk

VISCACEAE—MISTLETOE FAMILY

Phoradendron bolleanum—Bollean mistletoe
Phoradendron californicum—mesquite mistletoe

ZYGOPHYLLACEAE—CALTROP FAMILY

Larrea tridentata—creosote bush
* *Tribulus terrestris*—puncturevine

Gymnosperms and Gnetophytes

Vascular Species

CUPRESSACEAE—CYPRESS FAMILY

Juniperus californica—California juniper

EPHEDRACEAE—EPHEDRA FAMILY

Ephedra aspera—rough jointfir
Ephedra californica—California joint fir
Ephedra viridis—Mormon tea

Monocots

Vascular Species

AGAVACEAE—AGAVE FAMILY

Agave deserti var. *deserti*—desert agave
Hesperoyucca whipplei—chaparral yucca
Yucca schidigera—Mojave yucca

ALLIACEAE—ONION FAMILY

Allium fimbriatum var. *fimbriatum*—fringed onion
Allium haematochiton—redskin onion

JUNCACEAE—RUSH FAMILY

Juncus mexicanus—Mexican rush

LILIACEAE—LILY FAMILY

Calochortus splendens—splendid mariposa lily

POACEAE—GRASS FAMILY

Bromus berteroanus—Chilean chess
* *Bromus diandrus*—ripgut brome
* *Bromus hordeaceus*—soft brome
* *Bromus madritensis*—compact brome
* *Bromus tectorum*—cheatgrass
* *Cynodon dactylon*—Bermudagrass
* *Cynosurus echinatus*—annual dogtails
* *Distichlis spicata*—salt grass
* *Hordeum murinum* ssp. *glaucum*—smooth barley
Melica imperfecta—smallflower melicgrass
* *Polypogon monspeliensis*—annual rabbitsfoot grass
* *Schismus barbatus*—common Mediterranean grass
Sporobolus airoides—alkali sacaton
Stipa speciosa—desert needlegrass

THEMIDACEAE—BRODIAEA FAMILY

Dichelostemma capitatum—bluedicks

TYPHACEAE—CATTAIL FAMILY

Typha sp.—no common name

* signifies introduced (non-native) species

Appendix C

List of Wildlife Species Observed

Bird

Blackbirds, Orioles and Allies

ICTERIDAE—BLACKBIRDS

Agelaius phoeniceus—red-winged blackbird
Agelaius tricolor—tricolored blackbird
Euphagus cyanocephalus—Brewer's blackbird
Icterus bullockii—Bullock's oriole
Icterus cucullatus—hooded oriole
Icterus parisorum—Scott's oriole
Quiscalus mexicanus—great-tailed grackle
Sturnella neglecta—western meadowlark
Xanthocephalus xanthocephalus—yellow-headed blackbird
* *Molothrus ater*—brown-headed cowbird

Bushtits

AEGITHALIDAE—LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus—bushtit

Cardinals, Grosbeaks and Allies

CARDINALIDAE—CARDINALS AND ALLIES

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

Falcons

FALCONIDAE—CARACARAS AND FALCONS

Falco columbarius—merlin
Falco sparverius—American kestrel

Finches

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus—house finch
Spinus lawrencei—Lawrence's goldfinch
Spinus psaltria—lesser goldfinch

Flycatchers

TYRANNIDAE—TYRANT FLYCATCHERS

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

Goatsuckers

CAPRIMULGIDAE—GOATSUCKERS

Chordeiles acutipennis—lesser nighthawk

Hawks

ACCIPITRIDAE—HAWKS, KITES, EAGLES, AND ALLIES

Accipiter cooperii—Cooper's hawk
Accipiter striatus—sharp-shinned hawk
Aquila chrysaetos—golden eagle
Buteo jamaicensis—red-tailed hawk
Circus hudsonius—northern harrier

Hummingbirds

TROCHILIDAE—HUMMINGBIRDS

Calypte anna—Anna's hummingbird
Calypte costae—Costa's hummingbird

Jays, Magpies and Crows

CORVIDAE—CROWS AND JAYS

Aphelocoma californica—California scrub-jay
Corvus brachyrhynchos—American crow
Corvus corax—common raven

Larks

ALAUDIDAE—LARKS

Eremophila alpestris actia—California horned lark

Mockingbirds and Thrashers

MIMIDAE—MOCKINGBIRDS AND THRASHERS

Mimus polyglottos—northern mockingbird
Oreoscoptes montanus—sage thrasher
Toxostoma redivivum—California thrasher

New World Quail

ODONTOPHORIDAE—NEW WORLD QUAIL

Callipepla californica—California quail

New World Vultures

CATHARTIDAE—NEW WORLD VULTURES

Cathartes aura—turkey vulture

Old World Sparrows

PASSERIDAE—OLD WORLD SPARROWS

* *Passer domesticus*—house sparrow

Old World Warblers and Gnatcatchers

SYLVIIDAE—SYLVIID WARBLERS

Polioptila caerulea—blue-gray gnatcatcher
Polioptila melanura—black-tailed gnatcatcher

Owls

STRIGIDAE—TYPICAL OWLS

Athene cunicularia—burrowing owl
Bubo virginianus—great horned owl

Pigeons and Doves

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove
* *Columba livia*—rock pigeon (rock dove)
* *Streptopelia decaocto*—Eurasian collared-dove
Zenaida asiatica—white-winged dove

Roadrunners and Cuckoos

CUCULIDAE—CUCKOOS, ROADRUNNERS, AND ANIS

Geococcyx californianus—greater roadrunner

Shorebirds

CHARADRIIDAE—LAPWINGS AND PLOVERS

Charadrius vociferus—killdeer

Shrikes

LANIIDAE—SHRIKES

Lanius ludovicianus—loggerhead shrike

Silky Flycatchers

PTILOGONATIDAE—SILKY-FLYCATCHERS

Phainopepla nitens—phainopepla

Starlings and Allies

STURNIDAE—STARLINGS

* *Sturnus vulgaris*—European starling

Swallows

HIRUNDINIDAE—SWALLOWS

Hirundo rustica—barn swallow

Stelgidopteryx serripennis—northern rough-winged swallow

Tachycineta bicolor—tree swallow

Swifts

APODIDAE—SWIFTS

Aeronautes saxatalis—white-throated swift

Chaetura vauxi—Vaux's swift

Verdin

REMIZIDAE—PENDULINE TITS AND VERDINS

Auriparus flaviceps—verdin

Vireos

VIREONIDAE—VIREOS

Vireo gilvus—warbling vireo

Waterfowl

ANATIDAE—DUCKS, GEESE, AND SWANS

Anas platyrhynchos—mallard

Wood Warblers and Allies

PARULIDAE—WOOD-WARBLERS

Cardellina pusilla—Wilson's warbler
Geothlypis trichas—common yellowthroat
Oreothlypis celata—orange-crowned warbler
Oreothlypis ruficapilla—Nashville warbler
Setophaga coronata—yellow-rumped warbler
Setophaga nigrescens—black-throated gray warbler
Setophaga townsendi—Townsend's warbler

Woodpeckers

PICIDAE—WOODPECKERS AND ALLIES

Colaptes auratus—northern flicker
Dryobates nuttallii—Nuttall's woodpecker
Dryobates scalaris—ladder-backed woodpecker

Wrens

TROGLODYTIDAE—WRENS

Campylorhynchus brunneicapillus—cactus wren
Salpinctes obsoletus—rock wren
Thryomanes bewickii—Bewick's wren
Troglodytes aedon—house wren

Wrentits

TIMALIIDAE—BABBLERS

Chamaea fasciata—wrentit

New World Sparrows

PASSERELLIDAE—NEW WORLD SPARROWS

Amphispiza bilineata—black-throated sparrow
Chondestes grammacus—lark sparrow
Melospiza lincolnii—Lincoln's sparrow
Melospiza melodia—song sparrow
Melozone crissalis—California towhee
Passerculus sandwichensis—savannah sparrow
Pipilo maculatus—spotted towhee
Pooecetes gramineus—vesper sparrow
Spizella breweri—Brewer's sparrow
Zonotrichia leucophrys—white-crowned sparrow

Invertebrate

Butterflies

LYCAENIDAE—BLUES, HAIRSTREAKS, AND COPPERS

Atlides halesus—great purple hairstreak
Brephidium exile—western pygmy-blue
Glaucopsyche lygdamus australis—southern blue
Hemiargus ceraunus gyas—Edward's blue
Hemiargus isola—Reakirt's blue
Icaricia acmon acmon—Acmon blue
Leptotes marina—marine blue
Ministrymon leda—Leda ministreak
Strymon melinus—gray hairstreak
—Blue sp.

NYMPHALIDAE—BRUSH-FOOTED BUTTERFLIES

Chlosyne californica—California patch
Danaus gilippus—queen
Euphydryas chalcedona chalcedona—Chalcedon variable checkerspot
Euphydryas editha quino—quino checkerspot butterfly
Nymphalis californica—California tortoiseshell
Vanessa annabella—west coast lady
Vanessa atalanta—red admiral
Vanessa cardui—painted lady
Vanessa sp.—lady

RIODINIDAE—METALMARKS

Apodemia mormo virgulti—Behr's metalmark

HESPERIIDAE—SKIPPERS

Erynnis funeralis—funereal duskywing
Hesperia juba—Juba skipper
Pyrgus albescens—white checkered-skipper
—Duskywing sp.

PIERIDAE—WHITES AND SULFURS

Anthocharis cethura—desert orangetip
Anthocharis sara sara—Pacific sara orangetip
Colias eurydice—California dogface
Colias eurytheme—orange sulphur
Colias harfordii—Harford's sulphur
Euchloe hyantis lotta—desert pearly marble
Eurema nicippe—sleepy orange
Nathalis iole—dainty sulphur
Phoebis sennae—cloudless sulphur
Pieris rapae—cabbage white
Pontia beckerii—Becker's white
Pontia protodice—checkered white
Pontia sisymbrii—spring white
—Sulphur sp.
—White sp.

Moths

SPHINGIDAE—HAWK MOTHS

Hyles lineata—White-lined sphinx

Ants

FORMICIDAE—ANTS

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Mammal

Canids

CANIDAE—WOLVES AND FOXES

Canis latrans—coyote

Cats

FELIDAE—CATS

Lynx rufus—bobcat

Domestic

EQUIDAE—HORSES AND BURROS

* *Equus caballus*—domestic horse

BOVIDAE—BISON, GOATS AND SHEEP

* *Boa taurus*—domestic cattle

Hares and Rabbits

LEPORIDAE—HARES AND RABBITS

Lepus californicus bennettii—San Diego black-tailed jackrabbit

Lepus californicus—black-tailed jackrabbit

Sylvilagus audubonii—desert cottontail

Sylvilagus bachmani—brush rabbit

Kangaroo Rats

HETEROMYIDAE—POCKET MICE AND KANGAROO RATS

Dipodomys sp.—kangaroo rat

Mustelids

MUSTELIDAE—WEASELS, SKUNKS, AND OTTERS

Taxidea taxus—American badger

Pocket Gophers

GEOMYIDAE—POCKET GOPHERS

Thomomys bottae—Botta's pocket gopher

Squirrels

SCIURIDAE—SQUIRRELS

Ammospermophilus leucurus—white-tailed antelope squirrel

Spermophilus (Otospermophilus) beecheyi—California ground squirrel

Ungulates

CERVIDAE—DEERS

Odocoileus hemionus—mule deer

Rats, Mice, and Voles

CRICETIDAE—RATS, MICE, AND VOLES

Neotoma lepida intermedia—San Diego desert woodrat

Reptile

Lizards

PHRYNOSOMATIDAE—IGUANID LIZARDS

Callisaurus draconoides—zebra-tailed lizard

Sceloporus magister—desert spiny lizard

Sceloporus occidentalis—western fence lizard

Uta stansburiana—common side-blotched lizard

TEIIDAE—WHIPTAIL LIZARDS

Aspidoscelis tigris stejnegeri—San Diegan tiger whiptail

Snakes

COLUBRIDAE—COLUBRID SNAKES

Pituophis catenifer—gophersnake

—coachwhip sp.

* signifies introduced (non-native) species

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Appendix D1

Special-Status Plant Species Detected or Potentially Occurring

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Acmispon haydonii	pygmy lotus	None/None/List A/ 1B.3	Pinyon–juniper woodland, Sonoran desert scrub; rocky/perennial herb/Jan–June/1,705–3,935	Observed on site. One pygmy lotus mapped within the BSA during the April 2019 surveys.
Berberis higginsiae	Higgins' barberry	None/None/None/3.2	Chaparral, Sonoran desert scrub; rocky, sometimes granitic/perennial shrub/Mar–Apr/ 2,620–3,495	Observed. One Higgins' barberry was mapped within the BSA during the April 2019 surveys.
Delphinium parishii ssp. *subglobosum*	Colorado Desert larkspur	None/None/List D/4.3	Chaparral, cismontane woodland, pinyon and juniper woodland, Sonoran desert scrub/ perennial herb/Mar–June/1,965–5,905	Observed. Approximately 244 individuals were mapped within the BSA during the April 2019 surveys.
Euphorbia abramsiana	Abrams' spurge	None/None/None/ 2B.2	Mojavean desert scrub, Sonoran desert scrub; sandy/annual herb/(Aug)Sep–Nov/−15–4,300	Moderate potential to occur. There is suitable Sonoran desert scrub vegetation and sandy soil present. However, there are no known occurrences within 5 miles of the BSA (CDFW 2018).
Geraea viscida	sticky geraea	None/None/ List B/ 2B.2	Chaparral (often in disturbed areas)/perennial herb/(Apr)May–June/1,475–5,575	Observed. Approximately 41 individuals were mapped within the BSA during the April 2019 surveys.
Harpagonella palmeri	Palmer's grapplinghook	None/None/List D/4.2	Chaparral, coastal scrub, valley and foothill grassland; clay; open grassy areas within shrubland/annual herb/Mar–May/65–3,135	Observed. Approximately 7,494 individuals were mapped within the BSA during the April 2019 surveys.

Status Designations
FE: Federally listed as endangered
SE: State listed as endangered
SR: State listed as rare
CRPR (California Rare Plant Rank):
CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR 2A: Plants presumed extirpated in California, but common elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
CRPR 3: Plants about which more information is needed – a review list
CRPR 4: Plants of limited distribution – a watch list
Threat Rank:
1: seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
2: moderately threatened in California (20%–80% of occurrences threatened/moderate degree and immediacy of threat)
3: not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

County of San Diego Sensitive Plant List:
List A: plants rare, threatened, or endangered in California and elsewhere
List B: plants rare, threatened, or endangered in California but more common elsewhere
List C: plants which may be rare, but need more information to determine their true rarity status
List D: plants of limited distribution and that are uncommon, but not presently rare or endangered

Notes: CRPR = California Rare Plant Rank; amsl = above mean sea level; CNDDB = California Natural Diversity Database; BSA = biological study area;

[1] "Vicinity" refers to the surrounding USGS 7.5-minute quadrangles: Jacumba, Carrizo Mountain, Sweeney Pass, Sombrero Peak, In-Ko-Pah Gorge, Live Oak Springs, and Tierra del Sol.

References

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Appendix D2

Special-Status Plant Species with Low Potential or Not Expected to Occur

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
Abronia maritima	red sand-verbena	None/None/List D/ 4.2/None	Coastal dunes/perennial herb/Feb–Nov/0–330	Not detected. This species occurs along the coast. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Abronia villosa var. *aurita*	chaparral sand-verbena	None/None/List A/ 1B.1/None	Chaparral, coastal scrub, desert dunes; sandy/ annual herb/(Jan)Mar–Sep/245–5,250	Not detected. There is no suitable chaparral vegetation; however, there is suitable sandy soil present. The closest occurrence is 15 miles north of the BSA (CCH 2018).
Acanthomintha ilicifolia	San Diego thorn-mint	FT/SE/List A/1B.1/ Narrow Endemic	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; clay, openings/annual herb/Apr–June/30–3,150	Not detected. There is no suitable vernal pool or clay soil present.
Acmispon prostratus	Nuttall's acmispon	None/None/List A/ 1B.1/None	Coastal dunes, coastal scrub (sandy)/annual herb/Mar–June(July)/0–35	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Adolphia californica	California adolphia	None/None/List B/ 2B.1/None	Chaparral, coastal scrub, valley and foothill grassland; clay/perennial deciduous shrub/ Dec–May/30–2,430	Not detected. The site is outside of the species' known elevation range.
Agave shawii var. *shawii*	Shaw's agave	None/None/List B/ 2B.1/Narrow Endemic	Coastal bluff scrub, coastal scrub; maritime succulent scrub/perennial leaf succulent/ Sep–May/5–395	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ambrosia chenopodiifolia	San Diego bur-sage	None/None/List B/ 2B.1/None	Coastal scrub/perennial shrub/Apr–June/ 180–510	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ambrosia pumila	San Diego ambrosia	FE/None/List A/1B.1/ 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/65–1,360	Not detected. The site is outside of the species' known elevation range.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
Androsace elongata ssp. *acuta*	California androsace	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland/annual herb/Mar–June/490–4,280	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 28 miles northwest of the BSA (CCH 2018).
Aphanisma blitoides	aphanisma	None/None/List A/ 1B.2/None	Coastal bluff scrub, coastal dunes, coastal scrub; sandy or gravelly/annual herb/Feb–June/ 0–1,000	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Arctostaphylos glandulosa ssp. *crassifolia*	Del Mar manzanita	FE/None/List A/1B.1/ None	Chaparral (maritime, sandy)/perennial evergreen shrub/Dec–June/0–1,200	Not detected. This species occurs on sandstone terraces and bluffs near the coast (USFWS 2010). The site is outside of the species' known elevation range.
Arctostaphylos otayensis	Otay manzanita	None/None/List A/ 1B.2/None	Chaparral, cismontane woodland; metavolcanic/ perennial evergreen shrub/Jan–Apr/900–5,575	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 24 miles northwest of the BSA (CCH 2018).
Arctostaphylos rainbowensis	rainbow manzanita	None/None/List A/ 1B.1/None	Chaparral/perennial evergreen shrub/Dec–Mar/ 670–2,200	Not detected. The site is outside of the species' known elevation range.
Artemisia palmeri	San Diego sagewort	None/None/List D/ 4.2/None	Chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; sandy, mesic/perennial deciduous shrub/(Feb)May–Sep/45–3,000	Not detected. There is no suitable riparian vegetation present; however, there is sandy soil. The closest known occurrence is 30 miles west of the BSA (CCH 2018).
Asplenium vespertinum	western spleenwort	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal scrub; rocky/perennial rhizomatous herb/Feb–June/ 590–3,280	Not detected. There is no suitable chaparral vegetation present; however, there is rocky soil. The closest known occurrence is 18 miles west of the BSA (CCH 2018).
Astragalus crotalariae	Salton milk-vetch	None/None/List D/ 4.3/None	Sonoran desert scrub (sandy or gravelly)/ perennial herb/Jan–Apr/−195–820	Not detected. The site is outside of the species' known elevation range.

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Astragalus deanei	Dean's milk-vetch	None/None/List A/ 1B.1/None	Chaparral, cismontane woodland, coastal scrub, riparian forest/perennial herb/Feb–May/ 245–2,280	Not detected. The site is outside of the species' known elevation range.
Astragalus douglasii var. *perstrictus*	Jacumba milk-vetch	None/None/List A/ 1B.2	Chaparral, cismontane woodland, pinyon–juniper woodland, riparian scrub, valley and foothill grassland; rocky/perennial herb/Apr–June/ 2,950–4,495	Not detected. While there is suitable scrub vegetation and rocky soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. The closest known CNDDB occurrence overlaps the southwestern portion of the BSA (CDFW 2018). During initial constraints surveys of the BSA, Jacumba milk-vetch was observed off-site during a reference check in Boulevard, California on 3/28/2019. Additionally, the species was observed off-site during surveys within the vicinity (Bergman 2018).
Astragalus insularis var. harwoodii	Harwood's milk-vetch	None/None/List B/ 2B.2/None	Desert dunes, Mojavean desert scrub; sandy or gravelly/annual herb/Jan–May/0–2,330	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present. The closest known CNDDB occurrence is 3.2 miles northeast of the BSA at the base of Mountain Springs Grade (CDFW 2018). According to the San Diego Plant Atlas, Harwood's milk-vetch occurs east of Sweeny Pass (SDNHM 2018).

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Astragalus lentiginosus var. *borreganus*	Borrego milk-vetch	None/None/List D/4.3	Mojavean desert scrub, Sonoran desert scrub; sandy/annual herb/Feb–May/95–2,935	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. There are no known CNDDB occurrences in the vicinity[1] (CDFW 2018). The closest known occurrence is 28 miles northwest of the BSA (CCH 2018).
Astragalus magdalenae var. *peirsonii*	Peirson's milk-vetch	FT/SE/List A/ 1B.2/None	Desert dunes/perennial herb/Dec–Apr/195–740	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Astragalus oocarpus	San Diego milk-vetch	None/None/List A/ 1B.2/None	Chaparral (openings), cismontane woodland/ perennial herb/May–Aug/1,000–5,000	Not detected. There is no suitable chaparral vegetation present.
Astragalus pachypus var. *jaegeri*	Jaeger's bush milk-vetch	None/None/List A/ 1B.1/None	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; sandy or rocky/ perennial shrub/Dec–June/1,195–3,200	Not detected. There is no suitable chaparral vegetation present; however, there is sandy and rocky soil.
Astragalus tener var. *titi*	coastal dunes milk-vetch	FE/SE/List A/ 1B.1/None	Coastal bluff scrub (sandy), coastal dunes, coastal prairie (mesic); often vernally mesic areas/annual herb/Mar–May/0–165	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Atriplex coulteri	Coulter's saltbush	None/None/List A/ 1B.2/None	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland; alkaline or clay/ perennial herb/Mar–Oct/5–1,510	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Atriplex pacifica	South Coast saltscale	None/None/List A/ 1B.2/None	Coastal bluff scrub, coastal dunes, coastal scrub, playas/annual herb/Mar–Oct/0–460	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Atriplex parishii	Parish's brittlescale	None/None/List A/ 1B.1/None	Chenopod scrub, playas, vernal pools; alkaline/annual herb/June–Oct/80–6,235	Not detected. No suitable vegetation present.

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Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None/List A/ 1B.2/None	Coastal bluff scrub, coastal scrub; alkaline/annual herb/Apr–Oct/30–655	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ayenia compacta	California ayenia	None/None/ List B/ 2B.3/None	Mojavean desert scrub, Sonoran desert scrub; rocky/perennial herb/Mar–Apr/490–3,595	Not detected. There is suitable Sonoran desert scrub and rocky soil present. However, there are no known occurrences within 5 miles of the BSA (CDFW 2018). California ayenia occurs generally north of Mt. Laguna in Anza-Borrego Desert State Park (SDNHM 2018).
Azolla microphylla	Mexican mosquito fern	None/None/List D/ 4.2/None	Marshes and swamps (ponds, slow water)/ annual/perennial herb/Aug/95–330	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Baccharis vanessae	Encinitas baccharis	FT/SE/List A/ 1B.1/None	Chaparral (maritime), cismontane woodland; sandstone/perennial deciduous shrub/ Aug, Oct, Nov/195–2,360	Not detected. The site is outside of the species' known elevation range.
Berberis fremontii	Fremont barberry	None/None/ List C/ 2B.3/None	Joshua tree woodland, pinyon–juniper woodland; rocky, sometimes granitic/perennial evergreen shrub/Mar–May/3,755–5,645	Not detected. The site is outside of the species' known elevation range.
Berberis nevinii	Nevin's barberry	FE/SE/List A/1B.1/ Narrow Endemic	Chaparral, cismontane woodland, coastal scrub, riparian scrub; sandy or gravelly/perennial evergreen shrub/(Feb)Mar–June/225–2,705	Not detected. There is no suitable chaparral or riparian scrub vegetation present; however, there is sandy soil. There are no known occurrences in the vicinity[1] (CDFW 2018).
Bergerocactus emoryi	golden-spined cereus	None/None/List B/ 2B.2/None	Closed-cone coniferous forest, chaparral, coastal scrub; sandy/perennial stem succulent/ May–June/5–1,295	Not detected. The site is outside of the species' known elevation range.
Bloomeria clevelandii	San Diego goldenstar	None/None/List A/ 1B.1/None	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; clay/perennial bulbiferous herb/Apr–May/160–1,525	Not detected. The site is outside of the species' known elevation range.

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Boechera hirshbergiae	Hirshberg's rockcress	None/None/List A/ 1B.2/None	Pebble (pavement) plain/perennial herb/ Mar–May/4,590–4,640	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/List A/1B.1/ Narrow Endemic	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools; often clay/perennial bulbiferous herb/Mar–June/80–3,675	Not detected. There is no suitable vegetation or clay soil present.
Brodiaea orcuttii	Orcutt's brodiaea	None/None/List A/ 1B.1/None	Closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools; mesic, clay/perennial bulbiferous herb/May–July/ 95–5,550	Not detected. There is no suitable vegetation or clay soil present.
Bursera microphylla	little-leaf elephant tree	None/None/ List B/ 2B.3/None	Sonoran desert scrub (rocky)/perennial deciduous tree/June–July/655–2,295	Not detected. The site is outside of the species' known elevation range.
Calandrinia breweri	Brewer's calandrinia	None/None/List D/ 4.2/None	Chaparral, coastal scrub; sandy or loamy, disturbed sites and burns/annual herb/ (Jan)Mar–June/30–4,005	Not detected. There is no suitable chaparral vegetation present; however, there is sandy soil. The closest known occurrence is 29 miles west of the BSA (CCH 2018).
California macrophylla	round-leaved filaree	None/None/List B/ None/None	Cismontane woodland, valley and foothill grassland; clay/annual herb/Mar–May/45–3,935	Not detected. There is no suitable vegetation or clay soil present.
Calliandra eriophylla	pink fairy-duster	None/None/List B/ 2B.3	Sonoran desert scrub (sandy or rocky)/perennial deciduous shrub/Jan–Mar/390–4,920	Not detected. While there is suitable Sonoran desert scrub vegetation and sandy and rocky soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. Pink fairy-duster prefers rocky hillsides and

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				bajadas (Reiser 2001). Rocky hillsides make up a large portion of the BSA. In addition, populations of pink fairy-duster have been documented throughout In-Koh-Pah, which is less than 5 miles from the site (Reiser 2001).
Calochortus catalinae	Catalina mariposa lily	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/perennial bulbiferous herb/(Feb)Mar–June/45–2,295	Not detected. The site is outside of the species' known elevation range.
Calochortus dunnii	Dunn's mariposa lily	None/SR/List A/1B.2/ Narrow Endemic	Closed-cone coniferous forest, chaparral, valley and foothill grassland; gabbroic or metavolcanic, rocky/perennial bulbiferous herb/(Feb)Apr–June/ 605–6,005	Not detected. There is no suitable chaparral vegetation present; however, there is gabbroic and rocky soil.
Camissoniopsis lewisii	Lewis' evening-primrose	None/None/List C/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	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Carlowrightia arizonica	Arizona carlowrightia	None/None/ List B/ 2B.2/None	Sonoran desert scrub (sandy, granitic alluvium)/perennial deciduous shrub/Mar–May/ 935–1,410	Not detected. The site is outside of the species' known elevation range. Arizona carlowrightia occurs north of Sweeny Pass (SDNHM 2018).
Caulanthus simulans	Payson's jewelflower	None/None/List D/4.2	Chaparral, coastal scrub; sandy, granitic/annual herb/(Feb)Mar–May(June)/295–7,220	Not detected. While there is suitable sandy and granitic soil is present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. In addition, Payson's jewelflower is found in juniper woodland (Reiser 2001).

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				Juniper woodland is a common vegetation community in the Jacumba area (Reiser 2001). Populations of Payson's jewelflower occur throughout Boulevard, which is approximately 5 miles from the site. Jacumba was the historical range for Payson's jewelflower, where it was considered to be locally abundant (Reiser 2001).
Ceanothus cyaneus	Lakeside ceanothus	None/None/List A/ 1B.2/ Narrow Endemic	Closed-cone coniferous forest, chaparral/perennial evergreen shrub/Apr–June/ 770–2,475	Not detected. The site is outside of the species' known elevation range.
Ceanothus verrucosus	wart-stemmed ceanothus	None/None/List B/ 2B.2/None	Chaparral/perennial evergreen shrub/Dec–May/ 0–1,245	Not detected. The site is outside of the species' known elevation range.
Centromadia parryi ssp. *australis*	southern tarplant	None/None/List A/ 1B.1/None	Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools/annual herb/May–Nov/0–1,575	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Centromadia pungens ssp. *laevis*	smooth tarplant	None/None/List A/ 1B.1/None	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2,100	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Chaenactis carphoclinia var. *peirsonii*	Peirson's pincushion	None/None/List A/ 1B.3/None	Sonoran desert scrub (sandy)/annual herb/ Mar–Apr/5–1,640	Not detected. The site is outside of the species' known elevation range.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None/None/List A/ 1B.1/None	Coastal bluff scrub (sandy), coastal dunes/annual herb/Jan–Aug/0–330	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Chaenactis parishii	Parish's chaenactis	None/None/List A/ 1B.3/None	Chaparral (rocky)/perennial herb/ May–July/4,265–8,200	Not detected. The site is outside of the species' known elevation range.

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Chamaebatia australis	southern mountain misery	None/None/List D/ 4.2/None	Chaparral (gabbroic or metavolcanic)/perennial evergreen shrub/Nov–May/980–3,345	Not detected. There is no suitable chaparral vegetation present; however, there is gabbroic soil. The closest known occurrence is 19 miles west of the BSA (CCH 2018).
Chloropyron maritimum ssp. *maritimum*	salt marsh bird's-beak	FE/SE/List A/ 1B.2/None	Coastal dunes, marshes and swamps (coastal salt)/annual herb (hemiparasitic)/ May–Oct(Nov)/0–100	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Chorizanthe leptotheca	Peninsular spineflower	None/None/ List D/ 4.2/None	Chaparral, coastal scrub, lower montane coniferous forest; alluvial fan, granitic/annual herb/ May–Aug/980–6,235	Not detected. Peninsular spineflower typically occurs in inland chaparral habitat where steep slopes predominate (Reiser 2001). The BSA consists of steep slopes but lacks inland chaparral typical of where Peninsular spineflower occurs. There are suitable soils derived from granitic and alluvial sources. There are no known occurrences within 5 miles of the BSA (CDFW 2018). In addition, populations of Peninsular spineflower typically occur west of Boulevard (SDNHM 2018).
Chorizanthe orcuttiana	Orcutt's spineflower	FE/SE/List A/ 1B.1/None	Closed-cone coniferous forest, chaparral (maritime), coastal scrub; sandy openings/annual herb/Mar–May/5–410	Not detected. The site is outside of the species' known elevation range.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FC/SE/List A/ 1B.1/None	Coastal scrub (sandy), valley and foothill grassland/annual herb/Apr–July/490–4,005	Not detected. No suitable vegetation present.
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	None/None/ List A/ 1B.2/None	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools; often clay/annual herb/Apr–July/95–5,020	Not detected. There is no suitable vegetation or clay soils present. Long-spined spineflower typically occurs on clay lenses that are devoid of shrubs

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				(Reiser 2001). The closest known CNDDB occurrence is 5.0 miles east of the BSA southwest of Lake Domingo (CDFW 2018). Populations of long-spined spineflower generally occur west of Morena Village and northwest of Mt. Laguna (SDNHM 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Cistanthe maritima	seaside cistanthe	None/None/List D/ 4.2/None	Coastal bluff scrub, coastal scrub, valley and foothill grassland; sandy/annual herb/(Feb)Mar–June(Aug)/15–985	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Clarkia delicata	delicate clarkia	None/None/ List A/ 1B.2/None	Chaparral, cismontane woodland; often gabbroic/annual herb/Apr–June/770–3,280	Not detected. There is no suitable vegetation present; however, there is suitable gabbroic soil derived from igneous rock. There are no known occurrences within 5 miles of the BSA (CDFW 2018). Delicate clarkia is found west of Buckman Springs Road (SDNHM 2018). Delicate clarkia typically occurs on the periphery of oak woodland communities in partial shade, and typically consists of vernally mesic soil (Reiser 2001). Soils in some areas where delicate clarkia are present include Bancas stony loam (Reiser 2001). No oak woodland communities occur in the BSA. This

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				species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Clinopodium chandleri	San Miguel savory	None/None/List A/ 1B.2/None	Chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; rocky, gabbroic or metavolcanic/perennial shrub/ Mar–July/390–3,525	Not detected. There is no suitable chaparral vegetation present; however, there is rocky and gabbroic soil.
Colubrina californica	Las Animas colubrina	None/None/List B/ 2B.3	Mojavean desert scrub, Sonoran desert scrub/ perennial deciduous shrub/Apr–June/30–3,280	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018).
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	None/None/List A/ 1B.2/None	Chaparral, cismontane woodland/perennial evergreen shrub/Apr–June/95–2,590	Not detected. The site is outside of the species' known elevation range.
Convolvulus simulans	small-flowered morning-glory	None/None/List D/ 4.2/None	Chaparral (openings), coastal scrub, valley and foothill grassland; clay, serpentinite seeps/annual herb/Mar–July/95–2,430	Not detected. The site is outside of the species' known elevation range.
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	None/None/List A/ 1B.1/None	Coastal bluff scrub, chaparral (maritime, openings), coastal scrub; sandy/perennial herb/ May, July, Aug, Sep/45–490	Not detected. The site is outside of the species' known elevation range.

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Cryptantha ganderi	Gander's cryptantha	None/None/List A/ 1B.1/None	Desert dunes, Sonoran desert scrub (sandy)/annual herb/Feb–May/520–1,310	Not detected. The site is outside of the species' known elevation range.
Cylindropuntia californica var. *californica*	snake cholla	None/None/List A/ 1B.1/Narrow Endemic	Chaparral, coastal scrub/perennial stem succulent/Apr–May/95–490	Not detected. The site is outside of the species' known elevation range.
Cylindropuntia fosbergii	pink teddy-bear cholla	None/None/None/ 1B.3	Sonoran desert scrub/perennial stem succulent/ Mar–May/275–2,790	Not detected. While there is suitable Sonoran desert scrub vegetation, the species' known elevation range is 50 feet higher than the minimum elevation in the BSA. There are no known occurrences within 5 miles of the BSA (CDFW 2018). Populations of pink teddy-bear cholla occur off the Great Southern Overland Stage Route in Anza-Borrego Desert State Park farther north of the study area (Calflora 2018; SDNHM 2018; CCH 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Cylindropuntia wolfii	Wolf's cholla	None/None/List D/4.3	Sonoran desert scrub/perennial stem succulent/ Mar–May/325–3,935	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. Wolf's

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				cholla is found in alluvial fans and rocky slope terrain (Reiser 2001). The closest known occurrence is 2.4 miles northeast of the BSA east of Table Mountain (CCH 2018). Populations of wolf's cholla have been documented just off Carrizo Gorge Road in Jacumba (SDNHM 2018). Populations have also been documented west of Jacumba near Boulevard (Calflora 2018; CCH 2018).
Deinandra conjugens	Otay tarplant	FT/SE/List A/1B.1/ Narrow Endemic	Coastal scrub, valley and foothill grassland; clay/annual herb/(Apr)May–June/80–985	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Deinandra floribunda	Tecate tarplant	None/None/List A/ 1B.2	Chaparral, coastal scrub/annual herb/Aug–Oct/ 225–4,005	Not detected. While there are sandy washes present, this species was not detected during the August 2019 surveys.
Deinandra mohavensis	Mojave tarplant	None/SE/List A/1B.3/ None	Chaparral, coastal scrub, riparian scrub; mesic/annual herb/(May)June–Oct(Jan)/ 2,095–5,250	Not detected. There is no suitable chaparral or riparian vegetation present.
Deinandra paniculata	paniculate tarplant	None/None/List D/ 4.2/None	Coastal scrub, valley and foothill grassland, vernal pools; usually vernally mesic, sometimes sandy/annual herb/(Mar)Apr–Nov/80–3,085	Not detected. No suitable vegetation present.
Dichondra occidentalis	western dichondra	None/None/List D/ 4.2/None	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial rhizomatous herb/(Jan)Mar–July/160–1640	Not detected. The site is outside of the species' known elevation range.
Dicranostegia orcuttiana	Orcutt's bird's-beak	None/None/List B/ 2B.1/None	Coastal scrub/annual herb (hemiparasitic)/ (Mar)Apr–July(Sep)/30–1150	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.

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Dieteria asteroides var. *lagunensis*	Mt. Laguna aster	None/SR/ List B/2B.1	Cismontane woodland, lower montane coniferous forest/perennial herb/(May)July–Aug/ 2,590–7,875	Not detected. While there is suitable habitat present, this species was not detected during the August 2019 surveys.
Diplacus aridus	low bush monkeyflower	None/None/List D/4.3	Chaparral (rocky), Sonoran desert scrub/perennial evergreen shrub/Apr–July/2,460–3,935	Not detected. While there is suitable Sonoran desert scrub vegetation and rocky soils present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. Low bush monkeyflower grows in desert chaparral and is well adapted to rock outcrops (Reiser 2001). The closest known occurrence is 0.4 miles west of the BSA at the intersection of Old Highway 80 and Railroad Street and 0.5 miles east of the BSA north of Old Highway 80 (CCH 2018).
Diplacus clevelandii	Cleveland's bush monkeyflower	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, lower montane coniferous forest; gabbroic, often in disturbed areas, openings, rocky/perennial rhizomatous herb/ Apr–July/1,475–6,560	Not detected. There is no suitable chaparral vegetation present; however, there is gabbroic soil. The closest known occurrence is 4.36 miles north of the BSA on the eastern slope of Mount Tule (CCH 2018).
Ditaxis serrata var. *californica*	California ditaxis	None/None/List C/3.2	Sonoran desert scrub/perennial herb/Mar–Dec/ 95–3,280	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys

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				conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018). The closest known occurrence is 7 miles north of the BSA (CCH 2018).
Downingia concolor var. *brevior*	Cuyamaca Lake downingia	None/SE/List A/1B.1/ None	Meadows and seeps (vernally mesic), vernal pools/annual herb/May–July/4,525–4,920	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Dudleya alainae	Banner dudleya	None/None/List C/3.2	Chaparral, lower montane coniferous forest, Sonoran desert scrub; rocky/perennial herb/Apr–July/2,425–3,935	Not detected. While there is suitable Sonoran desert scrub vegetation and rocky soils are present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018). The closest known occurrence is 40 miles northwest of the BSA (CCH 2018).
Dudleya attenuata ssp. *attenuata*	Orcutt's dudleya	None/None/List B/ 2B.1/None	Coastal bluff scrub, chaparral, coastal scrub; rocky or gravelly/perennial herb/May–July/5–165	Not detected. The site is outside of the species' known elevation range.
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	None/None/List A/ 1B.1/None	Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland; rocky, often clay or serpentinite/perennial herb/Apr–June/15–1,475	Not detected. The site is outside of the species' known elevation range.

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Dudleya brevifolia	short-leaved dudleya	None/SE/List A/1B.1/ Narrow Endemic	Chaparral (maritime, openings), coastal scrub; Torrey sandstone/perennial herb/Apr–May/ 95–820	Not detected. The site is outside of the species' known elevation range.
Dudleya multicaulis	many-stemmed dudleya	None/None/List A/ 1B.2/None	Chaparral, coastal scrub, valley and foothill grassland; often clay/perennial herb/Apr–July/ 45–2,590	Not detected. The site is outside of the species' known elevation range.
Dudleya variegata	variegated dudleya	None/None/List A/ 1B.2/Narrow Endemic	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools; clay/perennial herb/Apr–June/5–1,905	Not detected. The site is outside of the species' known elevation range.
Dudleya viscida	sticky dudleya	None/None/List A/ 1B.2/None	Coastal bluff scrub, chaparral, cismontane woodland, coastal scrub; rocky/perennial herb/ May–June/30–1,805	Not detected. The site is outside of the species' known elevation range.
Ericameria cuneata var. *macrocephala*	Laguna Mountains goldenbush	None/None/List A/ 1B.3/None	Chaparral (granitic)/perennial shrub/Sep–Dec/ 3,920–6,070	Not detected. The site is outside of the species' known elevation range. Laguna mountains goldenbush grows clustered around rocky knolls in montane chaparral (Reiser 2001). Laguna Mountains goldenbush generally occurs west of Live Oak Springs (CCH 2018).
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	None/None/List B/ 1B.1/Narrow Endemic	Chaparral, coastal scrub; mesic/perennial evergreen shrub/(July)Sep–Nov/95–1,970	Not detected. The site is outside of the species' known elevation range.
Eriogonum evanidum	vanishing wild buckwheat	None/None/List A/ 1B.1/None	Chaparral, cismontane woodland, lower montane coniferous forest, pinyon–juniper woodland; sandy or gravelly/annual herb/July–Oct/3,605–7,300	Not detected. The site is outside of the species' known elevation range.
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/SE/List A/ 1B.1/None	Coastal scrub, valley and foothill grassland, vernal pools; mesic/annual/perennial herb/Apr–June/ 65–2,035	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present. The closest known CNDDB occurrence is 3.2 miles northeast of

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				the BSA at the base of Mountain Springs Grade (CDFW 2018). San Diego button-celery typically occurs within vernal pools and has a coastal distribution (Calflora 2018; CCH 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Eryngium pendletonense	Pendleton button-celery	None/None/List A/ 1B.1/None	Coastal bluff scrub, valley and foothill grassland, vernal pools; clay, vernally mesic/perennial herb/Apr–June(July)/45–360	Not detected. The site is outside of the species' known elevation range, and there is no suitable vegetation present.
Erythranthe diffusa	Palomar monkeyflower	None/None/ List D/ 4.3/None	Chaparral, lower montane coniferous forest; sandy or gravelly/annual herb/Apr–June/ 4,000–6,005	Not detected. The site is outside of the species' known elevation range. Lower montane coniferous forest with a chaparral understory is the typical land used by Palomar monkeyflower (Reiser 2001). Palomar monkeyflower occurs north of Mt. Laguna (CCH 2018).
Eucnide rupestris	annual rock-nettle	None/None/ List B/ 2B.2/None	Sonoran desert scrub/annual herb/Dec–Apr/ 1,640–1,970	Not detected. Annual rock nettle has been mapped in acid igneous rock (Reiser 2001). Acid igneous rock is not present in the BSA. The site is outside of the species' known elevation range.
Euphorbia arizonica	Arizona spurge	None/None/List B/ 2B.3	Sonoran desert scrub (sandy)/perennial herb/ Mar–Apr/160–985	Not detected. Arizona spurge occurs within Sonoran desert creosote bush scrub (Reiser 2001). The closest known CNDDB occurrence is 2.2 miles east of the BSA south of Interstate 8 (CDFW

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				2018). Arizona spurge has been documented just east of Jacumba Hotsprings (CCH 2018). Arizona spurge has been observed off numerous areas on the railroad tracks in Jacumba (Bergman 2009). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Euphorbia misera	cliff spurge	None/None/List B/ 2B.2/None	Coastal bluff scrub, coastal scrub, Mojavean desert scrub; rocky/perennial shrub/Dec–Aug(Oct)/ 30–1,640	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Euphorbia platysperma	flat-seeded spurge	None/None/List A/ 1B.2/None	Desert dunes, Sonoran desert scrub (sandy)/ annual herb/Feb–Sep/210–330	Not detected. The site is outside of the species' known elevation range.
Euphorbia revoluta	revolute spurge	None/None/List D/ 4.3/None	Mojavean desert scrub (rocky)/annual herb/ Aug–Sep/3,590–10,170	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ferocactus viridescens	San Diego barrel cactus	None/None/List B/ 2B.1/None	Chaparral, coastal scrub, valley and foothill grassland, vernal pools/perennial stem succulent/ May–June/5–1,475	Not detected. The site is outside of the species' known elevation range.
Frankenia palmeri	Palmer's frankenia	None/None/List B/2B.1/None	Coastal dunes, marshes and swamps (coastal salt), playas/perennial herb/May–July/0–35	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Fremontodendron mexicanum	Mexican flannelbush	FE/SR/List A/ 1B.1/None	Closed-cone coniferous forest, chaparral, cismontane woodland; gabbroic, metavolcanic, or serpentinite/perennial evergreen shrub/Mar–June/ 30–2,350	Not detected. The site is outside of the species' known elevation range.

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Fritillaria biflora	Chocolate lily	None/None/List D/ None/None	Coastal scrub, chaparral, valley and foothill grassland; sometimes clay, cobbly loam/perennial herb/Feb–June/1,030–3,379	Not detected. The site is outside of the species' known elevation range.
Funastrum utahense	Utah vine milkweed	None/None/List D/4.2	Mojavean desert scrub, Sonoran desert scrub; sandy or gravelly/perennial herb/(Mar)Apr–June (Sep–Oct)/325–4,710	Not detected. While there is suitable Sonoran desert scrub vegetation and sandy soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018). The closest known occurrence is 12.3 miles east of the BSA (CCH 2018).
Galium angustifolium ssp. *borregoense*	Borrego bedstraw	None/SR/List A/1B.3	Sonoran desert scrub (rocky)/perennial herb/ Mar(May)/1,145–4,100	Not detected. While there is suitable Sonoran desert sage scrub, which is the general habitat for this subshrub (Reiser 2001), this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. Sonoran desert scrub vegetation and rocky soil are present. The closest known CNDDB occurrence is 1.5 miles north of the BSA in Carrizo Gorge (CDFW 2018).

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Galium angustifolium ssp. *jacinticum*	San Jacinto Mountains bedstraw	None/None/List A/ 1B.3/None	Lower montane coniferous forest/perennial herb/June–Aug/4,425–6,890	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present. San Jacinto Mountain bedstraw occurs on the edge of montane meadows and nestled into minor rocky outcrops (Reiser 2001) The closest known CNDDB occurrence is 4.8 miles northwest of the BSA, east of Sacatone Springs and In-Ko-Pah Mountains (CDFW 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Galium johnstonii	Johnston's bedstraw	None/None/List D/ 4.3/None	Chaparral, lower montane coniferous forest, pinyon–juniper woodland, riparian woodland/ perennial herb/June–July/4,000–7,545	Not detected. The site is outside of the species' known elevation range.
Githopsis diffusa ssp. *filicaulis*	Mission Canyon bluecup	None/None/List C/3.1/ None	Chaparral (mesic, disturbed areas)/annual herb/Apr–June/1,475–2,295	Not detected. The site is outside of the species' known elevation range.
Grindelia hallii	San Diego gumplant	None/None/List A/ 1B.2/None	Chaparral, lower montane coniferous forest, meadows and seeps, valley and foothill grassland/perennial herb/May–Oct/605–5,725	Not detected. There is no suitable chaparral vegetation present.
Hazardia orcuttii	Orcutt's hazardia	None/ST/List A/1B.1/ None	Chaparral (maritime), coastal scrub; often clay/ perennial evergreen shrub/Aug–Oct/260–280	Not detected. The site is outside of the species' known elevation range.
Herissantia crispa	curly herissantia	None/None/ List B/ 2B.3/None	Sonoran desert scrub/annual/perennial herb/ (Apr)Aug–Sep/2,295–2,380	Not detected. The site is outside of the species' known elevation range. Curly herissantia is associated with *Hyptis emoryi* and *Justicia californica* (Reiser 2001). These associates are typical of

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				the low desert. The closest known CNDDB occurrence is 3.2 miles northeast of the BSA at the base of Mountain Springs Grade (CDFW 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Hesperocyparis forbesii	Tecate cypress	None/None/List A/ 1B.1/None	Closed-cone coniferous forest, chaparral; clay, gabbroic or metavolcanic/perennial evergreen tree/N.A./260–4,920	Not detected. There is no suitable vegetation or clay soil present.
Hesperocyparis stephensonii	Cuyamaca cypress	None/None/List A/ 1B.1/None	Closed-cone coniferous forest, chaparral, cismontane woodland, riparian forest; gabbroic/ perennial evergreen tree/N.A./3,395–5,595	Not detected. There is no suitable chaparral or riparian vegetation present; however, there is gabbroic soil.
Heterotheca sessiliflora ssp. *sanjacintensis*	sessileflower false goldenaster	None/None/List D/ None/None	Montane habitats; reported to be endemic to Mount Palomar and the San Jacinto Mountains (Reiser 2001)/perennial herb/July–Sep/ 2,200–7,218	Not detected. The site is outside of the species' known elevation range.
Heuchera brevistaminea	Laguna Mountains alumroot	None/None/List A/ 1B.3/None	Broadleafed upland forest, chaparral, cismontane woodland, riparian forest; rocky/perennial rhizomatous herb/ Apr–July(Sep)/4,490–6,560	Not detected. The site is outside of the species' known elevation range. Laguna Mountains alumroot occurs north of Mt. Laguna (SDNHM 2018).
Heuchera rubescens var. *versicolor*	San Diego County alumroot	None/None/List B/ 3.3/None	Chaparral, lower montane coniferous forest; rocky/perennial rhizomatous herb/May–June/ 4,920–13,125	Not detected. The site is outside of the species' known elevation range.
Holocarpha virgata ssp. *elongata*	graceful tarplant	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/annual herb/ May–Nov/ 195–3,610	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 41 miles west of the BSA on Otay Mountain (CCH 2018).

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Hordeum intercedens	vernal barley	None/None/List C/3.2/ None	Coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions), vernal pools/annual herb/Mar–June/15–3,280	Not detected. No suitable vegetation present.
Horkelia cuneata var. *puberula*	mesa horkelia	None/None/List A/ 1B.1/None	Chaparral (maritime), cismontane woodland, coastal scrub; sandy or gravelly/perennial herb/ Feb–July(Sep)/225–2,655	Not detected. No suitable vegetation present.
Horkelia truncata	Ramona horkelia	None/None/List A/ 1B.3/None	Chaparral, cismontane woodland; clay, gabbroic/ perennial herb/May–June/1,310–4,265	Not detected. No suitable vegetation or clay soil present.
Horsfordia newberryi	Newberry's velvet-mallow	None/None/List D/ 4.3/None	Sonoran desert scrub (rocky)/perennial shrub/ Feb,Apr,Nov,Dec/5–2,625	Not detected. Newberry's velvet-mallow occurs in rocky desert canyon lands at lower elevations (Reiser 2001).This species' elevation range is nearly 100 feet lower than the elevation range in the BSA; therefore, this species is unlikely to be present. Newberry's velvet-mallow occurs north and east of Mt. Laguna (SDNHM 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Hosackia crassifolia var. *otayensis*	Otay Mountain lotus	None/None/List A/ 1B.1/None	Chaparral (metavolcanic, often in disturbed areas)/perennial herb/May–Aug/1,245–3,295	Not detected. There is no suitable chaparral vegetation present.

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Hulsea californica	San Diego sunflower	None/None/List A/ 1B.3	Chaparral, lower montane coniferous forest, upper montane coniferous forest; openings and burned areas/perennial herb/Apr–June/3,000–9,565	Not detected. There are no forests present, but there are open areas. There are no known occurrences within 5 miles of the BSA (CDFW 2018). Generally, San Diego sunflower occurs throughout the Laguna Mountains and Pine Valley (San Diego plant atlas 2018). San Diego sunflower is also locally abundant in McCain Valley and is found in Jacumba (Bergman 2012). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Hulsea mexicana	Mexican hulsea	None/None/List B/ 2B.3	Chaparral (volcanic, often on burns or disturbed areas)/annual/perennial herb/Apr–June/3,935	Not detected. Collections of Mexican hulsea have been made throughout Jacumba and into the Jacumba Mountains (Calflora 2018). The closest known CNDDB occurrence is 1.0 miles northeast of the BSA along the northwest slope of Table Mountain (CDFW 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.

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Hymenothrix wrightii	Wright's hymenothrix	None/None/List D/ 4.3/None	Cismontane woodland, lower montane coniferous forest, valley and foothill grassland/perennial herb/ June–Oct/ 4,590–5,085	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ipomopsis tenuifolia	slender-leaved ipomopsis	None/None/List B/ 2B.3	Chaparral, pinyon–juniper woodland, Sonoran desert scrub; gravelly or rocky/perennial herb/ Mar–May/325–3,935	Not detected. While there is suitable Sonoran desert scrub vegetation and rocky and gravelly soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. The closest known CNDDB occurrences overlap the southwestern and western portions of the BSA (CDFW 2018). Slender-leaved ipomopsis has been documented throughout Jacumba (Calflora 2018; SDNHM 2018).
Isocoma menziesii var. *decumbens*	decumbent goldenbush	None/None/ List A/ 1B.2/None	Chaparral, coastal scrub (sandy, often in disturbed areas)/perennial shrub/Apr–Nov/ 30–445	Not detected. The site is outside of the species' known elevation range. Decumbent goldenbush uses clay soils, which are not characteristic of the Jacumba area (Reiser 2001; USDA 2018). The closest known CNDDB occurrence is 3.8 miles northwest of the BSA near Laguna Mountains (CDFW 2018). Decumbent goldenbush has a coastal distribution (SDNHM 2018; Calflora 2018). This species was not detected during the April 2019 surveys.

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				Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Iva hayesiana	San Diego marsh-elder	None/None/List B/ 2B.2/None	Marshes and swamps, playas/perennial herb/ Apr–Oct/30–1,640	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Johnstonella costata	ribbed cryptantha	None/None/List D/ 4.3/None	Desert dunes, Mojavean desert scrub, Sonoran desert scrub; sandy/annual herb/Feb–May/ –195–1,640	Not detected. The site is outside of the species' known elevation range.
Johnstonella holoptera	winged cryptantha	None/None/ List D/ 4.3/None	Mojavean desert scrub, Sonoran desert scrub/annual herb/Mar–Apr/325–5,545	Not detected. There is suitable Sonoran desert scrub vegetation present. However, there are no known occurrences within 5 miles of the BSA (CDFW 2018; CCH 2018). Generally, winged cryptantha occurs in the low deserts and is more likely to be found in Imperial County and on the border of Imperial County in Arizona (Calflora 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Juglans californica	Southern California black walnut	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal scrub, riparian woodland; alluvial/perennial deciduous tree/Mar–Aug/160–2,955	Not detected. There is no suitable chaparral or riparian vegetation present.

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Juncus acutus ssp. *leopoldii*	southwestern spiny rush	None/None/List D/4.2	Coastal dunes (mesic), meadows and seeps (alkaline seeps), marshes and swamps (coastal salt)/perennial rhizomatous herb/ (Mar)May–June/5–2,955	Not detected. Southwestern spiny rush uses numerous soil types and is described as occurring in desert drainages (Reiser 2001). Meadows and washes, which are the typical habitat of southwestern spiny rush, are found in the BSA; however, this species has not been observed during the vegetation mapping or jurisdictional delineation. Southwestern spiny rush has been documented throughout Jacumba (Calflora 2018; SDNHM 2018). This conspicuous species was not detected during the April 2019 surveys.
Juncus cooperi	Cooper's rush	None/None/List D/ 4.3/None	Meadows and seeps (mesic, alkaline or saline)/perennial herb/Apr–May(Aug)/ –850–5,805	Not detected. No suitable vegetation present.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/List A/ 1B.1/None	Marshes and swamps (coastal salt), playas, vernal pools/annual herb/Feb–June/0–4,005	Not detected. No suitable vegetation present.
Lathyrus splendens	pride-of-California	None/None/List D/4.3	Chaparral/perennial herb/Mar–June/655–5,005	Not detected. Pride-of-California is locally abundant in the Campo area. Also called the pride-of-Campo or Campo pea, it has been seen growing on numerous shrub species including shrubs found in the BSA. The closest known occurrence is 0.4 miles west of the BSA at the intersection of Old Highway 80 and Railroad Street (CCH 2018). Numerous collections have been made from Campo to In-Koh-Pah (Calflora 2018;

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				SDNHM 2018). Pride-of-California or Campo pea has been observed numerous times in the Jacumba and Campo region (Bergman 2012). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Lepechinia cardiophylla	heart-leaved pitcher sage	None/None/List A/ 1B.2/Narrow Endemic	Closed-cone coniferous forest, chaparral, cismontane woodland/perennial shrub/Apr–July/ 1,705–4,495	Not detected. There is no suitable chaparral vegetation present.
Lepechinia ganderi	Gander's pitcher sage	None/None/List A/ 1B.3/Narrow Endemic	Closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland; gabbroic or metavolcanic/perennial shrub/June–July/ 1,000–3,295	Not detected. There is no suitable chaparral vegetation present; however, there is gabbroic soil.
Lepidium flavum var. *felipense*	Blair Valley pepper-grass	None/None/List A/ 1B.2	Pinyon and juniper woodland, Sonoran desert scrub; sandy/annual herb/Mar–May/ 1,490–2,755	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018).
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	None/None/List A/4.3/ None	Chaparral, coastal scrub/annual herb/Jan–July/ 0–2,905	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 24 miles

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				west of the BSA on Los Pinos Mountain (CCH 2018).
Leptosiphon floribundus ssp. *hallii*	Santa Rosa Mountains leptosiphon	None/None/List A/ 1B.3/None	Pinyon and juniper woodland, Sonoran desert scrub/perennial herb/May–July(Nov)/ 3,280–6,560	Not detected. There is suitable Sonoran desert scrub vegetation present. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018).
Leptosyne maritima	sea dahlia	None/None/List B/ 2B.2/None	Coastal bluff scrub, coastal scrub/perennial herb/Mar–May/15–490	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Lessingia glandulifera var. *tomentosa*	Warner Springs lessingia	None/None/List A/ 1B.1/None	Chaparral (sandy)/annual herb/Aug,Oct/ 2,850–4,005	Not detected. There is no suitable chaparral vegetation present.
Lewisia brachycalyx	short-sepaled lewisia	None/None/List B/ 2B.2/None	Lower montane coniferous forest, meadows and seeps; mesic/perennial herb/(Feb)Apr–June(July)/ 4,490–7,545	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland; openings/perennial bulbiferous herb/ Mar–July(Aug)/95–5,905	Not detected. There is no suitable chaparral or riparian vegetation present. The closest known occurrence is 22 miles northwest of the BSA on Sheephead Mountain (CCH 2018).
Lilium parryi	lemon lily	None/None/List A/ 1B.2/None	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest; mesic/perennial bulbiferous herb/July–Aug/ 4,000–9,005	Not detected. The site is outside of the species' known elevation range.
Limnanthes alba ssp. *parishii*	Parish's meadowfoam	None/SE/List A/1B.2/ None	Lower montane coniferous forest, meadows and seeps, vernal pools; vernally mesic/annual herb/ Apr–June/1,965–6,560	Not detected. No suitable vegetation present.
Linanthus bellus	desert beauty	None/None/List B/ 2B.1	Chaparral (sandy)/annual herb/Apr–May/ 3,280–4,595	Not detected. Suitable sandy soil present. The closest known CNDDB occurrence is 1.0 miles east of the BSA south of Interstate 8 (CDFW

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				2018). Desert beauty has been collected from Campo to the Imperial County line (Calflora 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Linanthus maculatus ssp. *emaculatus*	Jacumba Mountains linanthus	None/None/None/ 1B.1/None	Desert dunes (edges), Sonoran desert scrub; sandy or coarse, opaque-white, decomposed granite soils of washes and on flats near wash margins/annual herb/(Mar)Apr(May)/ 1,295–1,920	Not detected. Jacumba Mountains linanthus is locally abundant just above Agua Caliente County Park (Callfora 2018).
Linanthus orcuttii	Orcutt's linanthus	None/None/List A/ 1B.3/None	Chaparral, lower montane coniferous forest, pinyon–juniper woodland; openings/annual herb/ May–June/3,000–7,035	Not detected. There is no suitable chaparral vegetation present.
Lupinus albifrons var. *medius*	Mountain Springs bush lupine	None/None/List A/ 1B.3	Pinyon and juniper woodland, Sonoran desert scrub/perennial shrub/Mar–May/1,390–4,495	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. The closest known CNDDB occurrence overlaps the southwestern portion of the BSA (CDFW 2018).
Lycium californicum	California box-thorn	None/None/List D/ 4.2/None	Coastal bluff scrub, coastal scrub/perennial shrub/(Dec)Mar, June, July, Aug/15–490	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.

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Lycium parishii	Parish's desert-thorn	None/None/List B/ 2B.3	Coastal scrub, Sonoran desert scrub/perennial shrub/Mar–Apr/440–3,280	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known occurrences within 5 miles of the BSA (CDFW 2018). Parish's desert thorn occurs in the Jacumba Mountains (SDNHM 2018). Parish's desert thorn has been observed throughout Jacumba on previous studies and is locally abundant near the border fence (Bergman 2017).
Lyrocarpa coulteri	Palmer's lyrepod	None/None/List D/ 4.3/None	Sonoran desert scrub (gravelly or rocky)/perennial herb/Dec–Apr/390–2,610	Not detected. The site is outside of the species' known elevation range.
Malacothamnus aboriginum	Indian Valley bush-mallow	None/None/List A/ 1B.2/None	Chaparral, cismontane woodland; rocky, granitic, often in burned areas/perennial deciduous shrub/ Apr–Oct/490–5,575	Not detected. There is no suitable chaparral vegetation present; however, there is rocky soil.
Malperia tenuis	brown turbans	None/None/ List B/ 2B.3/None	Sonoran desert scrub (sandy, gravelly)/annual herb/ (Feb)Mar–Apr/45–1,100	Not detected. The site is outside of the species' known elevation range. Brown turbans generally occur in Imperial County (Calflora 2018).
Matelea parvifolia	spearleaf	None/None/List B/ 2B.3	Mojavean desert scrub, Sonoran desert scrub; rocky/perennial herb/Mar–May(July)/ 1,440–3,595	Not detected. While there is suitable Sonoran desert scrub vegetation and rocky soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
				appropriate phenological stage, this species would have been observed if it occurred on site. The closest known CNDDB occurrence is 4.2 miles northeast of the BSA along Mountain Springs Grade (CDFW 2018). Populations of spearleaf occur around the desert view tower in In-Koh-Pah (CCH 2018).
Mentzelia hirsutissima	hairy stickleaf	None/None/ List B/ 2B.3/None	Sonoran desert scrub (rocky)/annual herb/ Mar–May/0–2,295	Not detected. The site is outside of the species' known elevation range. The closest known CNDDB occurrence is 3.2 miles northeast of the BSA at the base of Mountain Springs Grade (CDFW 2018). Populations of hairy stickleaf have been documented near the desert view tower (SDNHM 2018).
Mentzelia tricuspis	spiny-hair blazing star	None/None/None/ 2B.1	Mojavean desert scrub; sandy, gravelly, slopes, and washes/annual herb/Mar–May/490–4,200	Not detected. The closest known CNDDB occurrence is 3.2 miles northeast of the BSA at the base of Mountain Springs Grade (CDFW 2018). Shiny-hair blazing star is found throughout In-Koh-Pah and near the desert view tower (CCH 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.

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Mentzelia tridentata	creamy blazing star	None/None/None/ 1B.3/None	Mojavean desert scrub; rocky, gravelly, sandy/annual herb/Mar–May/2,295–3,855	Not detected. No suitable vegetation present.
Microseris douglasii ssp. *platycarpha*	small-flowered microseris	None/None/List D/ 4.2/None	Cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools; clay/annual herb/ Mar–May/45–3,510	Not detected. No suitable vegetation present.
Mimulus latidens	vernal pool monkeyflower	None/None/List A/ None/None	Vernal pools/annual herb/Apr–June/900–2,953	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Mirabilis tenuiloba	slender-lobed four o'clock	None/None/List D/4.3	Sonoran desert scrub/perennial herb/ (Feb)Mar–May/ 750–3,595	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. There is a historic occurrence from 1924 in the western portion of the BSA (CCH 2018). Slender-lobed four o'clock has been documented in Jacumba and around the desert view tower (Calflora 2018; CCH 2018; SDNHM 2018).
Monardella hypoleuca ssp. *lanata*	felt-leaved monardella	None/None/List A/ 1B.2/None	Chaparral, cismontane woodland/perennial rhizomatous herb/June–Aug/980–5,165	Not detected. There is no suitable chaparral vegetation present.
Monardella macrantha ssp. *hallii*	Hall's monardella	None/None/List A/ 1B.3/None	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/perennial rhizomatous herb/ June–Oct/2,395–7,200	Not detected. There is no suitable vegetation present.
Monardella stoneana	Jennifer's monardella	None/None/List A/ 1B.2/None	Closed-cone coniferous forest, chaparral, coastal scrub, riparian scrub; usually rocky intermittent	Not detected. The site is outside of the species' known elevation range.

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			streambeds/perennial herb/June–Sep/ 30–2,590	
Monardella viminea	willowy monardella	FE/SE/List A/1B.1/ Narrow Endemic	Chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; alluvial ephemeral washes/perennial herb/June–Aug/160–740	Not detected. The site is outside of the species' known elevation range.
Mucronea californica	California spineflower	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland; sandy/annual herb/Mar–July(Aug)/0–4,595	Not detected. There is no suitable chaparral vegetation present; however, there is sandy soil. The closest known occurrence is 22 miles northwest of the BSA in Pine Valley (CCH 2018).
Myosurus minimus ssp. *apus*	little mousetail	None/None/List C/3.1/ None	Valley and foothill grassland, vernal pools (alkaline)/annual herb/Mar–June/65–2,100	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Nama stenocarpa	mud nama	None/None/ List B/ 2B.2/None	Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan–July/ 15–1,640	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Nasturtium gambelii	Gambel's water cress	FE/ST/List A/ 1B.1/None	Marshes and swamps (freshwater or brackish)/perennial rhizomatous herb/Apr–Oct/ 15–1,085	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Navarretia fossalis	spreading navarretia	FT/None/List A/1B.1/ None	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools/annual herb/Apr–June/95–2,150	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Navarretia peninsularis	Baja navarretia	None/None/List A/ 1B.2/None	Chaparral (openings), lower montane coniferous forest, meadows and seeps, pinyon–juniper woodland; mesic/annual herb/(May)June–Aug/ 4,920–7,545	Not detected. The site is outside of the species' known elevation range.
Navarretia prostrata	prostrate vernal pool navarretia	None/None/List A/ 1B.1/None	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools; Mesic/annual herb/Apr–July/5–3,970	Not detected. No suitable vegetation present.
Nemacaulis denudata var. *denudata*	coast woolly-heads	None/None/List A/ 1B.2/None	Coastal dunes/annual herb/Apr–Sep/0–330	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.

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Nemacaulis denudata var. *gracilis*	slender cottonheads	None/None/ List B/ 2B.2/None	Coastal dunes, desert dunes, Sonoran desert scrub/ annual herb/(Mar)Apr–May/ –160–1,310	Not detected. The site is outside of the species' known elevation range. Slender cottonheads are generally distributed near the coast but have been documented in Carrizo Creek and near Borrego Springs (SDNHM 2018; Calfora 2018).
Nolina cismontana	chaparral nolina	None/None/List A/ 1B.2/None	Chaparral, coastal scrub; sandstone or gabbro/ perennial evergreen shrub/(Mar)May–July/ 455–4,185	Not detected. There is no suitable chaparral vegetation present; however, there is gabbroic soil.
Nolina interrata	Dehesa nolina	None/SE/List A/1B.1/ Narrow Endemic	Chaparral (gabbroic, metavolcanic, or serpentinite)/ perennial herb/June–July/ 605–2,805	Not detected. There is no suitable chaparral vegetation present; however, there is gabbroic soil.
Ophioglossum californicum	California adder's-tongue	None/None/List D/ 4.2/None	Chaparral, valley and foothill grassland, vernal pools (margins); mesic/perennial rhizomatous herb/(Dec)Jan–June/195–1,720	Not detected. The site is outside of the species' known elevation range.
Opuntia wigginsii	Wiggins' cholla	None/None/List C/3.3	Sonoran desert scrub (sandy)/perennial stem succulent/Mar/95–2,905	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018).
Orcuttia californica	California Orcutt grass	FE/SE/List A/ 1B.1/None	Vernal pools/annual herb/Apr–Aug/45–2,165	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ornithostaphylos oppositifolia	Baja California birdbush	None/SE/List B/2B.1/ None	Chaparral/perennial evergreen shrub/Jan–Apr/180–2,625	Not detected. There is no suitable chaparral vegetation present.

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Orobanche parishii ssp. *brachyloba*	short-lobed broomrape	None/None/List D/ 4.2/None	Coastal bluff scrub, coastal dunes, coastal scrub; sandy/perennial herb (parasitic)/Apr–Oct/ 5–1,000	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Packera ganderi	Gander's ragwort	None/SR/List A/1B.2/ None	Chaparral (burns, gabbroic outcrops)/perennial herb/Apr–June/1,310–3,935	Not detected. There is no suitable chaparral vegetation present; however, there is gabbroic soil.
Pectocarya peninsularis	Baja California bur-comb	None/None/List D/ None/None	Sonoran desert scrub; washes, roadsides, clearings, sandy, silty, or gravelly soil/annual herb/ Feb–Apr/300–984	Not detected. The site is outside of the species' known elevation range.
Penstemon clevelandii var. *connatus*	San Jacinto beardtongue	None/None/List D/4.3	Chaparral, pinyon–juniper woodland, Sonoran desert scrub; rocky/perennial herb/Mar–May/ 1,310–4,920	Not detected. While there is suitable Sonoran desert scrub vegetation and rocky soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018). The closest known occurrence is 9.5 miles northwest of the BSA on the western slope of Mount Tule (CCH 2018).
Penstemon thurberi	Thurber's beardtongue	None/None/List D/ 4.2/None	Chaparral, Joshua tree woodland, pinyon–juniper woodland, Sonoran desert scrub/perennial herb/ May–July/1,640–4,005	Not detected. There is suitable Sonoran desert scrub vegetation present. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018). The closest known occurrence is 15 miles north of the BSA on the western slope of Carrizo Mountain (CCH 2018).

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Pentachaeta aurea ssp. *aurea*	golden-rayed pentachaeta	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, valley and foothill grassland/annual herb/ Mar–July/260–6,070	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 24 miles northwest of the BSA on Corte Madera Mountain (CCH 2018).
Perideridia gairdneri ssp. *gairdneri*	Gairdner's yampah	None/None/List D/ 4.2/None	Broadleafed upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools; vernally mesic/perennial herb/June–Oct/ 0–2,000	Not detected. The site is outside of the species' known elevation range.
Petalonyx linearis	narrow-leaf sandpaper-plant	None/None/None/ 2B.3	Mojavean desert scrub, Sonoran desert scrub; sandy or rocky canyons/perennial shrub/ (Jan–Feb)Mar–May(June–Dec)/−80–3,660	Not detected. While there is suitable Sonoran desert scrub vegetation and sandy and rocky soils present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known occurrences within 5 miles of the BSA (CDFW 2018). Narrow-leaf sandpaper-plant occurs in the northern sections of the south desert slopes (SDNHM 2018).
Phacelia stellaris	Brand's star phacelia	None/None/List A/ 1B.1/None	Coastal dunes, coastal scrub/annual herb/Mar–June/0–1,310	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Pholistoma auritum var. *arizonicum*	Arizona pholistoma	None/None/None/ 2B.3	Mojavean desert scrub/annual herb/Mar/ 900–2,740	Not detected. This plant was collected by Dudek near the site in 2009 during botanical studies (Bergman 2009). The closest known CNDDB occurrence is 0.4 miles north of the BSA, northwest of

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
				Round Mountain (CDFW 2018). Arizona pholistoma has been collected in Jacumba numerous times (Calflora 2018; SDNHM 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Pickeringia montana var. *tomentosa*	woolly chaparral-pea	None/None/None/4.3/ None	Chaparral; gabbroic, granitic, clay/evergreen shrub/ May–Aug/0–5,575	Not detected. There is no suitable chaparral vegetation and clay soil present; however, there is gabbroic and granitic soil present. The closest known occurrence is 3.7 miles northeast of the BSA west of Interstate 8 (CCH 2018). Woolly chaparral pea has been documented in In-Koh-Pah just past the desert view tower, but is found to be locally abundant in Otay, where it is most likely to occur (Calflora 2018; Bergman 2007).
Pilostyles thurberi	Thurber's pilostyles	None/None/ List D/ 4.3/None	Sonoran desert scrub/perennial herb (parasitic)/ Dec–Apr/0–1,200	Not detected. The site is outside of the species' known elevation range. Thurber's pilostyles is a parasitic plant that occurs on the stems of dyebush (*Psorothamnus emoryi*). Thurber's pilostyles starts blooming in January on dyebush (Bergman 2005). Dyebush occurs in the low desert in areas with the lowest

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				precipitation rates (Bergman 2005; Calflora 2018).
Pinus torreyana ssp. *torreyana*	Torrey pine	None/None/List A/ 1B.2/None	Closed-cone coniferous forest, chaparral; sandstone/perennial evergreen tree/N.A./ 95–525	Not detected. The site is outside of the species' known elevation range.
Piperia cooperi	chaparral rein orchid	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, valley and foothill grassland/perennial herb/Mar–June/ 45–5,200	Not detected. There is no suitable chaparral vegetation present.
Piperia leptopetala	narrow-petaled rein orchid	None/None/List D/ 4.3/None	Cismontane woodland, lower montane coniferous forest, upper montane coniferous forest/perennial herb/ May–July/1,245–7,300	Not detected. No suitable vegetation present.
Poa atropurpurea	San Bernardino blue grass	FE/None/List A/1B.2/ None	Meadows and seeps (mesic)/perennial rhizomatous herb/(Apr)May–July(Aug)/ 4,460–8,055	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Pogogyne abramsii	San Diego mesa mint	FE/SE/List A/ 1B.1/None	Vernal pools/annual herb/Mar–July/295–655	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Pogogyne nudiuscula	Otay Mesa mint	FE/SE/List A/ 1B.1/None	Vernal pools/annual herb/May–July/295–820	Not detected. 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/List D/ 4.3/None	Chaparral, cismontane woodland, riparian woodland/ perennial deciduous shrub/May–Aug/325–3,280	Not detected. There is no suitable chaparral or riparian vegetation present. The closest known occurrence is 31 miles west of the BSA on the western slope of Lyons Peak (CCH 2018).
Proboscidea althaeifolia	desert unicorn-plant	None/None/List D/4.3	Sonoran desert scrub; gently sloping sandy flats and washes, sometimes roadsides/perennial herb/ May–Sep(Oct)/275–3,280	Not detected. While there is suitable habitat present, this species was not detected during the August 2019 surveys.
Pseudorontium cyathiferum	Deep Canyon snapdragon	None/None/None/ 2B.3/None	Sonoran desert scrub (rocky)/annual herb/Feb–Apr/0–2,625	Not detected. This species' elevation range is nearly 100 feet lower than the

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
				elevation range in the BSA; therefore, this species is unlikely to be present. Deep canyon snapdragon has only been collected within central Riverside County. Observations have been made near Jacumba (Calflora 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Quercus cedrosensis	Cedros Island oak	None/None/List B/ 2B.2/None	Closed-cone coniferous forest, chaparral, coastal scrub/perennial evergreen tree/Apr–May/ 835–3,150	Not detected. There is no suitable chaparral vegetation present.
Quercus dumosa	Nuttall's scrub oak	None/None/List A/ 1B.1/None	Closed-cone coniferous forest, chaparral, coastal scrub; sandy, clay loam/perennial evergreen shrub/Feb–Apr(May–Aug)/45–1,310	Not detected. The site is outside of the species' known elevation range.
Quercus engelmannii	Engelmann oak	None/None/List D/ 4.2/None	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland/perennial deciduous tree/Mar–June/160–4,265	Not detected. There is no suitable chaparral or riparian vegetation present. The closest known occurrence is 17 miles west of the BSA in Campo (CCH 2018).
Rhus aromatica var. *simplicifolia*	single-leaved skunkbrush	None/None/List B/ 2B.3/None	Pinyon and juniper woodland; usually granitic/perennial deciduous shrub/Mar–Apr/ 4,000–4,495	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ribes canthariforme	Moreno currant	None/None/List A/ 1B.3/None	Chaparral, riparian scrub/perennial deciduous shrub/Feb–Apr/1,115–3,935	Not detected. There is no suitable chaparral or riparian vegetation present.
Ribes viburnifolium	Santa Catalina Island currant	None/None/List A/ 1B.2/None	Chaparral, cismontane woodland/perennial evergreen shrub/Feb–Apr/95–1,150	Not detected. The site is outside of the species' known elevation range.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
Romneya coulteri	Coulter's matilija poppy	None/None/List D/ 4.2/None	Chaparral, coastal scrub; often in burns/perennial rhizomatous herb/Mar–July(Aug)/65–3,935	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 25 miles west of the BSA in Potrero (CCH 2018).
Rosa minutifolia	small-leaved rose	None/SE/List B/2B.1/ None	Chaparral, coastal scrub/perennial deciduous shrub/Jan–June/490–525	Not detected. The site is outside of the species' known elevation range.
Rubus glaucifolius var. *ganderi*	Cuyamaca raspberry	None/None/List A/3.1/ None	Lower montane coniferous forest (gabbroic)/perennial evergreen shrub/May–June/ 3,935–5,495	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Rupertia rigida	Parish's rupertia	None/None/List D/ 4.3/None	Chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, pebble (pavement) plain, valley and foothill grassland/ perennial herb/June–Aug/2,295–8,200	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 24 miles northwest of the BSA on the western slope of Corte Madera Mountain (CCH 2018).
Saltugilia caruifolia	caraway-leaved woodland-gilia	None/None/List D/ 4.3/None	Chaparral, lower montane coniferous forest; sandy, openings/annual herb/May–Aug/ 2,755–7,545	Not detected. There is no suitable chaparral vegetation present; however, there is sandy soil. The closest known occurrence is 0.2 miles west of the BSA along Old Highway 80 (CCH 2018). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Salvia eremostachya	desert sage	None/None/List D/4.3	Sonoran desert scrub (rocky or gravelly)/perennial evergreen shrub/Mar–May/2,295–4,595	Not detected. While there is suitable Sonoran desert scrub vegetation and rocky soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
				appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018).
Salvia munzii	Munz's sage	None/None/List B/ 2B.2/None	Chaparral, coastal scrub/perennial evergreen shrub/Feb–Apr/375–3,495	Not detected. There is no suitable chaparral vegetation present.
Scutellaria bolanderi ssp. *austromontana*	southern mountains skullcap	None/None/List A/ 1B.2/None	Chaparral, cismontane woodland, lower montane coniferous forest; mesic/perennial rhizomatous herb/June–Aug/1,390–6,560	Not detected. There is no suitable chaparral vegetation present.
Selaginella asprella	bluish spike-moss	None/None/List D/ 4.3/None	Cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, upper montane coniferous forest; granitic, rocky/perennial rhizomatous herb/July/ 5,245–8,860	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Selaginella cinerascens	ashy spike-moss	None/None/List D/ 4.1/None	Chaparral, coastal scrub/perennial rhizomatous herb/ N.A./65–2100	Not detected. The site is outside of the species' known elevation range.
Selaginella eremophila	desert spike-moss	None/None/List B/ 2B.2	Chaparral, Sonoran desert scrub (gravelly or rocky)/perennial rhizomatous herb/ (May)June(July)/655–4,250	Not detected. While there is suitable habitat present, this species was not detected during the August 2019 surveys.
Senecio aphanactis	chaparral ragwort	None/None/List B/ 2B.2/None	Chaparral, cismontane woodland, coastal scrub; sometimes alkaline/annual herb/Jan–Apr(May)/45–2,625	Not detected. This species' elevation range is typically almost 100 feet lower than the elevation range within the BSA. The closest known CNDDB occurrence overlaps the southwestern portion of the BSA (CDFW 2018). However, chaparral ragwort generally has a coastal distribution (Calflora 2018; SDNHM 2018).

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
Senna covesii	Coves' cassia	None/None/List B/ 2B.2	Sonoran desert scrub; dry, sandy desert washes and slopes/perennial herb/Mar–June(Aug)/ 735–4,250	Not detected. While there is suitable Sonoran desert scrub vegetation present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. However, there are no known CNDDB occurrences in the vicinity[1] (CDFW 2018). The closest known occurrence is 30 miles northwest of the BSA (CCH 2018).
Sibaropsis hammittii	Hammitt's clay-cress	None/None/List A/ 1B.2/None	Chaparral (openings), valley and foothill grassland; clay/annual herb/Mar–Apr/2,360–3,495	Not detected. There is no suitable vegetation or clay soil present.
Spermolepis echinata	bristly scaleseed	None/None/List B/ None/None	Sonoran desert scrub (sandy or rocky)/annual herb/Mar–Apr/1,500–4,921	Not detected. The site is outside of the species' known elevation range.
Stemodia durantifolia	purple stemodia	None/None/List B/ 2B.1/None	Sonoran desert scrub (often mesic, sandy)/perennial herb/(Jan) Apr, June, Aug, Sep, Oct, Dec /590–985	Not detected. The site is outside of the species' known elevation range.
Stipa diegoensis	San Diego County needle grass	None/None/List D/ 4.2/None	Chaparral, coastal scrub; rocky, often mesic/perennial herb/Feb–June/30–2,625	Not detected. There is no suitable chaparral vegetation present; however, there is rocky soil. The closest known occurrence is 23 miles west of the BSA (CCH 2018).
Streptanthus bernardinus	Laguna Mountains jewelflower	None/None/List D/ 4.3/None	Chaparral, lower montane coniferous forest/perennial herb/May–Aug/2,195–8,200	Not detected. There is no suitable chaparral vegetation present. The closest known occurrence is 17 miles west of the BSA in Campo (CCH 2018).

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
Streptanthus campestris	southern jewelflower	None/None/List A/ 1B.3	Chaparral, lower montane coniferous forest, pinyon–juniper woodland; rocky/perennial herb/(Apr)May–July/2,950–7,545	Not detected. While there is suitable rocky soil present, this species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site. The closest known CNDDB occurrence is 1.3 miles northwest of the BSA in Walker Canyon Ecological Preserve (CDFW 2018). Southern jewelflower occurs in Jacumba and throughout In-Koh-Pah, and has also been collected throughout Boulevard (Calflora 2018; SDNHM 2018).
Stylocline citroleum	oil neststraw	None/None/List A/ 1B.1/None	Chenopod scrub, Coastal scrub, Valley and foothill grassland; clay/annual herb/Mar–Apr/160–1310	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Symphyotrichum defoliatum	San Bernardino aster	None/None/None/ 1B.2	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July–Nov/ 5–6,695	Not detected. While there is suitable habitat present, this species was not detected during the August 2019 surveys.
Suaeda esteroa	estuary seablite	None/None/List A/ 1B.2/None	Marshes and swamps (coastal salt)/perennial herb/(May)July–Oct(Jan)/0–15	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Suaeda taxifolia	woolly seablite	None/None/List D/ 4.2/None	Coastal bluff scrub, coastal dunes, marshes and swamps (margins of coastal salt)/perennial evergreen shrub/Jan–Dec/0–165	Not detected. The site is outside of the species' known elevation range and there is no suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
Tetracoccus dioicus	Parry's tetracoccus	None/None/List A/ 1B.2	Chaparral, coastal scrub/perennial deciduous shrub/Apr–May/540–3,280	Not detected. Parry's tetracoccus is successful in xeric conditions (Reiser 2001). The closest known CNDDB occurrence overlaps the southwestern portion of the BSA (CDFW 2018). Populations of Parry's tetracoccus have been documented in Jacumba near the BSA (SDNHM 2018; Calflora 2018; Bergman 2005). This species was not detected during the April 2019 surveys. Based on above-average rainfall and surveys conducted during the appropriate phenological stage, this species would have been observed if it occurred on site.
Thermopsis californica var. *semota*	velvety false lupine	None/None/List A/ 1B.2/None	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland/perennial rhizomatous herb/ Mar–June/ 3,280–6,135	Not detected. No suitable vegetation present.
Viguiera laciniata	San Diego County viguiera	None/None/List D/ 4.3/None	Chaparral, coastal scrub/perennial shrub/ Feb–June(Aug)/195–2,460	Not detected. The site is outside of the species' known elevation range. San Diego viguiera generally occurs coastally (Calflora 2018). Populations occur west of Potrero and generally west of Alpine (SDNHM 2018).
Viguiera purisimae	La Purisima viguiera	None/None/List A/ 2B.3/None	Coastal bluff scrub, chaparral/shrub/Apr–Sep/ 1,195–1,395	Not detected. The site is outside of the species' known elevation range.
Viola purpurea ssp. *aurea*	golden violet	None/None/List B/ 2B.2/None	Great Basin scrub, pinyon–juniper woodland; sandy/ perennial herb/Apr–June/3,280–8,200	Not detected. No suitable vegetation present.
Xanthisma junceum	rush-like bristleweed	None/None/List D/ 4.3/None	Chaparral, coastal scrub/perennial herb/ May–Jan/ 785–3,280	Not detected. There is no suitable chaparral vegetation present. The

Scientific Name	Common Name	Status (Federal/State/ County of San Diego/ CRPR/MSCP County Subarea Plan)	Primary Habitat Associations/ Life Form/Blooming Period/Elevation Range (Feet amsl)	Potential to Occur
				closest known occurrence is 0.2 miles west of the BSA along Old Highway 80 (CCH 2018).
Xylorhiza orcuttii	Orcutt's woody-aster	None/None/List A/ 1B.2/None	Sonoran desert scrub/perennial herb/Mar–Apr/0–1,200	Not detected. The site is outside of the species' known elevation range. Populations of Orcutt's woody aster generally occur north of Mt. Laguna at lower elevations and all the way to the Salton Sea. Numerous collections have been taken on the western side of the Salton sea (SDNHM 2018).

Status Designations
FE: Federally listed as endangered
SE: State listed as endangered
SR: State listed as rare
CRPR (California Rare Plant Rank):
- CRPR 1A: plants presumed extirpated in California and either rare or extinct elsewhere
- CRPR 1B: plants rare, threatened, or endangered in California and elsewhere
- CRPR 2A: plants presumed extirpated in California, but more common elsewhere
- CRPR 2B: plants rare, threatened, or endangered in California, but more common elsewhere
- CRPR 3: plants about which more information is needed – a review list
- CRPR 4: plants of limited distribution – a watch list
- Threat Rank:
- .1: seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- .2: moderately threatened in California (20%–80% of occurrences threatened/moderate degree and immediacy of threat)
- .3: not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

County of San Diego Sensitive Plant List:
- List A: plants rare, threatened, or endangered in California and elsewhere
- List B: plants rare, threatened, or endangered in California but more common elsewhere
- List C: plants which may be rare, but need more information to determine their true rarity status
- List D: plants of limited distribution and that are uncommon, but not presently rare or endangered

Notes: CRPR = California Rare Plant Rank; MSCP = Multiple Species Conservation Program; amsl = above mean sea level; BSA = biological study area; CNDDB = California Natural Diversity Database.
[1] "Vicinity" refers to the surrounding USGS 7.5 minute quadrangles: Jacumba, Carrizo Mountains, Sweeney Pass, Sombrero Peak, In-Ko-Pah Gorge, Live Oak Springs, and Tierra del Sol.

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Appendix E1

Special-Status Wildlife Species Detected or Potentially Occurring

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Reptiles				
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	High potential to occur in the scrub habitat. There is suitable open sandy areas with scattered brush present. The closest known CNDDB occurrence overlaps the southwestern portion of the BSA (CDFW 2018).
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC/Group 2	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas	Observed in various locations in the BSA.
Coleonyx variegatus abbotti	San Diego banded gecko	None/SSC/Group 1	Rocky areas within coastal scrub and chaparral	High potential to occur. There is suitable desert flats and rocky areas present. Its range is known east of the Peninsular Ranges and south of the Transverse Ranges (Nafis 2018).
Crotalus ruber	red diamond rattlesnake	None/SSC/Group 2	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	High potential to occur. There is suitable desert flats and rocky areas present. The closest known CNDDB occurrence overlaps the western boundary of the BSA (CDFW 2018).
Diadophis punctatus similis	San Diego ringneck snake	None/None/Group 2	Moist habitats including wet meadows, rocky hillsides, gardens, farmland grassland, chaparral, mixed-conifer forest, and woodland habitats	Moderate potential to occur in scrub and bosque habitats.
Lichanura trivirgata	rosy boa	None/None/Group 2	Desert and chaparral habitats with rocky soils in coastal canyons and hillsides, desert canyons, washes, and mountains	High potential to occur in the scrub and bosque habitats.
Phrynosoma blainvillii	Blainville's horned lizard	None/SSC/Group 2	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	High potential to occur in the scrub habitat. There are suitable open areas of sandy soil present. The closest known CNDDB occurrence overlaps the southwestern portion of the BSA (CDFW 2018).

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Salvadora hexalepis virgultea	coast patch-nosed snake	None/SSC/Group 2	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Moderate potential to occur in the scrub habitat.
Sauromalus ater	common chuckwalla	None/None/Group 2	Rock-dwelling, sheltering in rock crevices or under rocks; inhabits rocky flats and hillsides in the Mojave and Colorado Deserts; found in creosote bush habitats; sea level to 1,800 meters (5,900 feet) amsl	Moderate potential to occur in rocky areas and the scrub habitat.
Sceloporus graciosus vandenburgianus	southern sagebrush lizard	None/None/Group 2	Montane chaparral, hardwood and conifer forest, juniper, coastal scrub	Moderate potential to occur in the scrub habitat.
Birds				
Accipiter cooperii (nesting)	Cooper's hawk	None/WL/Group 1	Nests and forages in dense stands of live oak, riparian woodlands, or other woodland habitats often near water	Observed foraging on site. Moderate potential to nest in the denser mesquite bosque habitat in the north. There is suitable open habitat for foraging. The closest known CNDDB occurrence overlaps the western boundary of the BSA (CDFW 2018).
Accipiter striatus (nesting)	sharp-shinned hawk	None/WL/Group 1	Nests in coniferous forests, ponderosa pine, black oak, riparian deciduous, mixed conifer, Jeffrey pine; winters in lowland woodlands and other habitats	Observed on site during focused burrowing owl surveys. This species does not nest in San Diego County. Potential to forage on site during the winter or migration.
Agelaius tricolor (nesting colony)	tricolored blackbird	BCC/ST, SSC/Group 1	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry (*Rubus armeniacus*); forages in grasslands, woodland, and agriculture	Observed foraging on and near the site. Not expected to nest on site. There are no suitable freshwater bodies of water within the BSA. Tricolored blackbirds were observed nesting in the large pond west of Jacumba Street in 2019 (Amoaku 2019).
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	None/WL/Group 1	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 to nest and forage in scrub habitat.

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Aquila chrysaetos (nesting and wintering)	golden eagle	BCC/FP, WL/Group 1	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	Observed flying over the site. There is a golden eagle nest record on Round Mountain from 2012 (USFWS 2019). This nest was described as an intact cliff nest in 2012 occupied by common ravens (USFWS 2019). Aside from Round Mountain, there is no suitable nesting habitat (i.e., large trees or cliffs) in the BSA. There are golden eagle nest locations on Table Mountain, approximately 10,000 feet from the BSA (CDFW 2018; SANGIS 2019). Golden eagles nesting in the vicinity have potential to forage in the open shrubland and disturbed habitat (previous agricultural land) on site.
Artemisiospiza belli belli	Bell's sage sparrow	BCC/WL/Group 1	Nests and forages in coastal scrub and dry chaparral; typically in large, unfragmented patches dominated by chamise (*Adenostoma fasciculatum*); nests in denser patches but uses more open habitat in winter	Not expected to nest. There is no suitable dense patches of scrub. Moderate potential to forage in open habitat during winter dispersal.
Asio otus (nesting)	long-eared owl	None/SSC/Group 1	Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats	Not expected to nest. There is no suitable nesting habitat due to lack of dense stands of tall trees. Moderate potential to forage. There is suitable open habitat for foraging. The closest known CNDDB occurrence is 3.8 miles west of the BSA east of Boundary Peak (CDFW 2018).
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	BCC/SSC/Group 1	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Observed. In April 2018, a dead burrowing owl was found at the very southeast corner of the study area west of the airstrip. A burrowing owl burrow was recorded nearby in early April 2018; the burrow had signs of whitewash and pellets. This burrow showed

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
				no further signs of use on subsequent surveys. One burrowing owl was observed in March 2019 flying away from a potential burrow. This species was not observed during the remainder of the spring 2019 surveys and is presumed a winter visitor. The closest known CNDDB occurrence is 0.3 miles east of the BSA south of Carrizo Creek Road (CDFW 2018).
Buteo lineatus	red-shouldered hawk	None/None/Group 1	Nests in dense riparian areas, especially with adjacent edges, swamps, marshes, and wet meadows for hunting	Moderate potential to nest in the bosque habitat. There is suitable open habitat for foraging.
Buteo regalis (wintering)	ferruginous hawk	BCC/WL/Group 1	Winters and forages in open, dry country, grasslands, open fields, agriculture	Moderate potential to winter in suitable open, dry scrub habitat.
Buteo swainsoni (nesting)	Swainson's hawk	BCC/ST/Group 1	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	Swainson's hawk does not nest in San Diego County. Moderate potential to forage in open woodland and scrub habitat during migration.
Calypte costae (nesting)	Costa's hummingbird	BCC/None/None	Nests and forages in desert wash, edges of riparian and valley–foothill riparian, coastal scrub, desert scrub, desert succulent scrub, lower-elevation chaparral, and palm oasis	Observed.
Cathartes aura	turkey vulture	None/None/Group 1	Rangeland, agriculture, grassland; uses cliffs and large trees for roosting, nesting, and resting throughout most of California during breeding season	Observed foraging regularly over the BSA.
Chaetura vauxi (nesting)	Vaux's swift	None/SSC/None	Late-stage conifer forest and mixed-conifer/deciduous forest; nests in redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga* spp.), and other conifers, and occasionally buildings and chimneys	Observed flying over the site in April 2019. This species occurs in the region during migration and does not nest nearby (Baltosser and Scott 1996). No potential to nest on site.

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Circus hudsonius (nesting)	northern harrier	None/SSC/Group 1	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	Observed foraging on site. While there is some potential to nest on site, no nests or nesting behavior have been observed during frequent spring surveys. This species is not known to regularly occur this far east, but possible breeding confirmed in the Jacumba area (Unitt 2004).
Eremophila alpestris actia	California horned lark	None/WL/Group 2	Nests and forages in grasslands, disturbed lands, agriculture, and beaches; nests in alpine fell fields of the Sierra Nevada	Observed on site. Territorial and nesting behavior observed; this species is likely nesting within the disturbed agricultural fields and possibly within the lower hillsides on the north side of the railroad tracks that were not part of the Quino surveys.
Falco columbarius (wintering)	merlin	None/WL/Group 2	Forages in semi-open areas, including coastline, grassland, agriculture, savanna, woodland, lakes, and wetlands	Observed foraging on site on March 31, 2019. This species occurs during migration, but is unlikely to occur regularly due to lack of preferred habitat.
Falco mexicanus (nesting)	prairie falcon	BCC/WL/Group 1	Forages in grassland, savanna, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Moderate to nest. There is potential nesting habitat in the cliff located at Round Mountain in the BSA, which has been previously occupied by golden eagles or ravens. While there is suitable foraging habitat on site, no prairie falcons have been observed during surveys in 2018 and 2019. There is suitable desert scrub vegetation present for foraging. The closest known CNDDB occurrence overlaps the entire BSA (CDFW 2018).
Lanius ludovicianus (nesting)	loggerhead shrike	BCC/SSC/Group 1	Nests and forages in open habitats with scattered shrubs, trees, or other perches	Observed regularly on site. Likely nests in the shrub and tree habitats.
Polioptila melanura	black-tailed gnatcatcher	None/WL/None	Nests and forages in wooded desert wash and desert scrub	Observed. This species likely nests in scrub and bosque habitat on site.

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Spizella breweri (nesting)	Brewer's sparrow	BCC/None/None	Nests in treeless shrub habitat with moderate canopy, especially sagebrush; winters in open desert scrub and croplands in southern Mojave and Colorado Deserts	Observed in April 2018, March 2019, and April 2019. Not expected to nest on site. This species was likely migrating through the area since it is not known to nest in San Diego County (Unitt 2004).
Tyto alba	barn owl	None/None/Group 2	Open habitats including grassland, chaparral, riparian, and other wetlands	Moderate potential to forage on site. There is open foraging habitat present.
Xanthocephalus xanthocephalus (nesting)	yellow-headed blackbird	None/SSC/None	Nests in marshes with tall emergent vegetation, often along borders of lakes and ponds; forages in emergent wetlands, open areas, croplands, and muddy shores of lacustrine habitat	Observed flying over the site with food. This species may be using the pond west of Jacumba Street where a larger flock of tricolored blackbirds were observed.
Mammals				
Antrozous pallidus	pallid bat	None/SSC/Group 2	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	High potential to roost. There is some suitable roosting habitat in the abandoned buildings on site and the rocky outcrops on Round Mountain. There is suitable shrubland and open, dry habitats for foraging, but water resources nearby are limited to a small pond west of Jacumba Hot Springs. The closest known CNDDB occurrence overlaps the eastern boundary of the BSA (CDFW 2018). There are records of pallid bats roosting in a bridge in Jacumba in 2014 (Tremor 2017).
Chaetodipus californicus femoralis	Dulzura pocket mouse	None/SSC/Group 2	Open habitat, coastal scrub, chaparral, oak woodland, chamise chaparral, mixed-conifer habitats; disturbance specialist; 0 to 3,000 feet amsl	Moderate potential to occur. There is suitable open habitat present. This species is not recorded south of I-8 in the southeast portion of the County (Tremor 2017).
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None/SSC/Group 2	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland	High potential to occur. There is suitable desert scrub vegetation present.

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Chaetodipus fallax pallidus	pallid San Diego pocket mouse	None/SSC/Group 2	Desert wash, desert scrub, desert succulent scrub, and pinyon–juniper woodland	High potential to occur. There is suitable desert scrub vegetation present. The closest known CNDDB occurrence is 2.8 miles east of the BSA near Smugglers Cave (CDFW 2018) and there are records just west of Jacumba Hot Springs and east at the San Diego/Imperial County border (Tremor 2017).
Corynorhinus townsendii	Townsend's big-eared bat	None/SSC/Group 2	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	Moderate potential to roost on site in the abandoned buildings on site. There is suitable shrubland and open, dry habitats for foraging, but water resources nearby are limited to a small pond west of Jacumba Hot Springs. There are records along the I-8 in eastern San Diego County (Tremor 2017). This species is more closely tied to caves and tunnels and is unlikely to roost on site.
Eumops perotis californicus	western mastiff bat	None/SSC/Group 2	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	Moderate potential to roost. There is some suitable roosting habitat in the rocky canyons areas on Round Mountain. There is potential foraging habitat on site. There is suitable shrubland and open, dry habitats, but water resources nearby are limited to a small pond west of Jacumba Hot Springs.
Lasiurus blossevillii	western red bat	None/SSC/Group 2	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	Moderate potential to roost. There is suitable tree canopy present in the mesquite bosque habitat. There is suitable foraging habitat on site.
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None/SSC/Group 2	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands	Observed regularly throughout the BSA.

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Macrotus californicus	Californian leaf-nosed bat	None/SSC/Group 2	Riparian woodlands, desert wash, desert scrub; roosts in mines and caves, occasionally buildings	Moderate potential to roost. There is no suitable roosting habitat due to lack of mines and caves. There are some abandoned buildings on site. However, this species has not been recorded in the Jacumba region (Tremor 2017).
Myotis ciliolabrum	western small-footed myotis	None/None/Group 2	Arid woodlands and shrublands, but near water; roosts in caves, crevices, mines, abandoned buildings	High potential to roost on site in the abandoned buildings on site. There is suitable shrubland and open, dry habitats for foraging, but water resources nearby are limited to a small pond west of Jacumba Hot Springs.
Myotis yumanensis	Yuma myotis	None/None/Group 2	Riparian, arid scrublands and deserts, and forests associated with water (streams, rivers, tinajas); roosts in bridges, buildings, cliff crevices, caves, mines, and trees	High potential to roost, and possibly maternity roost, in the abandoned buildings. Records for this species are concentrated in the mountains and western portions of San Diego County (Tremor 2017), but this species is fairly common in the region and could use the site for foraging and/or roosting in the abandoned buildings and cliff crevices on Round Mountain.
Neotoma lepida intermedia	San Diego desert woodrat	None/SSC/Group 2	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Sign observed. A woodrat midden was observed along the western boundary of the BSA. There is suitable desert scrub and cacti present. The closest known CNDDB occurrence is 2.0 miles east of the BSA south of Jade Mountain (CDFW 2018).
Nyctinomops femorosaccus	pocketed free-tailed bat	None/SSC/Group 2	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	Moderate potential to roost in the rocky areas on Round Mountain. There is suitable shrubland and open, dry habitats for foraging, but water resources nearby are limited to a small pond west of Jacumba Hot Springs.

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Odocoileus hemionus	mule deer	None/None/Group 2	Coastal sage scrub, chaparral, riparian, woodlands, and forest; often browses in open area adjacent to cover throughout California, except deserts and intensely farmed areas	Mule deer tracks were observed during the Quino checkerspot butterfly surveys in 2019.
Onychomys torridus ramona	southern grasshopper mouse	None/SSC/Group 2	Open habitats associated with gentle terrain; native grassland and sparse coastal scrub to the west of the mountains and alluvial fans and desert scrub to the east	Moderate potential to occur in the flatter desert scrub areas. The closest known occurrence overlaps the southwestern portion of the BSA (CDFW 2018; Tremor 2017).
Perognathus longimembris internationalis	Jacumba pocket mouse	None/SSC/Group 2	Desert scrub and sparse sage scrub in areas with fine sandy soils	High potential to occur in scrub habitat.
Puma concolor	cougar	None/None/Group 2	Scrubs, chaparral, riparian, woodland, and forest; rests in rocky areas and on cliffs and ledges that provide cover; most abundant in riparian areas and brushy stages of most habitats throughout California, except deserts	Potential to occasionally occur on site, particularly along the western edge where the terrain and vegetation provide more cover. Lower potential to occur in the flatter areas on the ranch due to lack of cover.
Taxidea taxus	American badger	None/SSC/Group 2	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	High potential to occur in open scrub habitat. A potential badger den was observed during the 2019 QCB surveys.
Invertebrates				
Apodemia virgulti peninsularis	Peninsular metalmark	None/None/Group 1	At species level: sand/dune, shrubland/chaparral, mixed woodland. The primary habitat is coastal sage scrub. Host plant is Eriogonum fasciculatum (NatureServe 2019).	Moderate potential to occur; Eriogonum fasciculatum is not widespread on site and is not a dominant or co-dominant shrub in the vegetation.

Scientific Name	Common Name	Status (Federal/State/County of San Diego)	Habitat	Potential to Occur
Euphydryas editha quino	Quino checkerspot butterfly	FE/None/Group 1	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)	Observed. One Quino checkerspot butterfly was observed during the 2019 rare plant surveys in the southwestern portion of the BSA. None were observed during the focused protocol Quino surveys, and this individual was likely using the site for nectar while traveling between locations. There is USFWS designated critical habitat just west of the BSA.

Status Designations:
FE: Federally listed as endangered
FT: Federally listed as threatened
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC: California Species of Special Concern
FP: California fully protected species
WL: California Watch List species
SE: State listed as endangered
ST: State listed threatened
SDL: State delisted
SS: listed on Special Animals List, but no other status
County of San Diego Sensitive Animal List:
Group 1: Species with a high level of sensitivity, listed as threatened or endangered, or with a natural history requirement that increases their sensitivity.
Group 2: Species that are becoming less common but are not so rare that extinction is imminent without immediate action.

Notes: amsl = above mean sea level; BSA = biological study area; CNDDB = California Natural Diversity Database.

[1] "Vicinity" refers to within the project's site and surrounding USGS quadrangles: Jacumba, Carrizo Mountain, Sweeney Pass, Sombrero Peak, In-Ko-Pah Gorge, Live Oak Springs, and Tierra del Sol (CDFW 2018).

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Appendix E2

Special-Status Wildlife Species Not Expected or Rarely Occurring

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Amphibians				
Anaxyrus californicus	arroyo toad	FE/SSC/Group 1	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 approximately 20 miles east of the closest arroyo toad occurrence (USFWS 2018; CDFW 2018), and is therefore outside of this species range.
Batrachoseps major aridus	desert slender salamander	FE/SE/Group 1	Barren, palm oasis, desert wash, and desert scrub	Not expected to occur. The site is outside of the species' known geographic range. It is only known from two localities on the east slope of the Santa Rosa Mountains: Hidden Palm Canyon (a tributary to Deep Canyon) at an elevation of 2,800 feet amsl and Guadalupe Canyon (Nafis 2018).
Ensatina klauberi	large-blotched salamander	None/WL/Group 1	Moist and shaded evergreen and deciduous woodlands	Not expected to occur; there is no suitable evergreen or deciduous woodland on site.
Rana draytonii	California red-legged frog	FT/SSC/Group 1	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Not expected to occur. The site is outside of the species' known geographic range.
Rana muscosa	mountain yellow-legged frog	FE/SE, WL/Group 1	Lakes, ponds, meadow streams, isolated pools, and open riverbanks; rocky canyons in narrow canyons and in chaparral	Not expected to occur. The site is outside of the species' known geographic range.
Spea hammondii	western spadefoot	None/SSC/Group 2	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. The site is outside of the species' known geographic range and there is no suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Taricha torosa (Monterey Co. south only)	California newt	None/SSC/Group 2	Wet forests, oak forests, chaparral, and rolling grassland	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Reptiles				
Actinemys marmorata	western pond turtle	None/SSC/Group 1	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Not expected to occur. The site is outside of the species' known geographic range.
Anniella stebbinsi	southern California legless lizard	None/SSC/Group 2	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	Low potential to occur in the scrub and bosque habitats. There are no records of this cryptic reptile in the project area.
Aspidoscelis hyperythra	orange-throated whiptail	None/WL/Group 2	Low-elevation coastal scrub, chaparral, and valley–foothill hardwood	Low potential to occur on site; there are no records for this species east of Campo (CDFW 2018).
Coleonyx switaki	Switak's banded gecko	None/ST/Group 2	Rocklands, especially massive rocks and rock formations at the heads of canyons.	Low potential to occur. The range of this species is further east at the San Diego/Imperial County border and south into Baja California (Nafis 2018). There are no suitable massive rock formations present or many rocky areas in general on the BSA. The closest known CNDDB occurrence is 1.8 miles east of the BSA south of Table Mountain (CDFW 2018).

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Gopherus agassizii	Mohave Desert tortoise	FT/ST/None	Arid and semi-arid habitats in Mojave and Sonoran Deserts, including sandy or gravelly locations along riverbanks, washes, sandy dunes, canyon bottoms, desert oases, rocky hillsides, creosote flats, and hillsides	Not expected to occur. The site is outside of the species' known geographic range. The CNDDB occurrence location for desert tortoise within the 9-quadrangle search area is presumed to be a released or escaped captive individual (CDFW 2018).
Lampropeltis zonata (pulchra)	California mountain kingsnake (San Diego population)	None/WL/Group 2	Habitat generalist found in habitats including conifer forest, oak–pine woodlands, riparian woodland, chaparral, manzanita, and coastal scrub	Low potential to occur in the scrub and bosque habitats. This species is typically found in wetter environments than found on site.
Phrynosoma mcallii	flat-tailed horned lizard	None/SSC/Group 1	Desert washes and flats with sparse low-diversity vegetation cover and sandy soils	Not expected to occur. The site is outside of the species' known geographic range, which includes the Anza-Borrego Desert east of the BSA.
Plestiodon skiltonianus interparietalis	Coronado skink	None/WL/Group 2	Woodlands, grasslands, pine forests, and chaparral; rocky areas near water	Low potential to occur in the scrub and bosque habitats. This species is typically found in wetter environments than found on site.
Thamnophis hammondii	two-striped gartersnake	None/SSC/Group 1	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Low potential to occur due to lack of perennial water sources on site.
Thamnophis sirtalis ssp. (coastal plain from Ventura Co. to San Diego Co., from sea level to about 850 meters amsl)	south coast garter snake	None/SSC/Group 2	Marsh and upland habitats near permanent water and riparian vegetation	Low potential to occur due to lack of perennial water sources on site.
Uma notata	Colorado Desert fringe-toed lizard	None/SSC/Group 1	Wind-blown sand dunes, dry lakebeds, sandy beaches, riverbanks, desert washes, and sparse desert scrub	Not expected to occur. The site is outside of the species' known geographic range.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Birds				
Aechmophorus occidentalis	western grebe	None/None/Group 1	Winters in sheltered bays or estuaries on the coast and on large freshwater lakes, rarely on rivers.	Not expected to occur. There are no suitable freshwater bodies of water within the BSA.
Ammodramus savannarum (nesting)	grasshopper sparrow	None/SSC/Group 1	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	Not expected to occur. The site is outside of the species' known geographic range.
Anas strepera	gadwall	None/None/Group 2	Interior valleys, wetlands, ponds, and streams. Feeds and rests in freshwater lacustrine and emergent habitats, and to a lesser extent, estuarine and saline emergent habitats, and nests in nearby herbaceous and cropland habitats. Common in Central Valley and less common in Coast Range foothills of central and Southern California. Locally common in Imperial Valley and along Colorado River, October to March. Breeds on northeastern plateau and east of Sierra Nevada.	Not expected to occur. There are no suitable freshwater bodies of water within the BSA.
Anser caerulescens	snow goose	None/None/Group 2	Fresh emergent wetlands, adjacent lacustrine waters, and nearby wet croplands, pastures, meadows, and grasslands. Occasionally found in saline (brackish) emergent wetlands and adjacent estuarine waters. Found primarily in Central Valley; less common southward in the interior but abundant in Imperial Valley and locally common along Colorado River. Found regularly only in Southern California along Coast Ranges and immediate coast from mid-November to February.	Not expected to occur. There are no suitable bodies of water within the BSA.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Antigone canadensis canadensis (wintering)	lesser sandhill crane	None/SSC/Group 2	Winter foraging in cropland, grazed and mowed grassland, pasture, alfalfa fields, and shallow wetlands; roosting sites are flooded and support several inches of water	Not expected to occur. There are no suitable bodies of water within the BSA.
Antigone canadensis tabida (nesting and wintering)	greater sandhill crane	None/ST, FP/Group 2	Winter foraging in cropland, grazed and mowed grassland, pasture, alfalfa fields, and shallow wetlands; roosting sites are flooded and support several inches of water	Not expected to occur. There are no suitable bodies of water within the BSA.
Ardea herodias (nesting colony)	great blue heron	None/None/Group 2	Nests in large trees or snags; forages in wetlands, water bodies, watercourses, and opportunistically in uplands, including pasture and croplands	Not expected to nest on site. There are no suitable bodies of water within the BSA.
Asio flammeus (nesting)	short-eared owl	None/SSC/Group 2	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	Not expected to occur. The site is outside of the species' known geographic range.
Aythya americana (nesting)	redhead	None/SSC/Group 2	Nests in deep (>3 feet) permanent or semi-permanent wetlands of at least 1 acre; 75% open water; emergent tules (Scirpus spp., and Typha spp.) 3 feet in height; winters in coastal estuaries and large, deep ponds, lakes, and reservoirs of the interior	Not expected to occur. The site is outside of the species' known geographic range.
Branta canadensis	Canada goose	None/None/Group 2	Lakes, rivers, ponds, and other bodies of water; yards, park lawns, and agricultural fields	Not expected to occur. There are no suitable bodies of water within the BSA.
Bucephala islandica (nesting)	Barrow's goldeneye	None/SSC/Group 2	Winters in lagoons, bays, and estuaries in coastal areas, and riverine waters, lakes, and reservoirs in the interior	Not expected to occur. There are no suitable bodies of water within the BSA.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Butorides virescens	green heron	None/None/Group 2	Nests and roosts in valley foothill and desert riparian habitats; feeds in fresh emergent wetland, lacustrine, slow-moving riverine habitats. Resident in foothills and lowlands throughout California; common August to March in southern coastal ranges, in summer along the Colorado River, and found all year at the Salton Sea.	Not expected to occur. There are no suitable bodies of water within the BSA.
Campylorhynchus brunneicapillus sandiegensis (San Diego and Orange Counties only)	coastal cactus wren	BCC/SSC/Group 1	Southern cactus scrub patches	Not expected to occur. The site is outside of this subspecies' range.
Cerorhinca monocerata (nesting colony)	rhinoceros auklet	None/WL/Group 2	Marine pelagic and subtidal habitats	Not expected to occur. The site is outside of the species' known geographic range.
Charadrius alexandrinus nivosus (nesting)	western snowy plover	FT, BCC/SSC/Group 1	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. The site is outside of the species' known geographic range.
Charadrius montanus (wintering)	mountain plover	BCC/SSC/Group 2	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Chlidonias niger (nesting colony)	black tern	None/SSC/Group 2	Freshwater marsh with emergent vegetation; in the Central Valley primarily nests and forages in rice fields and other flooded agricultural fields with weeds and other residual aquatic vegetation	Not expected to occur. No suitable vegetation present.
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT, BCC/SE/Group 1	Nests in dense, wide riparian woodlands and forest with well-developed understories	Not expected to occur. The site is outside of the species' known geographic range.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Contopus cooperi (nesting)	olive-sided flycatcher	BCC/SSC/Group 2	Nests in mixed-conifer, montane hardwood–conifer, Douglas-fir, redwood, red fir, and lodgepole pine habitats; usually close to water	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Cypseloides niger (nesting)	black swift	BCC/SSC/Group 2	Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats	Not expected to occur. No suitable vegetation present.
Dendrocygna bicolor (nesting)	fulvous whistling-duck	None/SSC/Group 2	Nests in freshwater wetlands, especially shallow impoundments managed for rice production and temporarily flooded grasslands; also nests in pastures, haylands, and small grain fields adjacent to rice fields	Not expected to occur. No suitable vegetation present.
Egretta rufescens	reddish egret	None/None/Group 2	Freshwater marsh with emergent vegetation; in the Central Valley primarily nests and forages in rice fields and other flooded agricultural fields with weeds and other residual aquatic vegetation	Not expected to occur. No suitable vegetation present.
Elanus leucurus (nesting)	white-tailed kite	None/FP/Group 1	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. White-tailed kite is not known to nest this far east (Unitt 2004). Potential to occasionally forage on site if flying through the area.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE/Group 1	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Low potential to nest and forage. There is no perennial surface water or closed-canopy riparian vegetation present. There are no known CNDDB occurrences within 5 miles of the BSA (CDFW 2018).

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Falco peregrinus anatum (nesting)	American peregrine falcon	FDL, BCC/SDL, FP/Group 1	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Not expected to nest on site. This species is primarily found near water bodies where waterfowl are regularly present. The project site lacks water bodies that would attract peregrine falcons to the area. Additionally, no peregrine falcons have been observed during nesting raptor surveys or any other surveys during 2018 and 2019.
Fratercula cirrhata (nesting colony)	tufted puffin	None/SSC/Group 2	Nests on offshore rocks and islands free of mammalian predators, either in earthen burrows or crevices on steep rocky slopes	Not expected to occur. No suitable vegetation present.
Gavia immer (nesting)	common loon	None/SSC/Group 2	Extirpated as a breeder from California; winters in coastal waters such as bays, channels, coves, and inlets; also winters inland at large, deep lakes and reservoirs	Not expected to occur. No suitable vegetation present.
Haliaeetus leucocephalus (nesting and wintering)	bald eagle	FDL, BCC/SE, FP/Group 1	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	Not expected to occur. No suitable vegetation present.
Icteria virens (nesting)	yellow-breasted chat	None/SSC/Group 1	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Low potential to nest and forage. The riparian vegetation present is marginal habitat for this species.
Ixobrychus exilis (nesting)	least bittern	BCC/SSC/Group 2	Nests in freshwater and brackish marshes with dense, tall growth of aquatic and semi-aquatic vegetation	Not expected to occur. No suitable vegetation present.
Junco hyemalis caniceps (nesting)	gray-headed junco	None/WL/Group 2	Nests and forages in pine and juniper–pine forests	Not expected to occur. No suitable vegetation present

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Larus californicus (nesting colony)	California gull	None/WL/Group 2	Nests in alkali and freshwater lacustrine habitats; abundant in coastal and interior lowlands during non-nesting period	Not expected to occur. No suitable vegetation present.
Laterallus jamaicensis coturniculus	California black rail	BCC/ST, FP/Group 2	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.
Leucophaeus atricilla (nesting colony)	laughing gull	None/WL/Group 2	Coastal saltmarsh, bays, and estuaries	Not expected to occur. No suitable vegetation present.
Melanerpes lewis (nesting)	Lewis's woodpecker	BCC/None/Group 1	Winters in open oak woodland and savanna; nests in open ponderosa pine forest and logged or burned pine forest	Not expected to occur. The site is outside of the species' known geographic range.
Mycteria americana	wood stork	None/SSC/Group 2	Nests in freshwater and marine-estuarine forested habitats; forages in natural and artificial wetlands; roosts in trees, usually over water	Not expected to occur. No suitable vegetation present
Numenius americanus (nesting)	long-billed curlew	BCC/WL/Group 2	Nests in grazed, mixed grass, and short-grass prairies; localized nesting along the California coast; winters and forages in coastal estuaries, mudflats, open grassland, and cropland	Not expected to occur. The site is outside of the species' known geographic range.
Oceanodroma furcata (nesting colony)	fork-tailed storm-petrel	None/SSC/Group 2	Offshore islands with restricted access and free of mammalian predators; nesting habitat varies across islands from natural crevices in talus slopes to earthen burrows dug by themselves or other species	Not expected to occur. No suitable vegetation present
Oceanodroma homochroa (nesting colony)	ashy storm-petrel	BCC/SSC/Group 2	Nests on rocky offshore islands on talus slopes, rock walls, sea caves, cliffs, and under piles of driftwood; they do not excavate their own nesting burrows	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Oceanodroma melania (nesting colony)	black storm-petrel	None/SSC/Group 2	Nests on small rocky islands or talus slopes of larger islands free of mammalian predators; occurs on land only to breed	Not expected to occur. The site is outside of the species' known geographic range.
Oreortyx pictus	mountain quail	None/None/Group 2	Dense montane chaparral and brushy areas within coniferous forest, pinyon–juniper–yucca associations; uses shrubs, brush stands, and trees on steep slopes for cover	Low potential to occur on site; this species is typically found in denser vegetation.
Oreothlypis luciae (nesting)	Lucy's warbler	BCC/SSC/Group 1	Nests and forages in desert wash and desert riparian habitats, especially dominated by mesquite (Prosopis spp.), but also in other shrubs and tamarisk	Not expected to occur. The site is outside of the species' known geographic range.
Pandion haliaetus (nesting)	osprey	None/WL/Group 1	Large waters (lakes, reservoirs, rivers) supporting fish; usually near forest habitats, but widely observed along the coast	Not expected to occur. The site is outside of the species' known geographic range.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None/SE/Group 1	Nests and forages in coastal saltmarsh dominated by pickleweed (*Salicornia* spp.)	Not expected to occur. No suitable vegetation present
Passerculus sandwichensis rostratus (wintering)	large-billed savannah sparrow	None/SSC/Group 2	Nests and forages in open, low saltmarsh vegetation, including low halophytic scrub	Not expected to occur. No suitable vegetation present
Pelecanus erythrorhynchos (nesting colony)	American white pelican	None/SSC/Group 2	Nests colonially on sandy, earthen, or rocky substrates on isolated islands in freshwater lakes; minimal disturbance from predators; access to foraging areas on inland marshes, lakes, or rivers; winters on shallow coastal bays, inlets, and estuaries	Not expected to occur. No suitable vegetation present
Pelecanus occidentalis californicus (nesting colonies and communal roosts)	California brown pelican	FDL/SDL, FP/Group 2	Forages in warm coastal marine and estuarine environments; in California, nests on dry, rocky offshore islands	Not expected to occur. The site is outside of the species' known geographic range.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Phalacrocorax auritus (nesting colony)	double-crested cormorant	None/WL/Group 2	Nests in riparian trees near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines; winter habitat includes lakes, rivers, and coastal areas	Not expected to occur. The site is outside of the species' known geographic range.
Piranga rubra (nesting)	summer tanager	None/SSC/Group 2	Nests and forages in mature desert riparian habitats dominated by cottonwoods and willows	Not expected to occur. The site is outside of the species' known geographic range.
Plegadis chihi (nesting colony)	white-faced ibis	None/WL/Group 1	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. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Polioptila californica californica	coastal California gnatcatcher	FT/SSC/Group 1	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet amsl	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Progne subis (nesting)	purple martin	None/SSC/Group 1	Nests and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands; in the Sacramento region often nests in weep holes under elevated freeways	Not expected to occur. No suitable vegetation present.
Pyrocephalus rubinus (nesting)	vermilion flycatcher	None/SSC/Group 1	Nests in riparian woodlands, riparian scrub, and freshwater marshes; typical desert riparian with cottonwood, willow, mesquite adjacent to irrigated fields, ditches, or pastures	Low potential to nest and forage. There is no suitable riparian vegetation present.
Rallus obsoletus levipes	Ridgway's rail	FE/SE, FP/Group 1	Coastal wetlands, brackish areas, coastal saline emergent wetlands	Not expected to occur. The site is outside of the species' known geographic range.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Riparia riparia (nesting)	bank swallow	None/ST/Group 1	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 coastal vegetation present
Rynchops niger (nesting colony)	black skimmer	BCC/SSC/Group 1	Nests on barrier beaches, shell banks, spoil islands, and saltmarsh; forages over open water; roosts on sandy beaches and gravel bars	Not expected to occur. The site is outside of the species' known geographic range.
Setophaga petechia (nesting)	yellow warbler	BCC/SSC/Group 2	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Low potential to nest and forage. There is no suitable riparian vegetation present. This species is a presumed migrant in this area (Unitt 2004).
Sialia mexicana	western bluebird	None/None/Group 2	Nests in old-growth red fir, mixed-conifer, and lodgepole pine habitats near wet meadows used for foraging	Low potential to occur. No suitable old-growth forest present for nesting. This species has not been observed on site.
Spinus lawrencei (nesting)	Lawrence's goldfinch	BCC/None/None	Nests and forages in open oak, arid woodlands, and chaparral near water	Observed on site in spring 2019. This species does not nest in the area (Baltosser and Scott 1996). Additionally, the site lacks suitable nesting habitat (oak, woodland, and chaparral near water).
Sternula antillarum browni (nesting colony)	California least tern	FE/SE, FP/Group 1	Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats	Not expected to occur. The site is outside of the species' known geographic range.
Strix occidentalis occidentalis	California spotted owl	BCC/SSC/Group 1	Nests and forages in dense, old-growth, multi-layered mixed-conifer, redwood, and Douglas-fir habitats	Not expected to occur. No suitable old-growth forest present.
Synthliboramphus scrippsi (nesting colony)	Scripps's murrelet	FC, BCC/ST/Group 2	Nests on steep sea slopes, canyons, and cliffs with sparse vegetation	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Thalasseus elegans (nesting colony)	elegant tern	None/WL/Group 1	Inshore coastal waters, bays, estuaries, and harbors; forages over open water	Not expected to occur. The site is outside of the species' known geographic range.
Toxostoma bendirei	Bendire's thrasher	BCC/SSC/Group 2	Nests and forages in desert succulent shrub and Joshua tree habitat in Mojave Desert; nests in yucca, cholla, and other thorny scrubs or small trees	Not expected to occur. The site is outside of the species' known geographic range.
Toxostoma crissale	crissal thrasher	None/SSC/Group 1	Nests and forages in desert riparian and desert wash; dense thickets of sagebrush and other shrubs such as mesquite, iron catclaw acacia (*Senegalia greggii*), and arrowweed–willow within juniper and pinyon–juniper woodlands	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Toxostoma lecontei	LeConte's thrasher	BCC/SSC/Group 2	Nests and forages in desert wash, desert scrub, alkali desert scrub, desert succulent, and Joshua tree habitats; nests in spiny shrubs or cactus	Low potential to occur. This species is primarily found in the Anza-Borrego Desert in washes and sandy areas. There may be potential habitat in the desert scrub on site, but this species has not been observed in the Jacumba area since the early twentieth century (CDFW 2018).
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/Group 1	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	Low potential to nest and forage. The mesquite bosque is marginal habitat for vireo and there are no known CNDDB occurrences within 5 miles of the BSA (CDFW 2018).
Vireo vicinior (nesting)	gray vireo	BCC/SSC/Group 1	Nests and forages in pinyon–juniper woodland, oak, and chamise and redshank chaparral	Low potential to occur in scrub habitat. This species is a rare breeder in chaparral habitat in eastern San Diego County. The BSA lacks chamise or redshank chaparral, which is their suitable nesting habitat.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Fishes				
Cyprinodon macularius	desert pupfish	FE/SE/Group 2	Desert springs, small streams, and marshes below 1,515 meters (5,000 feet) amsl; tolerates high salinities, high water temperatures, and low dissolved-oxygen concentrations	Not expected to occur. The site is outside of the species' known geographic range. There are no perennial surface water or springs on site.
Eucyclogobius newberryi	tidewater goby	FE/SSC/Group 1	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 is outside of the species' known geographic range. There are no perennial surface water or springs on site.
Gasterosteus aculeatus williamsoni	unarmored threespine stickleback	FE/SE, FP/Group 2	Slow-moving and backwater areas	Not expected to occur. The site is outside of the species' known geographic range. There are no perennial surface water or springs on site.
Gila orcuttii	arroyo chub	None/SSC/Group 1	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. There are no perennial surface water or springs on site.
Oncorhynchus mykiss irideus	southern steelhead – Southern California DPS	FE/None/Group 1	Clean, clear, cool, well-oxygenated streams; needs relatively deep pools in migration and gravelly substrate to spawn	Not expected to occur. The site is outside of the species' known geographic range. There are no perennial surface water or springs on site.
Mammals				
Bassariscus astutus	ringtail	None/FP/Group 2	Mixed forests and shrublands near rocky areas or riparian habitats; forages near water and is seldom found more than 1 kilometer (0.62 miles) from a water source	Low potential to occur in the mesquite bosque habitat in the BSA. There is suitable shrubland and open, dry habitats, but water resources nearby are limited to a small pond west of Jacumba Hot Springs, approximately 1.5 miles

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
				(2.5 kilometers) from the mesquite bosque on site. The closest record of ringtail is by Tule Lake, approximately 3 miles northwest of the site.
Choeronycteris mexicana	Mexican long-tongued bat	None/SSC/Group 2	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon–juniper woodland; roosts in caves, mines, and buildings	Not expected to occur. The site is outside of the species' known geographic range.
Dipodomys stephensi	Stephens' kangaroo rat	FE/ST/Group 1	Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas	Not expected to occur. The site is outside of the species' known geographic range.
Euderma maculatum	spotted bat	None/SSC/Group 2	Foothills, mountains, desert regions of southern California, including arid deserts, grasslands, and mixed-conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes	Low potential to roost on site. There is some roosting potential in the rock cervices on Round Mountain; however, there are only four records (two confirmed) of this species in San Diego County (Tremor 2017).
Lasiurus xanthinus	western yellow bat	None/SSC/None	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet amsl; roosts in riparian and palms	Low potential to roost due to lack of riparian trees preferred by this species. There is potential foraging habitat on site, but this species has very limited records in San Diego County (Tremor 2017). There is suitable desert scrub vegetation present, but water resources nearby are limited to a small pond west of Jacumba Hot Springs.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Myotis evotis	long-eared myotis	None/None/Group 2	Brush, woodland, and forest habitats from sea level to 9,000 feet amsl; prefers coniferous habitats; forages along habitat edges, in open habitats, and over water; roosts in buildings, crevices, under bark, and snags; uses caves as night roosts	Low potential to roost. This species has not been documented occurring along the eastern slope of the mountains (Tremor 2017).
Myotis thysanodes	fringed myotis	None/None/Group 2	Drier woodlands (oak, pinyon–juniper, and ponderosa pine), desert scrub, mesic coniferous forest, grassland, and sage–grass steppe; sea level to 9,350 feet amsl; roosts in buildings, mines, rocks, cliff faces, bridges, and large, decadent trees and snags	Low potential to roost. This species is primarily found in the mountains (Tremor 2017).
Myotis volans	long-legged myotis	None/None/Group 2	Primarily coniferous forests, but also seasonally in riparian and desert habitats; roosts in crevices in cliffs, caves, mines, buildings, exfoliating tree bark, and snags	Low potential to roost. There are only a few records of this species in San Diego County concentrated in the mountains (Tremor 2017).
Nyctinomops macrotis	big free-tailed bat	None/SSC/Group 2	Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water	Not expected to occur. The site is outside of the species' known geographic range.
Ovis canadensis nelsoni	Nelson's bighorn sheep	None/FP/Group 1	Steep slopes and cliffs, rough and rocky topography, sparse vegetation; also canyons, washes, and alluvial fans	Not expected to occur. This species is restricted to steeper terrain in the mountains. The closest occurrences are within the Orocopia Mountains northeast of the BSA (CDFW 2018).
Ovis canadensis nelsoni pop. 2 DPS	Peninsular bighorn sheep DPS	FE/ST, FP/None	Dry, rocky, low-elevation desert slopes, canyons, and washes; females near water during lambing season	Not expected to occur. The site is outside of the species' known geographic range (CDFG 2011). This species is restricted to steeper terrain in the mountains. The closest occurrences are within the Jacumba Mountains east and

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
				north of the BSA (CDFW 2018). USFWS designated critical habitat does not overlap the BSA (USFWS 2018).
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None/SSC/Group 2	Lower-elevation grassland, alluvial sage scrub, and coastal scrub	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC/Group 1	Fine-grained sandy substrates in open coastal strand, coastal dunes, and river alluvium	Not expected to occur. No suitable vegetation present.
Invertebrates				
Ariolimax columbianus stramineus	Palomar banana slug	None/None/Group 2	Moist forests; dark, damp habitats, such as under logs or other decomposing material	Not expected to occur. No suitable vegetation present.
Branchinecta sandiegonensis	San Diego fairy shrimp	FE/None/Group 1	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. The site is outside of the species' known geographic range. B. *sandiegonensis* is documented along western San Diego County but occurrences are lacking east of the Peninsular Ranges (Erickson and Belk 1999).
Brennania belkini	Belkin's dune tabanid fly	None/None/Group 2	Inhabits coastal sand dunes of Southern California	Not expected to occur. No suitable vegetation present.
Callophrys thornei	Thorne's hairstreak	None/None/Group 1	Interior cypress woodland dominated by host plant Tecate cypress (*Hesperocyparis forbesii*)	Not expected to occur. No Tecate cypress present.
Cicindela gabbii	western tidal-flat tiger beetle	None/None/Group 2	Inhabits estuaries and mudflats along the coast of Southern California	Not expected to occur. The site is outside of the species' known geographic range.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Cicindela hirticollis gravida	sandy beach tiger beetle	None/None/Group 2	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Cicindela latesignata latesignata	western beach tiger beetle	None/None/Group 2	Mudflats and beaches in coastal Southern California	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Cicindela senilis frosti	senile tiger beetle	None/None/Group 2	Inhabits marine shoreline, from Central California coast south to saltmarshes of San Diego; also found at Lake Elsinore	Not expected to occur. The site is outside of the species' known geographic range.
Cicindela trifasciata sigmoidea	mudflat tiger beetle	None/None/Group 2	Marshes along coast and edges of marshes and rivers	Not expected to occur. No suitable vegetation present.
Cicindela latesignata latesignata	oblivious tiger beetle	None/None/Group 2	Inhabited the Southern California coastline, from La Jolla north to the Orange County line. Occupied saline mudflats and moist sandy spots in estuaries of small streams in the lower zone. Has not been observed in 20 years. C. l. obliviosa is no longer the accepted name for this species (ITIS 2016).	Not expected to occur. No suitable vegetation present.
Coelus globosus	globose dune beetle	None/None/Group 1	Inhabitant of coastal sand dune habitat; erratically distributed from Ten Mile Creek in Mendocino County south to Ensenada, Mexico	Not expected to occur. The site is outside of the species' known geographic range and there is no suitable vegetation present.
Danaus plexippus	monarch	None/None/Group 2	Wind-protected tree groves with nectar sources and nearby water sources	Low potential to occur. There are no stands of eucalyptus trees on site.
Euphyes vestris harbisoni	Harbison dun skipper	None/None/Group 1	Oak riparian drainages and adjacent seeps supporting host plant Carex spissa	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Helminthoglypta traski coelata	Peninsular Range shoulderband snail	None/None/Group 2	Wet habitats	Not expected to occur. No suitable vegetation present.
Linderiella occidentalis	California linderiella	None/None/Group 1	Cool soft-water vernal pools in grasslands below 1,000 feet amsl	Not expected to occur. No suitable vegetation present.
Lycaena hermes	Hermes copper	FC/None/Group 1	Mixed woodlands, chaparral, and coastal scrub	Not expected to occur. The site is outside of the species' known geographic range. No host plant, spiny redberry (Rhamnus crocea), present.
Megathymus yuccae harbisoni	coastal giant skipper	None/None/Group 2	Coastal dunes, open yucca flats, desert canyons, open woodland, grassland, and old fields; host plant is Yucca schidigera; record from eastern San Diego County near Scissors Crossing, Anza-Borrego Desert State Park	Not expected to occur. No suitable vegetation present.
Panoquina errans	wandering skipper	None/None/Group 1	Saltmarsh	Not expected to occur. No suitable vegetation present.
Papilio multicaudata	two-tailed swallowtail	None/None/Group 1	Foothill slopes and canyons, moist valleys, streamsides, woodlands, parks, roadsides, and urban settings; host plants include Fraxinus, Ptelea, and Prunus species (Butterflies and Moths of North America 2016)	Not expected to occur. No suitable vegetation present.
Phobetus robinsoni	Robinson's rain beetle	None/None/Group 2	Known from two locations in Orange County and only known from Scissors Crossing in San Diego County (43 FR 35636–35643)	Not expected to occur. The site is outside of the species' known geographic range.
Plebejus saepiolus hilda	Hilda greenish blue	None/None/Group 1	At species level: bogs, stream edges, open fields, meadows, open forests, and roadsides; host plants include species of Trifolium (Butterflies and Moths of North America 2016)	Not expected to occur. No suitable vegetation present.
Pseudocopaeodes eunus eunus	alkali skipper	None/None/Group 1	Grassy spots on alkali flats; playa/salt flats	Not expected to occur. No suitable vegetation present.

Scientific Name	Common Name	Status (Federal/State/ County of San Diego)	Habitat	Potential to Occur
Pyrgus ruralis lagunae	Laguna Mountains skipper	FE/None/Group 1	Restricted to montane meadows of Laguna Mountains and Mount Palomar	Not expected to occur. The site is outside of the species' known geographic range.
Streptocephalus woottoni	Riverside fairy shrimp	FE/None/Group 1	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. The site is outside of the species' known geographic range.
Trigonoscuta blaisdelli	Blaisdell trigonoscuta weevil	None/None/Group 2	*Trigonoscuta* sp.: Coastal, desert, or inland sand dunes; wide variety of plant types used; the larvae feed on the roots and the adults on the leaves	Not expected to occur. No suitable vegetation present.
Tryonia imitator	mimic tryonia (=California brackishwater snail)	None/None/Group 2	Inhabits coastal lagoons, estuaries, and saltmarshes, from Sonoma County south to San Diego County	Not expected to occur. The site is outside of the species' known geographic range.

Status Designations:
FE: Federally listed as endangered
FT: Federally listed as threatened
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC: California Species of Special Concern
FP: California Fully Protected species
WL: California Watch List species
SE: State listed as endangered
ST: State listed as threatened
SDL: State delisted
SS: isted on Special Animals List, but no other status
County of San Diego Group1: Species with a high level of sensitivity, listed as threatened or endangered, or with a natural history requirement that increases their sensitivity.
County of San Diego Group 2: Species that are becoming less common but are not so rare that extinction is imminent without immediate action.

Notes: amsl = above mean sea level; BSA = biological study area; CNDDB = California Natural Diversity Database.
[1] "Vicinity" refers to within the project site and surrounding USGS quadrangles: Jacumba, Carrizo Mountains, Sweeney Pass, Sombrero Peak, In-Ko-Pah Gorge, Live Oak Springs, and Tierra del Sol (CDFW 2018).

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Appendix F

Jacumba Airport

Burrowing Owl Assessment Results

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

MEMORANDUM

To:	Patrick Brown, BayWa Renewable Energy
From:	Callie Amoaku, Dudek
Subject:	Jacumba Airport- Burrowing Owl Habitat Assessment Results January 20, 2020
Date:	
cc:	
Attachment(s):	Att. 1: Figures (Location, Biological Resources); Att. 2: Representative Site Photographs

This memorandum provides the results of the burrowing owl habitat assessment conducted on January 2, 2020 on the Jacumba Airport property. The purpose of the memorandum is to describe the vegetation communities and conditions of the off-site survey area, and to analyze and discuss the habitat suitability and potential for burrowing owls to utilize the existing habitat.

1 Location and Background

The Jacumba Airport is located just south of Old Highway 80, and immediately north of the US/Mexico Border in southeastern San Diego County, California. The area surveyed (Study Area) includes the approximately 60.75-acre area south of the Jacumba Airport's runway. The Study Area is located adjacent to the southeastern corner of the project boundary for the Jacumba Valley Ranch project, and lies within the Jacumba U.S. Geological Survey (USGS) 7.5-minute quadrangle, Township 18 South, Range 8 East, Section 9 (Figure 1, Project Location).

The airport contains a single, relatively small runway through the center of the site that runs parallel to the US/Mexico border. Use of the airport for aviation activities is infrequent. Surrounding land use consists of rural land and land previously cultivated for agriculture. Wild horses frequent the Study Area, determined by evidence including eyewitness accounts and scat observed throughout the site by biologists during the survey.

2 Methods

Burrowing owl is a CDFW Species of Special Concern (SSC). According to the guidelines in the Staff Report on Burrowing Owl Mitigation (CDFG 2012):

> Essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

The habitat assessment was conducted on January 2, 2020 from 8:45 AM to 1:09 PM by Dudek biologists Callie Amoaku and Olivia Koziel throughout the approximately 60.75-acre area south of the Jacumba Airport's runway. The air temperature ranged from 61 to 66 degrees Fahrenheit, cloud cover ranged from 0 to 10 percent cover with

clear visibility, and wind speed ranged from 0 to 5 miles per hour. All fossorial burrows were examined for sign (i.e., owl pellets, molted feathers, abundant insect remains, whitewash) and potentially suitable burrows were recorded using the ESRI Collector mobile application. Climatic conditions at the time of the survey were within protocol guidelines, ensuring that surveys were conducted under good weather conditions that would permit clear detection of individuals should they occur within the Study Area.

Dudek biologists conducted the habitat assessment pursuant to the survey guidelines outlined in Appendix D of the Staff Report on Burrowing Owl Mitigation (CDFG 2012). Burrows and/or burrow surrogates are required to be 11 centimeters (4.3 inches) or greater in diameter and 150 centimeters (59 inches) in depth for habitat to be considered suitable.

The habitat assessment was conducted concurrently with vegetation mapping and consisted of walking approximately 15-meter (50-foot) transects throughout the Study Area and documenting the presence of any suitable burrows and/or burrow surrogates (e.g., rock cavities, pipes, culverts, debris piles). Vegetation communities and land covers were mapped using the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) as modified by the County and noted in Vegetation Communities of San Diego County (Oberbauer et al. 2008).

3 Results

3.1 Habitat Suitability Assessment Narrative

Multiple known burrowing owl occurrences have been recorded by Dudek just west of the Study Area boundary, within the Jacumba Valley Ranch project area. A burrowing owl individual was observed in March of 2019, and a burrow with burrowing owl sign was observed in May of 2019 near the same location. These occurrence locations are included in Attachment 1, Figure 2, Biological Resources. These locations were revisited during the January 2, 2020 habitat assessment and no burrowing owls or new sign were observed.

The Study Area consists of relatively flat land with occasional mounds and small hills, which generally constitutes suitable topography for burrowing owls to be able to perch and forage. Friable soils, which are suitable for burrowing, are present throughout much of the Study Area. Numerous rodent or lagomorph (hare or rabbit) burrows were observed throughout the Study Area which burrowing owls could potentially modify and utilize. None of the burrows observed and evaluated within the Study Area met the size criteria for a suitable or surrogate burrowing owl burrow (11 centimeters [4.3 inches] or greater in diameter and 150 centimeters [59 inches] in depth). One burrow mapped within the desert saltbush scrub habitat in the western portion of the study area had an opening that met the diameter criteria, but did not quite meet the depth criteria for a suitable burrow (Figure 2, Biological Resources). The depth of the burrow was approximately 107 centimeters (42 inches).

Soil was rockier and less burrows were observed within the Sonoran creosote bush scrub in the eastern portion of the Study Area. However, the habitat structure in this area is similar to the habitat just southwest of the Study Area in which burrowing owl occurrences were observed in previous years, therefore this area is considered suitable and may have the highest potential of supporting burrowing owl usage of the habitat types present within the Study Area. An access road and wind sock station are located between the runway and the border wall, through roughly the center of the Study Area. Just south of this access road, there is a section of the Study Area within the desert saltbush scrub habitat which consists of relatively dense creosote shrubs. This area may be too dense for burrowing

owls to utilize for foraging and is not suitable habitat. Aside from the dense area just south of this access road, the majority of the Study Area consists of suitable habitat with the potential to support burrowing owls.

No suitable burrows, burrowing owls, or burrowing owl sign were observed during the habitat assessment survey.

3.2 Vegetation Communities and Land Cover Types

Five vegetation communities and/or land covers occur within the study area, including four sensitive communities (County of San Diego 2010). The acreages of vegetation communities and land covers in the study area are listed in Table 1 and their distribution on site are shown on the biological resources map (Figure 2, Biological Resources). Descriptions of each vegetation community and land cover type are included below.

Table 1. Vegetation Communities and Land Cover Types

Vegetation Community	Code	Acres
Desert Saltbush Scrub	36110	35.31
Mesquite Bosque	61820	1.06
Peninsular Juniper Woodland and Scrub	72320	2.46
Sonoran Creosote Bush Scrub	33100	15.46
Disturbed Habitat	11000	6.46
	Total Acres	60.75

3.2.1 Desert Saltbush Scrub

Desert saltbush scrub is characterized by widely spaced low, microphyllous 0.3 to 1 meter tall shrubs dominated by allscale (*Atriplex polycarpa*) and alkali goldenbush (*Isocoma acradenia*) (Oberbauer et al. 2008). This vegetation community commonly occurs on fine-textured, poorly drained soils with high alkalinity in drier areas. Characteristic species typically include silverscale saltbush (*Atriplex argentea*), fourwing saltbush (*Atriplex canescens*), and spiny hop sage (*Grayia spinosa*).

Desert saltbush scrub occupies 35.31 acres and is the most abundant vegetation community mapped, accounting for the majority of the western and central portions of the Study Area. The area was dominated by fourwing saltbush, associated with tumbleweed (*Salsola tragus*) and non-native grasses and forbs including common Mediterranean grass (*Schismus barbata*) and redstem stork's bill (*Erodium cicutarium*).

3.2.2 Mesquite Bosque

Mesquite Bosque is characterized by an open to fairly dense, drought-deciduous streamside thorn forest with open annual and perennial grass understory (Oberbauer et al. 2008). This vegetation community is dominated by mesquite (Prosopis glandulosa) and additional characteristic species typically include carelessweed (*Amaranthus palmeri*), white bursage, fourwing saltbush, and allscale. Mesquite Bosque commonly occurs on higher alluvial terraces and near washes, streambanks, alkali sinks, or outwash plains with substantial groundwater.

Mesquite bosque occupies a small amount of the total mapped area, accounting for 1.06 acres near the western end of the Study Area. Associated species observed within this habitat type in the Study Area included mesquite, some fourwing saltbush, and assorted non-native grasses.

3.2.3 Peninsular Juniper Woodland and Scrub

Peninsular juniper woodland and scrub consists of relatively dense juniper woodland dominated by California juniper (*Juniperus californica*). Other dominant species include Parry's beargrass (*Nolina parryi*), Sonoran scrub oak (*Quercus turbinella*), Mojave yucca (*Yucca schidigera*), and sagebrush (*Artemisia tridentata*). Fuel loads are usually insufficient to carry fire and do not tolerate fire, therefore reverting back to semi-desert chaparral (Oberbauer et al. 2008).

Within the Study Area, peninsular juniper woodland and scrub occupies 2.46 acres near the eastern boundary and is dominated by California juniper. Less commonly occurring species within the community include California ephedra (*Ephedra californica*), Mojave yucca, and broom snakeweed (*Gutierrezia sarothrae*).

3.2.4 Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub consists of almost entirely of creosote (*Larrrea tridentata*) a shrub approximately 0.5-3 meters tall. Sonoran creosote bush scrub community is widely spaced usually with bare ground between shrubs. Shrubs can be dormant for long periods of time and but growth occurs in the winter to early spring when rainfall is adequate. Many species of herbs may flower from February to March when rainfall is sufficient. In sandy areas, annual wildflowers can be extensive. Other woody or succulent plants are not typically supported within this community. Soils are well-drained and temperatures in the winter rarely go below freezing (Oberbauer 2008).

Within the Study Area, creosote shrubs dominate the Sonoran creosote bush scrub community. This community occupies approximately 15.46 acres of the eastern half of the Study Area and is the second-most abundant vegetation community present. Large openings with bare ground and some rocky soil occur.

3.2.5 Disturbed Habitat

Disturbed habitat refers to areas where soils have been recently or repeatedly disturbed by grading, compaction, or clearing of vegetation. Structures are typically not present within disturbed habitats, and these areas provide relatively low value for most plant and wildlife species. When vegetated, disturbed habitat supports predominantly non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance (Oberbauer et al. 2008).

Within the Study Area, disturbed habitat occupies 6.46 acres and consists primarily of the disturbed area surrounding the paved airport runway (along the northern boundary of the Study Area), as well as an access road and wind sock area between the runway and the border wall through the center of the Study Area. This land cover type supports very limited vegetation and consists of mostly compacted soil.

4 Conclusion

The Study Area contains suitable habitat (vegetation, soil type, topography, and habitat structure) which has the potential to support burrowing owls; however no burrowing owls appeared to occupy the area at the time the habitat assessment was conducted. No suitable burrows (per the guideline dimensions), burrowing owls, or burrowing owl sign were observed during the habitat assessment survey.

Please feel free to call Callie Amoaku at 760.479.4293 if you have any questions regarding the contents of this memorandum.

Sincerely,

Callie Amoaku

Att 1: Figure 1, Project Location
Figure 2, Biological Resources
Att 2: Photo Log

Literature Cited

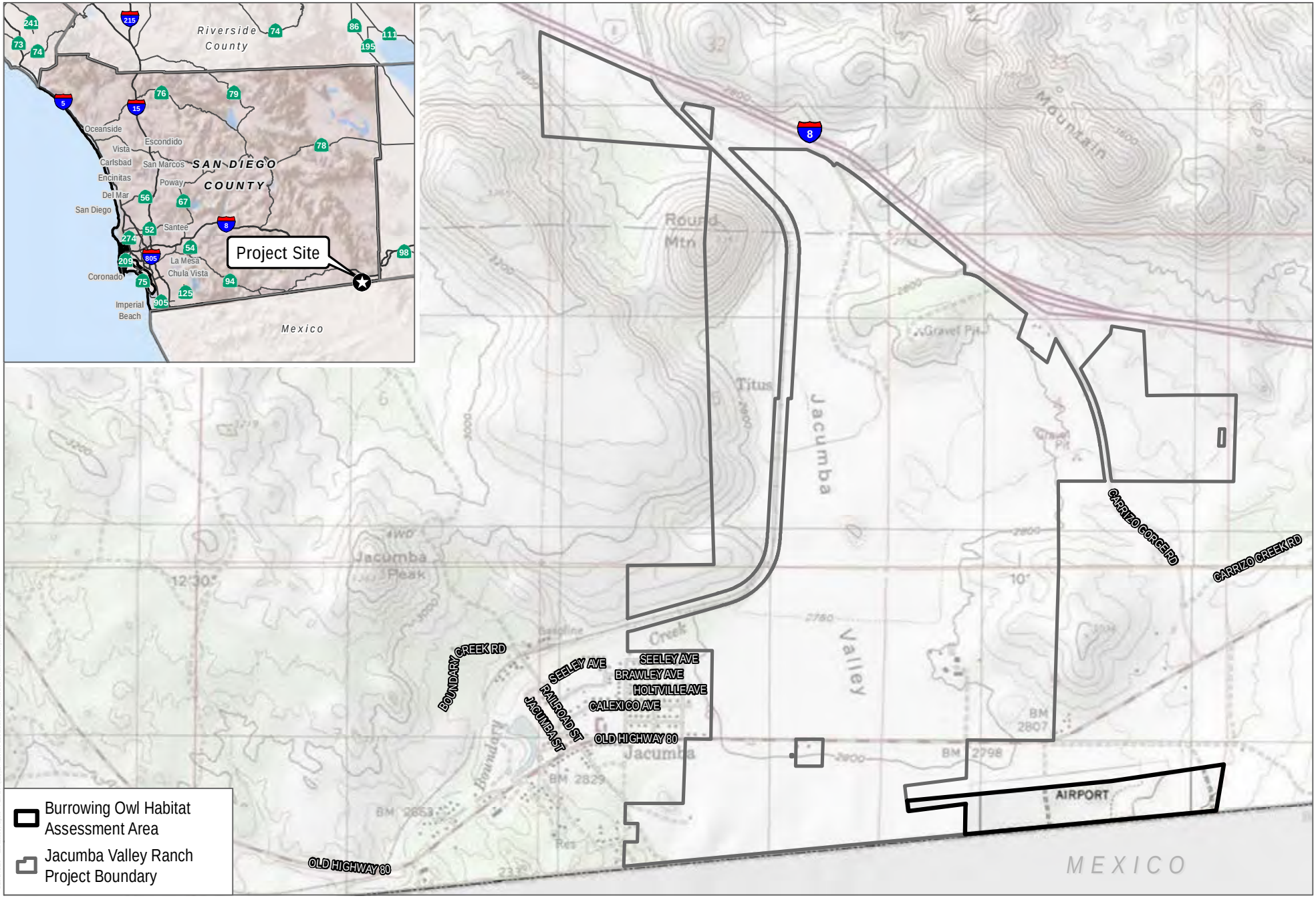
County of San Diego. 2010. County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources. Fourth Revision. Land Use and Environment Group, Department of Land Use and Planning & Development Services, Department of Public Works. September 15, 2010.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, California. CDFG.

Oberbauer, T, M. Kelly, and J. Buegge. March 2008. Draft Vegetation Communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California." Robert F. Holland, Ph.D. October 1986.

Attachment A

Figures



SOURCE: USGS 7.5-Minute Series Jacumba, Jacumba OE S Quadrangles; SANGIS 2019

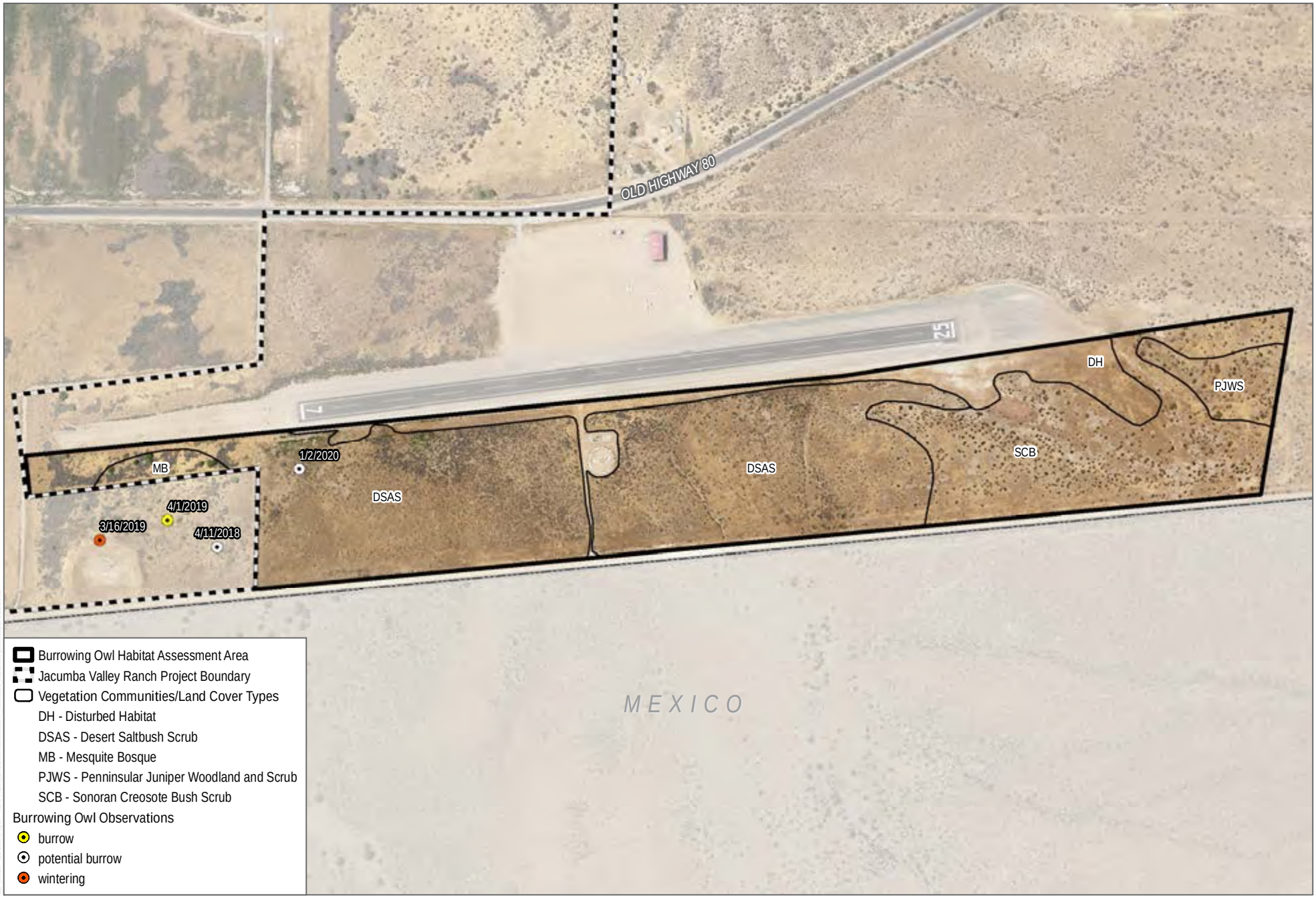
DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Jacumba Airport - Burrowing Owl Habitat Assessment Results



SOURCE: SANGIS 2017, 2020

DUDEK

0 250 500 Feet

FIGURE 2

Biological Resources

Jacumba Airport - Burrowing Owl Habitat Assessment Results

Attachment B

Representative Site Photographs

	
Representative photograph of disturbed habitat within the Study Area. Photo facing west.	Photograph of denser, less suitable area of desert saltbush scrub habitat west of the access road. Photo facing southwest.
	
Representative photograph for Sonoran creosote bush scrub within the Study Area. Photo facing northeast.	Representative photograph of less dense desert saltbush scrub within the Study Area. Photo facing east.



Representative photograph of peninsular juniper woodland and scrub within in the Study Area. Photo facing east.



Photograph of access road (disturbed land cover type) through central portion of the Study Area. Photo facing southwest.



Photograph of a burrow within the Study Area. No suitable burrows were observed that met all size criteria for burrowing owl suitability.

Appendix G

Aquatic Resources Delineation Report

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

MEMORANDUM

To:	South Coast Branch, Regulatory Division, U.S. Army Corps of Engineers
From:	Callie Amoaku, Dudek
Subject:	Aquatic Resources Delineation Report for Jacumba Valley Ranch Energy Park; SPL-2019-00339
Date:	December 2, 2019, Revised March 27, 2020
cc:	George Gunmoe, BayWa Patricia Schuyler, Dudek
Attachment(s):	Attachment A, Appendix 1 of Regulatory Guidance Letter 16-1, Request for Corps Jurisdictional Determination Attachment B, Preliminary Jurisdictional Determination Form Attachment C, Figures Attachment D, Data Station Forms and OHWM Datasheets Attachment E, WETS Table Attachment F, Review Area Photos

This memo provides the 20 items listed in the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports in support of a preliminary jurisdictional determination for the proposed Jacumba Valley Ranch Energy Park (project) in San Diego County, California.

Item 1: Request for a Jurisdictional Determination

Attachment A contains Appendix 1 of Regulatory Guidance Letter 16-1, Request for Corps Jurisdictional Determination Form and Attachment B contains the Preliminary Jurisdictional Determination Form.

Item 2: Contact Information

Applicant:	JVR Energy Park, LLC	**Agent:**	Dudek
Contact Name:	George Gunmoe	**Contact Name:**	Callie Amoaku/Patricia Schuyler
Address:	17901 Von Karman Avenue Suite 1050 Irvine, California 92614	**Address:**	605 Third Street Encinitas, California 92024
Phone:	832.303.2477	**Phone:**	760.479.4293
Fax:	N/A	**Fax**	760.632.0164
Email:	George.Gunnoe@baywa-re.com	**Email:**	cford@dudek.com or pschuyler@dudek.com

Item 3: Site Access

A site visit was conducted on January 29, 2020 with Christopher Allen from the Carlsbad Field Office. The project applicant or agent will accompany U.S. Army Corps of Engineers staff to the Review Area for site visit(s).

Item 4: Directions to the Review Area

From the west: take Interstate 8 east toward El Centro. Take exit 73 toward Jacumba. Turn right toward Carrizo Gorge Road and then onto Carrizo Gorge Road. Turn right onto Old Highway 80 and arrive at Review Area.

From the east: take Interstate 8 west. Take exit 77 for In-Ko-Pah Park Road. Turn left onto In-Ko-Pah Park Road and left toward Old Highway 80. Turn right onto Old Highway 80 and arrive at Review Area.

Item 5: Jurisdictional Delineation Methods

The U.S. Army Corps of Engineers wetlands delineation was performed in accordance with the 1987 *U.S. Army Corps of Engineers Wetlands Delineation Manual* (ACOE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008a), *and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (ACOE 2008b).

Item 6: Aquatic Resources Narrative

The review area contains one aquatic feature formed from runoff from an adjacent parking lot and Carrizo Gorge Road and two borrow pits that were formed entirely in uplands. Acreages are summarized in Table 1.

Table 1. Potential Aquatic and Upland Resources within the Review Area

Feature ID	Resource Type	Acreage
Feature A	Isolated aquatic resource	0.15
Borrow pit 1	N/A	0.18
Borrow pit 2	N/A	1.49
	Total acreage	**1.76**

Note: Total may not sum due to rounding.

These 3 features within the Review Area are shown on Figure 2, Potential Aquatic Resources (all figures are provided in Attachment C). The soils are shown on Figure 3, Soils.

Feature A is a short feature formed from runoff associated with Carrizo Gorge Road and the parking lot across the street. There is a culvert directing flow into this drainage from the opposite side of the road, just below grade from the parking lot. Also, Feature A lacks a connection to a TNW or tributaries to TNWs. This feature originates at Carrizo Gorge Road and dissipates into upland approximately 1,000 feet west of the road.

Additionally, there are two borrow pits located near the eastern side of the site that were constructed in 2013/2014 in an upland area associated with a temporary sand and gravel mine. It appears water was stored and/or drained into the borrow pit as part of the mining activities. The borrow pits were dry with little to no vegetation during the January 2019 and February 2020 site visits. The borrow pits support sparse tamarisk and cracked soil as a result of the pit's inundation from mining activities. Two sample points were taken in borrow pit 1: one next to the tamarisk and one outside of the tamarisk. While one of the sample points resulted in positive indicators of a three-parameter wetland, this human-made basin was constructed in an upland area, is considered an artificial wetland, and does not connect to waters of the United States. Borrow pit 2 had even sparser tamarisk with minimal evidence of cracked soil.

At the request of ACOE staff, upland sampling points were taken throughout the fallow agricultural field. The results of the data stations are summarized in Table 2 and included in Attachment D.

Table 2. Data Station Results

Data Station	Location	Hydrophytic Vegetation	Hydric Soils	Hydrology	Three-Parameter Wetland
1A	Borrow pit 1	No	No	Yes	No
1B	Borrow pit 1	Yes	Yes	Yes	Yes
2A	Ag field	No	No	No	No
2B	Ag field	No	No	No	No
3	Ag field	No	No	No	No
4	Ag field	No	No	No	No
5	Ag field	No	No	No	No
6	Ag field	No	No	No	No
7	Ag field	No	No	No	No
8	Ag field	No	No	No	No
9	Ag field	No	No	No	No
10	Ag field	No	No	No	No
11	Ag field	No	No	No	No
12	Borrow pit 2	No	No	Yes	No
13	Ag field	No	No	No	No
14	Ag field	No	No	No	No
15	Ag field	No	No	No	No
16	Ag field	No	No	No	No
17	Ag field	No	No	No	No
18	Ag field	No	No	No	No
19	Ag field	No	No	No	No
20	Ag field	No	No	No	No
21	Ag field	No	No	No	No
22	Ag field	No	No	No	No
23	Ag field	No	No	No	No
24	Ag field	No	No	No	No

Item 7: Delineation Maps

All maps of delineated resources are provided in Attachment C.

Item 8: Dates of Field Work

A jurisdictional delineation for the review area was conducted in August 2018 by Dudek biologists Callie Amoaku, Scott Gressard, and Lindsy Mobley (Table 3). An additional site visit was conducted in January 2019 by Dudek biologist Erin Bergman to sample locations in the borrow pit. The freshwater marsh, which was not observed during the original delineation, was evaluated in April 2019 by Dudek biologists Callie Amoaku and Patricia Schuyler. On September 24, 2019, Dudek biologist Shana Carey took some additional photos on site and looked for any changes compared to the original delineation and additional sample points were collected on February 24, 2020.

Table 3. Schedule of the Jurisdictional Delineation Conducted for the Jacumba Valley Ranch Review Area

Date	Hours	Personnel	Conditions
8/2/2018	0800–1640	Callie Amoaku, Scott Gressard	80°F–96°F; 0% cc; 0–4 mph wind
8/7/2018	0900–1515	Scott Gressard, Lindsy Mobley	89°F–95°F; 0%–10% cc; 1–6 mph wind
8/22/2018	0930–1430	Scott Gressard	87°F–102°F; 0%–30% cc; 1–6 mph wind
1/20/2019	0800–1000	Erin Bergman	53°F–63°F; 0%–10% cc; 0–2 mph wind
4/24/2019	1645–1743	Callie Amoaku, Patricia Schuyler	85°F–88°F; 0% cloud cover; 1–5 mph wind
9/24/2019	1200–1345	Shana Carey	81°F–84°F; 0% cloud cover; 1–5 mph wind
2/24/2020	0830–1600	Shana Carey, Cody Schaaf	54–67°F; 0–20% cloud cover; 0–8 mph wind

Notes: cc = cloud cover; mph = miles per hour.

Item 9: Table of Aquatic Resources

Table 4 includes a description of each aquatic resource, its associated ordinary high water mark datasheet transect number, its Cowardin type, any ordinary high water mark indicators present, the dominant vegetation, hydric soils, the location, and the acreage/linear feet.

Table 4. Potential Aquatic Resources and Upland Areas within the Review Area

Feature Name	OHWM Datasheet Transect	Cowardin[1]	Ordinary High Water Mark Indicators	Dominant Vegetation	Hydric Soils[2]	Location (Lat/Long)	Acreage/ Linear Feet
Aquatic Resources							
Feature A	Transects A and B	Riverine	Drift and/or debris; presence of bed and bank; soil development; surface relief	Mostly unvegetated with some Sonoran mixed woody and succulent scrub vegetation	No	32.633619, -116.166389	0.09/790
Borrow pit 1	—	—	Mud cracks	Unvegetated with sparse tamarisk (*Tamarix ramosissima*)	No	32.632046, -116.170317	0.18
Borrow pit 2	—	—	Minimal mud cracks	Unvegetated with sparse tamarisk (*Tamarix ramosissima*)	Yes	32.628178, -116.176196	1.49
N/A	Transect C	—	None	Disturbed habitat	No	32.627400, -116.168333	N/A
N/A	Transect D	—	None	Disturbed habitat	Yes	32.613358, -116.176944	N/A

Notes: OHWM = ordinary high water mark.
1 USFWS 2019.
2 These soils have a hydric rating based on the State Soil Data (USDA 2020).

Item 10: Review Area Description

The Review Area is located south of Interstate 8 within private lands located immediately east of the community of Jacumba Hot Springs and adjacent to the U.S./Mexico Border in eastern San Diego County, California (Figure 1, Project Location). The Review Area is situated south and west of Carrizo Gorge Road and immediately north of the U.S./Mexico Border. The Review Area lies within the Jacumba U.S. Geological Survey 7.5-minute quadrangle, Townships 17 South and 18 South, Range 8 East, Sections 4, 5, 8, 9, 32, and 33 (Figure 1). The elevation range within the Review Area is from 2,720 feet to 3,360 feet above mean sea level.

Portions of the site were previously used for agricultural purposes and the central areas are relatively flat. The eastern and western portions are gentle to steep hillslopes. There are numerous dirt roads traversing the site, and the San Diego and Arizona Eastern Railway is located along the western side of the site.

Item 11: Hydrology

The proposed project falls within the Jacumba Valley hydrologic subarea of the Jacumba hydrologic area located within the Anza Borrego hydrologic unit (Figure 4, Hydrologic Setting). Table 5 shows the hydrologic unit, hydrologic area, and hydrologic subarea information based on the Water Quality Control Plan for the Colorado River Basin (Region No. 7) (RWQCB 2006).

Table 5. Project Hydrologic Characteristics

Hydrologic Unit	Hydrologic Area	Hydrologic Subarea
Anza Borrego (722.00)	Jacumba (722.70)	Jacumba Valley (722.72)

The Review Area is less than 1% of the area encompassed by the Jacumba Valley hydrologic subarea. The region can be characterized as relatively arid and dominated by ephemeral drainages that convey runoff during and/or shortly after rain events—there are no permanent bodies of water in or near the Review Area. Surface and subsurface water generally flows north via shallow drainages to a floodplain (named Carrizo Gorge Creek (SANGIS 2019)) that eventually flows into the northerly draining Carrizo Creek, which eventually flows into the Carrizo Wash. The Carrizo Wash drains into the San Felipe Creek. The endpoint of the watershed is the Salton Sea.

A WETS table is provided in Attachment E.

Item 12: Remote Sensing

Remote sensing was not used for the delineation.

Item 13: Soils

Soil types within the Review Area are shown on Figure 3. Soils mapped within the Review Area include acid igneous rock land; Carrizo very gravelly sand, 0% to 9% slopes; Indio silt loam, 0% to 2% slopes; Indio silt loam, 2% to 5% slopes; Indio silt loam, saline, 0% to 2% slopes; Ramona sandy loam, 9% to 15% slopes, eroded; Reiff fine sandy loam, 0% to 2% flops; Rositas loamy coarse sand, 2% to 9% slopes; sloping gullied land; and stony land (USDA 2019).

Item 14: Site Location Maps

All maps are provided in Attachment C.

Item 15: Aquatic Features Spreadsheet

A copy of the OMBIL Regulatory Module Bulk Upload Aquatic Resources or Consolidated Excel spreadsheet is not submitted with this memo because Table 4, Potential Aquatic Resources and Upland Areas within the Review Area, provides all of the information requested.

Item 16: Delineation Maps

All maps are provided in Attachment C.

Item 17: Photographs

Photos of the Review Area are provided in Attachment F.

Item 18: Data Forms

Completed wetland data determination forms and ordinary high water mark datasheets are provided in Attachment D.

Item 19: Methods

Potential aquatic resources and upland areas were mapped in the field using a Trimble GeoXT GPS with submeter accuracy. The delineators determined the extent of U.S. Army Corps of Engineers jurisdiction using the ordinary high water mark as outlined in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2008a) and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2010). Potential wetlands were assessed using the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008b).

Item 20: Digital Data

Geographic information system data is provided with this application submittal.

References

ACOE (U.S. Army Corps of Engineers). 1987. Corps of Engineers Wetlands Delineation Manual. Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. January 1987. http://www.cpe.rutgers.edu/Wetlands/1987-Army-Corps-Wetlands-Delineation-Manual.pdf.

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USGS (U.S. Geological Survey). 2018. "Flow lines, water points, watershed boundaries" [digital GIS data]. National Hydrography Dataset website. August 27, 2018. http://nhd.usgs.gov/.

Attachment A

Request for Corps Jurisdictional Determination Form

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: District Name Here

- I am requesting a JD on property located at: Carrizo Gorge Road and Old Highway 80
  (Street Address)
  City/Township/Parish: Jacumba County: San Diego State: _____
  Acreage of Parcel/Review Area for JD: 1,340
  Section: 5 Township: 18 South Range: 8 East
  Latitude (decimal degrees): 32.63673100000 Longitude (decimal degrees): -116.17861200000
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ☑ I currently own this property. ___ I plan to purchase this property.
  ☐ I am an agent/consultant acting on behalf of the requestor.
  ☐ Other (please explain): _____.
- Reason for request: (check as many as applicable)
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ☐ A Corps JD is required in order to obtain my local/state authorization.
  ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ☐ I believe that the site may be comprised entirely of dry land.
  ☐ Other: _____
- Type of determination being requested:
  ☐ I am requesting an approved JD.
  ☑ I am requesting a preliminary JD.
  ☐ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ☐ I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

*Signature: Digitally signed by Kishore Madduri DN: cn=Kishore Madduri, o=US, ou=Jacumba Valley Ranch, email=jacumbavalleyranch@gmail.com Date: 2019.11.25 23:11:07 -07'00' Date: March 25, 2020

- Typed or printed name: KISHORE MADDURI
  Company name: JACUMBA VALLEY RANCH LLC
  Address: 2423 CAMINO DEL RIO S, STE#212
  SAN DIEGO 92108
  Daytime phone no.: 408-338-6052
  Email address: JACUMBAVALLEYRANCH@GMAIL.COM

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Attachment B

Preliminary Jurisdictional Determination Form

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office: Los Angeles District | File/ORM #: SPL-2019-00339 | PJD Date: Mar 27, 2020

State: CA | City/County: Jacumba/San Diego

Nearest Waterbody: Salton Sea

Location: TRS, LatLong or UTM: 32.632046, -116.170317

Name/ Address of Person Requesting PJD: Callie Amoaku/Patricia Schuyler
605 Third Street
Encinitas, California 92024

Identify (Estimate) Amount of Waters in the Review Area:

Non-Wetland Waters: ____ linear ft ____ width ____ acres | Stream Flow:

Wetlands: ____ acre(s) | Cowardin Class:

Name of Any Water Bodies on the Site Identified as Section 10 Waters: Tidal: | Non-Tidal:

☐ Office (Desk) Determination
☑ Field Determination: | Date of Field Trip: see report

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☑ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☑ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps
- ☐ Corps navigable waters' study:
- ☑ U.S. Geological Survey Hydrologic Atlas:
  - ☑ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☑ U.S. Geological Survey map(s). Cite quad name: Jacumba
- ☑ USDA Natural Resources Conservation Service Soil Survey. Citation: USDA 2019
- ☑ National wetlands inventory map(s). Cite name: USFWS 2019
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is:
- ☐ Photographs: ☐ Aerial (Name & Date): ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Callie Amoaku

Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A - Sites

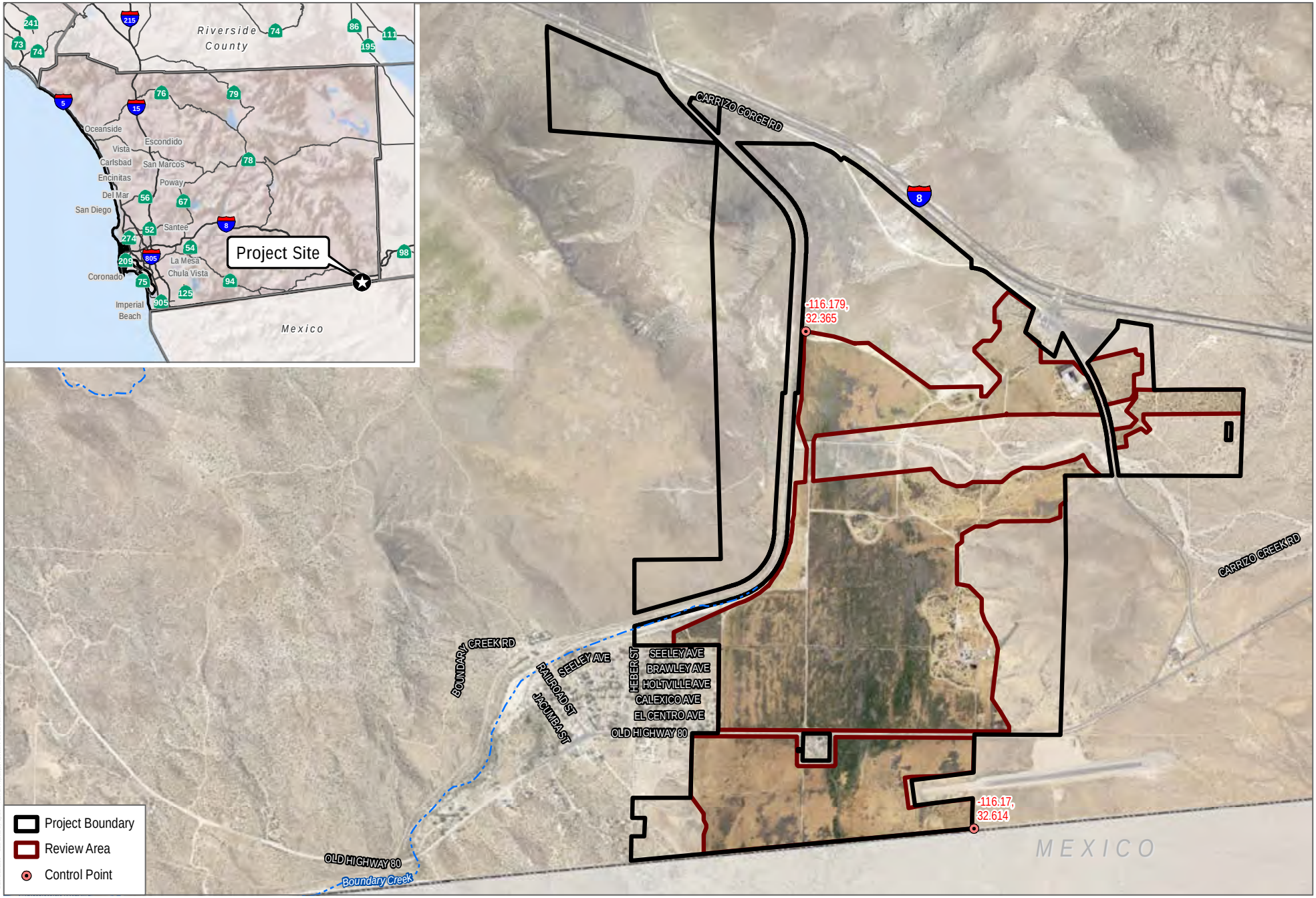
District Office	Los Angeles District	File/ORM #	SPL-2019-00339	PJD Date:	Mar 27, 2020		
State	CA	City/County	Jacumba/San Diego	Person Requestinq PJD	Callie Amoaku/Patricia Schuyler		

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource

Notes:

Attachment C

Figures



SOURCE: SANGIS 2017, 2020; ESRI 2020

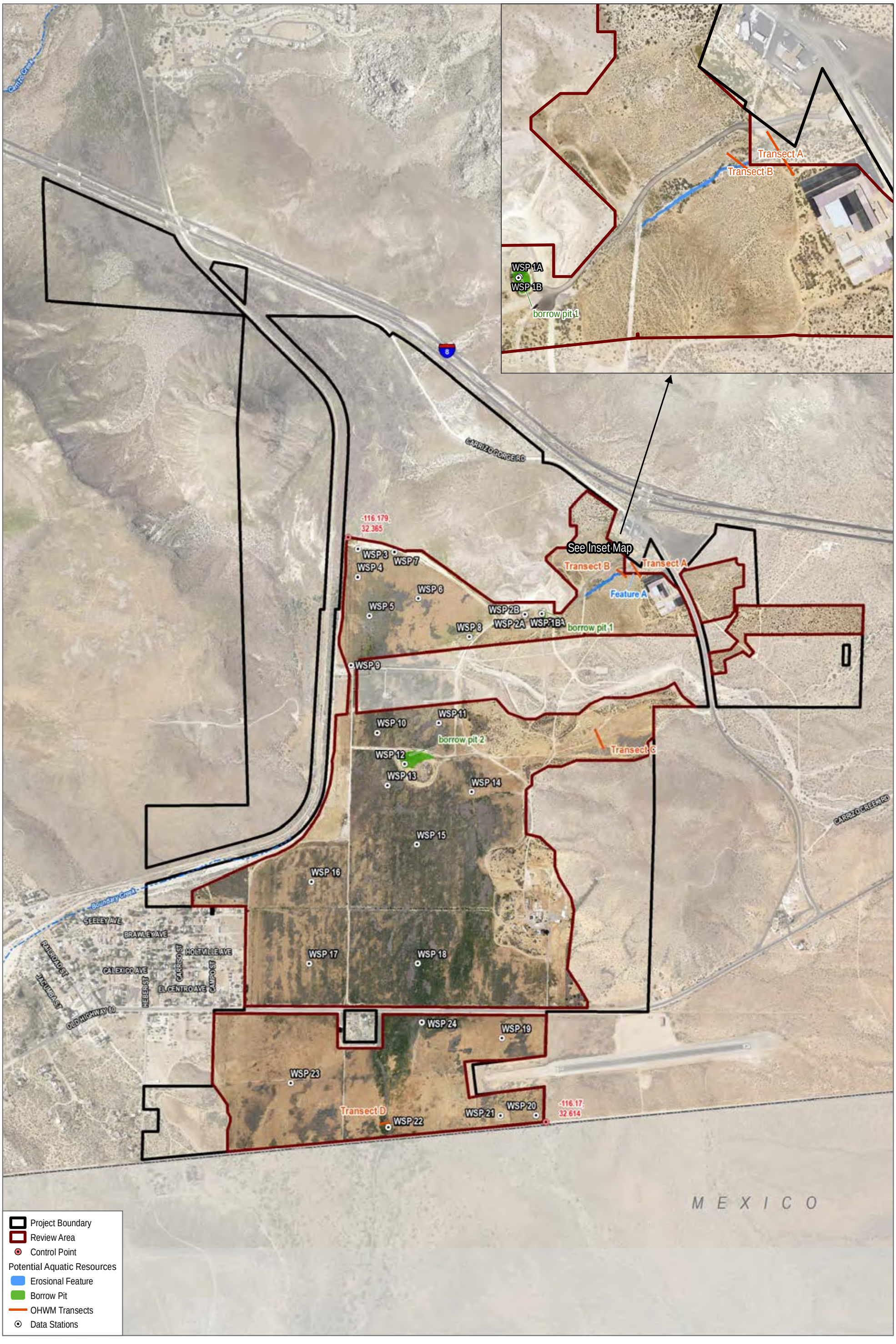
DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Aquatic Resoruces Delineation Report for JVR Energy Park Project



SOURCE: SANGIS 2017

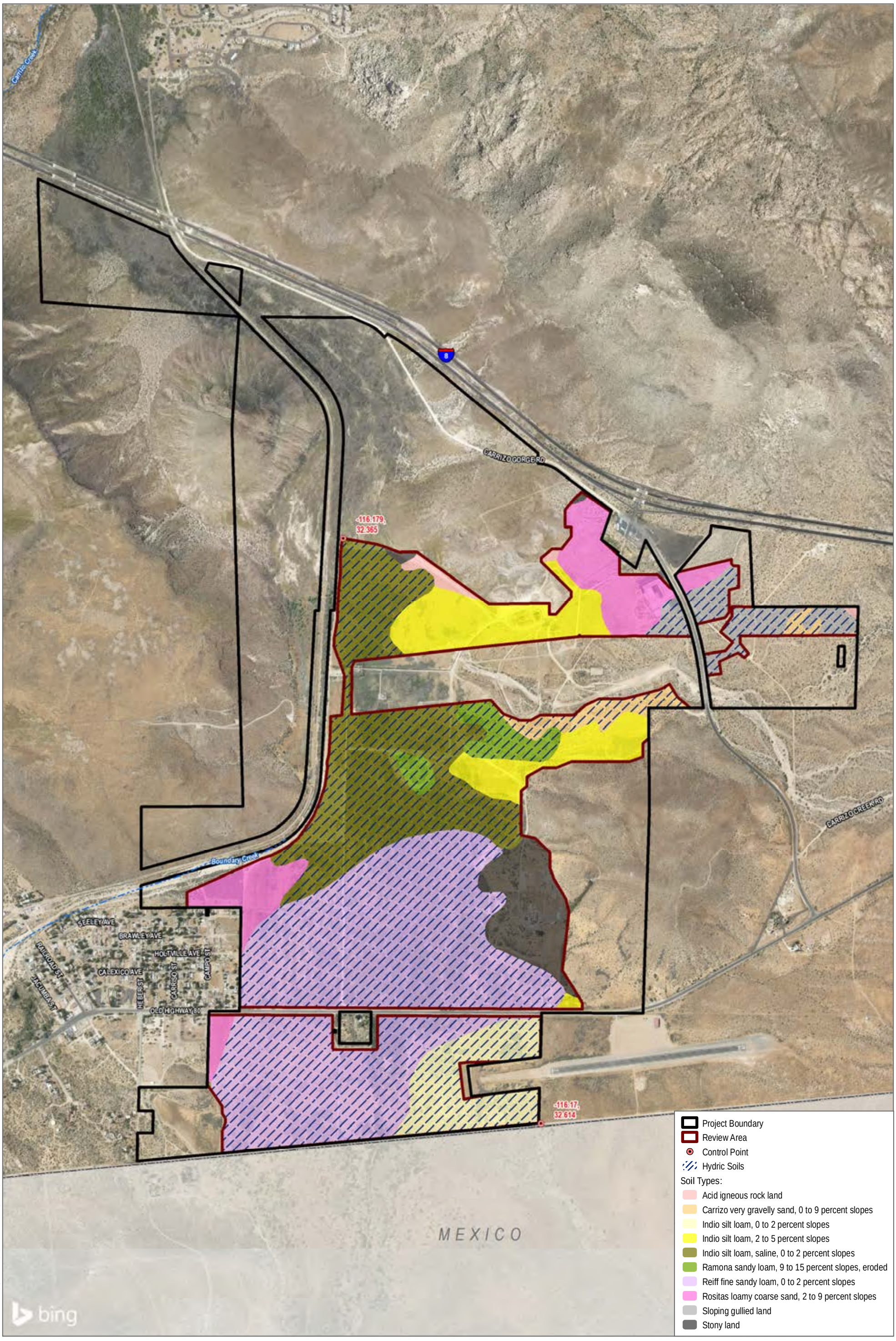
DUDEK

0 500 1,000 Feet

FIGURE 2

Potential Aquatic Resources

Aquatic Resoruces Delineation Report for JVR Energy Park Project



SOURCE: USDA 2019a, b; USGS 2018; SANGIS 2017, 2020

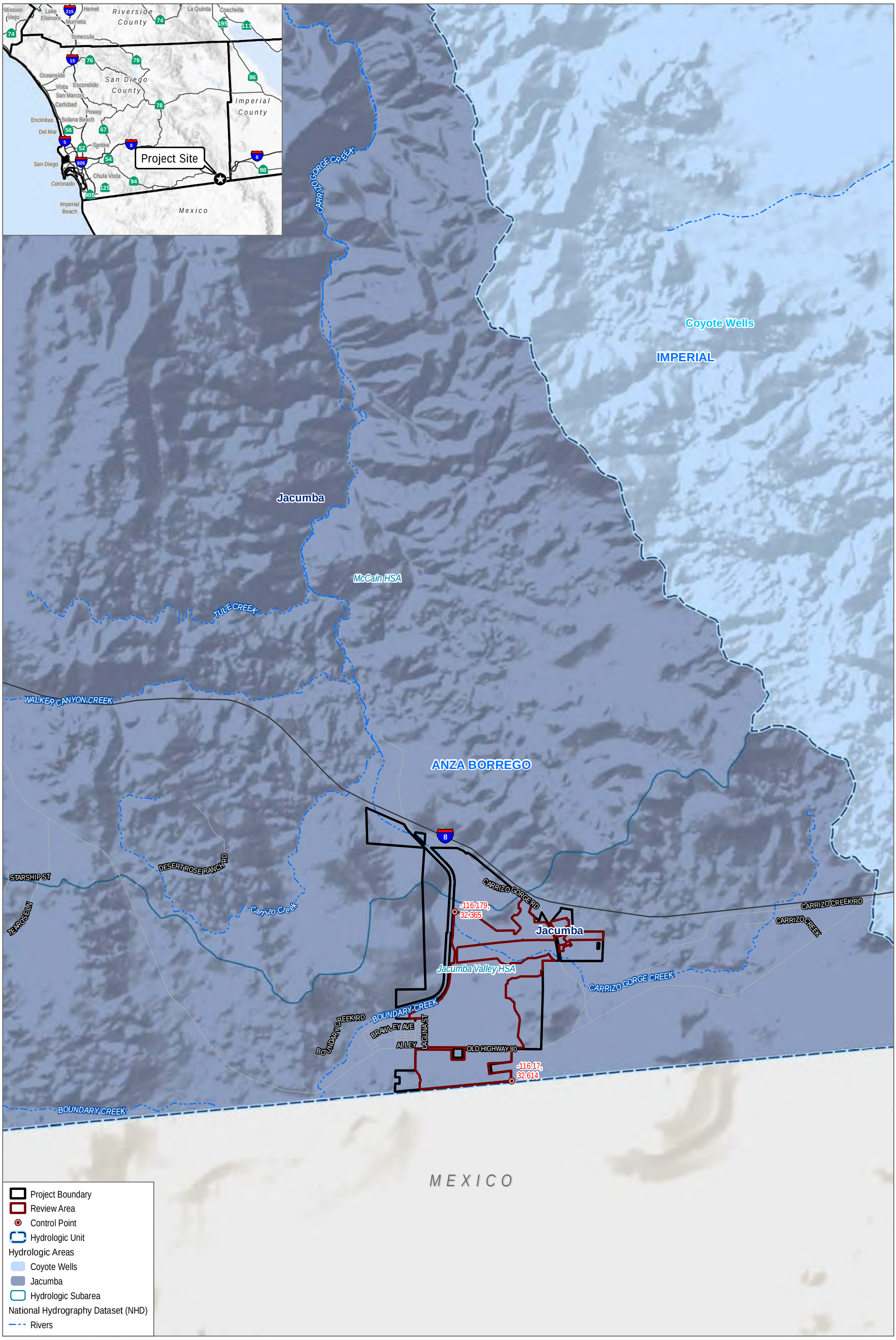
DUDEK

0 500 1,000 Feet

FIGURE 3

Soils

Aquatic Resoruces Delineation Report for JVR Energy Park Project



SOURCE: USGS 2020; SANGIS 2017, 2020

DUDEK

FIGURE 4

Hydrologic Setting

Aquatic Resoruces Delineation Report for JVR Energy Park Project

Attachment D

Data Station Forms and OHWM Datasheets

Transect A

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Jacumba Valley Ranch
Project Number: 10743
Stream: Feature 3
Investigator(s): Shana Carey

Date: 9/24/19
Town: Jct S
Photo begin file#:

Time:
State: CA
Photo end file#:

Y ☐ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☐ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Potential anthropogenic influences on the channel system:

Current directing runoff from east side of Jacumba Gorge Road and adjacent parking lot.

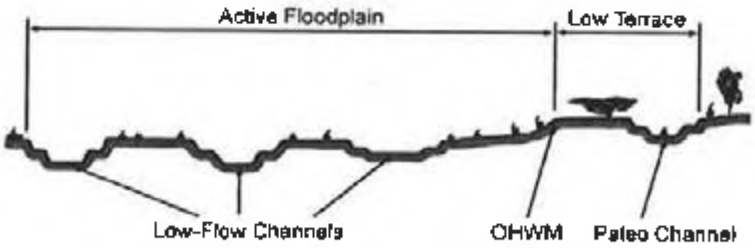
Brief site description:

Erosional feature formed in gully.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 2019
- ☐ Topographic maps
- ☑ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 10743 **Cross section ID:** Transect 1 **Date:** 9/24/19 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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

Community successional stage:

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

Indicators:

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

Comments:

Transect B

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: JVR
Project Number:
Stream: Transect 11
Investigator(s): Cody Schantz, Shawn Lopez
Date: 2/24/20
Town:
Photo begin file#:
Time: n/a
State:
Photo end file#:

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

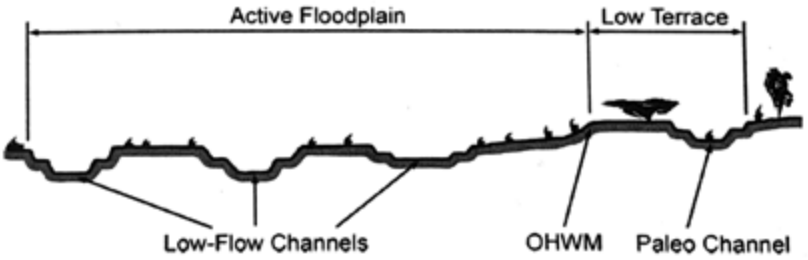
Potential anthropogenic influences on the channel system:
Nearby roads

Brief site description: Drainage coming off Carrizo Gorge Rd. onto project site.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2020
- ☒ Topographic maps
- ☐ Geologic maps
- ☒ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☒ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

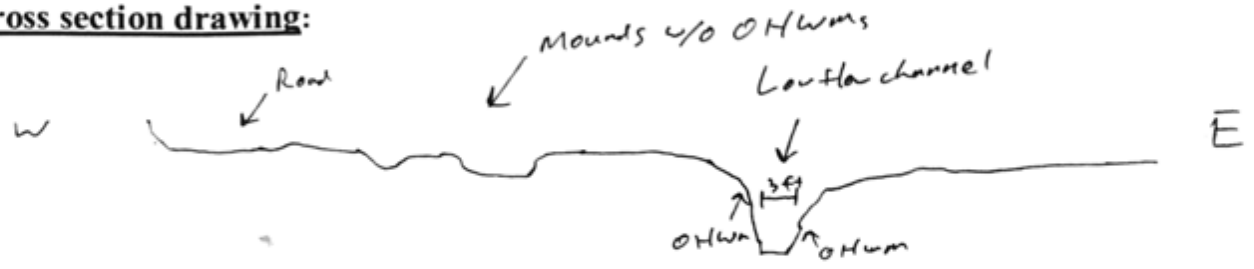


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Project ID: **Cross section ID:** T11 **Date:** 2/24/2020 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Steep, dramatic cut banks and sandy channel bottom. No OHWM indicators associated w/ mounds to W.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

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

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [x] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments: Drift deposits apparent on sides of channel along w/ obvious banks and bed. Channel comes from culvert fed by upstream road runoff.

Transect C

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: JVR
Project Number:
Stream: ~~[illegible]~~ T12
Investigator(s): Cady Schaaf + Shane Carey

Date: 2/24/2020 **Time:** n/a
Town: Jacumba **State:**
Photo begin file#: **Photo end file#:**

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Potential anthropogenic influences on the channel system:

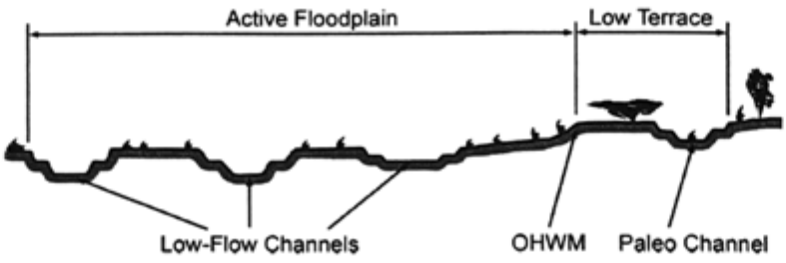
Brief site description:
Mounded area on eastern portion of site

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 2020
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☑ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via: None - No OHWM

☐ Mapping on aerial photograph ☑ GPS
☐ Digitized on computer ☐ Other:

Project ID: **Cross section ID:** T2 **Date:** 2/24/2020 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments: No OHWM indicators; No signs of flow or water conveyance – only small changes in relief. Not even a consistent scale.

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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

Community successional stage:

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

Indicators:

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

Comments:

Transect D

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: JVR
Project Number: 10743
Stream: TD
Investigator(s): Cody Schaaf, S Lara Carey

Date: 2/24/20
Town:
Photo begin file#:

Time:
State:
Photo end file#:

☒ Y / ☐ N Do normal circumstances exist on the site?

☐ Y / ☐ N Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Potential anthropogenic influences on the channel system:
Nearby roads, border, and residential lots/homesteads.

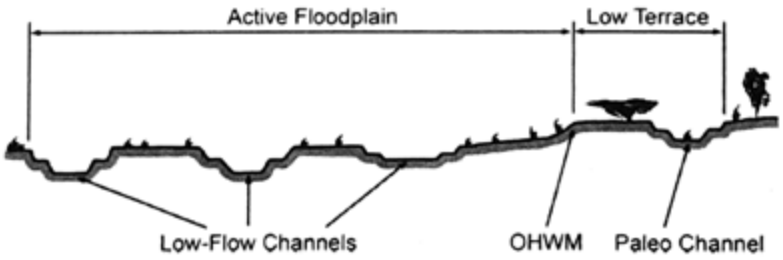
Brief site description: Area just north of border wall showing change in vegetation in open agricultural field

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2020
- ☒ Topographic maps
- ☐ Geologic maps
- ☒ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☒ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Project ID: 10743 **Cross section ID:** TD **Date:** 2/24/20 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☒ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments: No indicators of flow/standing water observed. Mounds present in places but topography and relief do not suggest any flow or concentration of water that would lead this to be characterized as a feature. Data station rules out hydric soils/veg.

Floodplain unit:

☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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

Community successional stage:

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

Indicators:

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

Comments: No feature or hydrologic unit present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 01/20/19

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 1a

Investigator(s): E. Bergman | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Artificial basin within terrace | Local relief (concave, convex, none): Convex | Slope (%): N/A

Subregion (LRR): C - Mediterranean California | Lat: 32.632047 | Long: -116.170317 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, 2 to 5 percent slopes | NWI classification: N/A

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

Are Vegetation [X] Soil [X] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [X] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Non-wetland confirmation point. Field data point is taken within the borrow pit. Floor of basin is bare to sparsely vegetated.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:	%		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Point of investigation is unvegetated (majority of the basin floor of the borrow pit is unvegetated).

SOIL

Sampling Point: 1a

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A	N/A			Silt	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil unit mapped at the point of investigation is Indio silt loam, 2 to 5 percent slopes, which is not listed as hydric by the NRCS. No hydric indicators observed at the point of investigation. Strong odor of aerobic actinomycetes ('earthly smell') indicates inundation (anaerobic conditions) may not be long-term enough to create reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

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

Wetland Hydrology Present? Yes ◉ No ○

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

N/A. This delineation has occurred within 1-week of multiple rainfall events and within a prolonged 8-year drought.

Remarks: Basin collects and retains water from precipitation events and imported water (dewatering pipes and their small outfalls occupy upper bank area of borrow pit). It is unknown if excavation to approximately 10 feet below natural grade has resulted in basin being in contact to groundwater related to the Carrizo Creek groundwater basin.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 01/20/19

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 1b

Investigator(s): E. Bergman | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Artificial basin within terrace | Local relief (concave, convex, none): Convex | Slope (%): N/A

Subregion (LRR): C - Mediterranean California | Lat: 32.632063 | Long: -116.170296 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, 2 to 5 percent slopes | NWI classification: N/A

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

Are Vegetation [X] Soil [X] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [X] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Wetland confirmation point. Field data point is taken within the borrow pit that is occupied by a small monotypic stand of tamarisk shoots. Floor of basin is bare to sparsely vegetated.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *N/A*			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Tamarix ramosissima*	35	Yes	FAC
2.			
3.			
4.			
5.			
Total Cover:	35 %		
Herb Stratum			
1. *N/A*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *N/A*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 65 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	35	x 3 =	105
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	35 (A)		105 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Small stack of tamarisk scrub (in the form of developing saplings and shoots) occupies small convex spoils pile (the remaining majority of the basin floor of the borrow pit is unvegetated).

SOIL

Sampling Point: 1b

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A	N/A			Silt	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Indio silt loam, 2 to 5 percent slopes is not listed as hydric by the NRCS and no hydric indicators observed. However, this soil is an entisol. Entisols rarely present hydric field indicators (as outlined by the NTCHS Field Indicators of Hydric Soils in the United States). Guidance for soil lacking hydric indicators is found in the 2008 Supplement Chapter 3, page 27 and states that 'a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators'. Guidance used for problem wetland situations in the Arid West for a soil considered hydric (or considered "hydric by definition"), but lacking hydric indicators, is found in the 2008 Supplement: Chapter 5, page 96, which outlines that a soil can be considered hydric with faint or no hydric soil indicators. This soil can also be considered hydric by definition because it underlies an area where both hydrophytic vegetation & wetland hydrology are simultaneously present at the point of investigation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

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

Wetland Hydrology Present? Yes ◉ No ○

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

N/A. This delineation has occurred within I-week of multiple rainfall events and within a prolonged 8-year drought.

Remarks: Basin collects and retains water from precipitation events and imported water (dewatering pipes and their small outfalls occupy upper bank area of borrow pit). It is unknown if excavation to approximately 10 feet below natural grade has resulted in basin being in contact to groundwater related to the Carrizo Creek groundwater basin.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 2a

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

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

Subregion (LRR): C - Mediterranean California | Lat: 32.63209 | Long: -116.170712 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, 2 to 5 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in bottom of small borrow pit with deep crevices in soil.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Tamarix ramosissima*	5	Yes	FAC
2.			
3.			
4.			
5.			
Total Cover:	5 %		
Herb Stratum			
1. *Hirschfeldia incana*	2	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 93 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	5	x 3 =	15
FACU species		x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	7 (A)		25 (B)

Prevalence Index = B/A = 3.57

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 2a

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/4	75					Loam	
0-14	10YR 4/3	25					Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: Minor soil cracking but not indicative of ponding water; soil cracking not observed at bottom of pit. Because soil cracking can occur in a variety of situations this may not be enough to serve as a primary indicator, particularly when other indicators are lacking. As noted in the Arid West Supplement, surface soil cracks "may also occur in temporary ponds and puddles in nonwetlands; these situations are easily distinguished by the absence of hydrophytic vegetation and/or hydric soils".

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 2b

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

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

Subregion (LRR): C - Mediterranean California | Lat: 32.63209 | Long: -116.170712 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, 2 to 5 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in patch of tamarisk above 2a pit.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tamarix ramosissima*	25	Yes	FAC
2.			
3.			
4.			
Total Cover:	25 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hirschfeldia incana*	2		UPL
2. *Cynosurus echinatus*	20	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	22 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	25	x 3 =	75
FACU species		x 4 =	0
UPL species	22	x 5 =	110
Column Totals:	47 (A)		185 (B)

Prevalence Index = B/A = 3.94

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 2b

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 4/3	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 3

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.63209 | Long: -116.170712 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field adjacent to dirt road near small tamarisk patch.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tamarix ramosissima*	1	Yes	FAC
2.			
3.			
4.			
Total Cover:	1 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	40	Yes	UPL
2. *Hordeum murinum*	40	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	80 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	1	x 3 =	3
FACU species	40	x 4 =	160
UPL species	40	x 5 =	200
Column Totals:	81 (A)		363 (B)

Prevalence Index = B/A = 4.48

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/2	100					Clay loam	
4-14	10YR 3/2	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 4

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.63209 | Long: -116.170712 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	80	Yes	UPL
2. *Atriplex canescens*	1		UPL
3. *Erodium cicutarium*	1		UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	82 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum: 10 % | % Cover of Biotic Crust: %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	82	x 5 =	410
Column Totals:	82 (A)		410 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	10YR 3/2	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 5

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.63209 Long: -116.170712 Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Plot taken in historic ag field in dead Atriplex sp. stand.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hordeum murinum*	1	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	1 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	1	x 4 =	4
UPL species		x 5 =	0
Column Totals:	1 (A)		4 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks: Most vegetation cover is dead Atriplex sp.

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/2	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 6

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.63209 | Long: -116.170712 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field adjacent to Atriplex canescens.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Atriplex canescens*	10	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	10 %		
Herb Stratum			
1. *Erodium cicutarium*	50	Yes	UPL
2. *Sisymbrium irio*	40	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	90 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/2	100					Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 7

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.63209 | Long: -116.170712 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in small low spot adjacent to dirt road showing minor soil cracking.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Erodium cicutarium*	1	No	UPL
2. *Sisymbrium irio*	30	Yes	UPL
3. *Atriplex canescens*	2	No	UPL
4. *Hordeum murinum*	2	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	35 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum: 75 % | % Cover of Biotic Crust: %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	2	x 4 =	8
UPL species	33	x 5 =	165
Column Totals:	35 (A)		173 (B)

Prevalence Index = B/A = 4.94

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/2	100					Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: Minor soil surface cracking. Area shows some evidence of temporary ponding; however, as noted in the Arid West Supplement, surface soil cracks do not always indicate hydrology "as they may also occur in temporary ponds and puddles in nonwetlands; these situations are easily distinguished by the absence of hydrophytic vegetation and/or hydric soils". Given the lack of other wetland indicators, the surface soil cracks observed here are not considered a hydrology indicator.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 8

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.63209 | Long: -116.170712 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in grassy area in historic ag field adjacent to road.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Erodium cicutarium*	30	Yes	UPL
2. *Sisymbrium irio*	1		UPL
3. *Hordeum murinum*	50	Yes	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	81 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum: 20 % | % Cover of Biotic Crust: %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	50	x 4 =	200
UPL species	31	x 5 =	155
Column Totals:	81 (A)		355 (B)

Prevalence Index = B/A = 4.38

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 8

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/2	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 9

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.630200 Long: -116.178543 Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in small roadside ditch where tamarisk are concentrated adjacent to road and field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tamarix ramosissima*	75	Yes	FAC
2.			
3.			
4.			
Total Cover:	75 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	10	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	75	x 3 =	225
FACU species		x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	85 (A)		275 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-3	10YR 3/2	100					Loamy sand	
3-6	10YR 5/3	100					Sand	
6-14	10 YR 3/2	98	5YR 4/6	2	C	PL	Sandy cl loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 10

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.628178 | Long: -116.176196 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	20	Yes	UPL
2. *Hordeum murinum*	2	No	FACU
3. *Descurainia pinnata*	15	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	37 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	2	x 4 =	8
UPL species	35	x 5 =	175
Column Totals:	37 (A)		183 (B)

Prevalence Index = B/A = 4.95

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 10

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 4/3	100					Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 11

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.628178 | Long: -116.176196 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	5	No	UPL
2. *Schismus barbatus*	50	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	55 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 50 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	55	x 5 =	275
Column Totals:	55 (A)		275 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 12

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.628178 | Long: -116.176196 | Datum: NAD 83

Soil Map Unit Name: Ramona sandy loam, 9 to 15 percent slopes, eroded | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Plot taken in bottom of small pit with Tamarisk. Area appears previously disturbed. Water appears to pond here.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Tamarix ramosissima*	15	Yes	FAC
2.			
3.			
4.			
5.			
Total Cover:	15 %		
Herb Stratum			
1. *Erodium cicutarium*	1	Yes	UPL
2. *Schismus barbatus*	1	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 99 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	15	x 3 =	45
FACU species		x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	17 (A)		55 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Lots of dead Sisymbrium irio and Tamarix surrounding sample point.

SOIL

Sampling Point: 12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/2	100					Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks: Soil cracks present. Ponding likely in this area.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 13

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.628178 | Long: -116.176196 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hirschfeldia incana*	60	Yes	UPL
2. *Schismus barbatus*	15	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	75 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 25 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	75	x 5 =	375
Column Totals:	75 (A)		375 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 13

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	99	5YR 4/4	1	C	PL	Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Minor redox, but no indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 14

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.628178 Long: -116.176196 Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	3	No	UPL
2. *Schismus barbatus*	10	No	UPL
3. *Erodium cicutarium*	80	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	93 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 7 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	93	x 5 =	465
Column Totals:	93 (A)		465 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: 14

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 15

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.628178 Long: -116.176196 Datum: NAD 83

Soil Map Unit Name: Reiff fine sandy loam, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	5	No	UPL
2. *Hirschfeldia incana*	10	No	UPL
3. *Descurainia pinnata*	80	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	95	x 5 =	475
Column Totals:	95 (A)		475 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: 15

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/3	100					Loam	
4-14	10YR 3/3	98	5YR 4/4	2	C	PL	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Slight redox in lower layer, but no indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 16

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.628178 | Long: -116.176196 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, saline, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	5		UPL
2. *Hirschfeldia incana*	30	Yes	UPL
3. *Descurainia pinnata*	60	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	95	x 5 =	475
Column Totals:	95 (A)		475 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 16

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 17

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.619755 Long: -116.176634 Datum: NAD 83

Soil Map Unit Name: Reiff fine sandy loam, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sisymbrium irio*	5		UPL
2. *Hirschfeldia incana*	20	Yes	UPL
3. *Descurainia pinnata*	30	Yes	UPL
4. *Schismus barbatus*	20	Yes	UPL
5.			
6.			
7.			
8.			
Total Cover:	75 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 30 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	75	x 5 =	375
Column Totals:	75 (A)		375 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: 17

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 18

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.619755 Long: -116.176634 Datum: NAD 83

Soil Map Unit Name: Reiff fine sandy loam, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Plot taken in historic ag field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1.			
2. *Hirschfeldia incana*	25	Yes	UPL
3. *Descurainia pinnata*	3	No	UPL
4. *Schismus barbatus*	3	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	31 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	31	x 5 =	155
Column Totals:	31 (A)		155 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks: Lots of dead vegetation.

SOIL

Sampling Point: 18

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 19

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.619755 Long: -116.176634 Datum: NAD 83

Soil Map Unit Name: Indio silt loam, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Plot taken in historic ag field. Just north of airstrip adjacent to border wall.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Schismus barbatus*	15	No	UPL
2. *Hirschfeldia incana*	15	No	UPL
3. *Descurainia pinnata*	30	Yes	UPL
4. *Erodium cicutarium*	30	Yes	UPL
5.			
6.			
7.			
8.			
Total Cover:	90 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	90	x 5 =	450
Column Totals:	90 (A)		450 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: 19

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-10	10YR 3/3	100					Loam	
10-14	10YR 3/3	99	2.5YR 3/6	1	C	PL	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Slight redox in lower layer. No indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 20

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.619755 | Long: -116.176634 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field. Just south of airstrip adjacent to border wall.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Schismus barbatus*	20	Yes	UPL
2. *Cryptantha intermedia*	5	No	UPL
3. *Hordeum murinum*	10	No	FACU
4. *Erodium cicutarium*	10	No	UPL
5. *Amsinckia menziesii*	50	Yes	UPL
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	10	x 4 =	40
UPL species	85	x 5 =	425
Column Totals:	95 (A)		465 (B)

Prevalence Index = B/A = 4.89

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 20

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture[3]	Remarks
0-14	10YR 3/4	100					Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 21

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.613715 | Long: -116.172211 | Datum: NAD 83

Soil Map Unit Name: Indio silt loam, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in artificial basin approximately 70 x 50 meters. Bottom of basin very even. Mostly bare but several native shrubs and non-native herbs present.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma acradenia*	5	Yes	FACU
2.			
3.			
4.			
5.			
Total Cover:	5 %		
Herb Stratum			
1. *Schismus barbatus*	15	Yes	UPL
2. *Cryptantha intermedia*	5	No	UPL
3. *Erodium cicutarium*	10	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 70 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species	30	x 5 =	150
Column Totals:	35 (A)		170 (B)

Prevalence Index = B/A = 4.86

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 21

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/4	100					Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 22

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.619755 | Long: -116.176634 | Datum: NAD 83

Soil Map Unit Name: Reiff fine sandy loam, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field just north of border wall.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1.			
2. *Hirschfeldia incana*	20	Yes	UPL
3. *Schismus barbatus*	30	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	50 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	50 (A)		250 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 22

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/4	100					Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: Slight surface soil cracking. However, as noted in the Arid West Supplement, surface soil cracks do not always indicate hydrology "as they may also occur in temporary ponds and puddles in nonwetlands; these situations are easily distinguished by the absence of hydrophytic vegetation and/or hydric soils". Given the lack of other wetland indicators, the surface soil cracks observed here are not considered a hydrology indicator.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch | City/County: Jacumba/San Diego | Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC | State: CA | Sampling Point: 23

Investigator(s): C. Schaaf, S. Carey | Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 32.619755 | Long: -116.176634 | Datum: NAD 83

Soil Map Unit Name: Reiff fine sandy loam, 0 to 2 percent slopes | NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field just north of border wall.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hordeum murinum*	20	Yes	FACU
2. *Erodium cicutarium*	50	Yes	UPL
3. *Schismus barbatus*	15	Yes	UPL
4. *Sisymbrium irio*	2	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	87 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	20	x 4 =	80
UPL species	67	x 5 =	335
Column Totals:	87 (A)		415 (B)

Prevalence Index = B/A = 4.77

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 23

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Jacumba Valley Ranch City/County: Jacumba/San Diego Sampling Date: 2/24/2020

Applicant/Owner: JVR Energy Park, LLC State: CA Sampling Point: 24

Investigator(s): C. Schaaf, S. Carey Section, Township, Range: S4 T18S R8E

Landform (hillslope, terrace, etc.): Field/flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 32.619755 Long: -116.176634 Datum: NAD 83

Soil Map Unit Name: Reiff fine sandy loam, 0 to 2 percent slopes NWI classification:

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Plot taken in historic ag field just north of border wall.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hirschfeldia incana*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 90 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	10	x 4 =	40
UPL species		x 5 =	0
Column Totals:	10 (A)		40 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 24

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils:[4]

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No signs of hydrology.

Attachment E

WETS Table

WETS Table

WETS Station: CAMPO ASOS, CA								
Requested years: 1971 - 2019								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	62.0	34.5	48.2	1.86	0.58	2.21	4	-
Feb	61.3	34.1	47.7	2.28	1.01	2.78	5	-
Mar	65.7	35.1	50.4	1.12	0.52	1.36	3	-
Apr	69.2	36.9	53.0	0.76	0.21	0.84	2	-
May	75.9	41.8	58.9	0.30	0.00	0.20	1	-
Jun	85.5	45.8	65.6	0.05	0.00	0.00	0	-
Jul	91.9	54.4	73.2	0.30	0.13	0.33	1	-
Aug	92.3	54.4	73.4	0.23	0.00	0.13	1	-
Sep	87.5	50.2	68.9	0.42	0.12	0.42	1	-
Oct	77.5	43.2	60.3	-	-	-	-	-
Nov	68.9	37.3	53.1	0.76	0.36	0.91	2	-
Dec	60.7	33.4	47.0	1.70	0.51	2.01	4	-
Annual:					-	-		
Average	74.9	41.7	58.3	-	-	-	-	-
Total	-	-	-	-			-	-

GROWING SEASON DATES

Years with missing data:	24 deg = 31	28 deg = 30	32 deg = 29
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 18	28 deg = 19	32 deg = 20
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	Insufficient data	Insufficient data	5/8 to 10/22: 167 days
70 percent *	Insufficient data	Insufficient data	5/1 to 10/30: 182 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1998				1.72	0.91	0.03	0.10	0.20	0.19	0.01	0.74	1.16	5.06
1999	1.33	0.74	0.45	1.57	0.00	0.33	0.50	M0.00	0.12	0.00	0.00	0.41	5.45
2000	0.42	3.51	1.08	0.34	M0.00	0.20	0.00	0.14	0.22	0.41	0.33	0.03	6.68
2001	2.32	3.41	1.31	0.97	0.01	0.02	0.12	0.00	0.67	0.00	0.80	0.73	10.36
2002	0.32	0.09	0.82	0.49	M0.00	0.00	0.16	0.00	1.07	0.01	M0.76	1.58	5.30
2003	M0.16	3.73	M1.66	1.21	0.70	M0.00	M1.62	M0.01	M0.41	M0.00	M0.42	0.93	10.85
2004	0.36	M3.60	0.59	1.32	0.00	0.00	0.09	0.01	0.00	6.51	M0.49	M3.51	16.48
2005	4.06	3.94	1.25	0.43	0.02	M0.00	M0.45	M1.64	M0.01	0.53	0.11	0.05	12.49

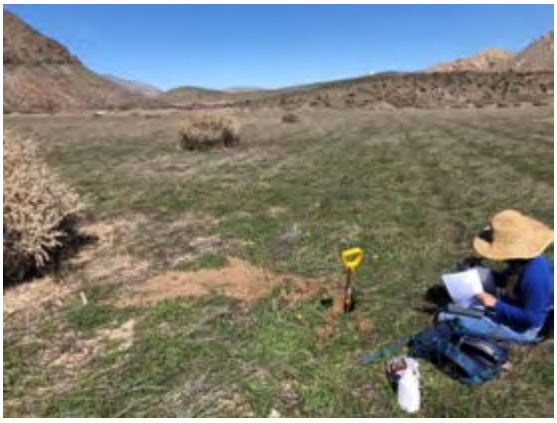
2006	0.66	M0.45	M3.37	0.07	0.18	M0.16	M0.55	0.02	M0.09	0.33	0.15	M0.92	6.95
2007	M0.56	3.27	M0.13	0.45	0.04	0.00	0.13	M0.13	M0.01	M0.18	M1.45	0.88	7.23
2008	M4.25	1.95	0.38	0.01	0.22	0.00	0.00	1.14	M0.00	M0.10	1.60	4.63	14.28
2009	M0.15	2.84	0.04	M0.19	M0.00	M0.01	M0.00	0.01	M0.02	0.03	M0.09	M4.00	7.38
2010	5.41	4.28	M2.16	1.74	0.00	0.00	0.10	0.00	M0.08	M2.90	M0.08	M2.43	19.18
2011	M0.24	4.93	1.64	0.39	0.40	0.00	0.22	M0.00	0.20	0.39	2.94	1.49	12.84
2012	0.51	M1.52	1.76	2.26	0.00	0.00	0.35	0.55	0.52	0.34	0.43	2.28	10.52
2013	2.03	0.98	1.43	0.01	0.33	0.00	0.24	0.19	1.51	0.90	0.80	0.55	8.97
2014	0.08	1.24	0.75	0.68	0.01	0.00	0.14	0.48	1.41	0.00	0.26	3.61	8.66
2015	0.36	0.67	1.45	0.27	2.31	0.27	0.51	0.01	0.59	1.06	0.76	1.25	9.51
2016	3.60	0.20	0.72	1.71	0.14	0.00	0.00	0.00	1.01	0.06	0.88	4.29	12.61
2017	6.66	3.69	0.11	0.00	0.89	0.00	0.16	0.00	0.21	0.00	0.34	0.01	12.07
2018	2.16	0.52	1.20	0.03	0.05	0.00	1.05	0.02	0.00	0.10	1.89	1.71	8.73
2019	M1.82												1.82
Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.													
Data missing for all days in a month or year is blank.													
Creation date: 2016-07-22													

Attachment F

Review Area Photos

ATTACHMENT F
Review Area Photos

	
WSP 1a	WSP 1b
	
WSP 2a	WSP 2b

	
WSP 3	WSP 4
	
WSP 5	WSP 6

	
WSP 7	WSP 8
	
WSP 9	WSP 10

	
WSP 11	WSP 12
	
WSP 13	WSP 14

	
WSP 15	WSP 16
	
WSP 17	WSP 18

	
WSP19	WSP 20
	
WSP 21	WSP 22

	
WSP 23	WSP 24
	
Transect A	Transect B

	
Culvert connected to Feature A, facing northwest	Transect C
	
Transect D	Borrow pit 1

	
Borrow pit 2	