MEMORANDUM

February 19, 2025

To:
Nathan Keith
Centennial Founders LLC

From:
Marc Blain

Subject: Crotch's Bumble Bee Habitat Assessment for the Centennial Specific Plan Project

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This memorandum presents the results of a habitat assessment for the Crotch's bumble bee (*Bombus crotchii*) for the Centennial Specific Plan Project (hereinafter referred to as the "project") in unincorporated Los Angeles County, California. The purpose of the assessment was to determine current habitat suitability for Crotch's bumble bee (CBB) on the Project site. To date, focused surveys for Crotch's bumble bee have not been conducted for the project; however, CBB was detected on the project site during sensitive insect surveys in 2003 (Bruyea Biological Consulting). At the time of the sensitive insect species surveys, CBB did not have regulatory protection.

PROJECT LOCATION AND DESCRIPTION

The Project is proposed on approximately 12,323 acres (19.3 square miles) of land in the northwestern portion of the Antelope Valley in unincorporated Los Angeles County. The Project site boundary is located on privately owned Tejon Ranch, which is actively used for grazing; farming; hunting; mineral, oil, and, gas extraction. Tejon Ranch is located mainly north of the Project site, primarily in Kern County.

The Project site is located approximately 35 miles north of the City of Santa Clarita in Los Angeles County; approximately 50 miles south of the City of Bakersfield in Kern County via State Route (SR) 99 and Interstate (I) 5; and approximately 36 and 43 miles west of the Cities of Lancaster and Palmdale, respectively, in Los Angeles County via SR-138. The Project site is bisected by SR-138 and is located approximately one mile east of I-5, just south of the Kern County/Los Angeles County boundary in the vicinity of Quail Lake. The community of Gorman in Los Angeles County is adjacent to I-5 and is approximately four miles north of the I-5/SR-138 junction. The community of Neenach is located approximately 1.2 miles to the east of the Project boundary. The West Branch of the State Water Project's (SWP) California Aqueduct bisects the Project.

REGULATORY STATUS

Crotch's bumble bee was petitioned for listing in October of 2018 as an Endangered species under the California Endangered Species Act (CESA). The California Fish and Game Commission determined that listing as Endangered "may be warranted" in June 2019, and the species advanced to Candidacy. The Commission's determination was challenged in court soon after, and Candidacy (and related protections) were stayed during the ensuing litigation. A California court of appeal ultimately upheld the Commission's determination, and the state Supreme Court declined to review the case. Candidacy was reinstated on September 30, 2022. As a California

State Candidate Endangered Species,[1] the species receives the same legal protection afforded to Endangered or Threatened species (Fish & Game Code, §§ 2074.2 & 2085).

SPECIES BACKGROUND

The Crotch's bumble bee is a near endemic species in California. It occurs throughout most of southwestern California including the Mediterranean region, along the Pacific coast, western deserts (sporadically), Great Valley, and adjacent foothills (Williams 2014; Zungri 2005). It was historically common in the Central Valley of California, but currently appears to be absent from most of it, specifically in the center of its historic range (Hatfield *et al*. 2014). It has also been documented in southwest Nevada near the California boarder and in Baja California, Mexico in the Sierra de Jaurez Mountain Range (Labougle 1990; Williams 2014). While this species can be found in most native habitats, it prefers grassland and scrub habitat types. It can also be found in urban areas with landscaped flowering plants.

Bumble bees are social insects that live in colonies composed of a queen, workers, and reproductive (males and gynes/new queens). Colonies are annual and only the new, mated queens overwinter. The mated queens emerge from hibernation in the spring and begin forage for pollen and nectar and look for a new colony nest location. Bumble bees do not dig their own nest cavities, but instead utilize abandoned rodent burrows, hollow logs, leaf litter, tufted grass patches, rock piles, and above ground man-made structures. CBB is a ground nester and often makes its nest in abandoned mammal burrows. Once a nest site is located, the queen will lay the first clutch of eggs. After hatching, the larvae feed on stored pollen for approximately two weeks before pupating for another two weeks. The adults that emerge from these pupae are females/workers who then take over foraging for resources, and tending to new clutches of eggs and larvae, while the queen lays more eggs. The workers/females also help to regulate the temperature of the nest and defend the nest against predators (Williams 2014). Colonies persist though the spring and summer months with successive broods of workers/females being produced as more floral resources become available. At some point in the summer, the colony switches to produce males and queens. The timing of this switch is not well understood but is generally thought to be related to the age of the queen and the size of the colony (Williams 2014). Adult male bumble bees do not forage for the colony but instead, leave the nest to feed at flowers and search for mates. The male CBB perches on pheromone-scented vegetation and waits for queens to fly by. While male bumble bees feed and search for mates, newly emerged queens leave the colony to feed during the day. The queens eat a large amount of pollen and nectar to build up fat reserves for overwintering. Queens typically mate only once with only one male, and then begin their search for an overwintering location. Little is known about overwintering sites; however, overwintering queens have been reported to use animal burrows, holes in loose dirt, leaves, or compost piles (Williams 2014). Once the new queen has mated, the colony declines, and the remaining bees die before winter begins.

CBB is a relatively large bumble bee with the queen measuring approximately 22 to 25 millimeters (mm) and the workers measuring approximately 12 to 20 mm (Williams 2014). CBB is a short-tongued species and prefers food plants from the following genera: *Asclepias*, *Chaenactis*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia* (Williams 2014). The hairs on Crotch's bumble bee are very short and even, giving it a clean appearance. The head of this species is considered short,

1 The species status will eventually change following the decision of the Fish and Game Commission to either designate the species as threatened or endangered or determine the species is not warranted for listing.

with the cheek (oculo-malar area) distinctly shorter than broad (Williams 2014). CBB female workers have yellow hair only on the front of the thorax and on the second abdominal segment (terga 2), males have yellow on both the front and back of the thorax and on both abdominal segments 1 and 2 (terga 1 and 2). In certain parts of its range, CBB may also show some reddish-brown coloration on the lower abdomen segments (terga 4 and 5).

CBB has been impacted by many environmental factors including rapid urbanization and the spread of agriculture. This is most evident in the Central Valley of California where this species now appears to be absent. Climate change, specifically increasing aridity, is an additional threat, especially because CBB has a very narrow climatic specialization compared to most bumble bees (NatureServe 2014). Bumble bees in general are threatened by several additional factors including pesticide use, pathogens from managed pollinators, as well as competition with non-native bees (Goulson 2010; Williams *et al*. 2009; Williams and Osborne 2009; Cameron *et al*. 2011; Fürst *et al*. 2014; Hatfield *et al*. 2012). Reduced genetic diversity resulting from any of these threats is also a limiting factor for bumble bee populations, because their method of sex-determination can be disrupted by inbreeding.

CBB was listed as one of the most abundant bee species on the Project site along with the honeybee (*Apis mellifera*) in the 2003 Sensitive Insect Survey Report for the project (Bruyea Biological Consulting). Additionally, multiple documented CBB observations occur within five miles of the Project location (CDFW 2024, iNaturalist 2024). Presumed CBB breeding was documented approximately 15 miles northeast of the project in the foothills of the Tehachapi Mountains (CDFW 2024).

METHODOLOGY

Literature Review

Prior to the field component, a literature review was conducted to identify CBB known from the Project vicinity. This included a review of Los Angeles and Kern Counties in the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CDFW 2024) and iNaturalist research grade observations (iNaturalist 2024). In addition, previous surveys conducted on the Project site were reviewed in Appendix 5.7-B of the Draft EIR for the project (Psomas 2017).

Field Survey

Psomas Senior biologist Marc Blain and Biologist Sarah Thomas conducted a habitat assessment for CBB on the project site on August 30, 2024. The Project site was driven to confirm desktop analysis and to document current site conditions to determine potentially suitable habitat. Flowering plants were documented, and a general overview of habitat types were noted. Representative site photographs were taken, and can be viewed in Attachment A.

RESULTS

Flowering plants were documented, which included alkali goldenbush (*Isocoma acradenia* var. *bracteosa*) and wreath plant (*Stephanomeria sp.*) as most flowering plants are dormant at this time of year (late summer). Given the current site conditions and the historical observations of

CBB on and near the Project site along with a review of the previously documented flowering plants on the Project site, CBB may potentially occupy the Project site.

RECOMMENDATIONS

CBB has previously been documented on the Project site, and the site currently contains potentially suitable habitat. Although impacts to CBB were not directly assessed, the *Centennial Project Draft EIR* includes Mitigation Measures (MM) for sensitive plants and wildlife species that would also reduce adverse affects to CBB, such as MM 7-3, MM 7-4, MM 7-10, MM 7-11, MM 7-12, MM 7-13, MM 7-15, MM 7-16, MM 7-17, MM 7-18, MM 7-21, and MM 7-22. These measures include various habitat preservation and restoration requirements for habitat suitable for CBB; fencing of work areas; development of a Landscaping Plan to restrict invasive species; scavenger proof waste management program and homeowner education on avoiding attracting wildlife; monitoring and control of Argentine ants; restriction of public access to the open space areas and promotion of public education and awareness of such areas; pet leash requirements; protocols for reducing the potential for introduction, and monitoring of, of pathogens and pests into the site; the requirement for an Implementation Plan to avoid impacts to the adjacent Significant Ecological Area; and the requirement for any golf courses constructed be designed in accordance with the Audubon Cooperative Sanctuary Program for Golf Courses designed to promote ecologically sound land management and to conserve natural resources.

In addition to the mitigation measures described above, it is recommended that the Project applicant implement the following Project Design Feature to avoid significant adverse impacts to CBB:

If Project ground-disturbing activities are scheduled to occur during the Crotch's bumble bee colony active period, a habitat assessment shall be conducted by a qualified biologist to identify suitable foraging and nesting habitat for CBB. The qualified biologist shall conduct pre-construction surveys for CBB in suitable habitat identified during the habitat assessment, using methodology accepted by California Department of Fish and Wildlife. If CBB is not detected, no further measures are required. A qualified biologist shall be present during ground-disturbing Project activities that occur during the CBB colony active period.

If CBB is detected:

1. No ground-disturbing activities shall occur within 100-feet of any known nest location, or as determined by a qualified biologist through evaluation of topographic features or distribution of nectar resources. The no disturbance buffer shall be in place for the duration of the nesting colony active period, unless a nest is determined to be inactive by a qualified biologist or is relocated or removed with CDFW authorization.

2. The Project Applicant shall prepare a Crotch's Bumble Bee Avoidance and Minimization Plan for review and approval by CDFW, which shall include additional, site-specific measures to avoid take of CBB during Project ground-disturbing activities during the nesting colony active period.

3. If the CBB remains a candidate for listing, or has been listed, as endangered or threatened under the California Endangered Species Act (CESA), and Project activities will cause "take" of CBB, as defined by CESA, the Project Applicant shall obtain authorization for

such take pursuant to Fish and Game Code Section 2081 or any other applicable provision of law providing such authorization.

Attachment A – Site Photographs

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Photo 1. View of the southeastern portion of the project site, facing southeast.

Photo 2. View of the central portion of the site, facing west.

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Site Photographs

Attachment A-1

Centennial Specific Plan Project

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Photo 3. View of the eastern portion of the site, facing north.

Photo 4. View of the central portion of the site, facing northwest.

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