Ocean Breeze Ranch Project

Addendum to the Biological Resources Technical Report

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BPDS2022-MUP-16-012TE

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Project Proponent:

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ACRONYMS AND ABBREVIATIONS

Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFG	California Fish and Game
CNDDB	California Natural Diversity Database
County	County of San Diego
HELIX	HELIX Environmental Planning, Inc.
HOA	Homeowners Association
MSCP	Multiple Species Conservation Program
NC	North County
PA	Planning Area
PDS	Planning and Development Services
RMP	Resource Management Plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1.0 INTRODUCTION

1.1 PURPOSE OF THE ADDENDUM REPORT

At the request of Ocean Breeze Ranch, LLC, HELIX Environmental Planning, Inc. (HELIX) has completed this addendum to the 2019 Biological Resources Technical Report (HELIX 2019) for the Ocean Breeze Ranch Project (project), and subsequent biological resources summary memo (HELIX 2024a) for the Ocean Breeze Ranch Modified Project (modified project). The purpose of this addendum is to document the existing biological conditions within the project site relative to Crotch's bumble bee (*Bombus crotchii*), a candidate species under the California Endangered Species Act (CESA), and to provide an analysis of potential impacts to this species with respect to local, state, and federal policy, as applicable. At the time of the project's original processing for project approval, Crotch's bumble bee was not listed as a candidate species under CESA. Therefore, impacts to Crotch's bumble bee were not previously analyzed for the project. This addendum report provides the biological resources technical documentation necessary for review of Crotch's bumble bee under the California Environmental Quality Act (CEQA) by County of San Diego (County) Planning and Development Services (PDS). This addendum focuses solely on Crotch's bumble bee. All other biological resources analyses and documentation required under CEQA for the project was previously conducted and approved by the County's Planning Commission in December 2019, with minor modifications to the previously approved project being addressed in an updated CEQA 15183 Checklist for the modified project.

1.2 PROJECT LOCATION AND DESCRIPTION

1.2.1 Project Location

The approximately 1,402.5-acre project site (site) is located west of Interstate 15, south of State Route 76, in the unincorporated community of Bonsall in north San Diego County, California (Figure 1, *Regional Location*). More specifically, the site occurs immediately north of portions of West Lilac Road and south of the San Luis Rey River, at 5820 West Lilac Road, Bonsall, California (Figure 2, *Aerial Photograph*). The site is depicted within Sections 13, 14, 15, 20, 21, 22, and 23 of Township 10 South, Range 3 West of the *Bonsall, California* U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 3, *USGS Topography*). Primary access to the site is provided by West Lilac Road.

The site occurs within the boundaries of the Draft North County (NC) Multiple Species Conservation Program (MSCP) Plan, which has not yet been approved or adopted.

1.2.2 Project Description

The project includes two components: a planned residential development and a private equestrian facility (Figure 4, *Site Plan*). The planned residential development includes 396 residential lots divided into three planning areas (PA1, PA2, and PA3). The planned residential development also included parks, roads, and landscaped areas. The existing equestrian facility, consisting of maintained equestrian pastures and previously constructed buildings and structures, would remain active within the site.

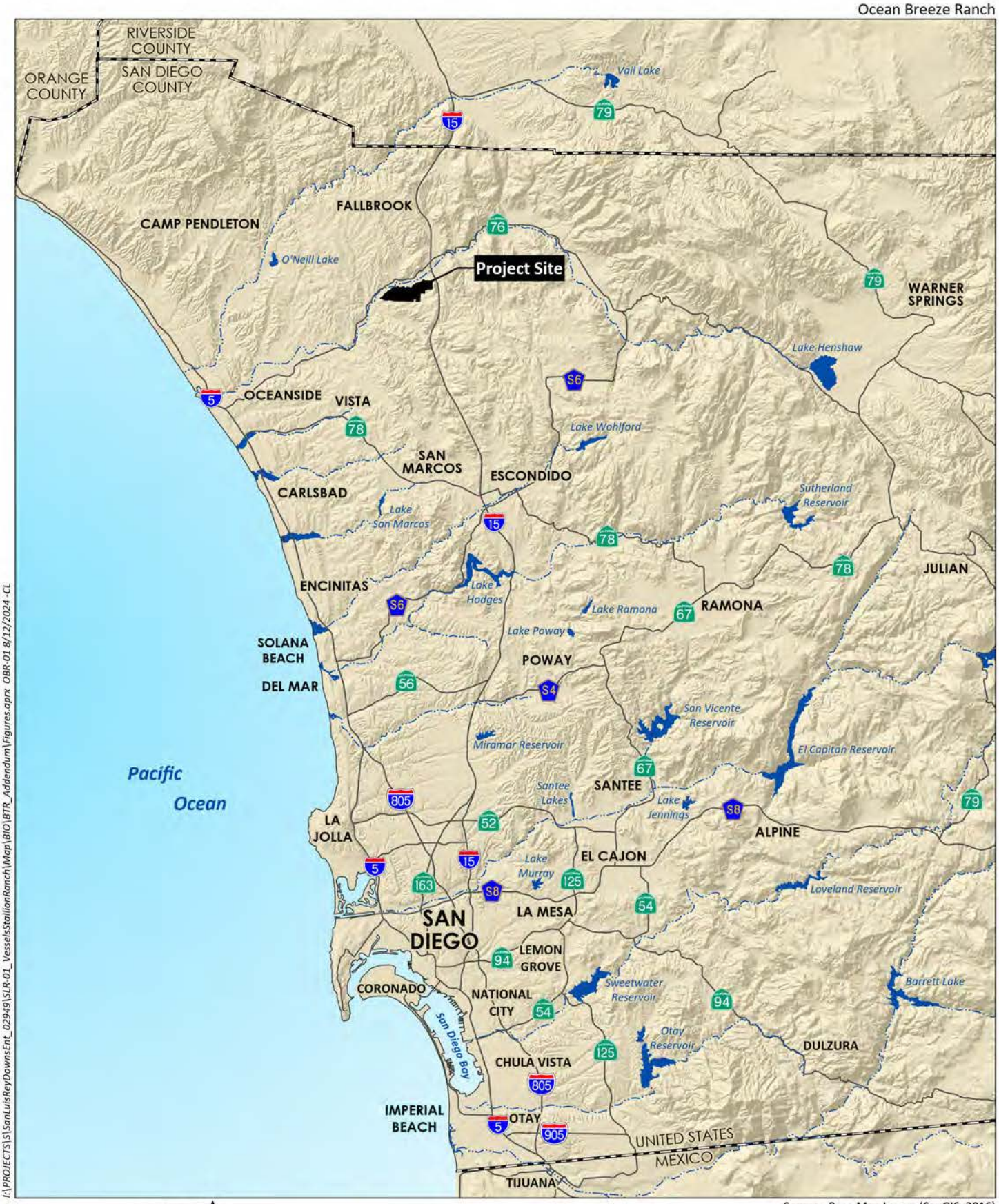
1.3 METHODS

1.3.1 Literature Review

HELIX conducted a search of sensitive species databases for information regarding Crotch's bumble bee within five miles of the project site, including the California Natural Diversity Database (CNDDB [California Department of Fish and Wildlife (CDFW) 2024a]), Bumble Bee Watch (2024), and iNaturalist (2024). Recent aerial imagery, topographic maps, and other maps of the project site and vicinity were reviewed to obtain updated information on the natural environmental setting.

1.3.2 Crotch's Bumble Bee Surveys

A habitat assessment for Crotch's bumble bee was conducted on May 30, 2024 (Table 1, *Crotch's Bumble Bee Survey Information*). A total of three surveys were conducted on June 20 and 21, July 15 and 16, and August 1 and 2, 2024, and survey methods were based on the considerations for CESA Candidate Bumble Bee Species guideline document (CDFW 2023). The survey area encompassed approximately 305.2 acres of potential Crotch's bumble bee habitat in the southwestern portion of the project site. Surveys focused on the project's proposed impact area within suitable habitat and the adjacent surrounding biological open space, although additional suitable habitat occurs in other portions of the on-site biological open space. Surveys were conducted by slowly walking meandering transects that incorporated patches of floral resources throughout the survey area, accounting for potential Crotch's bumble bee nesting locations, pollen and nectar sources, and foraging bumble bee activity. Survey routes were arranged to provide complete coverage of the survey area with the potential for occupancy by Crotch's bumble bee. Surveys were non-capture and were conducted using binoculars and a camera to aid in insect detection and later identification. If detected, photographs were taken of *Bombus* species encountered during the surveys. University of California, Riverside, bumble bee expert Dr. Douglas Yanega confirmed the species identification through the non-capture photographs. Details of the habitat assessment and subsequent survey dates, times, and conditions are noted in Table 1. The 2024 Crotch's Bumble Bee Survey Report (HELIX 2024b) is included in this addendum as Appendix A.



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Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Regional Location

Figure 1

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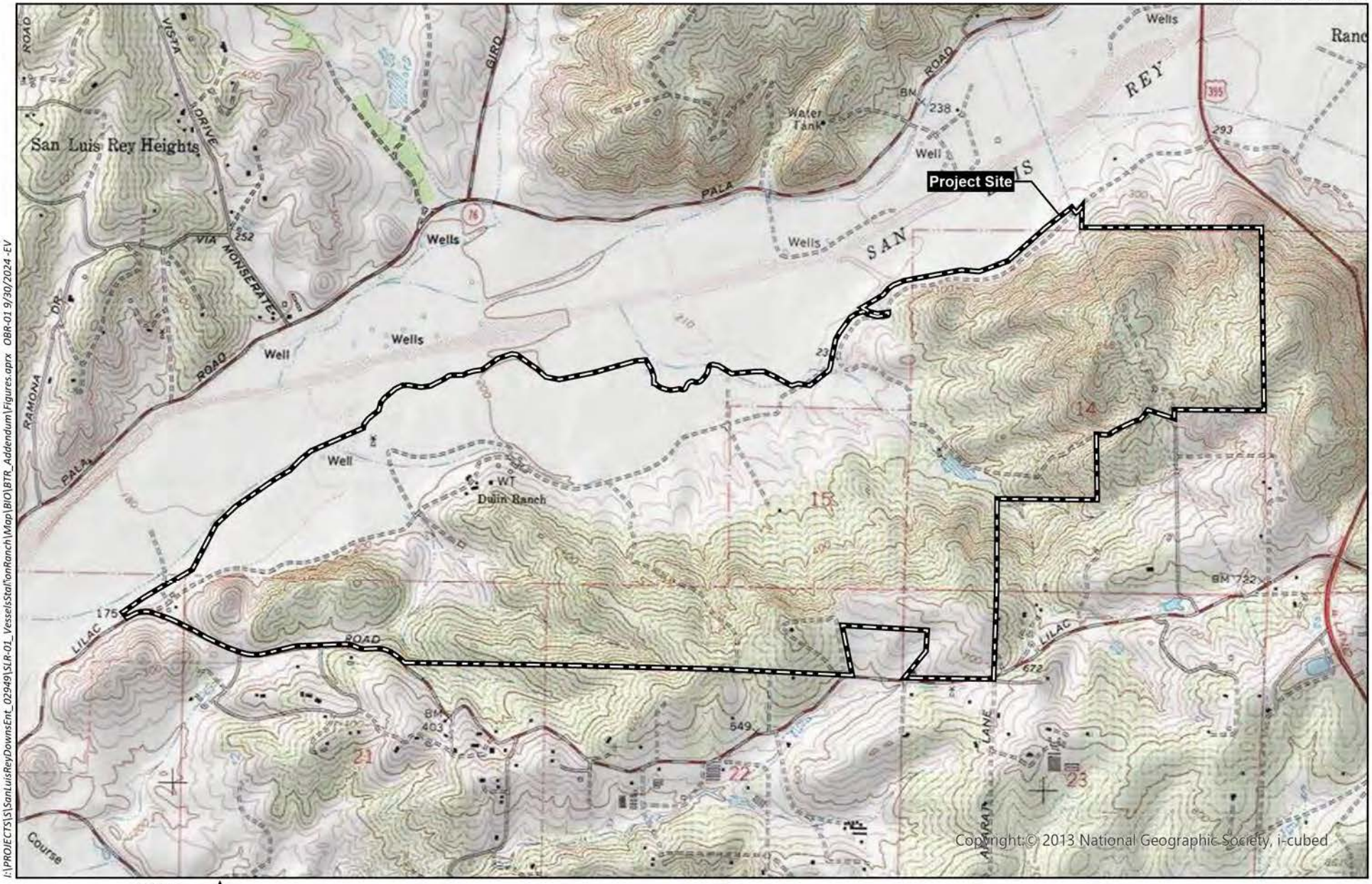
Source: Aerial Photo (SanGIS, 2023)

HELIX Environmental Planning

Aerial Photograph

Figure 2



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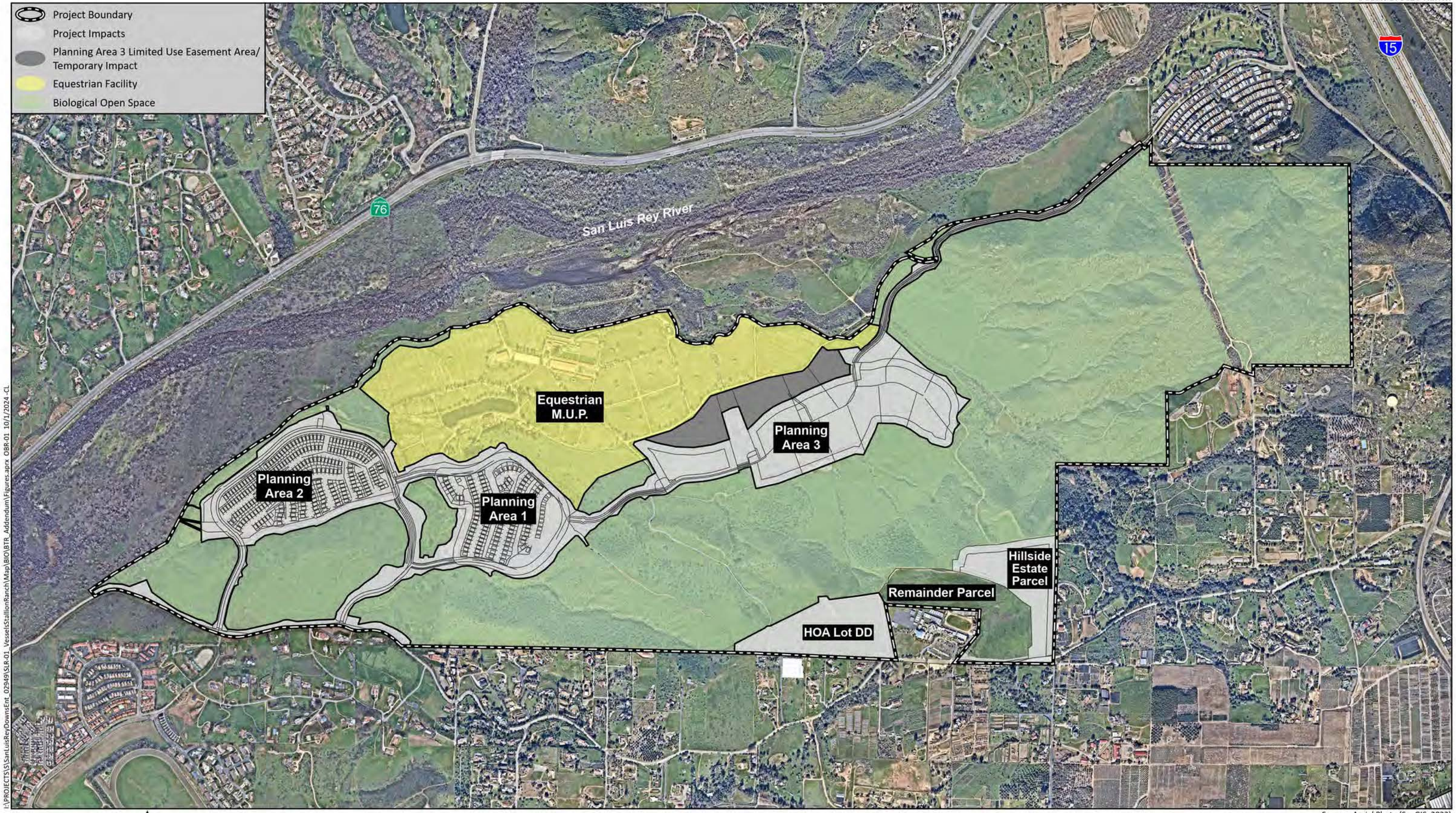
HELIX Environmental Planning

USGS Topography

Figure 3

Ocean Breeze Ranch



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Source: Aerial Photo (SanGIS, 2023)

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Site Plan

Figure 4

Table 1
CROTCH'S BUMBLE BEE SURVEY INFORMATION

Survey Type	Date/Weather Conditions[1]			Personnel[2]
Year 2024				
Crotch's Bumble Bee	May 30	N/A	Habitat Assessment	Stacy Nigro
	June 20	Start/End: 0915-1500; 64-84°F; wind 0-9 mph; 85-0% cloud cover	Survey 1	Stacy Nigro, Shawn Carroll, Laura Moreton
	June 21	Start/End: 0900-1500; 65-85°F; wind 0-10 mph; 0-10% cloud cover		Stacy Nigro, Angelica Grunloh, Alexander Walsh
	July 15	Start/End: 0910-1436; 71-82°F; wind 0-10 mph; 100-0% cloud cover	Survey 2	Stacy Nigro, Shawn Carroll, Kenui Moliterno
	July 16	Start/End: 0855-1412; 68-83°F; wind 0-8 mph; 100-1% cloud cover		Alexander Walsh, Kenui Moliterno, Amy Mattson
	August 1	Start/End: 0815-1330; 67-83°F; wind 0-12 mph; 95-30% cloud cover	Survey 3	Alexander Walsh, Kenui Moliterno, Angelica Grunloh
	August 2	Start/End: 0815-1230; 69-90°F; wind 0-10 mph; 30-1% cloud cover		Alexander Walsh, Kenui Moliterno, Angelica Grunloh

F = Fahrenheit
[1] Weather conditions included for focused animal surveys.
[2] HELIX biologists.

1.3.3 Nomenclature

Nomenclature used in this report generally comes from Holland (1986) and Oberbauer (2008) for vegetation; Baldwin, et al. (2012) for plants; and Williams, et al. (2014) for bumble bees. Animal species status is from CDFW (2024b).

1.4 RESULTS

1.4.1 Species Information

Crotch's bumble bee ranges across much of California, including the Mediterranean region, Pacific coast, western desert, and adjacent foothills throughout much of the state's southwestern region and north to Redding. This bee inhabits open grasslands and scrub habitats with suitable nectar and pollen sources. It primarily nests underground and forages on a wide variety of flowers, but a short tongue renders it best suited to open flowers with short corollas. In southern California, it is most commonly observed on flowering species in the *Asclepias*, *Astragalus*, *Chaenactis*, *Eschscholzia*, *Lupinus*, *Phacelia*, and *Salvia* genera.

1.4.2 Crotch's Bumble Bee Survey

Survey results were positive for Crotch's bumble bee (Figure 5, *Crotch's Bumble Bee Survey Results*). A total of 29 individuals were observed in 18 locations during the survey effort, with 12 individuals detected during Survey 1, 15 individuals during Survey 2, and two individuals during Survey 3 (Table 2, *Crotch's Bumble Bee Survey Results*). No Crotch's bumble bee nests were observed.

Table 2
CROTCH'S BUMBLE BEE SURVEY RESULTS

Species	Survey 1 (June 20-21, 2024)	Survey 2 (July 15-16, 2024)	Survey 3 (August 1-2, 2024)
Crotch's bumble bee observations	12	15	2

Male Crotch's bumble bees were seen during all three surveys, and females were observed during the first and second surveys. The species was observed in Diegan coastal sage scrub and non-native grassland habitats foraging on a variety of flowering nectar sources, including narrow leaf milkweed (*Asclepias fascicularis*), California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), and horehound (*Marrubium vulgare*). Individuals were also observed on non-flowering individuals of deerweed (*Acmispon glaber*), tocalote (*Centaurea melitensis*), and California everlasting (*Pseudognaphalium californicum*). Although nests of this species were not directly observed, the identification of male bees during all three surveys indicates the likely presence of a breeding Crotch's bumble bee population on-site.

Other *Bombus* species observed during the surveys were California bumble bee (*Bombus californicus*) and yellow-faced bumble bee (*Bombus vosnesensk*ii). Other bee species observed include western honey bee (*Apis mellifera*), western carpenter bee (*Xylocopa californica*), bindweed turret bee (*Diadasia bituberculata*), and green sweat bee (*Agapostemon texanus* – family *Halictidae*). Numerous other insects were also observed, including various species of wasps, butterflies, flies, dragonflies, and beetles.

1.5 APPLICABLE REGULATIONS

Biological resources-related laws and regulations that apply to Crotch's bumble bee include CEQA and CESA. The CDFW will be responsible for reviewing issues related to Crotch's bumble bee pursuant to CESA. The County is the lead agency for the CEQA environmental review process in accordance with state law and local ordinances. During CEQA review, the County will be responsible for reviewing project issues, including those related to Crotch's bumble bee, per the Guidelines for Determining Significance for Biological Resources (County 2010).

1.5.1 State of California

California Environmental Quality Act

Primary environmental legislation in California is found in CEQA and its implementing guidelines (State CEQA Guidelines), which require that projects with potential adverse effects (or impacts) on the environment undergo environmental review. Adverse environmental impacts are typically mitigated as a result of the environmental review process in accordance with existing laws and regulations.

California Endangered Species Act

The CESA established that it is state policy to conserve, protect, restore, and enhance state endangered species and their habitats. Under state law, plant and animal species may be formally designated rare, threatened, or endangered by official listing by the California Fish and Game Commission. CESA

Ocean Breeze Ranch

- Project Boundary
- Bumble Bee Survey Area

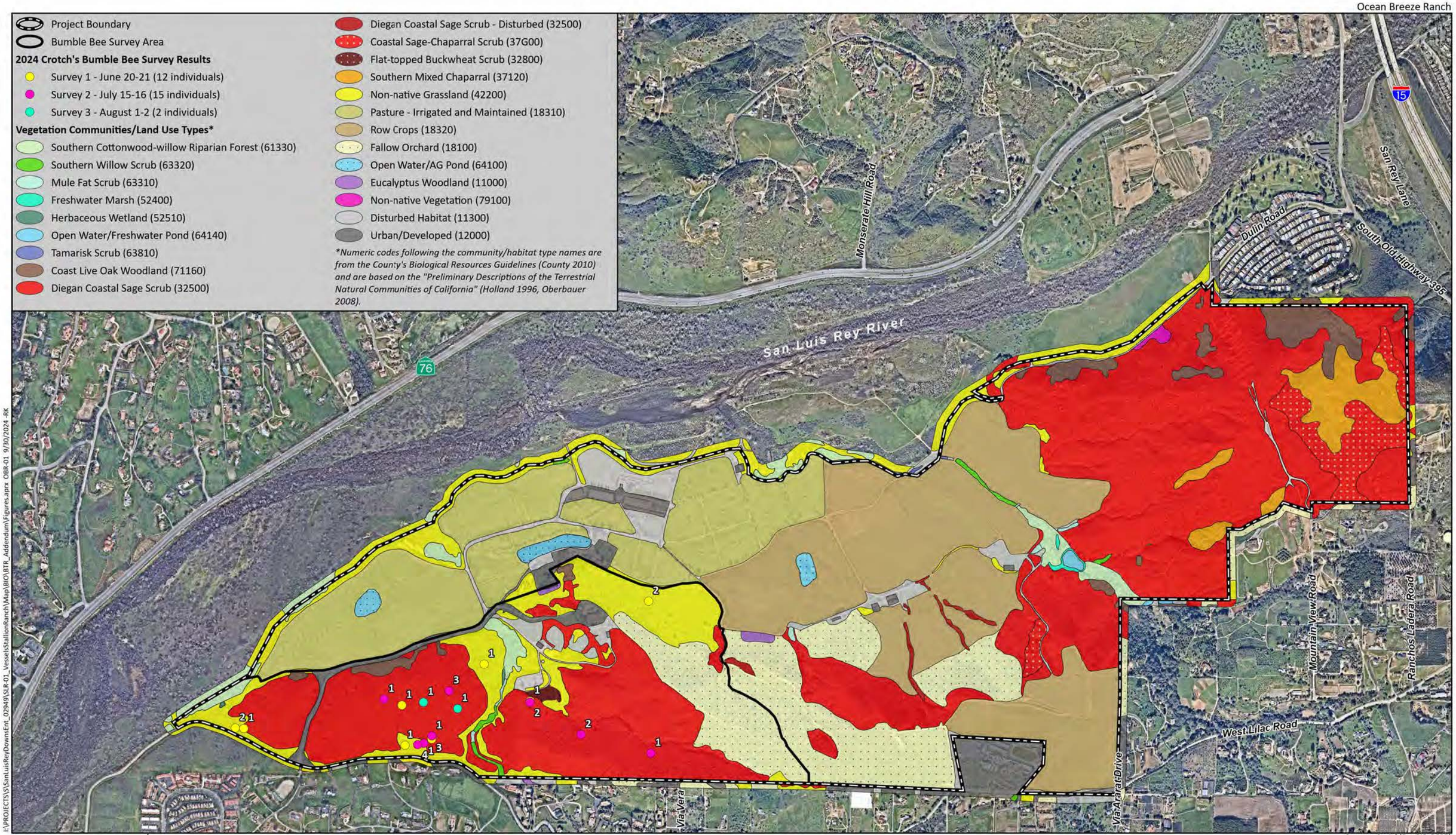
2024 Crotch's Bumble Bee Survey Results

- Survey 1 - June 20-21 (12 individuals)
- Survey 2 - July 15-16 (15 individuals)
- Survey 3 - August 1-2 (2 individuals)

Vegetation Communities/Land Use Types*

- Southern Cottonwood-willow Riparian Forest (61330)
- Southern Willow Scrub (63320)
- Mule Fat Scrub (63310)
- Freshwater Marsh (52400)
- Herbaceous Wetland (52510)
- Open Water/Freshwater Pond (64140)
- Tamarisk Scrub (63810)
- Coast Live Oak Woodland (71160)
- Diegan Coastal Sage Scrub (32500)
- Diegan Coastal Sage Scrub - Disturbed (32500)
- Coastal Sage-Chaparral Scrub (37G00)
- Flat-topped Buckwheat Scrub (32800)
- Southern Mixed Chaparral (37120)
- Non-native Grassland (42200)
- Pasture - Irrigated and Maintained (18310)
- Row Crops (18320)
- Fallow Orchard (18100)
- Open Water/AG Pond (64100)
- Eucalyptus Woodland (11000)
- Non-native Vegetation (79100)
- Disturbed Habitat (11300)
- Urban/Developed (12000)

**Numeric codes following the community/habitat type names are from the County's Biological Resources Guidelines (County 2010) and are based on the "Preliminary Descriptions of the Terrestrial Natural Communities of California" (Holland 1996, Oberbauer 2008).*



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Source: Aerial (SanGIS, 2023)

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Crotch's Bumble Bee Survey Results

Figure 5

authorizes that private entities may "take" plant or wildlife species listed as endangered or threatened under both the federal ESA and CESA, pursuant to a federal Incidental Take Permit if the CDFW certifies that the incidental take is consistent with CESA (California Fish and Game [CFG] Code Section 2080.1[a]). For state-only listed species, Section 2081 of CFG Code authorizes the CDFW to issue an Incidental Take Permit for state listed threatened and endangered species if specific criteria are met. Crotch's bumble bee does not have federal status, it is a state-only candidate for listing.

2.0 PROJECT EFFECTS

Direct impacts are immediate impacts resulting from permanent habitat removal, including impacts from grading, grubbing, clearing, and fuel modification. Direct impacts were quantified by overlaying the limits of project-related impacts, including fuel modification zones, on the biological resources map of the site. Indirect impacts are actions that are not direct removal of habitat but affect the surrounding biological resources either as a secondary effect of the direct impacts (e.g., construction noise, runoff, nighttime lighting, fugitive dust, etc.) or as the cause of degradation of a biological resource over time (e.g., edge effects and adjacency issues). Cumulative impacts are those caused by numerous projects in the region and their additive effect of multiple direct and indirect impacts to biological resources over time.

The modified project would impact 71.4 acres of habitat considered occupied by Crotch's bumble bee, composed of 32.8 acres of Diegan coastal sage scrub, 1.4 acres of flat-topped buckwheat scrub, and 37.2 acres of non-native grassland (Table 3, *Impacts to Crotch's Bumble Bee Habitat*; Figure 6a, *Crotch's Bumble Bee Survey Results and Project Impacts* and Figure 6b, *Crotch's Bumble Bee Survey Results and Project Impacts – Detail*). Impacts to Crotch's bumble bee habitat would occur in association with construction of PA1 and associated roadways, including proposed entrance roads from West Lilac Road onto the site. A total of six locations where individual bees were observed would be impacted, and 12 locations would be avoided, including 11 locations to be conserved within biological open space (Figure 7, *Biological Open Space, Vegetation, and Crotch's Bumble Bee Locations*). The other avoided location is within grassland that will remain as is within the existing equestrian facility.

Table 3
IMPACTS TO CROTCH'S BUMBLE BEE HABITAT

Vegetation Community[1]	Existing On-Site[2]	Project Impacts[2]
Diegan Coastal Sage Scrub – including disturbed (32500)	509.2	32.8
Flat-topped Buckwheat Scrub (32800)	1.4	1.4
Non-Native Grassland (42200)	104.2	37.2
Total	**614.8**	**71.4**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Rounded to the nearest 0.1 acre; thus, total reflects rounding.

Potential indirect impacts to Crotch's bumble bee may occur as a result of project implementation. These include unauthorized human access into conserved lands, spread of invasive plant species, unauthorized habitat impacts during construction, increased fire risk, and use of herbicides or pesticides, as described below.

Increases in human activity in the area could result in degradation of open space habitat and associated indirect impacts on Crotch's bumble bee through the creation of unauthorized trails and removal of vegetation that could be used by foraging bees.

Non-native plants could colonize areas disturbed by construction and development and could potentially spread into adjacent native habitats. Many non-native plants are highly invasive and can displace native vegetation (reducing native species diversity), potentially increase flammability and fire frequency, change ground and surface water levels, and potentially adversely affect native wildlife dependent on native plant species.

Errant construction impacts to sensitive vegetation communities outside the approved project impact footprint could result in a potentially significant impact to Crotch's bumble bee if suitable foraging habitat is affected.

Project development could increase the risk of human-induced fires that could affect native habitats and the species dependent upon them, including Crotch's bumble bee.

Use of herbicides or pesticides by homeowners or the Homeowners Association (HOA) in lands adjacent to the biological open space could have a detrimental effect on Crotch's bumble bee through reducing foraging resources, reducing reproductive capabilities, or direct mortality.

3.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

The only CEQA significance thresholds pertinent to the analysis of project impacts to Crotch's bumble bee are Thresholds 1 (Special Status Species) and 4 (Wildlife Movement and Nursery Sites):

Threshold 1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS [U.S. Fish and Wildlife Service]?

Threshold 4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

These thresholds are discussed below in Sections 3.1 and 3.2.

3.1 SPECIAL STATUS SPECIES

3.1.1 Analysis of Project Effects

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the USFWS or CDFW?

Ocean Breeze Ranch

- Project Boundary
- Bumble Bee Survey Area
- Project Impact Footprint

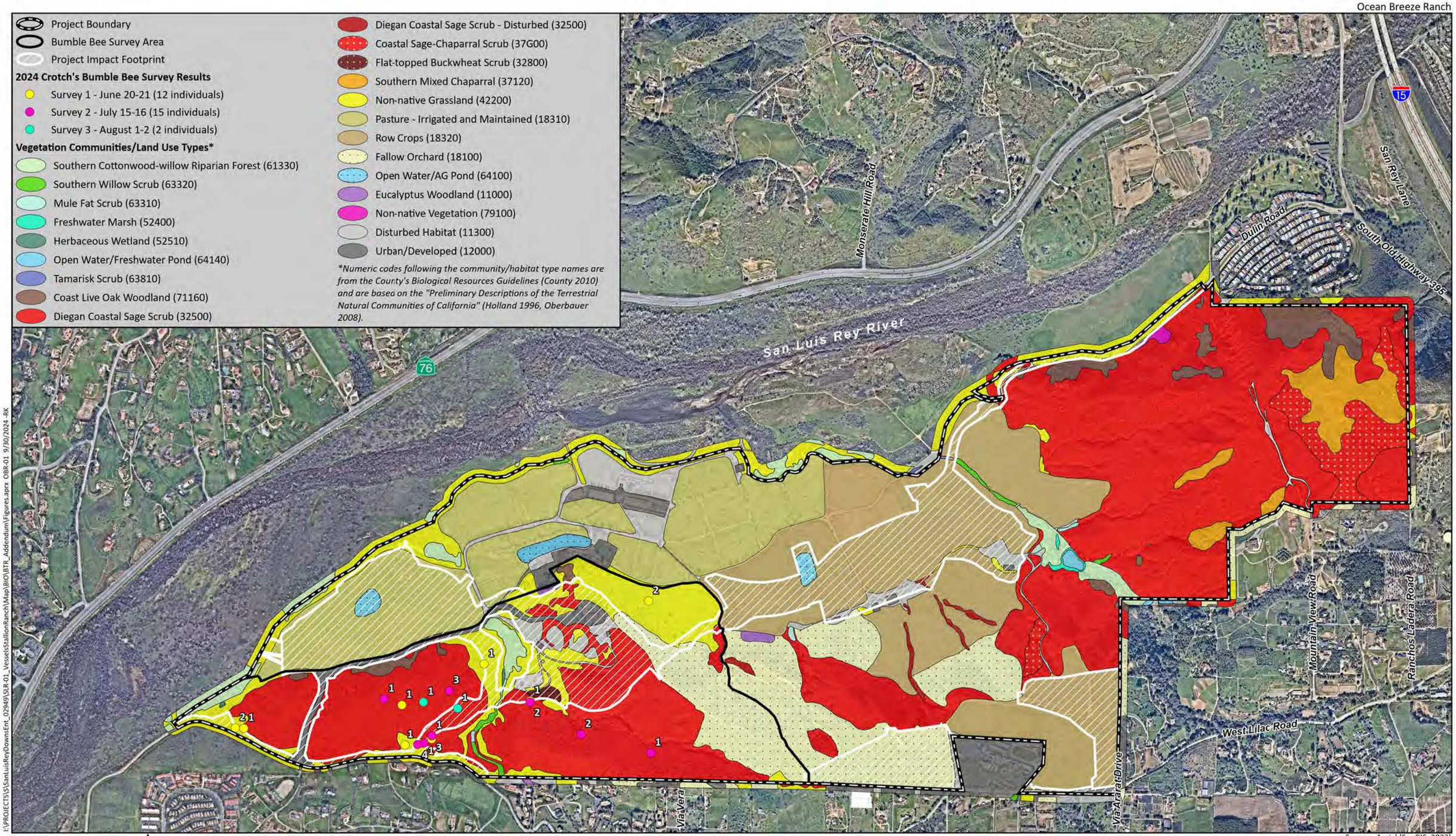
2024 Crotch's Bumble Bee Survey Results

- Survey 1 - June 20-21 (12 individuals)
- Survey 2 - July 15-16 (15 individuals)
- Survey 3 - August 1-2 (2 individuals)

Vegetation Communities/Land Use Types*

- Southern Cottonwood-willow Riparian Forest (61330)
- Southern Willow Scrub (63320)
- Mule Fat Scrub (63310)
- Freshwater Marsh (52400)
- Herbaceous Wetland (52510)
- Open Water/Freshwater Pond (64140)
- Tamarisk Scrub (63810)
- Coast Live Oak Woodland (71160)
- Diegan Coastal Sage Scrub (32500)
- Diegan Coastal Sage Scrub - Disturbed (32500)
- Coastal Sage-Chaparral Scrub (37G00)
- Flat-topped Buckwheat Scrub (32800)
- Southern Mixed Chaparral (37120)
- Non-native Grassland (42200)
- Pasture - Irrigated and Maintained (18310)
- Row Crops (18320)
- Fallow Orchard (18100)
- Open Water/AG Pond (64100)
- Eucalyptus Woodland (11000)
- Non-native Vegetation (79100)
- Disturbed Habitat (11300)
- Urban/Developed (12000)

**Numeric codes following the community/habitat type names are from the County's Biological Resources Guidelines (County 2010) and are based on the "Preliminary Descriptions of the Terrestrial Natural Communities of California" (Holland 1996, Oberbauer 2008).*



Source: Aerial (SanGIS, 2023)

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Crotch's Bumble Bee Survey Results and Project Impacts

Figure 6a

- Project Boundary
- Bumble Bee Survey Area
- Project Impact Footprint

2024 Crotch's Bumble Bee Survey Results

- Survey 1 - June 20-21 (12 individuals)
- Survey 2 - July 15-16 (15 individuals)
- Survey 3 - August 1-2 (2 individuals)

Vegetation Communities

- Southern Cottonwood Willow Riparian Forest
- Southern Willow Scrub
- Mule Fat Scrub
- Herbaceous Wetland
- Coast Live Oak Woodland
- Diegan Coastal Sage Scrub
- Flat-topped Buckwheat Scrub
- Non-native Grassland
- Eucalyptus Woodland
- Fallow Orchard
- Disturbed Habitat
- Urban/Developed

OVERVIEW MAP

San Luis Rey River

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Source: Aerial (SanGIS, 2023)

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Crotch's Bumble Bee Survey Results and Project Impacts - Detail

Figure 6b

- Project Boundary
- Project Impact Footprint
- Equestrian Facility/Equestrian Major Use Permit Area
- Pedestrian Trail Easement (on Existing Dirt Road)
- Open Space Fencing
- Open Space Conceptual Signage Location

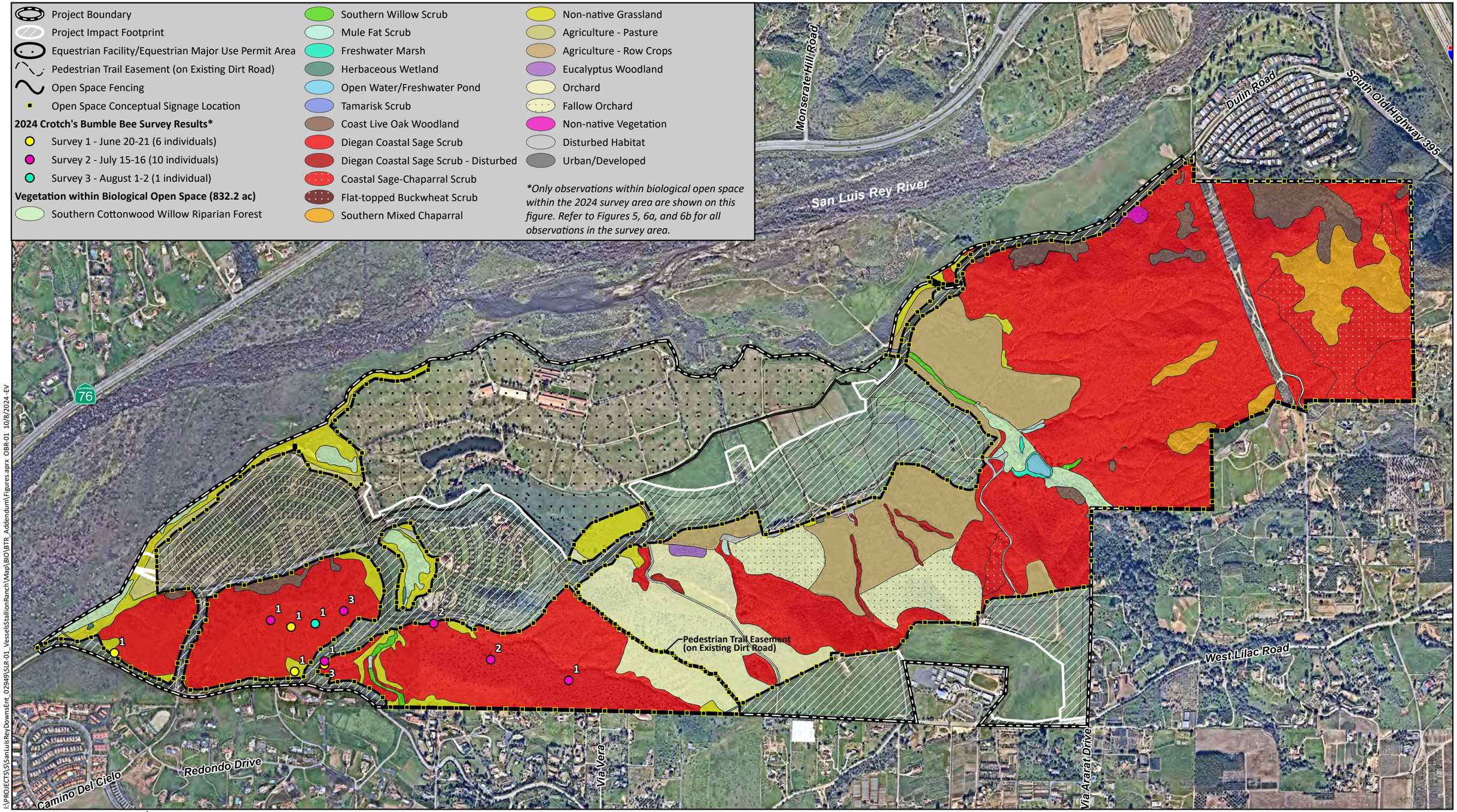
2024 Crotch's Bumble Bee Survey Results*

- Survey 1 - June 20-21 (6 individuals)
- Survey 2 - July 15-16 (10 individuals)
- Survey 3 - August 1-2 (1 individual)

Vegetation within Biological Open Space (832.2 ac)

- Southern Cottonwood Willow Riparian Forest
- Southern Willow Scrub
- Mule Fat Scrub
- Freshwater Marsh
- Herbaceous Wetland
- Open Water/Freshwater Pond
- Tamarisk Scrub
- Coast Live Oak Woodland
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub - Disturbed
- Coastal Sage-Chaparral Scrub
- Flat-topped Buckwheat Scrub
- Southern Mixed Chaparral
- Non-native Grassland
- Agriculture - Pasture
- Agriculture - Row Crops
- Eucalyptus Woodland
- Orchard
- Fallow Orchard
- Non-native Vegetation
- Disturbed Habitat
- Urban/Developed

**Only observations within biological open space within the 2024 survey area are shown on this figure. Refer to Figures 5, 6a, and 6b for all observations in the survey area.*



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Biological Open Space, Vegetation, and Crotch's Bumble Bee Locations

Figure 7

Per County Guidelines, any of the following conditions would be considered significant under this threshold if:

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 1 animal species, or a species listed as a state Species of Special Concern.

C. The project would impact the local long-term survival of a County List C or D plant species or a County Group 2 animal species.

D. The project may impact arroyo toad aestivation, foraging, or breeding habitat.

E. The project would impact golden eagle habitat.

F. The project would result in a loss of functional foraging habitat for raptors.

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.

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.

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 butterfly 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:

- Coastal cactus wren
- Coastal California gnatcatcher
- Least Bell's vireo
- Southwestern willow flycatcher
- Tree-nesting raptors
- Ground-nesting raptors

- Golden eagle
- Light-footed clapper rail

Significant Impacts

The proposed project would result in significant impacts to Crotch's bumble bee under County guideline 3.1.A for the following reasons:

A. The project would impact one or more individuals of a species listed as federally or state endangered or threatened.

The project would result in significant impacts to Crotch's bumble bee, a state candidate for listing under CESA. Candidate species receive the same protections as listed species under CESA.

The project would impact 71.4 acres of habitat considered occupied by Crotch's bumble bee, composed of 32.8 acres of Diegan coastal sage scrub, 1.4 acres of flat-topped buckwheat scrub, and 37.2 acres of non-native grassland. These impacts would be considered significant.

No Impact or Less than Significant Impacts

The project would not result in significant impacts to Crotch's bumble bee under Guidelines 3.1.B through 3.1.L for the following reasons:

Guidelines 3.1.B, 3.1.C, 3.1.D, 3.1.E, 3.1.F, 3.1.G, 3.1.I, 3.1.J, 3.1.K, and 3.1.L are not applicable to Crotch's bumble bee, thus no impact would occur under these guidelines. The project would result in less than significant impacts under Guideline 3.1.H, as further discussed below.

Guideline 3.1.H states "*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 project would avoid potentially significant indirect impacts to Crotch's bumble bee under Guideline 3.1.H as follows:

Potentially significant indirect impacts to Crotch's bumble bee resulting from human access and non-native plant species would be avoided through the following project design features: (1) permanent fencing shall be installed around biological open space where it abuts existing or proposed development, as well as in locations where human intrusion would not be precluded by physical factors such as steep topography or dense vegetation; (2) signs prohibiting access shall be posted along the perimeters of biological open space, including along areas where fencing is not installed; (3) and only non-invasive plant species would be included in the landscape plan for the site (species not listed on the California Invasive Plant Inventory prepared by the California Invasive Plant Council [Cal-IPC; 2006]).

Potentially significant indirect impacts resulting from construction impacts outside of the approved project footprint would be addressed through the placement of temporary construction fencing at the edges of the approved impact limits prior to the initiation of grading. Further, all construction staging shall occur within the approved limits of construction.

Potentially significant indirect impacts resulting from the increased risk of human-caused fires would be addressed through the incorporation of required fuel management zones and implementation of a limited building zone extending 100 feet outward from the biological open space which would provide a buffer between project development and biological open space. The construction of facilities requiring fire clearing is prohibited within the limited building zone.

Potentially significant indirect impacts resulting from the use of herbicides or pesticides by homeowners are generally not expected to occur, as all residential lots in PA1 and all but seven residential lots in PA2 are set back at least 100 feet from biological open space. The rear portions of 10 of the large lots in PA3 abut the biological open space, but most do not abut habitat with high potential for Crotch's bumble bee. The potential for impacts to Crotch's bumble bee from herbicide and pesticide use in HOA-maintained landscaped areas that abut biological open space would be reduced to a level below significance through Resource Manager outreach encouraging best management practices in the application of herbicides and pesticides to protect native insect pollinators, including (a) applying herbicide as locally and directly as possible (cut-stem application, hand applications, spraying directly onto the target plant), (b) applying pesticide with minimal applications, targeted to address the species of concern, and, in compliance with all federal and state laws, (c) applying herbicides and pesticides at times when insect pollinators are less active (e.g., after sunset or during cold temperatures), (d) applying herbicide and pesticide during times when potential nectar sources are absent, and (e) applying herbicide and pesticide at times when insect pollinators are not observed in the area.

In addition, long-term management would be implemented for the project's biological open space. Management activities would be conducted by a qualified Resource Manager pursuant to a County- and Wildlife Agency-approved Resource Management Plan. The Resource Manager would conduct regular site visits and address management issues as needed, including, but not limited to fence repair, sign replacement, trash removal, and homeowner education, including education focused on best management practices for herbicide and pesticide use adjacent to biological open space.

With implementation of the project design features described above and management activities described in the Resource Management Plan, no significant impact to Crotch's bumble bee resulting from indirect impacts from human access, non-native plant species, errant construction impacts, increases in fire risk, or use of pesticides would occur over the long term.

Cumulative Impact Analysis

As discussed in the 2019 Biological Resources Technical Report for the Ocean Breeze Ranch Project (HELIX 2019), the area of consideration for cumulative impacts on biological resources was based on an approximate 3.0-mile radius from the project site, extending to five miles from the site in a northeasterly direction. This study area includes surrounding open space connections to the project site, as well as foothills and canyons abutting the San Luis Rey River, and important named creek connections to the river in the project vicinity (i.e., Gopher Canyon Creek, Moosa Creek, Couser Creek, and Keys Creek). The cumulative study area was chosen because it includes areas with similar biological resources as the project site, as well as capturing the local watershed for the site. The area of consideration includes lands within a reasonable distance from the project site that may have a biologically based connection to the site in terms of habitat connectivity and development in the region.

A total of 43 projects (including the proposed project) were reviewed for the cumulative analysis, of which 20 would result in significant or potentially significant cumulative impacts to sensitive biological

resources. The remaining 23 projects either would not result in impacts to sensitive biological resources or information on impacts is not available. The project has the potential to contribute to the cumulative impact on Crotch's bumble bee, as discussed below.

The cumulative projects with available data would impact 220.0 acres of coastal sage scrub habitat and 398.7 acres of non-native grassland habitat, including impacts from the proposed project. The proposed project would result in impacts to 34.2 acres of combined coastal sage scrub/coastal sage transition (includes 32.8 acres of Diegan coastal sage scrub and 1.4 acres of flat-topped buckwheat scrub) and 37.2 acres of non-native grassland, for a total of 71.4 acres of impact to Crotch's bumble bee habitat. The project would contribute to the significant cumulative impact on Crotch's bumble bee since it would further reduce the amount of suitable foraging and nesting habitat available for this species.

Projects are required to compensate impacts on coastal sage scrub at a minimum 1:1 ratio. The proposed project would compensate the loss of coastal sage scrub habitat at a 3:1 ratio through on-site preservation, per the project's mitigation measures for impacts to habitat occupied by coastal California gnatcatcher (*Polioptila californica californica*; [HELIX 2019 and 2024a]). The 3:1 mitigation would total 102.6 acres of sage scrub. Additionally, in accordance with County guidelines and required mitigation ratios, the proposed project would mitigate for impacts to non-native grassland at a 0.5:1 ratio, totaling 18.6 acres, through on-site preservation of habitat within biological open space (HELIX 2019 and 2024a). Taken together, the project's required mitigation for impacts to coastal sage scrub and non-native grassland totals 121.2 acres, which exceeds the minimum 1:1 ratio of habitat preservation for Crotch's bumble bee (71.4 acres). Additional on-site preservation of these habitats would occur above and beyond these minimum requirements, including an additional 43.8 acres of sage scrub and 25.7 acres of non-native grassland conserved within biological open space in occupied bee habitat in the southwestern portion of the site, and an additional 320.9 acres of sage scrub and 16.9 acres of non-native grassland within other portions of the biological open space. Further, other native scrub habitats with high potential to support this species would also be conserved, consisting of 31.5 acres of coastal sage-chaparral scrub, and 31.8 acres of southern mixed chaparral.

As such, the proposed project's contribution to the cumulative impact on Crotch's bumble bee habitat would be less than considerable and reduced to a less than significant level.

3.1.2 Mitigation Measures and Design Considerations

Impacts to Crotch's bumble bee would be mitigated through implementation of two species-specific mitigation measures, BIO-1d and BIO-1e, in addition to implementation of four previously approved general mitigation measures: BIO-8a, BIO-8b, BIO-10a, and BIO-10b (HELIX 2019).

Species-Specific Measures

BIO-1d Mitigation for impacts to 71.4 acres of Crotch's bumble bee habitat (34.2 acres of combined coastal sage scrub/flat-topped buckwheat scrub and 37.2 acres of non-native grassland) shall occur at a minimum 1:1 ratio through on-site preservation of 71.4 acres of Diegan coastal sage scrub within a biological open space easement. The mitigation land will be located in the southwestern portion of the project site. The mitigation land for Crotch's bumble bee is contained within a much larger block of habitat to be conserved as biological open space for the project, totaling 832.2 acres, and overlaps with on-site preservation of coastal sage scrub for coastal California gnatcatcher. The mitigation shall be provided prior to the issuance of a grading permit.

BIO-1e Before the start of construction, required consultation with CDFW regarding the project's effects on Crotch's bumble bee must occur. If take of Crotch's bumble bee is expected, an incidental take permit issued by the CDFW must be obtained, as applicable. If CDFW issues an incidental take permit for Crotch's bumble bee, that document shall supersede any inconsistent measures and mitigation ratios provided for the species in the biological resources technical report addendum, CEQA document, or County Conditions of Approval. CESA compliance shall only be required if Crotch's bumble bee remains as a CESA candidate species or is listed under CESA at the time of project construction. If Crotch's bumble bee is delisted, this measure shall not be required.

Previously Approved Applicable Project Measures

While not required as species-specific mitigation for Crotch's bumble bee, the following four mitigation measures already required for the overall project will assist in reducing the potential for indirect impacts to this species to a level below significance.

BIO-8a The project requires preparation of a Resource Management Plan (RMP) for on-site biological open space to be approved by the County and Wildlife Agencies. The RMP will provide direction for the permanent preservation and management of the on-site biological open space in accordance with County regulations.

BIO-8b The project will incorporate a 100-foot-wide limited building zone easement extending outward from the edge of the biological open space easement.

BIO-10a To help ensure that errant impacts to sensitive vegetation communities outside of the impact footprint are avoided during construction, environmental fencing (including silt fencing where determined necessary by the Stormwater Pollution Prevention Plan), would be installed at the edges of the impact limits prior to initiation of grading. All construction staging shall occur within the approved limits of construction.

BIO-10b A qualified biologist will monitor the installation of environmental fencing wherever it would abut sensitive vegetation communities, jurisdictional waters or wetlands, or biological open space. The biologist also will conduct a preconstruction environmental training session for construction personnel to inform them of the sensitive biological resources on-site and avoidance measures to remain in compliance with project approvals. The biologist also will monitor vegetation clearing, grubbing, and grading activities on a regular basis to help ensure compliance with project approvals.

3.1.3 Conclusion

Project implementation could result in significant impacts to Crotch's bumble bee, a candidate for state listing under CESA. Potential significant impacts could result from loss of habitat. Implementation of species-specific mitigation measures BIO-1d and BIO-1e would reduce impacts to less than significant.

3.2 WILDLIFE MOVEMENT AND NURSERY SITES

3.2.1 Analysis of Project Effects

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Any of the following conditions would be considered significant if:

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.

C. The project would create artificial wildlife corridors that do not follow natural movement patterns.

D. The project would increase noise and/or nighttime lighting in a wildlife corridor or linkage to levels proven 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.

F. The project does not maintain adequate visual continuity (i.e., long lines-of-site) within wildlife corridors or linkage.

No Impact or Less than Significant Impacts

The project's approved Biological Resources Technical Report (HELIX 2019) determined that the project would not result in significant impacts under any of the above guidelines for Wildlife Movement and Nursery Sites. The presence of Crotch's bumble bee on-site does not change any of the previous conclusions and the project would not result in significant impacts to Crotch's bumble bee under any of these guidelines.

Sufficient habitat to support Crotch's bumble bee would be conserved in on-site biological open space. The proposed biological open space totals 832.2 acres and extends uninterrupted across the site for approximately 2.5 miles, with an additional 0.5 mile interrupted only by two access roads into the site, one of which currently exists. As such, the project would not substantially interfere with connectivity between blocks of habitat used by Crotch's bumble bee, or with potential to be used by this species.

The biological open space contains large expanses of native scrub habitats in addition to other habitats (Figure 7). A total of 172.1 acres of occupied Crotch's bumble bee habitat, composed of 146.4 acres of Diegan coastal sage scrub and 25.7 acres of non-native grassland would be conserved in the southwestern portion of the site, and an additional 401.0 acres of suitable habitat would be conserved

in the remainder of the biological open space (Figure 8, *Biological Open Space and Crotch's Bumble Bee Habitat*), consisting of 320.9 acres of Diegan coastal sage scrub, 16.9 acres of non-native grassland, 31.5 acres of coastal sage-chaparral scrub, and 31.8 acres of southern mixed chaparral. Preservation of these habitats will continue to provide foraging and breeding habitat for a variety of species, including Crotch's bumble bee. Impacts would be less than significant.

Cumulative Impact Analysis

The cumulative projects are located in a semi-rural area characterized primarily by low-density residential development and agricultural and equestrian uses. The proposed project's biological open space would maintain connectivity to core wildlife habitat along the San Luis Rey River and to undeveloped areas immediately east of the site. With the project's proposed biological open space, incorporation of design features, and implementation of mitigation measures at the specified ratios, the contribution of the project to the cumulative impact on wildlife movement would not be considerable and would be less than significant.

3.2.2 Mitigation Measures and Design Considerations

No additional mitigation measures are required.

3.2.3 Conclusion

With the preservation of habitat within the project's proposed biological open space, impacts to Crotch's bumble bee movement and breeding/foraging habitat would be less than significant and no additional mitigation measures are required.

4.0 SUMMARY OF PROJECT IMPACTS AND MITIGATION

Implementation of the project would result in significant impacts to Crotch's bumble bee, a special status animal species. A total of 71.4 acres of impact would occur to habitat for this species.

Table 4, *Crotch's Bumble Bee Habitat Impacts and Habitat Preservation*, provides a summary of project impacts and habitat preservation pertaining to vegetation communities that are occupied by Crotch's bumble bee or with potential to be occupied by this species. Table 5, *Summary of Biological Resources Mitigation Measures for Crotch's Bumble Bee*, provides a summary of the mitigation measures proposed for this species. Two new mitigation measures have been added to the project that are specific to Crotch's bumble bee.

Table 4
CROTCH'S BUMBLE BEE HABITAT IMPACTS AND HABITAT PRESERVATION

Vegetation Community[1]	Impacts to Crotch's Bumble Bee Occupied Habitat[2]	Minimum Required Mitigation at 1:1	Preservation of Occupied Habitat in Biological Open Space[2]	Additional Suitable Habitat Preserved in Biological Open Space[2]	Total Suitable Habitat for Crotch's Bumble Bee Conserved in Biological Open Space[2]
Diegan Coastal Sage Scrub – including disturbed (32500)	32.8	71.4[3]	146.4	320.9	**467.3**
Flat-Topped Buckwheat Scrub (32800)	1.4		0	0	**0**
Non-Native Grassland (42200)	37.2		25.7	16.9	**42.6**
Coastal Sage-Chaparral Scrub (37G00)	0		0	31.5	**31.5**
Southern Mixed Chaparral (37120)	0		0	31.8	**31.8**
Total	**71.4**	**71.4**	**172.1**	**401.0**	**573.1**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Rounded to the nearest 0.1 acre; thus, total reflects rounding.
[3] Mitigation is required at a minimum 1:1 ratio of preservation of occupied habitat, totaling 71.4 acres.

Table 5
SUMMARY OF BIOLOGICAL RESOURCES MITIGATION MEASURES FOR CROTCH'S BUMBLE BEE

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number
New Species-Specific Measures		
BIO-1d Mitigation for impacts to 71.4 acres of Crotch's bumble bee habitat (34.2 acres of combined coastal sage scrub/flat-topped buckwheat scrub and 37.2 acres of non-native grassland) shall occur at a minimum 1:1 ratio through on-site preservation of 71.4 acres of Diegan coastal sage scrub within a biological open space easement. The mitigation land will be located in the southwestern portion of the project site. The mitigation land for Crotch's bumble bee is contained with a much larger block of habitat to be conserved as biological open space for the project, totaling 832.2 acres, and overlaps with on-site preservation of coastal sage scrub for coastal California gnatcatcher. The mitigation shall be provided prior to the issuance of a grading permit.	Less than significant	3.1.A

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number
BIO-1e Before the start of construction, required consultation with CDFW regarding the project's effects on Crotch's bumble bee must occur. If take of Crotch's bumble bee is expected, an incidental take permit issued by the CDFW must be obtained, as applicable. If CDFW issues an incidental take permit for Crotch's bumble bee, that document shall supersede any inconsistent measures and mitigation ratios provided for the species in the biological resources technical report addendum, CEQA document, or County Conditions of Approval. CESA compliance shall only be required if Crotch's bumble bee remains as a CESA candidate species or is listed under CESA at the time of project construction. If Crotch's bumble bee is delisted, this measure shall not be required.	Less than significant	3.1.A

- Project Boundary
- Proposed Biological Open Space (832.2 ac)
- Equestrian Facility/Equestrian Major Use Permit Area
- Limited Building Zone
- Existing Utility Easements to Remain
- Future Potential Easement (6.4 ac)
- Open Space Fencing
- Open Space Conceptual Signage Location
- Crotch's Bumble Bee Occupied Habitat in the Biological Open Space Survey Area (172.1 ac)
- Additional Suitable Habitat for Crotch's Bumble Bee in the Biological Open Space (401.0 ac)

2024 Crotch's Bumble Bee Survey Results - Biological Open Space*

- Survey 1 - June 20-21 (6 individuals)
- Survey 2 - July 15-16 (10 individuals)
- Survey 3 - August 1-2 (1 individuals)

**Only observations within biological open space within the 2024 survey area are shown on this figure. Refer to Figures 5, 6a, and 6b for all observations in the survey area.*

Gird Road
Monserate Hill Road
Dulin Road
South Old Highway 395
San Luis Rey River
76
SDCWA Easement
2024 Crotch's Bumble Bee Survey Area
RMWD Easement
Pedestrian Trail Easement (on Existing Dirt Road)
RMWD Easement
West Lilac Road
Via Vera
Via Ararat Drive
Redondo Drive
Camino Del Cielo

0 1,100 Feet

N

I:\PROJECTS\S\SanLuisReyDownsEnt_02949\SLR-01_VesselsStallionRanch\Map\BIO\BTR_Addendum\Figures.aprx OBR-01 10/8/2024 RK

HELIX Environmental Planning

Biological Open Space and Crotch's Bumble Bee Habitat

Figure 8

5.0 LIST OF PREPARERS

The following individuals contributed to the fieldwork and/or preparation of this report.

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Stacy Nigro*†	B.S., Forest Resources and Conservation (emphasis Wildlife Ecology, minor in Botany), University of Florida, 1994
Alexander Walsh	Graduate Certificate GIS, University of California, Davis Center of Watershed Sciences, 2018 B.S., Environmental Sciences, San Diego State University, 2017

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Appendix A

2024 Crotch's Bumble Bee (*Bombus crotchii*) Survey Report for the Ocean Breeze Ranch Project

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September 27, 2024 04035.00006.001

Joe Martin
Senior Vice President – Land Development
Trumark Homes
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Newport Beach, CA 92660

Subject: 2024 Crotch's Bumble Bee (*Bombus crotchii*) Survey Report for the Ocean Breeze Ranch Project

Dear Mr. Martin:

This letter presents the results of a California Department of Fish and Wildlife (CDFW) presence/absence survey for the Crotch's bumble bee (*Bombus crotchii;* CBB), a candidate species under the California Endangered Species Act (CESA), conducted by HELIX Environmental Planning, Inc. (HELIX) for the Ocean Breeze Ranch Project (project). Candidate species receive the same protections as listed species under CESA. This report describes the methods used to perform the survey and the results. The survey methods were based on the considerations for CESA Candidate Bumble Bee Species[1] guideline document.

PROJECT LOCATION

The approximately 1,402-acre project site is located west of Interstate 15 and south of State Route 76 in the unincorporated community of Bonsall in north San Diego County, California (Figure 1, *Regional Location*). The site occurs immediately north of portions of West Lilac Road and south of the San Luis Rey River, at 5820 West Lilac Rd., Bonsall, California (Figure 2, *Aerial Photograph*). The site is within Sections 13, 14, 15, 20, 21, 22, and 23 of Township 10 South, Range 3 West of the Bonsall, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 3, *USGS Topography*). The San Luis Rey River occurs off-site to the north of the project site. The site occurs within the boundaries of the Draft North County Multiple Species Conservation Program planning area.

[1] CDFW. 2023. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. June 6. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline.

METHODS

Habitat Assessment

HELIX performed a desktop analysis of historical and current Crotch's bumble bee species occurrences before the habitat assessment. HELIX biologist Stacy Nigro conducted a habitat assessment in the southwestern portion of the site on May 30, 2024, to document the presence/absence of potential CBB foraging, nesting, and/or overwintering resources. Per CDFW's guidelines, potential *Bombus* nesting habitat includes abandoned rodent burrows or bird nests, thatched grasses, brush piles, rock piles, fallen logs, and human-made structures such as walls, rubble, or abandoned furniture, and potential overwintering habitat includes leaf litter and woody forest edge. A list of plant species observed in flower during the habitat assessment and their absolute percent cover is included in Attachment A, *Flowering Species Composition During the Habitat Assessment*. Site photographs of potential CBB habitat are included as Attachment B, *Representative Site Photographs*.

Focused Surveys

Potential CBB habitat was identified within the project site during the habitat assessment, initiating the need for CBB surveys. The survey area encompassed approximately 305.2 acres of potential CBB habitat in the southwestern portion of the project site. Additional suitable habitat for CBB occurs in other portions of the site, but surveys were limited to the project's proposed impact area within suitable CBB habitat and the surrounding biological open space. In accordance with the current CDFW survey guidelines, three focused surveys spaced at least two weeks apart were conducted within the CBB colony active period (April to August). Due to the large size of the survey area, a survey rate of three acres per hour was not feasible; therefore, the surveys were conducted by slowly walking meandering transects that incorporated patches of floral resources throughout the survey area, accounting for potential CBB nesting locations, pollen and nectar sources, and foraging bumble bee activity. Survey routes were arranged to ensure complete coverage of the survey area with the potential for occupancy by CBB. Surveys were non-capture and were conducted using binoculars and a camera to aid in insect detection and later identification. If detected, photographs were taken of *Bombus* species encountered during the surveys. UC-Riverside bumble bee expert Dr. Douglas Yanega confirmed species identification for non-capture photos. Details of the habitat assessment and subsequent survey dates, times, and conditions are noted in Table 1, *Survey Information*.

Table 1
SURVEY INFORMATION

Site Visit	Survey Area[1]	Survey Date	Biologist(s)[2]	Time (Start/Stop)	Approx. Acres (ac) Surveyed/ Acres per Hour (hr)	Weather Conditions (Start/Stop)
HA[3]	Areas 1 through 6	05/30/24	Stacy Nigro	0800/1500	N/A	N/A
1	Area 1	06/20/24	Laura Moreton	0915/1500	41.8 ac/ 7.3 ac/hr	64°F, wind 1-3 mph, 85% cloud cover 79°F, wind 3-8 mph, 0% cloud cover
	Area 2	06/20/24	Shawn Carroll	0920/1500	42.9 ac/ 7.6 ac/hr	64°F, wind 0-3 mph, 50% cloud cover 84°F, wind 6-9 mph, 0% cloud cover
	Area 3	06/20/24	Stacy Nigro	0920/1500	54.0 ac/ 9.6 ac/hr	74°F, wind 1-3 mph, 50% cloud cover 84°F, wind 6-9 mph, 0% cloud cover
	Area 4	06/21/24	Alexander Walsh	0900/1430	49.0 ac/ 8.9 ac/hr	66°F, wind 1-4 mph, 0% cloud cover 81°F, wind 3-10 mph, 0% cloud cover
	Area 5	06/21/24	Angelica Grunloh	0900/1500	53.9 ac/ 8.9 ac/hr	65°F, wind 3-5 mph, 0% cloud cover 78°F, wind 5-8 mph, 0% cloud cover
	Area 6	06/21/24	Stacy Nigro	0900/1450	63.7 ac/ 10.9 ac/hr	67°F, wind 0-4 mph, 10% cloud cover 85°F, wind 3-7 mph, 0% cloud cover
2	Area 1	07/15/24	Shawn Carroll	0910/1401	41.8 ac/ 8.6 ac/hr	71°F, wind 1-3 mph, 100% cloud cover 82°F, wind 6-10 mph, 0% cloud cover
	Area 2	07/15/24	Kenui Moliterno	0910/1436	42.9 ac/ 7.9 ac/hr	71°F, wind 0-1 mph, 100% cloud cover 82°F, wind 6-10 mph, 0% cloud cover
	Area 3	07/15/24	Stacy Nigro	0910/1410	54.0 ac/ 10.8 ac/hr	71°F, wind 0-1 mph, 100% cloud cover 82°F, wind 6-10 mph, 0% cloud cover
	Area 4	07/16/24	Alexander Walsh	0900/1400	49.0 ac/ 9.8 ac/hr	71°F, wind 1-3 mph, 100% cloud cover 81°F, wind 3-8 mph, <1% cloud cover
	Area 5	07/16/24	Kenui Moliterno	0900/1412	53.9 ac/ 10.4 ac/hr	68°F, wind 0-3 mph, 100% cloud cover 81°F, wind 3-8 mph, 1% cloud cover
	Area 6	07/16/24	Amy Mattson[2]	0855/1402	63.7 ac/ 12.4 ac/hr	71°F, wind 0-1 mph, 100% cloud cover 83°F, wind 0-4 mph, 1% cloud cover
3	Area 1	08/01/24	Alexander Walsh	0815/1320	41.8 ac/ 8.2 ac/hr	67°F, wind 1-3 mph, 95% cloud cover 81°F, wind 4-12 mph, 50% cloud cover
	Area 2	08/01/24	Angelica Grunloh	0815/1315	42.9 ac/ 8.6 ac/hr	67°F, wind 0-3 mph, 95% cloud cover 78°F, wind 5-8 mph, 65% cloud cover
	Area 3	08/01/24	Kenui Moliterno	0830/1330	54.0 ac/ 10.8 ac/hr	70°F, wind 0-1 mph, 90% cloud cover 83°F, wind 3-6 mph, 30% cloud cover
	Area 4	08/02/24	Alexander Walsh	0815/1215	49.0 ac/ 12.3 ac/hr	69°F, wind 1-4 mph, 10% cloud cover 90°F, wind 4-10 mph, 1% cloud cover
	Area 5	08/02/24	Kenui Moliterno	0830/1230	53.9 ac/ 13.5 ac/hr	74°F, wind 3-8 mph, 1% cloud cover 90°F, wind 5-10 mph, 4% cloud cover
	Area 6	08/02/24	Angelica Grunloh	0820/1225	63.7 ac/ 15.6 ac/hr	71°F, wind 0-3 mph, 30% cloud cover 90°F, wind 5-10 mph, 7% cloud cover

[1] Due to its large size, the survey area was subdivided into subareas so that each area could be assigned a surveyor.
[2] Biologists attended (1) *Bombus* Workshop - 2024 The Natural History Museum San Diego, (2) *Bombus crotchii* Workshop - 2024 University of California Riverside Dept of Entomology, and/or (3) Bumble Bee Atlas Training 2023-2024.
[3] Habitat assessment

LITERATURE REVIEW

Searches of the California Natural Diversity Database (CNDDB) and Bumble Bee Watch returned one record of CBB within five miles of the project site, located approximately 4.3 miles to the east.[2,3] The three closest occurrence points from the community science database, iNaturalist, were located 3.5, 3.6, and 3.9 miles to the northwest.[4]

RESULTS

Habitat Assessment

The survey area encompassed approximately 305.2 acres of potential CBB habitat in the project site (Figure 4, *2024 Crotch's Bumble Bee Survey Results*), which included Diegan coastal sage scrub, flat-topped buckwheat scrub, herbaceous wetland, non-native grassland, fallow orchard, and disturbed habitat. Of these, Diegan coastal sage scrub provides the highest quality suitable habitat within the survey area. Suitable nesting substrate for CBB was noted within the project site, which included thatched grasses, rubble and debris piles, rodent burrows, large fallen limbs, tree stumps, leaf litter, cavities, and brush piles. Species cover of flowering plants was moderate across the survey area, with California buckwheat (*Eriogonum fasciculatum*) and short-pod mustard (*Hirschfeldia incana*) providing the most abundant potential nectar sources within the survey area. White sage (*Salvia apiana*) and black sage (*Salvia mellifera*), which are species commonly used as nectar sources by CBB, were observed as subdominant species within Diegan coastal sage scrub on-site. Another commonly used nectar source, narrow-leaf milkweed (*Asclepias fascicularis*), was observed in scattered patches in Diegan coastal sage scrub, non-native grassland, and flat-topped buckwheat scrub habitats. Other commonly used nectar sources were also observed within the survey area, including plants in the *Lupinus* and *Phacelia* genera, as well as California poppy (*Eschscholzia californica*). The cover of flowering plants decreased during the course of the survey effort, as many flowering plants went to seed or senesced as the season progressed.

Characteristic plant species observed within suitable habitat in the survey area are briefly described below. Diegan coastal sage scrub in the survey area is characterized by California sagebrush (*Artemisia californica*), California buckwheat, laurel sumac (*Malosma laurina*), white sage, and black sage, while flat-topped buckwheat scrub predominately comprises California buckwheat. Herbaceous wetland in the survey area primarily supports yerba mansa (*Anemopsis californica*), while non-native grassland is dominated by brome grasses (*Bromus* spp.), and oats (*Avena* sp.) mixed with short-pod mustard, wild radish (*Raphanus sativus*) and prickly-lettuce (*Lactuca serriola*). Fallow orchard includes areas of former avocado and citrus orchards that have been abandoned, where many of the trees have been cut, and natural succession to non-native grassland and open sage scrub is occurring. These fallow orchard areas are characterized by dense annual grasses (bromes and oats), wild radish, and southern California morning glory (*Calystegia macrostegia*), with scattered laurel sumac and white sage in some locations.

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[2] California Department of Fish and Wildlife. 2024. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Available from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed July 9, 2024.

[3] Bumble Bee Watch. 2024. Citizen Science Database. Available from: https://www.bumblebeewatch.org/maps/. Accessed July 11, 2024.

[4] iNaturalist. 2024. Explore Observation, Crotch's Bumble Bee. Available from: https://www.inaturalist.org/observations?place_id=158630&subview=map&taxon_id=271451. Accessed July 11, 2024.

Disturbed habitat within the survey area was considered marginally suitable for CBB as these previously cleared and mowed areas are dominated by short-pod mustard, which could be used by CBB as a nectar source.

Additional habitat areas encompassed by the survey area boundary, but not considered suitable habitat due to lack of nectar species, include riparian habitats (southern cottonwood-willow riparian forest, southern willow scrub, and mule fat scrub), coast live oak woodland, eucalyptus woodland, and developed lands.

Plant species in flower were recorded during each survey, and the results are presented in Attachment C, *Flowering Plant Species Observed During Survey Effort.* A combined total of 114 plant species were observed in flower during the habitat assessment and surveys.

Focused Surveys

Survey results were positive for CBB (Figure 4, *2024 Crotch's Bumble Bee Survey Results*). A total of 29 CBB individuals were observed in 18 locations during the survey effort, with 12 individuals detected during Survey 1, 15 individuals during Survey 2, and two individuals during Survey 3 (Table 2, *Crotch's Bumble Bee Survey Results*). Other *Bombus* species observed were California bumble bee (*Bombus californicus*) and yellow-faced bumble bee (*Bombus vosnesenskii*). Other bee species observed during the survey effort were western honey bee (*Apis mellifera*), western carpenter bee (*Xylocopa californica*), bindweed turret bee (*Diadasia bituberculata*), and green sweat bee (*Agapostemon texanus* - family Halictidae). Numerous other insects were also observed, including various species of wasps, butterflies, flies, dragonflies, and beetles. Representative photos of CBB observed during the survey are included in Attachment D, *Crotch's Bumble Bee Photos.*

Table 2
CROTCH'S BUMBLE BEE SURVEY RESULTS

Species	Survey 1 (June 20-21, 2024)	Survey 2 (July 15-16, 2024)	Survey 3 (August 1-2, 2024)
Crotch's bumble bee observations	12	15	2

Male CBB were seen during all three surveys, and female CBB during the first and second surveys. CBB was observed in Diegan coastal sage scrub and non-native grassland habitats foraging on a variety of flowering nectar sources, including narrow leaf milkweed, California buckwheat, white sage, and horehound (*Marrubium vulgare*). CBB also were observed on non-flowering individuals of deerweed (*Acmispon glaber*), tocalote (*Centaurea melitensis*), and California everlasting (*Pseudognaphalium californicum*). Although CBB nests were not directly observed, the identification of male CBB during all three surveys indicates the likely presence of a breeding CBB population on-site.

Please contact me at Stacyn@helixepi.com or (619) 462-1515 if you have any questions.

Sincerely,

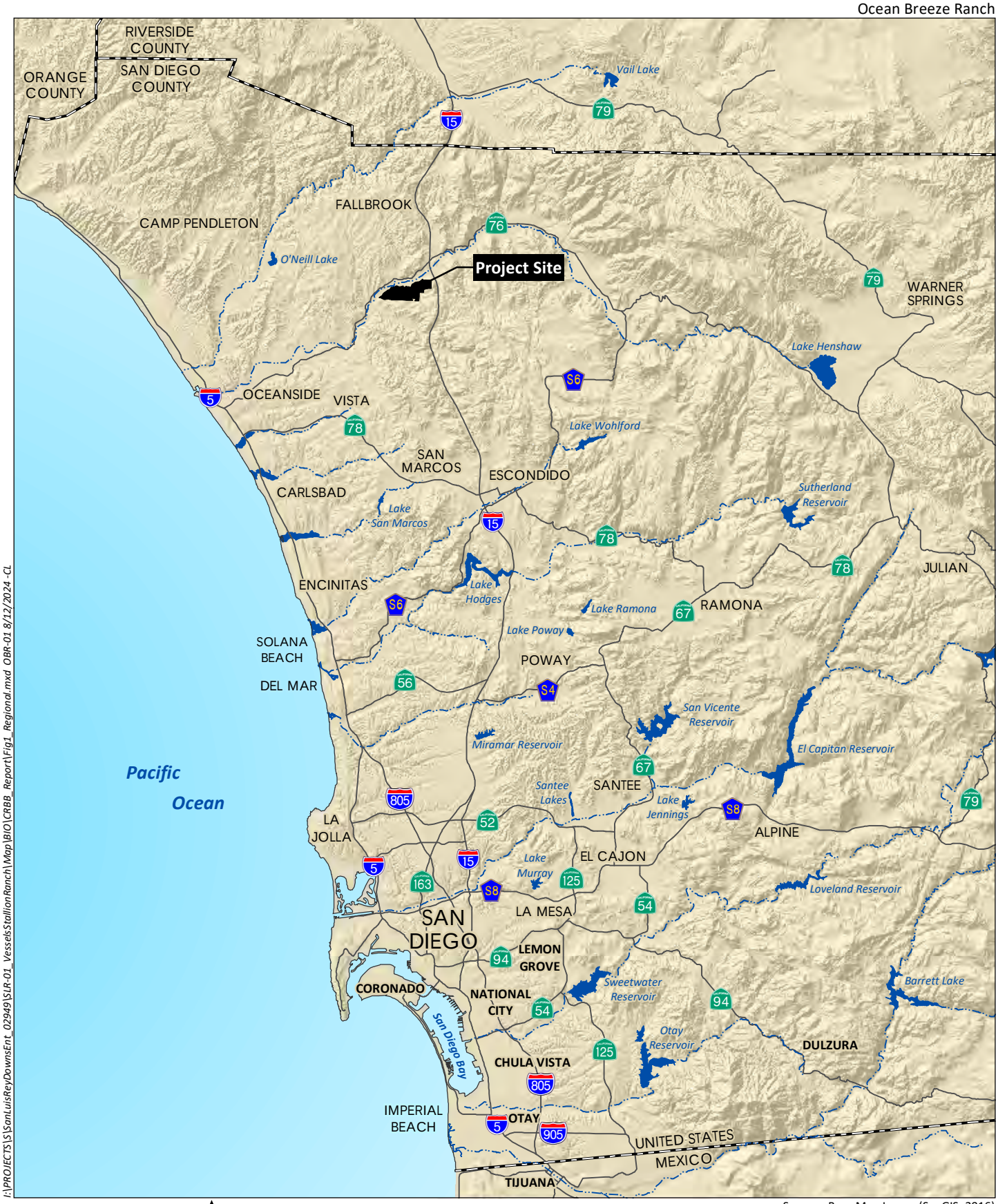
Stacy Nigro
Principal Biologist

Attachments:

Figure 1: Regional Location
Figure 2: Aerial Photograph
Figure 3: USGS Topography
Figure 4: 2024 Crotch's Bumble Bee Survey Results

Attachment A: Flowering Species Composition During the Habitat Assessment
Attachment B: Representative Site Photographs
Attachment C: Flowering Plant Species Observed During Survey Effort
Attachment D: Crotch's Bumble Bee Photos

Figures



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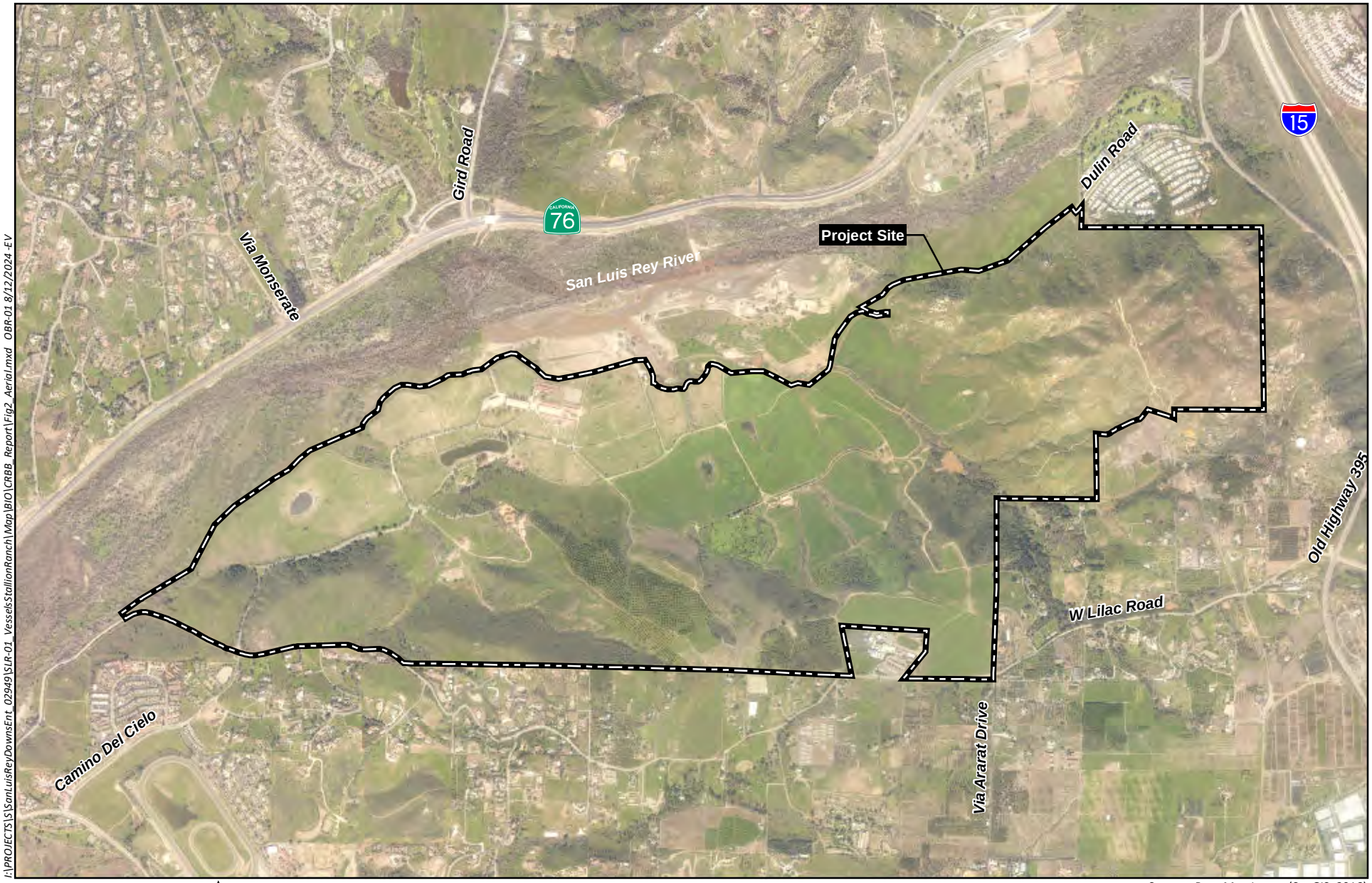
0 8 Miles

Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Regional Location

Figure 1



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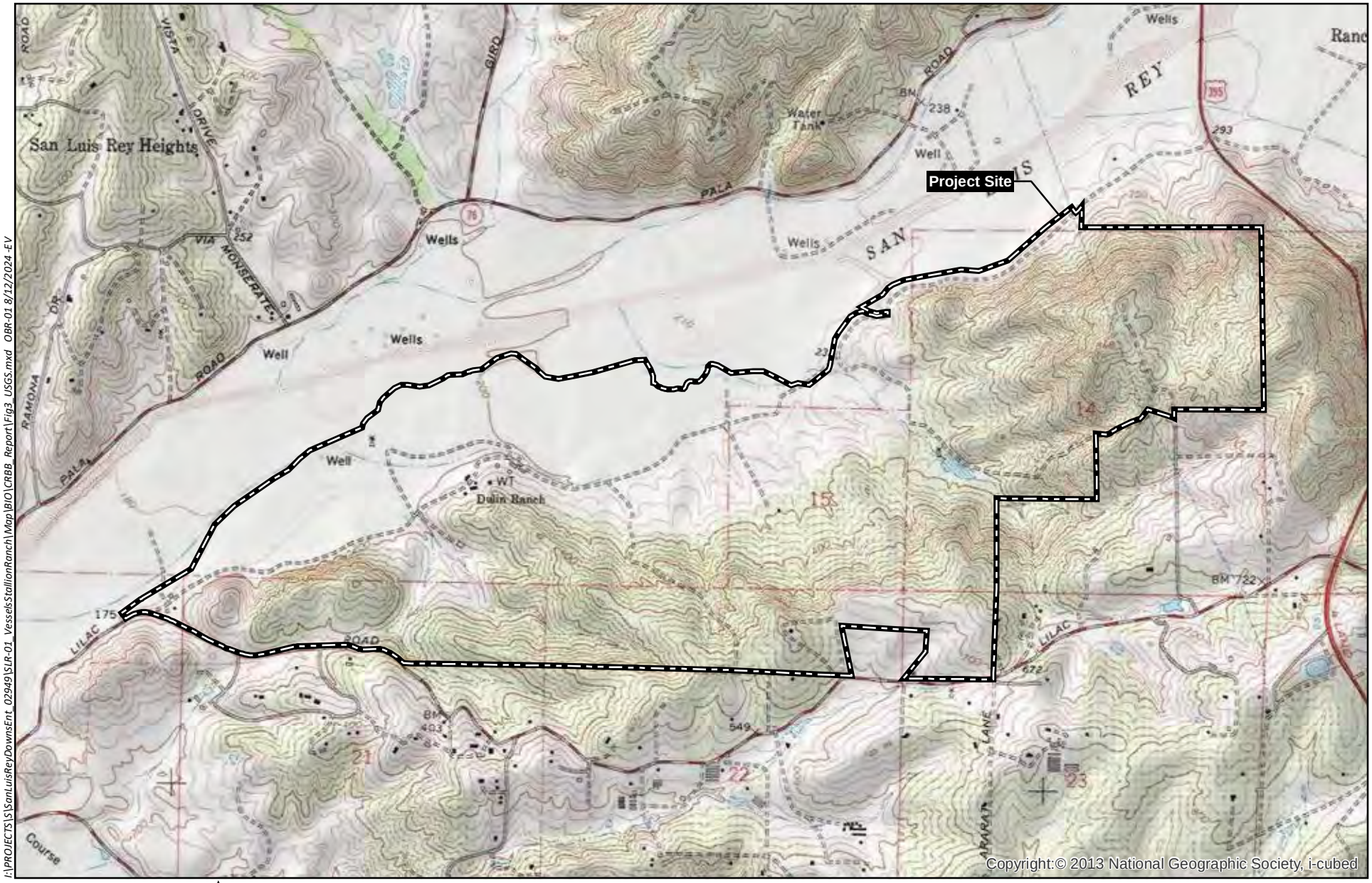
Source: Base Map Layers (SanGIS, 2016)

Aerial Photograph

Figure 2



0 2,000 Feet

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USGS Topography

Figure 3

Ocean Breeze Ranch

Project Boundary
Survey Subarea

2024 Crotch's Bumble Bee Survey Results
- Survey 1 - June 20-21 (12 individuals)
- Survey 2 - July 15-16 (15 individuals)
- Survey 3 - August 1-2 (2 individuals)

Vegetation Communities
- Southern Cottonwood Willow Riparian Forest
- Southern Willow Scrub
- Mule Fat Scrub
- Herbaceous Wetland
- Coast Live Oak Woodland
- Diegan Coastal Sage Scrub
- Flat-topped Buckwheat Scrub
- Non-native Grassland
- Eucalyptus Woodland
- Fallow Orchard
- Disturbed Habitat
- Urban/Developed

OVERVIEW MAP

San Luis Rey River

76

15

1a
1b
2
3
4
5
6

0 600 Feet

Source: Aerial (SanGIS, 2023)

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HELIX Environmental Planning

2024 Crotch's Bumble Bee Survey Results

Figure 4

Attachment A

Flowering Species Composition During the Habitat Assessment

Common Name	Scientific Name	Cover During Habitat Assessment
Short-pod mustard	*Hirschfeldia incana*	10
California buckwheat	***Eriogonum fasciculatum***	**5**
White sage	***Salvia apiana***	**5**
California sagebrush	*Artemisia californica*	4
Laurel sumac	*Malosma laurina*	4
Tocalote	*Centaurea melitensis*	3
Deerweed	***Acmispon glaber***	**2**
Clustered tarweed	*Deinandra fasciculata*	2
Golden-yarrow	*Eriophyllum confertiflorum*	2
California everlasting	*Pseudognaphalium californicum*	2
Mule fat	*Baccharis salicifolia*	1
Southern California morning glory	*Calystegia macrostegia*	1
Italian thistle	*Carduus pycnocephalus*	1
Poison hemlock	*Conium maculatum*	1
Common sand-aster	*Corethrogyne filaginifolia* var. *filaginifolia*	1
Wild carrot	*Daucus pusillus*	1
Monkey flower	*Diplacus aurantiacus*	1
Filaree	*Erodium* ssp.	1
Narrow-leaved bedstraw	*Galium angustifolium*	1
Miniature lupine	***Lupinus bicolor***	**1**
Chaparral mallow	*Malacothamnus fasciculatus*	1
Dot-seed plantain	*Plantago erecta*	1
Wild radish	*Raphanus sativus*	1
Blue eyed grass	*Sisyrinchium bellum*	1
Canchalagua	*Zeltnera venusta*	1
Small-flowered lotus	***Acmispon micranthus***	**<1**
Narrow leaf milkweed	***Asclepias fascicularis***	**<1**
Common goldenstar	*Bloomeria crocea*	<1
Woolly paintbrush	*Castilleja foliosa*	<1
Purple clarkia	***Clarkia purpurea***	**<1**
Chinese houses	*Collinsia heterophylla*	<1
California cholla	*Cylindropuntia californica* var. *parkeri*	<1
Salt heliotrope	*Heliotropium curassavicum*	<1
Bird's foot trefoil	*Lotus corniculatus*	<1
Collar lupine	***Lupinus truncatus***	**<1**
Hooked navarretia	*Navarretia hamata*	<1
Mexican evening primrose	*Oenothera speciosa*	<1
Coast prickly pear	*Opuntia littoralis*	<1
Chaparral prickly pear	*Opuntia oricola*	<1
Common phacelia	***Phacelia distans***	**<1**
Black sage	***Salvia mellifera***	**<1**
Blue elderberry	*Sambucus mexicanus*	<1
Checker-bloom	*Sidalcea sparsifolia*	<1
Western vervain	*Verbena lasiostachys*	<1
	Total	**54**

[1] Nectar species commonly used by Crotch's bumble bee (genera Acmispon, Antirrhinum, Asclepias, Cirsium, Clarkia, Cordylanthus, Dendromecon, Ehrendorferia, Eriogonum, Eschscholzia, Euthamia, Hypericum, Keckiella, Lantana, Lupinus, Monardella, Phacelia, Salvia, Trichostema, and Vicia) shown in **bold**.

Attachment B

Representative Site Photographs

Photo 1. Diegan coastal sage scrub in the survey area.

Photo 2. Diegan coastal sage scrub in the survey area.

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Photo 3. Diegan coastal sage scrub in the survey area.

Photo 4. Diegan coastal sage scrub in the survey area.

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Photo 5. Non-native grassland in the survey area.

Photo 6. Non-native grassland in the survey area.

Photo 7. Fallow orchard/successional non-native grassland in the survey area.

Photo 8. Mustard-dominated disturbed habitat in the survey area.

Attachment C

Flowering Plant Species Observed During Survey Effort

Family	Scientific Name*	Common Name	Survey Effort[1]
Adoxaceae	*Sambucus mexicana*	blue elderberry	HA, 1, 2
Agavaceae	*Chlorogalum parviflorum*	small flowered soaproot	HA, 1, 2, 3
Aizoaceae	*Aptenia cordifolia**	red apple ice plant	1
Alliaceae	*Allium* sp.	wild onion	1
Anacardiaceae	*Malosma laurina*	laurel sumac	HA, 1, 2, 3
Apiaceae	*Conium maculatum**	poison hemlock	HA, 1, 2, 3
	Daucus pusillus	wild carrot	HA, 1, 2
	*Foeniculum vulgare**	fennel	1, 2, 3
	*Torilis arvensis**	field hedge parsley	1, 2
Apocynaceae	*Asclepias fascicularis*	narrow leaf milkweed	HA, 1, 2, 3
Asteraceae	*Acourtia microcephala*	sacapellote	1, 2
	Artemisia californica	California sagebrush	HA, 2
	Baccharis salicifolia	mule fat	HA, 1, 2, 3
	*Carduus pycnocephalus**	Italian thistle	HA, 1, 2
	*Centaurea benedicta**	blessed thistle	1
	*Centaurea melitensis**	tocalote	HA, 2
	Corethrogyne filaginifolia var. *filaginifolia*	common sand-aster	HA, 1, 2, 3
	Deinandra fasciculata	clustered tarweed	HA, 1, 2, 3
	Eriophyllum confertiflorum	golden-yarrow	HA, 1, 2
	*Gazania linearis**	gazania	1
	*Glebionis coronaria**	crown daisy	1
	*Helminthotheca echioides**	bristly ox-tongue	1, 2, 3
	Heterotheca grandiflora	telegraph weed	1, 2, 3
	Isocoma menziesii	goldenbush	1, 2, 3
	*Lactuca serriola**	prickly lettuce	1, 2, 3
	Osmadenia tenella	osmadenia	1
	Pseudognaphalium biolettii	bicolor cudweed	1
	Pseudognaphalium californicum	California everlasting	HA, 1, 2
	Pseudognaphalium canescens	everlasting cudweed	1
	*Sonchus oleraceus**	Common sow-thistle	1, 2
	Stephanomeria exigua	small wirelettuce	1, 2, 3
	Stephanomeria virgata	twiggy wreath plant	2
Boraginaceae	*Heliotropium curassavicum*	salt heliotrope	HA, 1, 2
	Phacelia distans	common phacelia	HA, 1, 2
	Phacelia ramosissima	branching phacelia	3
Brassicaceae	*Hirschfeldia incana**	short-pod mustard	HA, 1, 2, 3
	*Lepidium latifolium**	perennial pepperweed	1, 2, 3
	*Lobularia maritima**	sweet alyssum	1
	*Raphanus raphanistrum**	jointed charlock	2
	*Raphanus sativus**	wild radish	HA, 1, 2
Cactaceae	*Cylindropuntia californica* var. *parkeri*	California cholla	HA, 1
	Opuntia littoralis	coast prickly pear	HA, 1
	Opuntia oricola	chaparral pricklypear	HA
Caprifoliaceae	*Lonicera subspicata*	southern honeysuckle	1, 2, 3
Caryophyllaceae	*Spergularia* sp.*	sand-spurrey	1
Chenopodiaceae	*Salsola tragus**	Russian thistle	1
Cleomaceae	*Peritoma arborea*	bladderpod	1

Family	Scientific Name*	Common Name	Survey Effort[1]
Convolvulaceae	*Calystegia macrostegia*	southern California morning glory	HA, 1, 2, 3
	*Convolvulus arvensis**	field bindweed	1
Crassulaceae	*Dudleya lanceolata*	lance-leaf dudleya	1, 2
	Dudleya pulverulenta	chalk dudleya	1, 2, 3
Cucurbitaceae	*Cucurbita foetidissima*	calabazilla	1
	Marah macrocarpa	wild cucumber	1
Euphorbiaceae	*Croton setiger*	doveweed	1, 2, 3
	*Euphorbia maculata**	spotted spurge	1, 2
	Euphorbia sp.	spurge	3
	*Ricinus communis**	castor-bean	1, 2
Fabaceae	*Acmispon americanus*	Spanish clover	HA, 1, 2, 3
	Acmispon glaber	deerweed	HA, 1, 2, 3
	Acmispon micranthus	small flowered lotus	HA, 1
	*Lotus corniculatus**	bird's foot trefoil	HA, 1, 3
	Lupinus bicolor	miniature lupine	HA
	Lupinus truncatus	collar lupine	HA, 1
Gentianaceae	*Zeltnera venusta*	canchalagua	HA, 1
Geraniaceae	*Erodium cicutarium**	coastal heron's bill	1
	Erodium sp.*	filaree	HA, 1, 2, 3
Iridaceae	*Sisyrinchium bellum*	blue eyed grass	1, 2
Lamiaceae	*Marrubium vulgare**	white horehound	1, 2
	Salvia apiana	white sage	HA, 1, 2, 3
	Salvia mellifera	black sage	HA, 1
	Stachys ajugoides	hedge nettle	1
	Trichostema lanceolatum	vinegar weed	2, 3
Malvaceae	*Malacothamnus fasciculatus*	chaparral bush mallow	HA, 1
	Sidalcea sparsifolia	checker-bloom	HA, 1
Myrsinaceae	*Lysimachia arvensis**	scarlet pimpernel	1, 2, 3
Nyctaginaceae	*Mirabilis laevis* var. *crassifolia*	coastal wishbone bush	1
Onagraceae	*Clarkia purpurea*	purple clarkia	HA, 1, 3
	Oenothera elata	evening primrose	1, 3
	*Oenothera speciosa**	Mexican evening primrose	HA, 3
Orobanchaceae	*Castilleja foliolosa*	woolly paintbrush	HA
Oxalidaceae	*Oxalis californica*	Californica wood sorrel	1
Papaveraceae	*Eschscholzia californica*	California poppy	1, 2, 3
Phrymaceae	*Diplacus aurantiacus*	sticky monkeyflower	HA, 1, 2, 3
Phytolaccaceae	*Phytolacca americana**	pokeweed	1, 2
Plantaginaceae	*Collinsia heterophylla*	Chinese houses	HA
	Plantago erecta	dot-seed plantain	HA, 1, 2
	*Plantago lanceolata**	ribwort	1, 3
	Sairocarpus (Antirrhinum) nuttallianus	Nuttall's snapdragon	1, 2, 3
Plumbaginaceae	*Limonium* sp.*	sea-lavender	1, 2, 3
Polemoniaceae	*Navarretia hamata*	hooked navarretia	1
Polygonaceae	*Eriogonum fasciculatum*	California buckwheat	HA, 1, 2, 3
	*Polygonum aviculare**	prostrate knotweed	2
	*Rumex crispus**	curly dock	1
Rosaceae	*Heteromeles arbutifolia*	toyon	2, 3
Rubiaceae	*Galium angustifolium*	narrow-leaved bedstraw	HA, 1, 2, 3

Family	Scientific Name*	Common Name	Survey Effort[1]
Saururaceae	*Anemopsis californica*	yerba mansa	1, 2
Scrophulariaceae	*Verbascum virgatum**	wand mullein	1
Solanaceae	*Datura wrightii*	jimsonweed	1, 2, 3
	*Nicotiana glauca**	tree tobacco	1, 2, 3
	*Solanum elaeagnifolium**	horse nettle	2, 3
	Solanum sp.	nightshade	1
Tamaricaceae	*Tamarix ramosissima**	tamarisk	1, 2
Themidaceae	*Bloomeria crocea*	common goldenstar	1
Verbenaceae	*Verbena lasiostachys*	western vervain	HA, 1, 2

* Non-native species

[1] Species observed flowering during a given survey, excluding grasses. HA=habitat assessment. 1 through 3=Survey 1 through Survey 3.

Attachment D

Crotch's Bumble Bee Photos

Photo 1. Male CBB on narrow leaf milkweed (*Asclepias fascicularis*).
June 20, 2024.

Photo 2. Two male CBB on narrow leaf milkweed (*Asclepias fascicularis*).
June 20, 2024.

Photo 3. Male CBB on narrow leaf milkweed (*Asclepias fascicularis*).
June 20, 2024.

Photo 4. Female CBB on California buckwheat (*Eriogonum fasciculatum*).
June 20, 2024.

Photo 5. Female CBB on California buckwheat (*Eriogonum fasciculatum*).
June 20, 2024.

Photo 6. Female CBB on horehound (*Marrubium vulgare*).
June 21, 2024.