July 8, 2024

LEWIS MANAGEMENT CORP.
Contact: Waen Messner
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Upland, California 91786

SUBJECT: Crotch Bumblebee Suitability Assessment Report for the Proposed Grand Terrace Project Located in the City of Grand Terrace, San Bernardino County, California

Introduction

On June 12, 2019, the California Fish and Game Commission (Commission) voted to accept a petition from the Xerces Society (2018) to consider listing four subspecies of bumble bee, including the Crotch bumble bee (*Bombus crotchii*), under the California Endangered Species Act (CESA). As a result of this decision, the Crotch bumble bee is a state candidate endangered species; as such, it is temporarily afforded the same protection as state-listed threatened or endangered species. The range of Crotch bumble bee historically extended throughout the southern two thirds of California, from coastal California east to the Sierra-Cascade crest and south into Mexico, but recent data indicates that this species is absent from the center of its historical range due to extensive agricultural intensification and urbanization (Xerces Society 2018).

This memorandum assesses existing site conditions and the potential for Crotch's bumble bee to occur on the project site. The assessment was conducted by ELMT biologists who are familiar with Crotch bumble bee and associated insect species on June 12, 2024.

Project Location

The project site is generally located north of State Route 60, east and south of Interstate 215, and west of Reche Canyon Road in the City of Grand Terrace, San Bernardino County, California. The site is depicted on the San Bernardino South quadrangle of the United States Geological Survey's (USGS) 7.5-minute topographic map within Sections 5 and 6 of Township 2 South, Range 4 West. Specifically, the project site is bounded to the west by Interstate 215, to the north by Commerce Way, and lies west of Michigan Street and north of Main Street within Assessor Parcel Numbers (APNs) 116-715-108, -109, -179, and 116-716-102, -103, -104, and -133. Refer to Exhibits 1-3 in Attachment A.

Project Description

This project proposes the development of The Gateway Specific Plan. Development includes land allocation for general commercial, residential, park, drainage facility, open space, and utilities areas as well as new roadways. Specific development information is not available at this time. However, the project site generally spans approximately 102 acres.

Methodology

A query of the California Natural Diversity Data Base (CNDDB) (CDFW 2023) for nearby occurrences of

special-status bumblebees and also searched iNaturalist (2023) for recent nearby observations of bumble bees was conducted. Additionally, the Bumble Bee Watch (2022) was reviewed for observations of special-status bumble bee species observations in Riverside County. Additionally, available background information and literature was reviewed**,** including the petition to list the species (The Xerces Society et al. 2018) and the California Department of Fish and Wildlife's (CDFW) response (CDFW 2019) to the petition.

The survey consisted of one site visit on June 12, 2024. The visual survey was conducted under dry weather conditions with temperatures between 80 degrees Fahrenheit (°F) and 90°F degrees and sustained winds of less than 5 miles per hour (mph) as averaged over a 30-second period. The visual survey began at least 2 hours after sunrise and ended at least 4 hours before sunset. Surveys were conducted by walking transects through the vegetation within the project site. Survey transects were spaced approximately 30 feet apart or closer if needed for visual coverage of potential nest sites. The survey consisted of looking for potential nest sites (e.g., holes, crevices), sources of nectar, and the presence of Crotch bumblebees on the ground or in vegetation and following them to an active nest.

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

A records search was conducted for Crotch's bumble bee occurrences within the past twenty (20) years and within a 5-mile radius of the project site. The nearest CNDDB occurrence (#428), recorded on May 4, 2020, is located approximately 4.82 miles southeast of the site in the City of Moreno Valley within Box Springs Mountain Reserve near the southern end of Altabrisa Way. The next-closest CNDDB occurrence (#427),

recorded on April 16, 202, is located approximately 4.9 miles southwest of the site in the City of Riverside near the intersection of Riverside Avenue and Elmwood Court. Refer to Exhibit 5, *CNDDB Occurrences* in Attachment A.

The closest observation posted to iNaturalist was made on June 18, 2020 approximately 2.93 miles northwest of the site in the City of Bloomington. The next-closest observation posted to iNaturalist was made on May 2, 2023, approximately 3.59 miles south of the site at the UC Riverside Botanic Gardens.

Bumble Bee Watch has one observation of Crotch's bumble bee in the Belvedere Heights neighborhood of the City of Riverside on April 26, 2020. approximately 2.74 miles southeast of the project site.

Existing Site Conditions

The project site is entirely surrounded by existing development and spans multiple roadways as well as the Riverside Canal, which occurs in the western region of the project site. The project site supports two (2) plant communities that would be classified as non-native grassland and mixed riparian woodland, and two (2) landcover types that can be classified as developed and disturbed (refer to Exhibit 4, *Vegetation*, in Attachment). The site consists primarily of vacant, undeveloped land that has been subject to a variety of anthropogenic disturbances such as disking, weed abatement, and onsite and surrounding development.

Vegetation

The non-native grassland plant community throughout the majority of the project site. Plant species present in the non-native grassland community include those present in the disturbed areas onsite. In general, vegetative density is higher in the non-native grassland plant community than in the disturbed areas onsite. Additional species observed in the nonnative grassland plant community include wild radish (*Raphanus raphanistrum*), prickly pear cactus (*Opuntia* sp.), tree tobacco (*Nicotiana glauca*), Mediterranean grass (*Schismus barbatus*), brittlebush (*Encelia farniosa*), stinknet (*Oncosiphon piluliferum*), purple fountain grass (*Pennisetum setaceum rubrum*), silver leaf nightshade (*Solanum elaeagnifolium*), and prostrate knotweed (*Polygonum aviculare*).

A mixed riparian woodland plant community was observed in several areas onsite including in and alongside the Riverside canal, and in several depressions which support a higher soil moisture. Species present in the mixed riparian woodland include castor (*Ricinus communis*), tree of heaven (*Ailanthus altissima*), Mexican fan palm (*Washingtonia robusta*), tree tobacco, Canada thistle (*Cirsium arvense*), and manroot (*Marah* sp.).

Additionally, the project site supports a disturbed landcover type. Disturbed areas onsite occur along margins of development and are most heavily concentrated along existing roadways and other paved areas. Other disturbed areas occur throughout the site in conjunction with fallow fields remnant of historical agricultural practices. These areas undergo frequent disturbance associated with weed abatement and disking. Species present in the disturbed areas onsite include spurge (*Euphorbia albomarginata*), red stem filaree (*Erodium cicutarium*), ripgut brome (*Bromus diandrus*), Jimson weed (*Dartura stramonium*), prickly lettuce (*Lactuca seriola*), London rocket (*Sysymbrium irio*), and common sunflower (*Helianthus annus*).

The project site also supports developed land in the form of active residential housing, a commercial storage facility, paved roadways, and small utilities structures. Residential development, along with the commercial storage facility occurs in the northern region of the project site along De Berry Street. Pump Station housing owned by the County of Riverside for the Van Buren Well occurs in a central area of the project site along Van Buren Street. Developed areas onsite are generally void of vegetation with the exception of ornamental landscaping. Plant species observed in the developed areas onsite include oleander (*Nerium oleander*), Mexican fan palm, eucalyptus (*Eucalyptus* sp.), palo verde (*Parkinsonia aculeata*), and mandarin (*Citrus reticulata*).

Survey Results

The proposed project site will generally span existing developed areas such as paved roadways and parking lots, fallow agricultural fields, active and historic grazing areas, and highly disturbed land subject to frequent disturbance such as disking. The project site predominantly supports a non-native grassland plant community with an unnamed drainage feature that primarily supports non-native riparian vegetation. The non-native plant communities onsite largely outcompete the native nectar and pollen-producing plants that Crotch's bumble bee could use. Crotch bumble bee habitat on the project site is of low quality due to high disturbance and low diversity of flowering plant species. No Crotch bumble bees, or nests were identified within the project area that was surveyed.

Conclusion

Generally, for all bumble bee species, high-quality habitat has three major components: a diverse supply of flowers for nectar and pollen, nesting locations, and subterranean spaces for overwintering queens (Hatfield et al. 2012).

Based on the results of this assessment, the project site and immediately surrounding areas were determined to provide low plant diversity for nectar sources. Further, no bumble bees have been recorded in the immediate vicinity of the project site (the closest recorded occurrence within the past 20 years is 2.74 miles southeast of the project site), and no bumble bees were observed onsite during the field investigation.

Due to existing anthropogenic disturbances, low plant diversity for nectar sources, no recorded occurrences in the immediate vicinity of the project site, and lack of observations during the field investigations Crotch bumble bee are presumed absent from the project site.

Please do not hesitate to contact Tom McGill at (951) 285-6014 or tmcgill@elmtconsulting.com or Travis McGill at (909) 816-1646 or travismcgill@elmtconsulting.com should you have any questions regarding this proposal.

Sincerely,

Thomas J. McGill, Ph.D.
Managing Director

Travis J. McGill
Director

Attachments:

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

Attachment A

Site Photographs

Photograph 1: From the northwest corner of the project site, looking east along the northern boundary.

Photograph 2: From the northwest corner of the project site, looking south along the western boundary.

Photograph 3: From the southern shoulder of De Berry Street, looking south through an area of vacant residential development and historical grazing areas.

Photograph 4: From the southern shoulder of De Berry Street, looking south through an area of active residential development.

Photograph 5: From the middle of the project site, looking east through an area of the site supporting commercial storage operations.

Photograph 6: From the western boundary of the project site, looking south along an unpaved utility road and the Riverside Canal.

Photograph 7: From the middle of the eastern boundary, looking west through an area which has undergone recent disking activities.

Photograph 8: From Van Buren Street, looking west through the project site.

Photograph 9: From the western region of the project, looking east through nonnative grasslands supported onsite and an unnamed drainage.

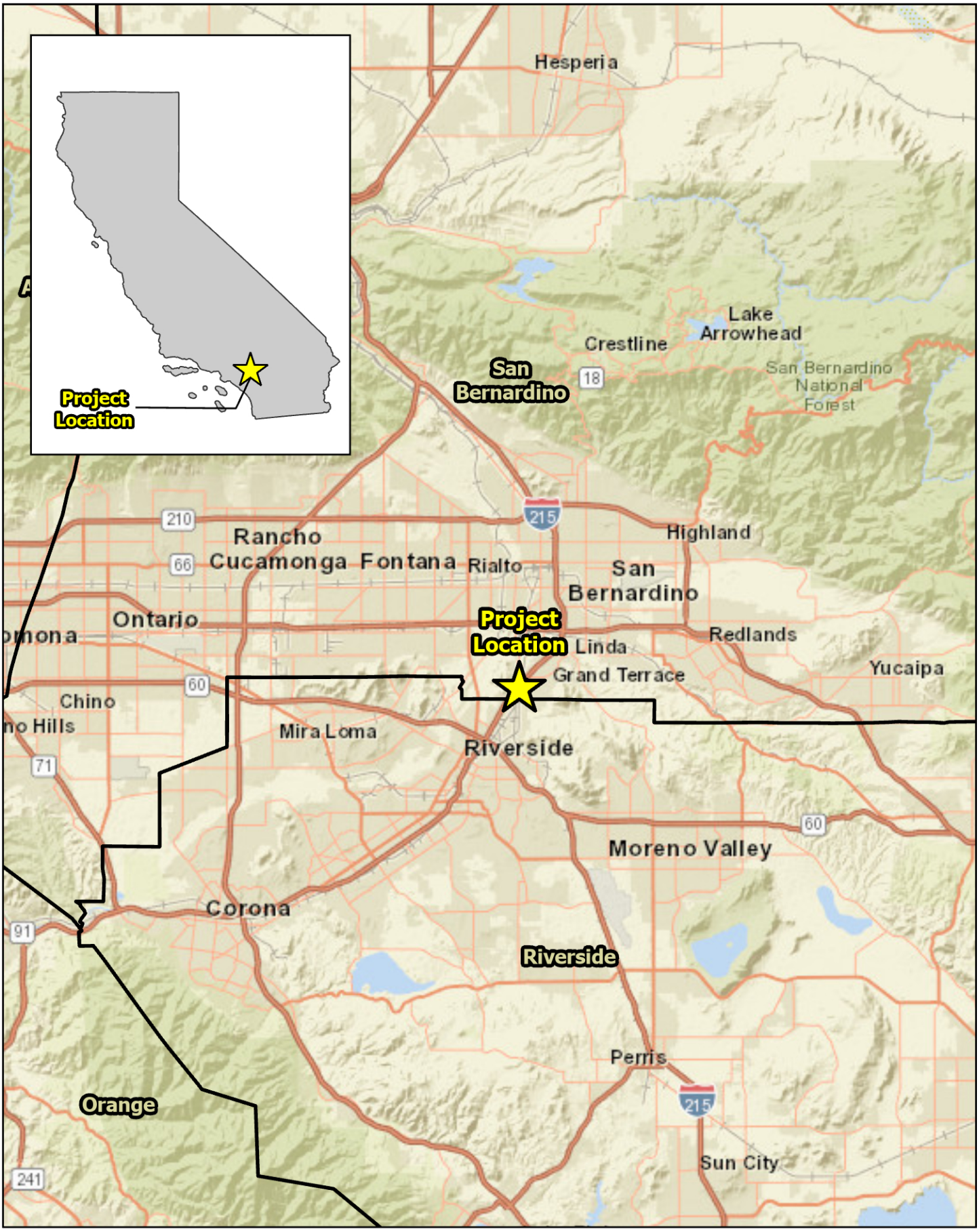
Photograph 10: From the southwest limits of the project site, looking north long an unpaved access road adjacent to Taylor Street.

Photograph 11: From the southwest limits of the project site, looking east along the southern boundary.

Photograph 12: From the southern boundary of the project site, looking north through an area supporting a riparian plant community.

Attachment B

Project Exhibits



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N

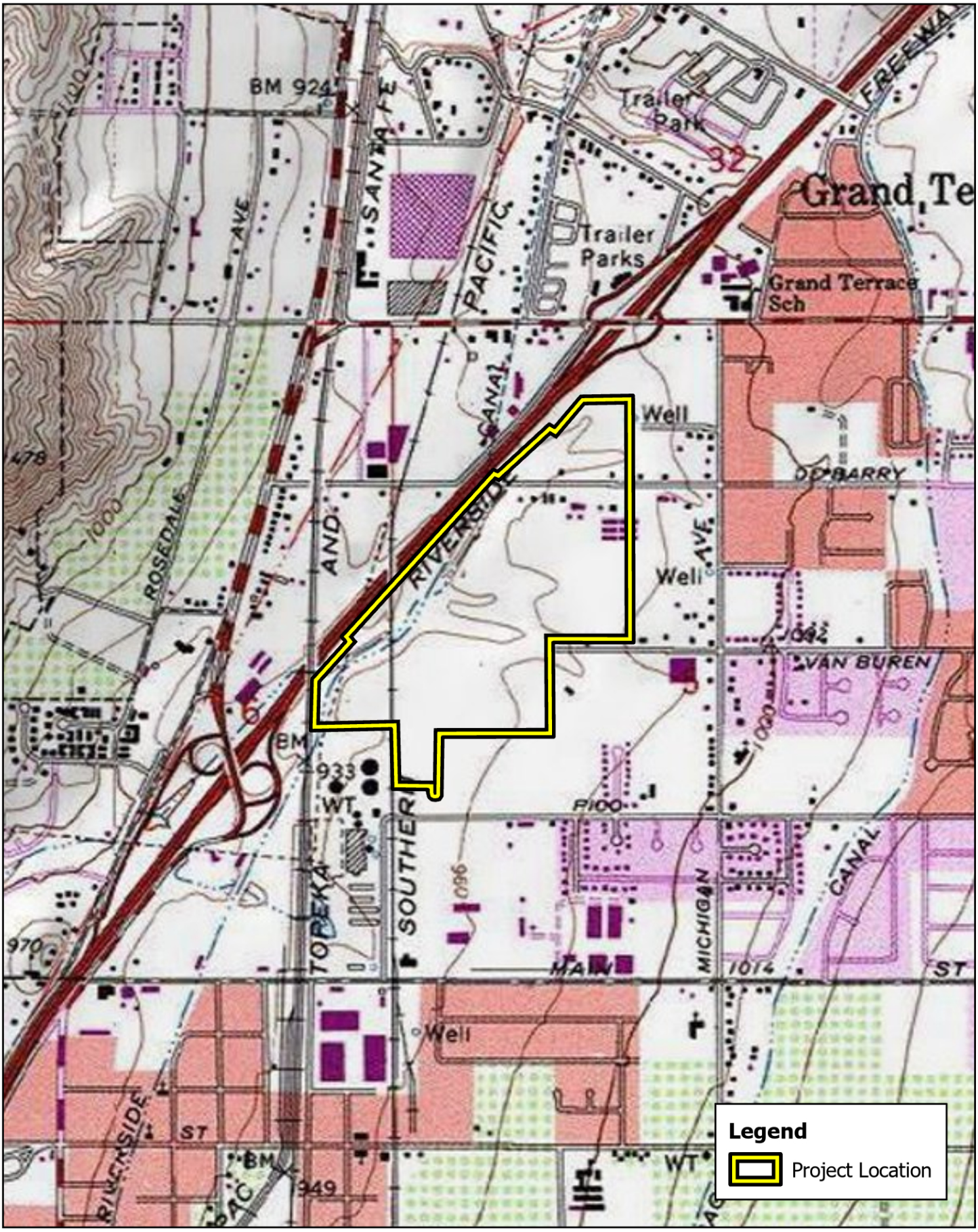
0 2.5 5 10 Miles

Source: Google Street Maps, San Bernardino County

THE GATEWAY AT GRAND TERRACE SPECIFIC PLAN
CROTCH BUMBLE BEE SUITABILITY ASSESSMENT

Regional Vicinity

Exhibit 1



ELMT CONSULTING

N

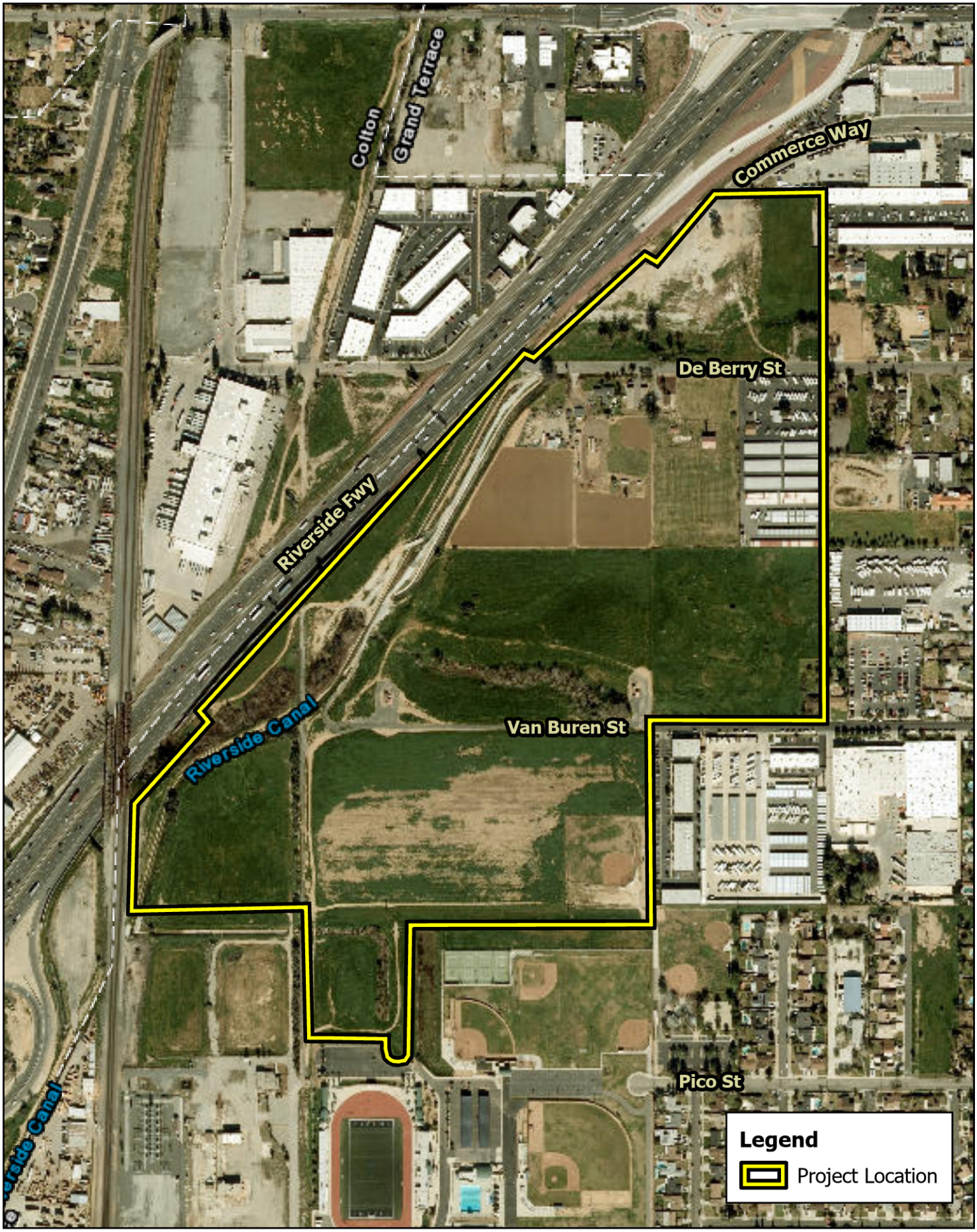
0 500 1,000 2,000 US Feet

Source: USGS Topographic Map, San Bernardino County

THE GATEWAY AT GRAND TERRACE SPECIFIC PLAN
CROTCH BUMBLE BEE SUITABILITY ASSESSMENT

Site Vicinity

Exhibit 2



ELMT CONSULTING

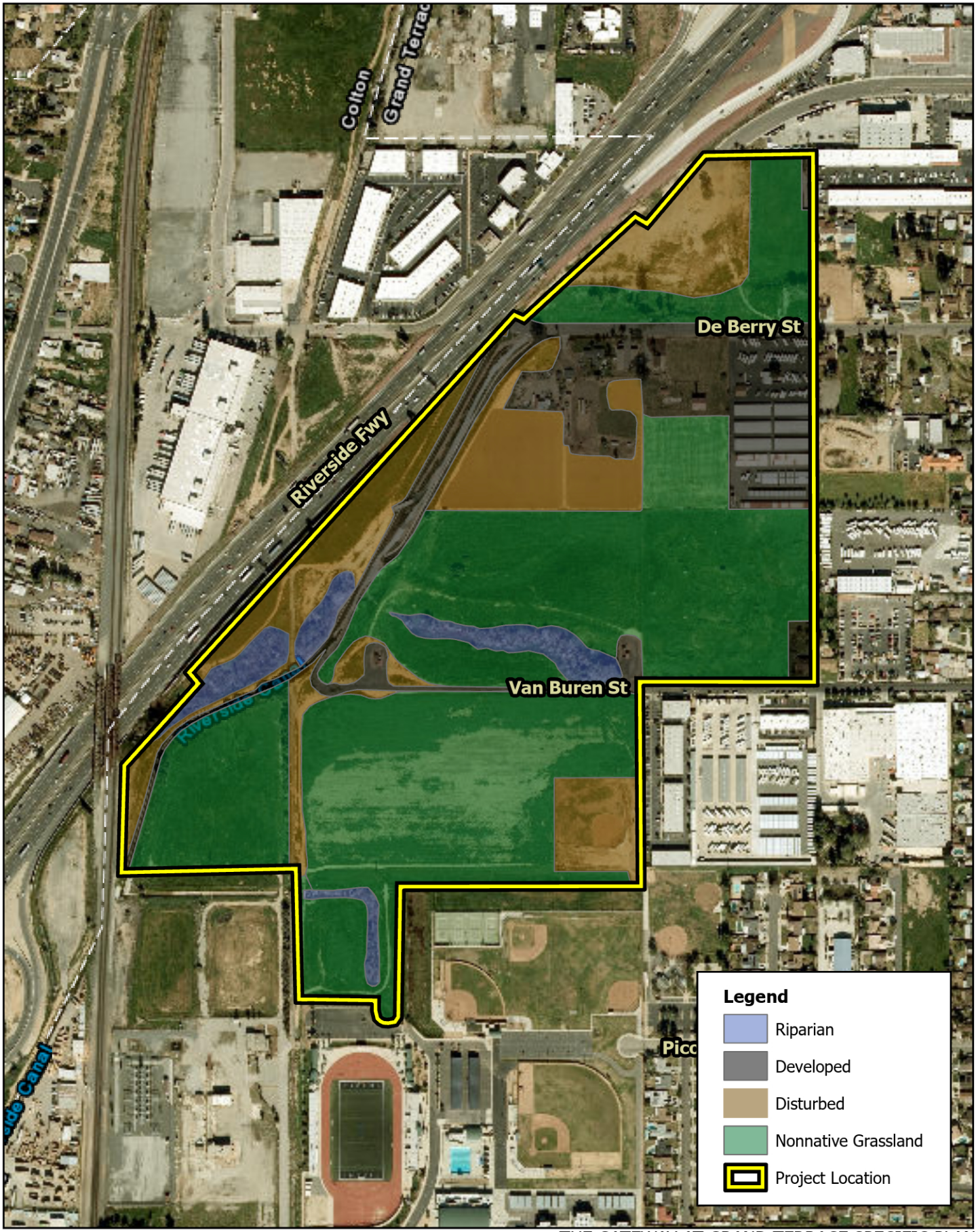
N 0 180 360 720 US Feet

Source: ESRI Aerial Imagery, San Bernardino County

THE GATEWAY AT GRAND TERRACE SPECIFIC PLAN
CROTCH BUMBLE BEE SUITABILITY ASSESSMENT

Project Site

Exhibit 3



ELMT CONSULTING

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0 180 360 720

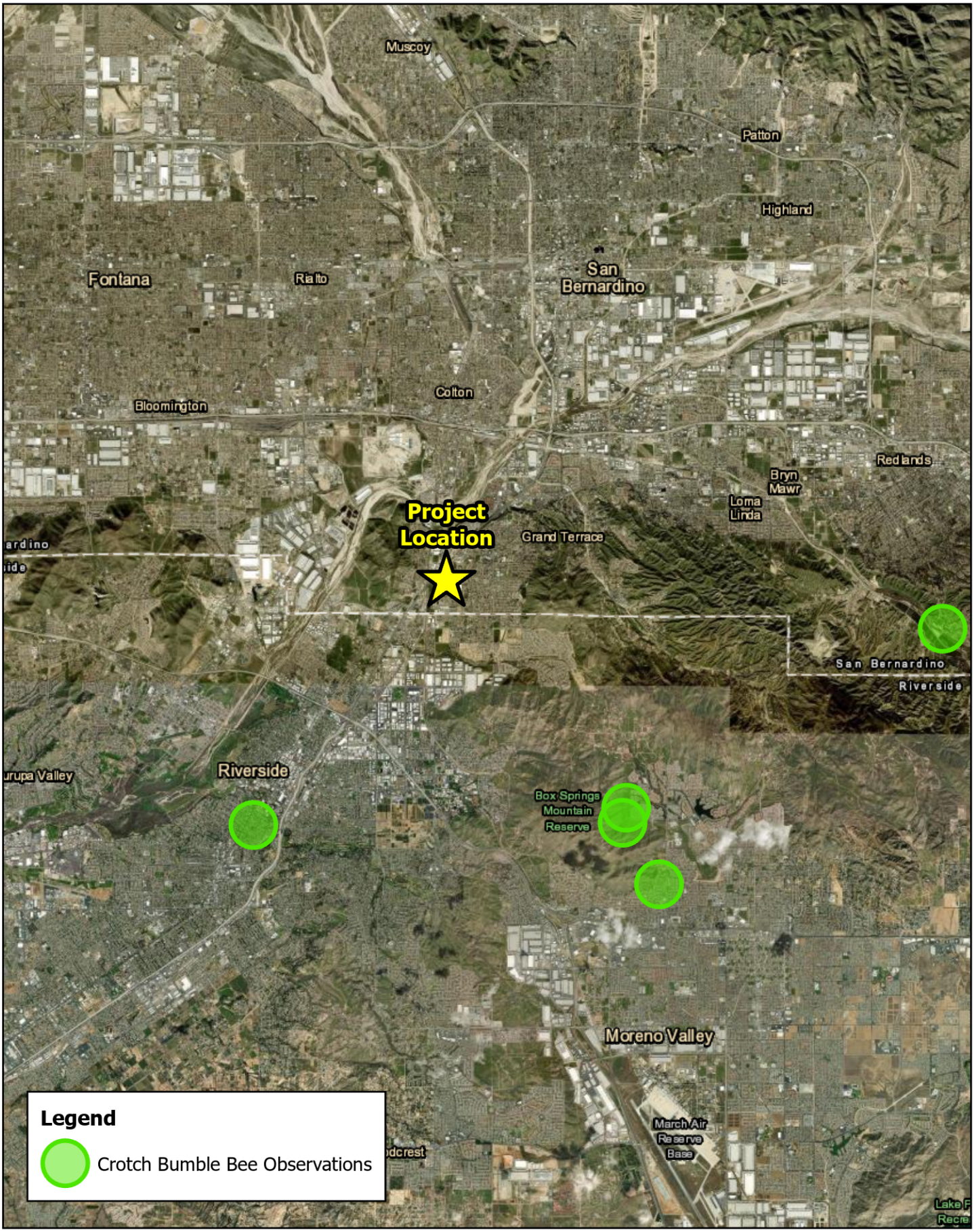
US Feet

Source: ESRI Aerial Imagery, San Bernardino County

THE GATEWAY AT GRAND TERRACE SPECIFIC PLAN
CROTCH BUMBLE BEE SUITABILITY ASSESSMENT

Vegetation

Exhibit 4



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THE GATEWAY AT GRAND TERRACE SPECIFIC PLAN
CROTCH BUMBLE BEE SUITABILITY ASSESSMENT

CNDDB Observations

Exhibit 5