



April 11, 2025

MUSLIM MORTUARY AND CEMETERY COMMITTEE

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SUBJECT: Crotch's Bumblebee (*Bombus crotchii*) Suitability Assessment for the Proposed Crescent Cemetery Project Located in Unincorporated Riverside County, California.

Introduction

This report contains the findings of ELMT Consulting's (ELMT) Crotch's Bumblebee suitability assessment conducted for the Crescent Cemetery Project located in unincorporated Riverside County, California. The Crotch's bumblebee suitability assessment included a review of the presence/absence survey conducted by Huffman Environmental, LLC biologists on June 6, June 26, and July 6, 2024, as well as by analyzing historic aerials of the project site, to delineate suitable habitat into quality categories (High, Moderate, Low) observed within the site boundaries.

The plant communities onsite were analyzed for their potential to provide nectar sources for the species and were evaluated for their potential to provide suitable burrowing and nesting habitat for overwintering and colonizing bumblebees, respectively.

Project Location

The project site is generally located north and east of Interstate 15, south of State Route 74, and west of Interstate 215 in Riverside County, California. The project site is depicted on the Lake Elsinore quadrangle of the United States Geological Survey's (USGS) 7.5-minute topographic map within Section 22 of Township 5 South, Range 4 West. Specifically, the proposed project site is located south of River Road, west of the San Jacinto River, north of Canyon Lake, and east of Jarvis Street within Assessor Parcel Numbers (APN) 349-170-003, -004, -005, -006, -007, -008, -009, -010, -011, -012, and -013; and 349-180-002, -004, -005, -006, -007, -008, -016, -017, -020, and -035.

Project Description

The project proposes to construct a cemetery and related support facilities designed for +/- 20,000 gravesites located in the unincorporated area of Riverside County in the community of Meadowbrook, north of Lake Elsinore. The cemetery would be developed over approximately 15 years. Facilities include the following:

- Mortuary - approximately 5,500 square feet (sf) with around 43 of 137 parking spaces (1,300 sf for assembly area). The intent of the mortuary is for burial preparations and small family-oriented gatherings as needed. It will provide offices to support making funeral and burial arrangements, including religious services ancillary to the mortuary, with family attendance.

- Chapel – approximately 9,700 sf with 2,400 sf of assembly area. Parking for each land use is planned to be shared on both sides of the main entry. 77 parking spaces for the chapel of the 152 parking spaces. Total parking provided for this campus area is 137 parking spaces.
- Equipment Shed –approximately 1,400 sf.
- Caretaker Residence. A caretaker residence, approximately 2,200 sf, is planned. It may be a modular design with its own septic tank. It is located near the main chapel area where the site manager can monitor and service the cemetery.

Species Background

Life History and Habitat Requirements

In California, Crotch bumble bees inhabit open grassland and scrub habitats. Suitable bee habitat is based on the availability of flowers on which to forage throughout the duration of the colony (spring through fall), colony nest sites, and overwintering sites for the queens (Xerces Society 2018). Bumble bees are generalist foragers (i.e., they do not depend on any one flower type). Documented food plants for Crotch bumble bees include *Asclepias* sp., *Chaenactis* sp., *Lupinus* sp., *Medicago* sp., *Phacelia* sp., and *Salvia* sp. (Williams et al. 2014). Crotch bumble bees, like most bumble bee species, nest underground (e.g., in abandoned rodent holes) (Xerces Society 2009). Very little is known about the hibernacula utilized by Crotch bumble bee queens in the winter (Xerces Society 2018). However, bumble bees generally overwinter in soft disturbed soil, leaf litter, or abandoned small mammal burrows (Williams et al. 2014; Xerces Society 2018). The flight period for Crotch bumble bee queens is from late February to late October, peaking in early April and again in July. The flight period for workers and males extends between late March and September (Xerces Society 2018).

Threats

The primary threats to the species are present or threatened modification or destruction of its habitat, overexploitation, competition from European honeybees, disease, and other natural events and human-related activities, including pesticide use, population dynamics and structure, and global climate change (The Xerces Society et al. 2018). Any disturbance of the ground (e.g., tilling, mowing, or grazing) can destroy bumble bee colonies or hibernating queens.

Previous Records

The nearest California Natural Diversity Database (CNDDDB) occurrence (#210) is located approximately 5 miles west of the site near Interstate 15 and State Route 79, and the second closest CNDDDB occurrence (#209) is located approximately 6.5 miles north of the site near Lake Skinner east of the site.

The closest observation posted on iNaturalist was made on April 1, 2021, approximately 6.5 miles north of the site near Lake Skinner, and the second closest observation posted on iNaturalist was made on May 1, 2020, approximately 13 miles northwest of the site.

Bumble Bee Watch has one observation of Crotch's bumble bee listed near Lake Skinner in 2021 approximately 6.5 miles north of the project site.

2024 Focused Survey

Crotch’s bumblebee surveys were conducted on June 6, June 26, and July 6, 2024 during Crotch’s bumblebee peak Colony Active Period (CDFW, 2023). Out of three survey rounds, one (1) Crotch’s bumblebee was observed onsite during survey round 1 (refer to exhibits 2 and 3 in Attachment A) . The male Crotch’s bumblebee was observed foraging and nectaring on *Salvia apiana*. After observing the Crotch’s bumblebee initially, the surveyor completed their transects in the remaining suitable habitat then returned to the location after 3 hours surpassed where Crotch’s bumblebee was originally observed and detected Crotch’s bumblebee still foraging on the same *S. apiana*. The remaining survey rounds 2 and 3 were negative for Crotch’s bumblebee detection. With the exception of Crotch’s bumblebee, *Bombus californicus* was detected during survey round 2, but none in survey round 3. The quantity and species observed during each survey round is documented in Table 1 below.

Table 1: Bombus Species Detected During Each Survey

Survey Date	Survey Round	<i>Bombus crotchii</i>	<i>Bombus californicus</i>
6/6/24	1	1	6
6/26/24	2	0	6
7/6/24	3	0	0

Methodology

ELMT biologists reviewed the 2024 Crotch’s Bumblebee Survey Report for the Crescent Gardens Cemetery, conducted by Huffman Environmental, LLC biologist Ryan Meszaros. The report’s findings were analyzed to delineate suitable Crotch’s bumble bee habitat into quality categories (High, Moderate, and Low quality) observed within site boundaries. Onsite plant communities were analyzed for their potential to provide nectar sources for the species. The plant communities were also evaluated for their potential to provide suitable burrowing and nesting habitat for overwintering and colonizing bumble bees, respectively. Historic aerials were analyzed to document changes to the plant communities found onsite. The High, Moderate, and Low-quality habitat are defined below:

High

Nectar Sources – High variety and high abundance of floral resources, floral resources of different blooming times, low competition from other pollinator species

Nesting and Overwintering Habitat - abundance of rodent burrows, loose soil, abundant protection opportunities (i.e. vegetation, leaf litter, shade, etc.), minimally disturbed (i.e. low foot traffic)

Moderate

Nectar Sources – Moderate variety and moderate abundance of floral resources, few floral resources of different blooming times, moderate competition from other pollinator species

Nesting and Overwintering Habitat – Moderate amount of rodent burrows present, moderately loose soil, occasionally disturbed

Low

Nectar Sources – floral resources absent or scarce, all floral resources blooming at the same time, high competition from other pollinator species

Nesting and Overwintering Habitat – rodent burrows not present or scarce, compact soil, exposed ground, heavily disturbed

Additionally, ELMT prepared a general Habitat Assessment and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) consistency analysis to document baseline conditions and assess the potential for special-status plant and wildlife species to occur within the boundaries of the project site. During the general Habitat Assessment, all plant communities were mapped onsite.

Existing Site Condition

The project elevation is around 1,600 feet, with flat to moderate topographic changes. Dirt access roads occur throughout the site and are among various vegetation community types. Most of the project site's vegetation communities consist of California buckwheat scrub and non-native grassland. Smaller portions of the site consist of riparian and disturbed/developed habitats. The site's eastern boundary encounters steeper topography as it borders the foothills near Canyon Lake. The western boundary borders sparse residential property while beyond the north and south boundaries are an extension of the undeveloped, vegetation community composition found within the site. It should be noted, there are honeybee boxes present in the middle of the project site.

Vegetation

The project site primarily supports undeveloped, vacant land with developed land occurring in the western limits of the site where adjacent development is encroaching into site boundaries. In addition, a remnant residential foundation is present in the middle of the eastern portion of the site. Undeveloped portions of the project site generally support natural plant communities, with the exception of a network of access roads and recreational trails that traverse the site. Historic aeriels indicate that the site has supported some form of trails network since at least 1967, and on-site and adjacent development have been present since at least 1978. Refer to Appendix A, *Site Photographs*, for representative site photographs of the project site.

Two (2) natural plant communities were documented on the project site: Riversidean Sage Scrub (RSS), and Mixed Riparian Scrub. In addition, the site supports one (1) land cover type that would be classified as disturbed. Refer to Exhibit 1, *Vegetation*. The plant community and land cover types are described in further detail below.

Riversidean Sage Scrub

The more topographically variable portions of the project site, namely the northern and southern portions and the southeast periphery, support a Riversidean sage scrub plant consistent with other natural areas in the surrounding area. The RSS supported on-site is dominated by a variety of woody perennials and supports a robust herbaceous layer. Vegetative cover in the RSS supported by the project site generally varies from moderate (>50%) to dense (>80%) with pockets of complete cover. Common native plant species observed in the RSS supported by the site include Deerweed (*Acmispon glaber*), fiddleneck

(*Amsinckia* sp.), California sagebrush (*Artemisia californica*), golden stars (*Bloomeria crocea*), splendid mariposa-lily (*Calochortus splendens*), common sandaster (*Corethrogyne filaginifolia*), dove weed (*Croton setiger*), coyote melon (*Cucurbita palmata*), valley cholla (*Cylindropuntia bernardina*), sacred datura (*Datura wrightii*), fasciculated tarplant (*Deinandra fasciculata*), paniculate tarplant (*Deinandra paniculata*), bush sunflower (*Encelia californica*), brittlebush (*Encelia farinosa*), sapphire woollystar (*Eriastrum sapphirinum*), California buckwheat (*Eriogonum fasciculatum*), slender buckwheat (*Eriogonum gracile*), golden yarrow (*Eriophyllum confertiflorum*), rattlesnake sandmat (*Euphorbia albomarginata*), matchweed (*Gutierrezia californica*), heliotrope (*Heliotropium curassavicum*), chaparral yucca (*Hesperoyucca whipplei*), California juniper (*Juniperus californica*), chaparral bush mallow (*Malacothamnus fasciculatus*), wishbone bush (*Mirabilis laevis*), showy penstemon (*Penstemon spectabilis*), holly leaf cherry (*Prunus ilicifolia*), perennial tobacco species (*Pseudognaphalium* sp.), spiny redberry (*Rhamnus crocea*), fragrant sumac (*Rhus aromatica*), white sage (*Salvia apiana*), chia sage (*Salvia columbariae*), blue elderberry (*Sambucus mexicana*), wire lettuce (*Stephanomeria exigua*), and vinegar weed (*Trichostema lanceolatum*). Common non-native plant species observed in the RSS supported on-site include giant reed (*Arundo donax*), broadleaf filaree (*Erodium botrys*), red-stemmed filaree (*Erodium cicutarium*), mustard (*Hirschfeldia incana*), cheeseweed (*Malva parviflora*), horehound (*Marrubium vulgare*), Brazilian pepper (*Schinus terebinthifolius*), and milk thistle (*Silybum marianum*).

Mixed Riparian

The north western portion of the project site supports a mixed riparian scrub plant community on the banks of the on-site drainage feature. Common native plant species observed in the plant community include, black willow (*Salix gooddingii*), baccharis (*Baccharis salicina*), pit seed goosefoot (*Chenopodium berlandieri*), coyote melon, sacred datura, giant wild rye (*Elymus condensatus*), matchweed, heliotrope, wire rush (*Juncus balticus*), duck weed (*Lemna* sp.), chaparral bush mallow, arroyo willow (*Salix lasiolepis*), rough hedge nettle (*Stachys rigida*), and stinging nettle (*Urtica dioica*). Common non-native plant species observed in this plant community include tree of heaven (*Ailanthus altissima*), red gum (*Eucalyptus camaldulensis*), horehound, tree tobacco (*Nicotiana glauca*), and London rocket (*Sisymbrium irio*).

It should be noted that several large red gum trees in this area appear to have been partially harvested, as several trunks remain intact while missing the majority of their mass above lateral chainsaw cuts. This portion of the site also appears to have supported some kind of horticultural or agricultural operation, as suggested by swathes of evenly spaced plants that are visible in some capacity from August 2019 to January 2023. The areas supporting growing operations were removed entirely during the recent grading.

Disturbed

Disturbed land generally encompasses areas where historic impacts or land uses have removed natural plant communities from an area and where routine disturbance prevents the re-establishment of a natural plant community. Within the boundaries of the project site, disturbed land is present throughout most of the southern portion of the site, in the western periphery of the site, and within and along a series of dirt trails and access roads that are routinely impacted by off-highway recreational vehicle access and other off-roading activities. Developed land supported on-site is generally barren and often supports dense monocultures of such species as dove weed, paniculate tarplant, brittlebush, vinegar weed, mustard, and stinknet (*Oncosiphon pilulifer*), and remnant stands of long-lived perennials that are adapted to routine disturbance such as California juniper. Other common native plant species observed in the disturbed land

supported by the project site include deerweed, bush sunflower, California buckwheat, slender buckwheat, rattlesnake sandmat, matchweed, heliotrope, and Californica juniper. Other common non-native plant species observed include oats (*Avena* spp.), foxtail brome (*Bromus madritensis*), red brome (*Bromus rubens*), tocalote (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), broadleaf filaree, red-stemmed filaree, red gum, cheeseweed, tree tobacco, Jerusalem thorn (*Parkinsonia aculeata*), Russian thistle (*Salsola tragus*), milk thistle, and London rocket.

Results

Nectar Source Suitability

Based on the review of existing reports and data, it was determined that the plant communities on the majority of the southern portion, the western extent, and the middle of the project site have a low potential to provide nectar sources for Crotch’s bumblebee due to the lack of variety and lack of abundance of floral resources. The middle and southern portions of the project site were determined to have a moderate potential to provide nectar sources for Crotch’s bumblebee due to lack of diversity of floral resources as well as proximity to the honeybee boxes, as its presence provides competition to the floral resources. The western and northern portions of the project site were determined to have a high potential to provide nectar sources for Crotch’s bumblebee due to the abundance and diversity of floral resources such as California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), Acton Encelia (*Encelia actonii*), and bull thistle (*Cirsium vulgare*). Refer to Exhibit 2, *Nectar Source Suitability*. The nectar source habitat qualities identified within the entire project site, and with the proposed limits of disturbance are provided in Table 2 below.

Table 2: Nectar Source Habitat Quality and Anticipated Impacts

	High (acres)	Moderate (acres)	Low (acres)	Unsuitable (acres)	Total
Project Site	26.2	7.6	45.3	6.2	85.3
Project Phase 1 (impacts)	1.1	0.60	21.5	3.1	26.3
Project Phase 2 (impacts)	9.0	1.8	9.4	1.3	21.5
Project Phase 3 (impacts)	2.3	0	6.9	0.3	9.5

Burrowing and Nesting Suitability

The southern portion of the project site was determined to have a low potential to provide burrowing and nesting habitat for Crotch’s bumblebee due to the disturbed and compact soils, lack of rodent holes, exposed ground, and distance from suitable nectar sources. The northern portion of the project site was determined to provide both moderate and high quality habitat for burrowing and nesting due to the presence of friable soils, presence of rodent burrows, and lack of anthropogenic disturbances. Refer to Exhibit 3, *Burrowing and Nesting Suitability*. The burrowing and nesting habitat qualities identified within the entire project site, and with the proposed limits of disturbance are provided in Table 3 below.

Table 3: Burrowing and Nesting Habitat Quality and Anticipated Impacts

	High (acres)	Moderate (acres)	Low (acres)	Unsuitable (acres)	Total
Project Site	36.6	14.9	27.6	6.2	85.3
Project Phase 1 (impacts)	1.3	4.2	1.3	3.1	9.9
Project Phase 2 (impacts)	12.6	7.0	0.5	3	23.1
Project Phase 3 (impacts)	2.4	0.1	6.8	0.3	9.6

It should be noted, the heavily trafficked dirt access roads were excluded and determined unsuitable habitat for both nectar sources and burrowing and nesting habitat for Crotch’s bumblebee.

Conclusions

Onsite nectaring sources will be field verified during the 2025 spring blooming season when California buckwheat, white sage, and encelia are in bloom.

Please do not hesitate to contact Travis McGill at (909) 816-1646 or travismcgill@elmtconsulting.com should you have any questions regarding this report.

Sincerely,



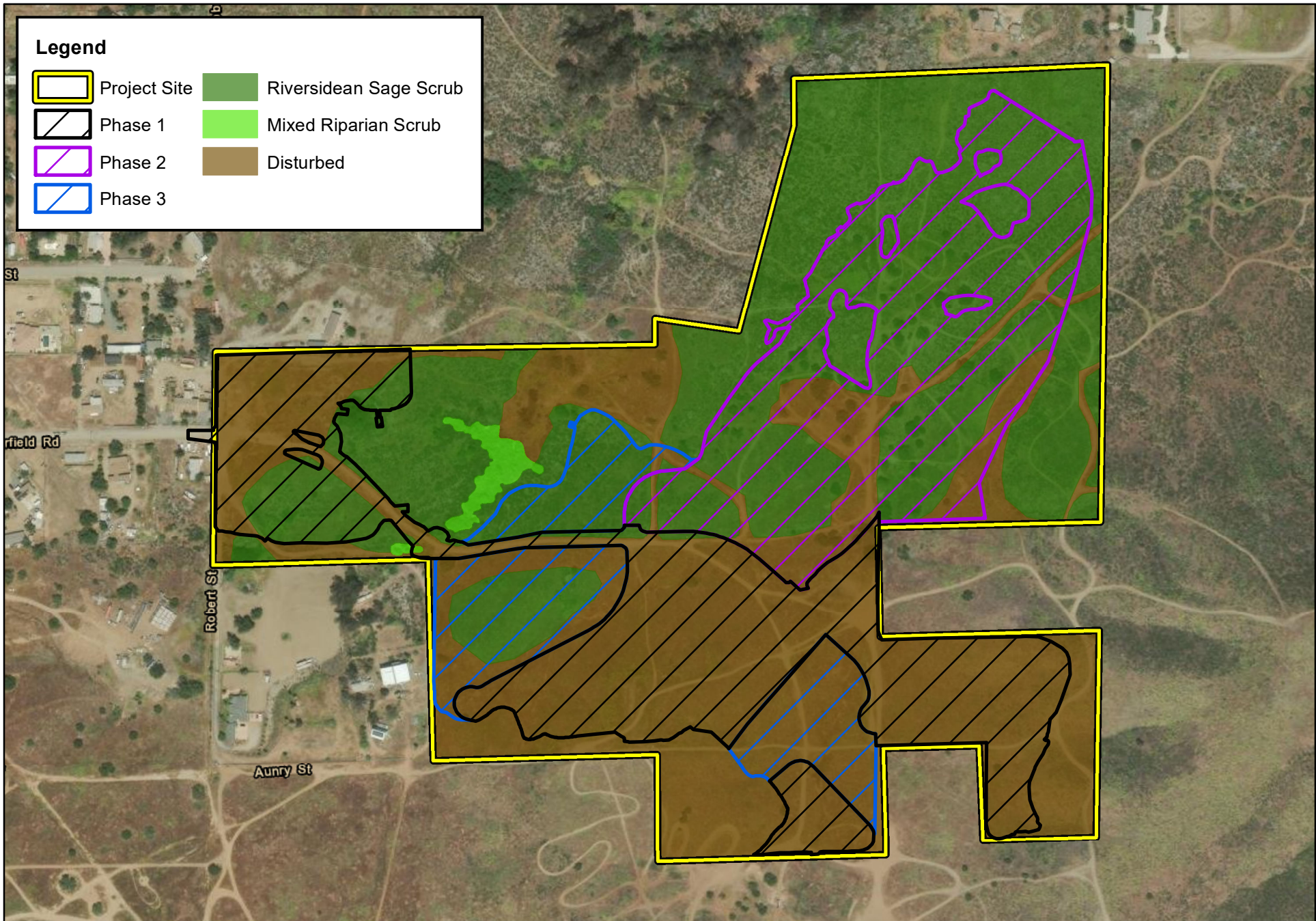
Travis J. McGill | Director/Biologist

Attachments:

- A. *Project Exhibits*
- B. *Site Photographs*

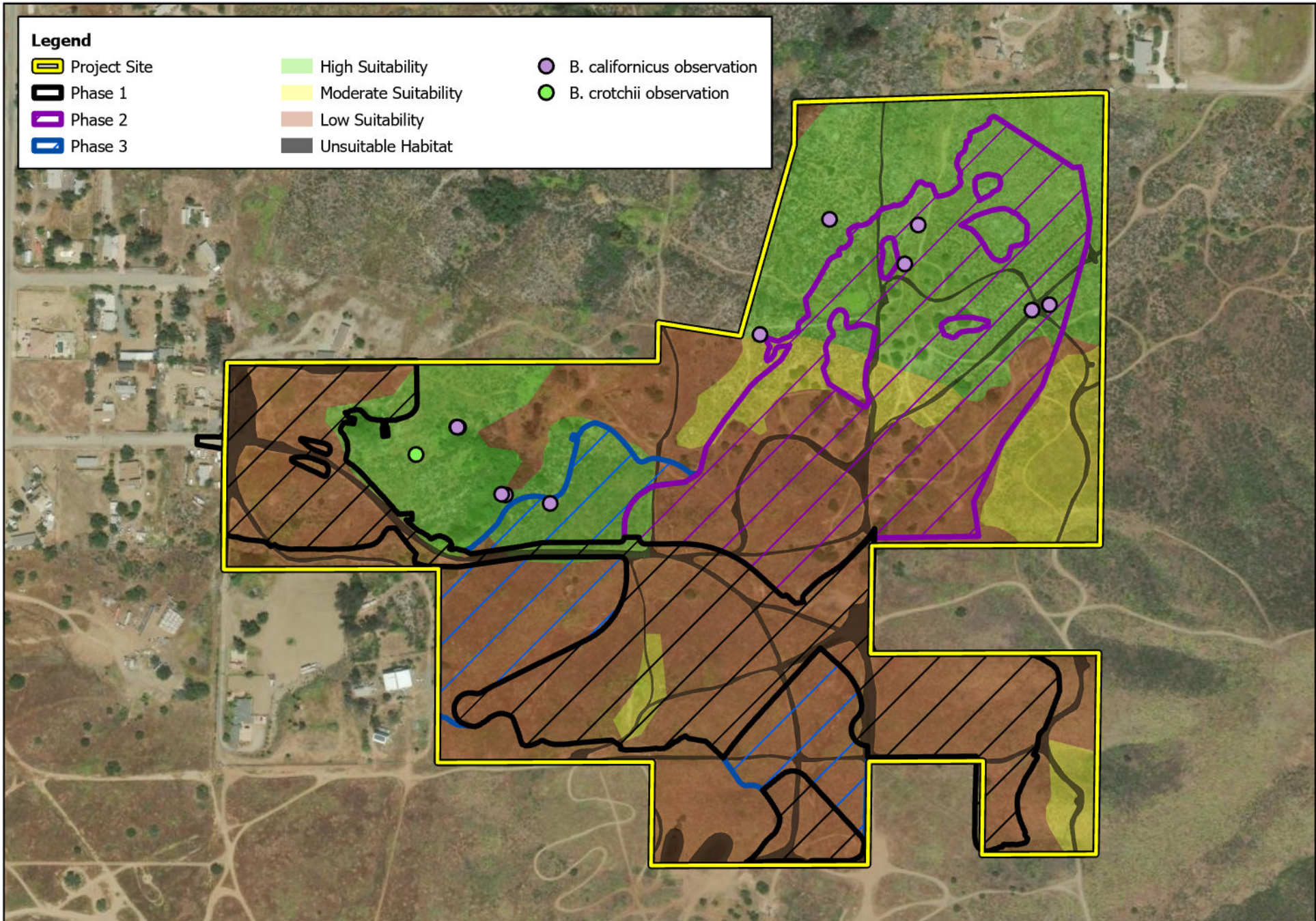
Attachment A

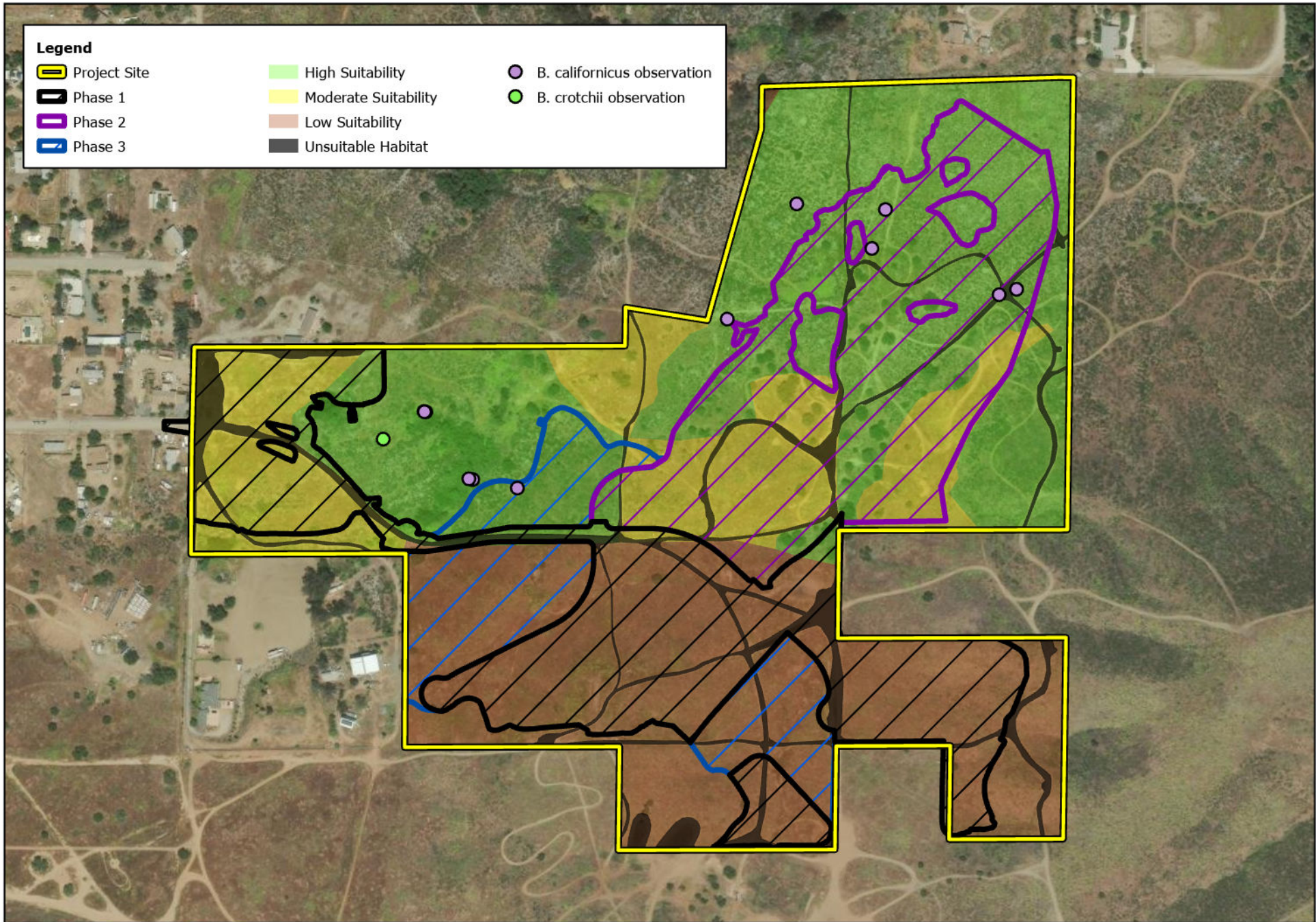
Project Exhibits



Legend

- Project Site
- Phase 1
- Phase 2
- Phase 3
- Riversidean Sage Scrub
- Mixed Riparian Scrub
- Disturbed



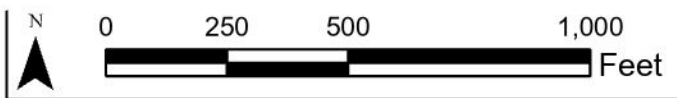


Legend

- Project Site
- Phase 1
- Phase 2
- Phase 3
- High Suitability
- Moderate Suitability
- Low Suitability
- Unsuitable Habitat
- B. californicus observation
- B. crotchii observation

CROTCH'S BUMBLEBEE SUITABILITY ASSESSMENT
CRESCENT CEMETERY

Burrowing and Nesting Suitability



Source: ESRI Aerial Imagery, Riverside County

Attachment B

Site Photographs



Photograph 1: From the southeast corner of the project site, looking west along the southern boundary.



Photograph 2: From the southeast corner of the project site, looking northwest through undeveloped land.



Photograph 3: From the southeast corner of the project site, looking north along the eastern boundary.



Photograph 4: From the northeast portion of the project site looking west through undeveloped land onsite.



Photograph 5: From the northeast portion of the project site, looking southwest through undeveloped land.



Photograph 6: From the northeast portion of the project site, looking south through undeveloped land.



Photograph 7: From the middle of the project site, looking west through an area which supports an apiary onsite.



Photograph 8: From the northwest region of the project site, looking south through an area of the site which historically supported a well and pump system.



Photograph 9: From the southwest region of the project site, looking east through existing vegetation surrounding the onsite drainage feature.



Photograph 10: From the southwest region of the project site, looking northeast through undeveloped land onsite.