

Appendix B. November 2020 CEQA Species Assessment Update

For activities that are considered “covered projects” by the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (Plan) (Jones & Stokes 2006), impacts of the overall Plan (including adverse effects of covered development, construction, maintenance and other activities, as well as beneficial effects of conservation actions) on covered plant and animal species were analyzed in a cumulative context via the Plan and its Environmental Impact Report/Environmental Impact Statement. However, certain other special-status species (hereafter “CEQA species”) were not included as covered species in the Plan or otherwise addressed by the Plan, yet assessment of impacts on these other species is still required during California Environmental Quality Act (CEQA) evaluation of individual Plan-covered projects. The March 2015 *Assessment of Plan Effects on California Environmental Quality Act Species* (2015 CEQA Assessment) for the Plan serves as the technical documentation to justify findings for future project-level CEQA documents that a project’s compliance with the Plan (including payment of any necessary fees) adequately mitigates project effects on certain plant and animal species to less-than-significant levels under CEQA (H. T. Harvey & Associates 2015). These conclusions were reached either because overall effects of Plan activities are expected to be beneficial or neutral, or because any residual adverse effects of Plan activities would be so low as to be less than significant under CEQA when viewed on a regional (i.e., Plan area-wide) scale. The 2015 CEQA Assessment considered impacts on 59 CEQA species, including 41 plant species and 18 animal species.

The East Contra Costa County Habitat Conservancy periodically updates the 2015 CEQA Assessment to incorporate any new CEQA species (as defined under *Identification of CEQA Species* in the 2015 CEQA Assessment) that have been identified since the original report was finalized in March 2015. This appendix provides an update to the 2015 CEQA Assessment as of November 2020.

Identification of New CEQA Species

In identifying new CEQA species, H. T. Harvey & Associates reviewed a number of resources to determine which species had been designated as special-status species since the 2015 CEQA Assessment and might occur in the Plan area, and whether any species meeting the criteria for CEQA species had been only recently (since 2015) recorded in the Plan area. Resources reviewed included notices of candidate species proposed for listing under the Federal or California Endangered Species Acts by the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW); new or updated lists of California species of special concern issued by the CDFW; new or updated designations of 1B and 2 ranked plant species by the California Native Plant Society (CNPS); the California Natural Diversity Database (CNDDB 2020); and other technical and regulatory documents and databases.

Two animal species that were recently designated as special-status species since the preparation of the 2015 CEQA Assessment do not meet the criteria for CEQA species in this assessment. These species are as follows:

- The western bumble bee (*Bombus occidentalis*) was petitioned for listing as a candidate under the California Endangered Species Act (CESA) in October 2018 (Hatfield et al. 2018). The species is not currently known to occur in the Plan area or surrounding vicinity. Although the western bumble bee was historically common throughout much of central and northern California, including Contra Costa County, its range has contracted to the point that it is now confined primarily to high-elevation sites in the Sierra Nevada (Hatfield et al. 2018). It is not expected to occur in the Plan area due to these recent range contractions.
- The riffle sculpin (*Cottus gulosus*) was added to the list of California species of special concern in 2016. Riffle sculpin are not known or expected to occur in the Plan area (Moyle et al. 2015), and the species is not expected to be affected by any Plan activities.

New CEQA species identified during the November 2020 assessment that were not included in the 2015 CEQA Assessment, and that we have fully evaluated in this appendix, are presented in Table 1. In total, we considered impacts of Plan implementation on three new plant species and five new animal species.

Table 1. New CEQA Species Included in the Updated Cumulative Effects Analysis

Name	Status*	Habitats Used	Summary of New Information
Plants			
California alkali grass (<i>Puccinellia simplex</i>)	CNPS 1B.2	Alkaline flats, sinks, lake shores and meadows (e.g., in the southeast portion of the Plan area) at 6 – 3070 feet elevation.	Listed by the CNPS in October 2015
Jepson's coyote-thistle (<i>Eryngium jepsonii</i>)	CNPS 1B.2	Grasslands and wetlands/vernal pools with clay soils at 10 – 1000 feet elevation.	Listed by CNPS in September 2016
Long-styled sand-spurrey (<i>Spergularia macrotheca</i> var. <i>longistyla</i>)	CNPS 1B.2	Meadows, seeps, seasonal wetlands, and lake shores with strong alkaline influence at 0 – 845 feet elevation.	Listed by the CNPS in June 2017
Invertebrates			
Monarch butterfly (<i>Danaus plexippus</i>)	FC	Requires milkweeds (<i>Asclepias</i> spp.) for egg-laying and larval development, but adults obtain nectar from a wide variety of flowering plants in many habitats. Individuals congregate in winter roosts, primarily in Mexico and in widely scattered locations on the central and southern California coast.	Petitioned for listing under CESA in August 2014
Crotch bumble bee (<i>Bombus crotchii</i>)	SC	Occurs in open grassland and scrub habitats. Like most other species of bumble bees, nests primarily underground (Williams et al. 2014). Generalist forager that visits a variety of floral resources.	Petitioned for listing under CESA in October 2018

Fish			
Central California roach (<i>Lavinia symmetricus</i>)	CSSC	Generally found in small streams. Well-adapted to intermittent watercourses (e.g., tolerant of high temperatures and low oxygen levels).	Designated a California species of special concern in 2016
Sacramento hitch (<i>Lavinia exilicauda</i>)	CSSC	Warm, lowland waters including clear streams, turbid sloughs, lakes, and reservoirs. Has a high tolerance for varying stream conditions and water temperatures.	Designated a California species of special concern in 2016
Mammals			
Mountain lion (<i>Puma concolor</i>) Southern California/Central Coast ESU	SC	Has a large home range size and occurs in a variety of habitats. Natal dens are typically located in remote, rugged terrain far from human activity. May occasionally occur in areas near human development, especially during dispersal.	Petitioned for listing under CESA in June 2019

*Key to status abbreviations:

FC = Federal candidate for listing under the Federal Endangered Species Act

SC = State candidate for listing under CESA

CSSC = California species of special concern

CNPS 1B.2 = California Native Plant Society List 1B.2 species

Plants

California alkali grass (*Puccinellia simplex*). Federal Status: None; State Status: None; CNPS Listing: 1B.2. California alkali grass was added to the CNPS Rare Plant Inventory Rank (CRPR) system as a List 1B.2 species in October 2015 (CNPS 2020). California alkali grass is a species in the family Poaceae adapted to alkaline affected, mesic, open habitats. It occurs in chenopod scrub, meadow, seep, mesic and alkaline California annual grassland, and vernal pool habitats, as well as alkaline sinks and vernal lake margins. While the range of the species with California is geographically large, with current or historical populations in at least 21 counties, it is only known from 80 populations, with many of these potentially being extirpated (CNPS 2020). The species is known from at least four observations (some recent) in the Byron area to the east and west of Vasco Road, as well as from an observation south of Discovery Bay just across the Alameda-Contra Costa County border. It could possibly occur in the Plan area either in small, alkaline seasonal wetlands in the foothills south of Byron and/or in alkaline flats in the valleys near Byron and the Clifton Court Forebay area.

Jepson's coyote-thistle (*Eryngium jepsonii*). Federal Status: None; State Status: None; CNPS Listing: 1B.2. Jepson's coyote-thistle was ranked on the CNPS Rare Plant Inventory as a List 1B.2 species in September 2016 (CNPS 2020). This plant was previously commonly misidentified as the common Jepson's button celery (*Eryngium aristulatum* var. *aristulatum*), but it is a distinct species and much rarer than its more common congener. Jepson's coyote-thistle is a species in the family Apiaceae that requires moist clay soils. It occurs in California annual grassland and vernal pool habitats, as well as clayey seasonal wetlands, and can tolerate alkaline soils.

The species' range is tightly centered on the San Francisco Bay Area and mid-state Central Valley area, including areas of eastern Contra Costa County within the Plan area. CNPS (2020) indicates that it is known from only about 10 populations (CNPS 2020), although newly discovered populations, such as the one within the Plan area on Lime Ridge, have been recorded since the species was recently listed (Calflora 2020). The species may occur in grassland locations with clay soils, especially within seasonal wetlands or vernal pools, across the Plan area.

Long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*). Federal Status: None; State Status: None; CNPS Listing: 1B.2. Long-styled sand-spurrey was ranked on the CNPS Rare Plant Inventory as a List 1B.2 species in June of 2017 (CNPS 2020). It is a perennial herb in the Caryophyllaceae (pink) family. It occurs in both seasonal and perennial wetlands with alkaline edaphic conditions, especially along wetland edges, being found in meadows, seeps, marshes, hot springs, and vernal mesic lake margins, such as along Lake Vaqueros where suitable alkalinity exists. It is known only from Alameda, Contra Costa, Napa, and Solano counties, from 22 officially recorded populations (CNPS 2020). Within the Plan area, this species is known from several observations in the Byron Airport area, in wetlands and alkaline grasslands to the west of Clifton Court Forebay, and along the alkaline shore of Lake Vaqueros (Calflora 2020).

Invertebrates

Monarch butterfly (*Danaus plexippus*). Federal Status: Candidate; State Status: None. The monarch butterfly is being considered by the USFWS for listing as threatened under the Federal Endangered Species Act (FESA). Monarchs feed and breed exclusively on plant species in the subfamily Asclepiadoideae, and 27 species of milkweed (*Asclepias* spp.) and several closely related species have been recorded as larval food plants (Malcolm and Brower 1986). Monarchs are known to overwinter along the California coast from Mendocino County south to Baja California, with the largest groups typically occurring in Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara Counties. Monarchs typically begin arriving at overwintering sites in mid-October (Hill et al. 1976), where they form dense clusters on the branches and leaves of trees. Monarchs depart from these overwintering sites in late-February or March, dispersing across California and several western states to breed (Dingle et al. 2005).

Monarchs have very specific overwintering habitat requirements, including trees groves with high humidity; dappled sunlight; a nearby water source; and protection from high winds, storms, and fluctuating temperatures. In California, monarch overwintering sites typically do not occur farther than 1.5 miles of the Pacific Ocean or San Francisco Bay, which moderate temperatures (Xerces Society 2016). Monarch butterflies have been known to cluster in groves of Monterey pine (*Pinus radiata*), blue gum eucalyptus (*Eucalyptus globulus*), red river gum eucalyptus (*Eucalyptus camaldulensis*), Monterey cypress (*Cupressus macrocarpa*), coast redwood (*Sequoia sempervirens*), coast live oak (*Quercus agrifolia*), western sycamore (*Platanus racemosa*), willow (*Salix* spp.), and acacia (*Acacia* spp.) (U.S. Forest Service 2015).

Monarchs occur in the Plan area primarily as migrants in the spring and fall, though small numbers may also breed within the Plan area where milkweeds are present. However, the numbers of migrants present in the

region have declined substantially in recent years; at the one known major overwintering site in Contra Costa County, located at Point Pinole National Shoreline outside of the Plan area (Xerces Society 2016, CNDDDB 2020), the population was estimated at 197 from 2010–2014 (Xerces Society 2016), but only two butterflies were seen at the site in 2019 (The Mercury News 2020). No current or historical overwintering sites are known as far inland as the Plan area, and it is possible that overwintering monarchs may be absent from the Plan area, or that they only occur in very low numbers. The species also breeds in the Plan area, albeit locally and in low numbers. Adults forage on flowering plants throughout the Plan area.

Crotch bumble bee (*Bombus crotchii*). **Federal Status: None; State Status: Candidate.** The Crotch bumble bee is a large (0.5–1.0-inch long), predominantly black bumble bee in the family Apidae. Its primary range extends throughout the southern two-thirds of California, and it also occurs in southwestern Nevada and Baja California, Mexico (Williams et al. 2014). The Crotch bumble bee is a short-tongued species that forages preferentially on plants in the genera *Asclepias*, *Chaenactis*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia* (Williams et al 2014). Colonies are established annually in nests located underground or just above the ground in grassland and scrub habitats, and are composed of a queen, workers, and reproductive individuals (males and new queens) (Hatfield et al. 2018). The new, mated queens hibernate over the winter and emerge in early spring (Hatfield et al. 2018). The flight period for queens extends from late February to late October with peaks in April and July, and the flight period for workers extends from March to September with a peak in early July (Hatfield et al. 2018, Thorp et al. 1983).

Historically, the Crotch bumble bee was common in grassland and scrub habitats within its range in California, but its populations have declined substantially in recent years due to habitat loss, disease, and pesticide use (Hatfield et al. 2015, Williams et al 2014). The species' current estimated range overlaps the eastern half of the Plan area (Hatfield et al. 2018), and there is one known occurrence of the species from the Plan area near Discovery Bay in 2017 (iNaturalist 2020). Small numbers of individuals may occur within Plan area in a variety of habitats, most likely within its estimated current range in the eastern half of the Plan area.

Fish

Central California roach (*Lavinia symmetricus symmetricus*). **Federal Status: None; State Status: Species of Special Concern.** The Central California roach is a small (typically less than 4 inches in length) fish in the family Cyprinidae. Individuals are gray or blue in color with a silver underside, and stocky in shape with a large head and a small, downward-turned mouth (Calfish 2020a). Central California roach are omnivorous and highly tolerant of a range of environmental conditions; they are widespread (and often abundant) in small, low-salinity streams tributary to the San Francisco estuary, and adapted to persist throughout the summer in small, shallow pools in intermittent streams (Leidy 2007, Moyle et al. 2015). Preferred habitat consists of clear, warm-water streams with sand or gravel substrates and an open tree canopy (Leidy 2007). Individuals live for up to three years, reach sexual maturity at age 2 or 3, and spawn from March to July (Santos et al. 2014). Central California roach are closely related to Sacramento hitch, and the two species are known to hybridize (Leidy 2007).

Central California roach are common in perennial and intermittent streams throughout the Plan area (Leidy 2007, Santos et al. 2014, Calfish 2020a).

Sacramento hitch (*Lavinia exilicauda exilicauda*). **Federal Status: None; State Status: Species of Special Concern.** The Sacramento hitch is a member of the family Cyprinidae. Individuals have a laterally compressed body with a slightly upturned mouth and grow to 13.8 inches in length (Moyle et al. 2015, Calfish 2020b). Adults are silver in color with a brown-yellow back that becomes darker with age, and juveniles are silver with a dark, triangular blotch on the caudal peduncle (Moyle et al. 2015, Calfish 2020b). Sacramento hitch are omnivorous and tolerant of high temperatures, preferring warm, turbid waters such as lakes, reservoirs, or pools in rivers with sandy or silty substrates (Moyle et al. 2015, Leidy 2007). As a result, they are often found in habitats with high abundances of nonnative species (Leidy 2007). Individuals live for four to six years, reach sexual maturity at age 1–3 (for males) or 2–3 (for females), and spawn from February to July (Calfish 2020b). Sacramento hitch are closely related to Central California roach, and the two species are known to hybridize (Leidy 2007).

Sacramento hitch may occur widely in perennial streams, intermittent streams, lakes, and reservoirs throughout the Plan area (Leidy 2007, Santos et al. 2014, Calfish 2020b).

Mammals

Mountain lion (*Puma concolor*). **Federal Status: None; State Status: Candidate.** The Southern California/Central Coast Evolutionary Significant Unit (ESU) of mountain lions, which includes the *californica* subspecies that occurs in Contra Costa County (Shaw et al. 2007), was proposed for listing as threatened under CESA in June 2019 (Center for Biological Diversity and the Mountain Lion Foundation 2019). The mountain lion is a solitary, wide-ranging carnivore that occurs in a variety of forested habitats, especially those that support black-tailed deer populations. Within these habitats, den sites are typically located in rocky terrain or dense vegetation (Pierce and Bleich 2003).

In the Plan area, mountain lions occur primarily around Mount Diablo, although individuals may occasionally range to the outskirts of developed areas (Bay Area Puma Project 2020). Mountain lions are expected to occur within the Plan's development areas very infrequently, if at all, due to high levels of human activity. Open lands on the periphery of the Program area provide suitable foraging habitat for this species, and individuals may establish dens in more remote areas, especially around Mount Diablo.

Cumulative Impact Assessment

The methods and assumptions for this impact assessment are provided under *Impact Assessment Methods and Assumptions* in the 2015 CEQA Assessment. The assessment is based principally on a comparison of the extent of impacts of Plan-covered development on habitat for the new CEQA species identified above with the expected benefits to each species based on the extent, type, and level of enhancement that will result from Plan

conservation measures. Table 2 lists applicable Plan conditions and indicates new CEQA species that would benefit from those conditions.

Table 2. Summary of Plan Conditions and Conservation Measures Applicable to New CEQA Species

New CEQA Species	Plan Conditions and Conservation Measures								
	1.6: Minimize Development Footprint Adjacent to Open Space	1.7: Establish Stream Setbacks	1.8: Establish Fuel Management Buffer	1.9: Incorporate Urban-Wildland Interface Design Elements	1.10: Maintain Hydrologic Conditions and Minimize Erosion	1.12: Implement BMPs for Rural Road Maintenance	1.13: BMPs for Flood Control Facility Maintenance	1.14: Design Requirements for Covered Roads outside the UDA	2.12: Wetland, Pond, and Stream Avoidance and Minimization
California alkali grass	X	X	X	X	X	X	X	X	X
Jepson's coyote-thistle	X	X	X	X	X	X	X	X	X
Long-styled sand-spurrey	X	X	X	X	X	X	X	X	X
Monarch butterfly	X		X	X		X		X	
Crotch bumble bee	X		X	X		X		X	
Central California roach	X	X	X	X	X	X	X	X	X
Sacramento hitch	X	X	X	X	X	X	X	X	X
Mountain lion	X		X	X		X		X	

The determination of whether the cumulative effects of Plan implementation will result in a significant impact on new CEQA species also took into account the conservation actions that have already been implemented under the Plan. For example, through 2019, the Habitat Conservancy had enrolled 14,221 acres of land into the Preserve System; the rate of land acquisition and preservation has stayed ahead of the pace necessary to assemble the 30,300-acre Preserve System that was projected to be required by Year 30 of the Plan (2037). In addition, the Habitat Conservancy had constructed 11 stream, wetland, and pond restoration/creation projects through 2019.

For the new plant CEQA species, detections of these species within habitat that has been acquired as Plan preserves, based on data provided by Nomad Ecology, LLC, were also taken into consideration.

Net Effects of the Plan on New Plant CEQA Species

California alkali grass, Jepson's coyote-thistle, and long-styled sand-spurrey share many characteristics with the 14 plant species discussed in the 2015 CEQA assessment as being alkaline adapted and/or wetland plant species. All three of these newly listed rare plant species share a known affinity for alkaline soils, and they tolerate saturated and inundated soils well enough to occur in wetlands. None of these species can occur in excessively drained, drier soils, and even when occurring in uplands, they occur only in mesic uplands or upland-wetland transition zones. Wetlands in a large portion of eastern Contra Costa County are saline or affected by alkaline soil substrates. Alkaline substrates can affect the availability of nutrients and contribute to osmotic stress in seasonal wetlands or in upland alkaline habitats. Wetland-adapted species often show low drought tolerance and are specifically adapted to certain hydrologic regimes.

These three newly listed rare plant species all occur in similar mesic alkaline habitats, but they do exhibit some differences in microhabitat preferences. For example, Jepson's coyote-thistle requires clay soils, while California alkali grass and long-styled sand-spurrey can tolerate coarser substrates. California alkali grass is the only species of the three to be recorded in chenopod scrub as opposed to grassland-dominated habitats or wetlands within grasslands. Long-styled sand-spurrey was historically reported as occurring along the edges of the Byron hot springs.

Wetlands will occur mainly as small inclusions in all habitats mapped within the inventory area, including chaparral, oak woodland and savanna, and grasslands. Wetlands also occur in floodplains, scattered in low depressions throughout the inventory area, and are most extensive in the eastern portion of the inventory area. The Plan does not attempt to accurately map either the complete extent, location, or type of all wetlands within the inventory area. While it is difficult to know exactly where all of the wetlands occur, limits given on the extent of wetland impacts are expected to be accurate, as each project under the Plan must comply with the Clean Water Act and receive Section 404 approval for impacts to Waters of the U.S. Perennial wetlands will experience 74-75 ac of impacts, but an equivalent acreage will be preserved. Approximately 84-85 ac of perennial wetlands will be restored or created within the Plan preserves or in nearby pre-existing Parks in addition to the preserved perennial wetlands. Seasonal wetlands (which are the most likely wetland hydrology type to support the newly listed species in this group) will experience 43-56 ac of impacts, but will be preserved and managed at a 3:1 ratio (preserved wetlands to impacted wetlands), with impacts capped if sufficient preservation acreage is not available to meet this ratio. Additionally, some 104-163 ac of seasonal wetlands will be restored, either in the new preserves or within currently existing parklands managed in a similar way to the Plan preserves.

The majority of known alkaline habitat in the inventory area occurs near Clifton Court Forebay and close to the San Joaquin River, and also areas in Deer, Horse, and Briones Valleys near the Marsh Creek Reservoir and Byron. The CNDDB maps most areas of alkaline meadows (a sensitive community type tracked by the database that would provide excellent habitat for many species in this group) in the southeastern corner of the inventory area. Alkaline habitats are expected to experience a minor extent of impacts (approximately 115 ac of alkaline

grasslands and 28-31 ac of alkaline wetlands) in comparison to the amount of these habitats expected to be acquired and incorporated into the Plan Preserve System. Preservation requirements for these habitats include 900 ac of alkaline grassland under the initial Urban Development Area (UDA) scenario; 1200 ac of alkaline grasslands under the maximum UDA scenario; 84-93 ac of alkaline wetlands preserved; and 61-67 ac of alkaline wetlands restored.

Wetlands within the UDA and close to rural infrastructure projects are likely to be directly impacted. Alkaline habitats near the Byron Airport expansion, near Marsh Creek Reservoir and Horse Valley, and within the UDA to the east of Oakley are also likely to be impacted under the Plan. Preservation requirements for wetlands and alkaline habitats of all types are so stringent that it is likely that a majority of the wetlands and alkaline habitats within the Acquisition Analysis (AA Zones) must be acquired, and therefore any given wetland or alkaline parcel in an AA zone has a fairly high likelihood of preservation, and any area suitable for wetland restoration is more likely to be used for that purpose than impacted. For example, 50-55% of the alkaline wetlands estimated to occur in all AA zones must be acquired, 75-98% of all seasonal wetlands in all AA zones must be acquired, and 32% of all perennial wetlands in all AA zones must be acquired. Approximately 60-83% of *all* remaining unprotected alkaline grasslands in the inventory area must be acquired.

Through 2019, the Habitat Conservancy had protected 33.7 acres of alkaline wetlands and restored 2.4 acres more, satisfying 38.8% of the projected alkaline wetland conservation needs for the 30-year Plan, even though only 0.1 acre (0.4% of the Plan's projected impacts to alkaline wetlands) had been permanently impacted. Similarly, through 2019, 276.8 acres of alkaline grassland had been protected (and 0.02 acre restored), satisfying 22% of the projected 30-year conservation needs, yet only 0.8 acre of alkaline grassland had been permanently impacted.

Alkaline habitats and wetlands are similar in that they share a common major threat (in addition to habitat loss and development) – overgrazing. In alkaline grasslands, plant growth tends to be stunted due to the harsh edaphic conditions. When these habitats are grazed as if they were producing similar biomass as non-alkaline areas under similar hydrologic conditions, they quickly become overgrazed, denuded, and degraded. Soils are exposed to erosion, and there is a decrease in both palatable species and species diversity. Common weedy species with higher alkaline tolerance can colonize the degraded habitats. Chenopod scrub (included as alkaline grasslands under the Plan), a habitat so heavily affected by alkaline edaphic conditions that very little grass can survive, should be grazed very carefully, such as for targeted weed control purposes, or under short durations, as it cannot recover quickly from the loss of biomass and disturbance to the soils and slow-growing, halophytic shrub vegetation. Preserves that include these alkaline habitats will be managed in this manner.

Similarly, in the arid west, livestock that are not moved frequently out of wetlands to drier ridges can damage wetlands by remaining in the wet areas and contaminating waters, causing soil disturbance, contributing to head cuts in riparian areas, and continuing to remove vegetation until very little is left. Therefore, adoption of management actions such as rotational grazing or grazing exclosures for overgrazed alkaline and/or wetland habitats in Plan preserves has the potential to allow these areas to recover. Such recovery could substantially

increase habitat values for CEQA species that depend on these habitat types. The Plan's adaptive management strategies incorporate these management approaches to achieve habitat enhancement. A complete absence of grazing in some alkaline habitats and wetlands, particularly vernal pool systems, could leave these habitats open to weed invasions and a detrimental, thick cover of non-native grasses. Therefore, careful prescription of grazing treatments is essential for successful management of these habitats.

Compensatory wetlands will be created under the Plan – through 2019, the Habitat Conservancy had created 13.3 acres of wetlands – and some of these areas may provide additional suitable habitat both for species covered under the Plan and for California alkali grass, Jepson's coyote-thistle, and long-styled sand-spurrey. However, care should be taken when expanding or enhancing existing wetland complexes, because if a population of a special-status plant species is excavated to provide depth, or is subjected to long-term changes in hydrology, it may be extirpated.

Direct loss of suitable/preferred habitat for these alkaline and/or wetland species may occur due to urban development within the UDA or covered rural infrastructure projects outside of preserves. However, these impacts are not expected to affect many extant populations of these species based on currently known location records (CCH 2020, Calflora 2020, CNDDDB 2020; see CEQA analysis Figures 3 and 4). Indirect impacts may also occur due to altered hydrology and fragmentation of wetlands that are not directly impacted within the UDA. Within the preserves, conservation measures intended to control weeds could improve and protect alkaline and wetland habitats, but we predict that the most effective tool to improve these habitats will be the modulation of grazing intensity to improve and maintain habitat for covered species such as San Joaquin spearscale. Permanent impacts to areas of vernal pool or alkaline meadow habitats could be considered significant under CEQA regardless of species-level impacts, due to the rarity of these habitats throughout the state. Such impacts could also have substantial effects on some of the species in this group, depending on rarity and specificity of the plant's preferred alkaline and/or wetland microhabitat.

Within preserves, suitable habitat for these newly listed species has a low chance of being impacted by trail construction and maintenance, wetland and riparian restoration or creation, and potential increases in anthropogenic disturbances in some currently privately owned areas that would be opened for public recreation if acquired under the Plan. Conversely, disturbance in some privately owned areas may decrease once incorporated into preserves, depending on current land use and changes in management to improve habitat for covered species, thus potentially benefiting these species. Sites for wetland and trail construction, or for other direct, localized impacts occurring within the preserves will be surveyed for covered and no-take plants. If these surveys are conducted in a protocol-level, floristic manner, non-covered special-status species will also be detected and preserve managers can avoid the low risk of these potential, preserve-related impacts to CEQA species by re-siting proposed trails or constructed wetlands when feasible if an unknown population is discovered. Additionally, if currently known populations of CEQA species are avoided by preserve activities when feasible, this would result in a similar reduction in risk for these species.

Based on surveys that have been conducted within Plan preserves (Nomad Ecology, LLC 2020), Jepson's coyote-thistle has been recorded in six Plan preserves, totaling 10,304 individuals in 10 populations within the Barron, Oleson, Poppi/Halstead, Smith, Thomas Central, and Thomas Southern preserves; California alkali grass has been recorded in three Plan preserves, totaling 2,105 individuals in three populations within the Casey, Coelho, and Souza III preserves; and long-styled sand-spurrey has been recorded in two Plan preserves, totaling 275 individuals in two populations within the Casey and Coelho preserves. Thus, the Plan's land acquisitions and habitat management have already provided considerable protection to these three species.

California alkali grass, Jepson's coyote-thistle, and long-styled sand-spurrey all have a CRPR of 1B.2, which indicates these species are all considered fairly endangered in California (CNPS 2020). As such, impacts to any of these species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if large population or multiple populations were lost, or if impacts would lead to an effective range reduction for any of the species. Because of these species' dependence on alkaline habitats and wetlands or mesic areas with clayey soils, they are likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are somewhat more likely to become part of the Plan Preserve System than impacted. Due to the wetland impact caps, all three species are even less likely to be impacted by the Plan.

Under the initial UDA scenario, there is some potential for unknown populations to be impacted. Extensive alkaline/saline-affected lowlands occur near the Byron Airport and surrounding Clifton Court Forebay, and alkaline wetlands of smaller sizes are found in the foothills to the south of Byron. Populations could also occur in alkaline wetlands or clayey inclusions in the alkaline areas near Marsh Creek Reservoir, Horse Valley, Deer Valley, and Briones Valley, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i. There is also a moderate to high likelihood that one or more populations of these species would be acquired due to the brittlescale and recurved larkspur-driven acquisition requirements in Zone 5, and the alkaline grasslands acreage requirements in Zones 5 and 6. Specifically, Subzones 2i (the northern portion), 6e, 6d, 6c, 5c, 5a, 5d, and 5b may provide suitable habitat, and although only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport, and in the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands would be acquired across all zones (Tables 1, 2, and 5 of the original CEQA species report), thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in alkaline grasslands, chenopod scrub, clayey grasslands, and alkaline-affected wetlands represent particularly suitable habitat for these species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain

a healthy, moderately grazed canopy, reducing trampling by livestock, and reducing negative effects of overgrazing on the species' growth and reproduction. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although such impacts would be highly localized and a more open herbaceous canopy would also likely benefit any populations in the long term. Compaction of soils on trail surfaces would likely be detrimental to any of these species, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population - particularly because many habitats in which these species are found, such as wetlands, would not be good candidate habitats for trail construction. Compensatory wetland construction could endanger populations of these species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow has been ditch-drained for pasture.

In summary, there is a small to moderate potential for impacts to each of these species, and a moderate to high potential for the species to occur in new preserves. It is unlikely a large or regionally important population, or multiple populations, would be lost given the known distributions, so it is expected that any such negative impacts that might occur would be less than significant. For all three species, the Plan area is not located on the edge of the known range, so loss of a population of any of the three would not cause a major range reduction for that species. The initial UDA contains no known populations of any of the three species. While some populations may be impacted due to being currently unknown and within the initial UDA, or if occupied habitat is impacted under the maximum UDA scenario, it will most likely be near the Byron Airport (e.g., related to airport expansion) or smaller impacts related to trails and similar projects. If no populations of these species are extirpated the Plan is expected to have a neutral or even net beneficial effect on all three species under either UDA. Alternatively, if any populations of these species are lost due to development under the Plan, it is expected that such impacts would be offset by conservation and enhanced management of other populations, such as the populations already documented on Plan preserves, and the net impact would be less than significant under CEQA.

Net Effects of the Plan on New Animal CEQA Species

Invertebrates

Monarch butterfly. The monarch butterfly occurs in the Plan area primarily as a migrant in the fall and spring, although small numbers of individuals may breed and forage in the Plan area year-round. No current or historical overwintering sites are known as far inland as the Plan area, and it is possible that overwintering monarchs may be absent from the Plan area, or that they only occur in very low numbers.

The most vulnerable element of the monarch annual cycle may be the overwintering period (Pyle and Monroe 2004 as cited in Western Association of Fish and Wildlife Agencies 2019), as so many individuals are concentrated in a few locations. No activities under the Plan will occur near known occupied overwintering sites for the monarch butterfly; nevertheless, suitable overwintering habitat is present in the Plan area.

Development under the initial UDA and maximum UDA that results in the alteration of habitat characteristics of monarch overwintering sites (e.g., tree trimming or removal) could result in the degradation or loss of overwintering habitat. However, because no impacts on known, occupied sites that support more than a few individuals or are important to regional populations will occur, this impact would be less than significant.

If breeding monarch butterflies are present within the Plan area, development under the initial UDA and maximum UDA, habitat creation and enhancement in Plan preserves (e.g., mowing and fuel management), and rural infrastructure projects that affect native milkweed plants could potentially impact small numbers of monarchs and their hostplants. However, because Contra Costa County is not known to be an important breeding area, and Plan activities would affect a very low proportion of the regional populations of host plants, Plan impacts on breeding monarchs and their larval host plants would not be substantial.

The Plan's conservation measures do not include enhancement of breeding habitat for monarchs (i.e., planting locally native milkweeds), and no conservation measures are included in the Plan to specifically avoid and minimize impacts on overwintering or breeding individuals. However, general conservation measures will minimize the footprint of work activities as well as impacts from staging, stockpiling, spills or leaks of chemicals, and other activities, effectively minimizing impacts of Plan activities on monarch habitat. In addition, milkweeds are a common component of native plant communities in the Plan area, and the proposed preservation of habitat areas that support native milkweeds (which are common and widespread in many habitats) is substantially greater than the proposed loss of such habitat under both UDA scenarios. Further, habitat enhancement techniques will increase the value of preserves for this species relative to existing conditions. Therefore, the net effects of Plan-related activities on monarchs would be neutral or modestly beneficial, and certainly would not be considered a significant impact under CEQA under either UDA scenario.

Crotch bumble bee. The Crotch bumble bee is a habitat generalist, occurring (or formerly occurring) in a variety of grassland and scrub habitats, and using a wide variety of flowering plant species. As a result, there is currently no way to predict with any high degree of confidence where this species might still be extant (and where impacts from Plan-related activities would occur under either UDA scenario), given that its habitat is widespread but the species itself is not. Factors that are suspected in the species' decline include habitat decline (although this species' habitats are still widespread), insecticide use, competition (e.g., with nonnative honey bees), diseases and parasites, genetic issues, and climate change.

Impacts on Crotch bumble bee habitat (i.e., grassland and scrub) under the initial UDA scenario include 2,533 acres of annual grasslands, 115 acres of alkali grasslands, and 0 acres of chaparral/scrub. In addition, because the Crotch bumble bee is a habitat generalist, habitat impacts may occur in other vegetative communities throughout the Plan area where foraging resources (i.e., flowering plants in the genera *Asclepias*, *Chaenactis*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia*, as well as other species that provide foraging resources for short-tongued bumble bees) are present. Development most likely to impact this species would occur in the eastern portion of the Plan area (i.e., near Oakley, Brentwood, Byron, and Discovery Bay) which is closest to the species' current range and the existing record near Discovery Bay. However, this portion of the Plan area is primarily agricultural

and provides relatively low-quality habitat for Crotch bumble bees; areas of grasslands and chaparral/scrub that provide higher-quality habitat occur in the central and eastern portions of the Plan area, farther from the species' current range. As a result, impacts on Crotch bumble bee habitat as a result of Plan development are expected to be relatively low. Habitat preservation requirements under the initial UDA scenario that would potentially benefit this species includes 13,000 acres of annual grassland, 900 acres of alkali grassland, and 550 acres of chaparral/scrub; however, these areas are located in the central and western portions of the Plan area where the species is not known to occur. Agricultural areas within the eastern portion of the Plan area where the Crotch bumble bee is most likely to occur fall within lower priority acquisition subzones (i.e., subzones 6a–6f) and represent lower-quality habitat for the species. As a result, the preservation of habitats under the Plan are expected to have limited benefits to the species.

Under the maximum UDA scenario, impacts on Crotch bumble bee habitat increase to 4,152 acres of annual grassland and 2 acres of chaparral/scrub, but are the same for alkali grassland (115 acres). A larger portion of potentially suitable habitat in the eastern portion of the Plan area will also be developed. Preservation requirements under the maximum UDA scenario will increase to 16,500 acres of annual grasslands, 1,250 acres of alkali grassland, and 550 acres of chaparral/scrub. However, as stated for the initial UDA scenario above, large areas of grasslands and chaparral/scrub are located in the central and eastern portion of the Plan area, whereas the Crotch bumble bee is primarily expected to occur in the eastern portion of the Plan area. As a result, impacts of development under the maximum UDA scenario on habitat for the Crotch bumble bee are expected to be limited, and the preservation of habitats under the Plan are similarly expected to have limited benefits to the species.

The Crotch bumble bee will experience a loss of annual grassland and generalist habitats under both the initial and maximum UDA scenarios, and a loss of chaparral/scrub habitat under the maximum UDA scenario. However, this species is likely so scarce within the Plan area that impacts will be very limited. The areas encompassed by the initial and maximum UDA scenarios contain only one known record of the species, near Discovery Bay. Development in the eastern portion of the Plan area (i.e., near Oakley, Brentwood, Byron, and Discovery Bay) overlaps the species' current estimated range, but the habitats in this area are primarily agricultural and represent low-quality habitat for the species. Development in the central and western portions of the Plan area will impact higher-quality grassland and chaparral/scrub habitats for Crotch bumble bees; however, the species is not known to occur within these areas. Habitat enhancement is expected to have some benefits to the species in terms of improving habitat for native plants, although the number of Crotch bumble bees that are expected to occur on conservation lands would be low.

In summary, Plan implementation will have a net neutral effect on the species, with limited impacts and benefits to the Crotch bumble bee under both UDA scenarios. Plan impacts would be less than significant under CEQA under either UDA scenario.

Fish

Central California roach. Central California roach are common in perennial and intermittent streams throughout the Plan area. Estimated impacts on habitat for Central California roach under the initial UDA scenario include 0.6 mile of perennial and intermittent streams and 4.0 miles of ephemeral streams¹. Impacts on larger streams will likely be restricted to narrow stream crossings for roads, bridges, pipelines, and other infrastructure, whereas ephemeral streams may be filled for development, particularly in the Willow Creek watershed in the hills above Pittsburg. In addition, stream habitats will be degraded to some extent by new development under the Plan due to fragmentation and isolation, noise, and other anthropogenic disturbance. Thus, preserved streams within the initial UDA would have a reduced ability to support Central California roach following build-out. Mitigation requirements under the initial UDA scenario that would benefit Central California roach include (1) the in-kind preservation of perennial streams at a 2:1 ratio (preserved:impacted) and intermittent or ephemeral streams at a 1:1 ratio (preserved:impacted), and (2) the in-kind or out-of-kind restoration or creation of perennial streams at a 2:1 ratio (preserved:impacted) and intermittent or ephemeral streams at a 1:1 ratio (preserved:impacted). Because the creation of new streams to replace the functions of streams lost due to development may not be feasible, ponds or seasonal wetlands may be created as out-of-kind mitigation for impacts on streams; such wetlands would not provide habitat for Central California roach. As a result, it is assumed that only the preservation or restoration of streams would benefit Central California roach.

Under the maximum UDA scenario, impacts on habitat for Central California roach would increase to an estimated 0.8 mile of perennial and intermittent streams and 5.0 miles of ephemeral streams; preservation requirements would be adjusted correspondingly per the ratios described above. The nature of impacts and preservation/restoration measures under the initial and maximum UDA scenarios would be similar.

Development under the Plan will avoid and minimize impacts on Central California roach and their habitat by observing stream setback requirements described in Conservation Measure 1.7, implementing measures to avoid or minimize direct and indirect impacts on hydrological conditions and erosion as described in Conservation Measure 1.10, and implementing stream avoidance and minimization measures as described in Conservation Measure 2.12. Biological goals of the Plan's conservation strategy that will benefit the Central California roach include the protection of at least 5 linear miles of streams within the Plan area to compensate for the permanent loss of stream habitat, the enhancement and restoration of riparian woodland/scrub habitat, and maintaining and enhancing instream aquatic habitat for native fish. In addition, the protection of stream habitat for foothill yellow-legged frogs (*Rana boylei*) is expected to benefit Central California roach, and the Plan will protect, maintain, or increase populations of foothill yellow-legged frogs in the Plan area, which includes the acquisition of land in Zone 4 (i.e., on the slopes of Mount Diablo and along the upper reaches of Marsh Creek) for the Preserve System.

¹ Due to the estimated nature of Plan impacts on streams, there is some possibility that take limits under the Plan may increase with approval from the CDFW and USFWS as long as the proposed increase is consistent with the biological goals and objectives of the Plan.

Through 2019, the Habitat Conservancy had protected 307,777 linear feet (58.3 miles) of streams. This protection included 12,625 linear feet (2.4 miles) of perennial streams that likely provide suitable habitat for the Central California roach and 137,989 linear feet (26.1 miles) of intermittent stream, some of which may provide at least seasonally suitable habitat for the Central California roach where contiguous with perennial streams supporting this fish species. In addition, the Habitat Conservancy had performed 10,745 linear feet (2.0 miles) of stream restoration through 2019.

Central California roach will experience a loss and degradation of stream habitat under both the initial and maximum UDA scenarios. However, the preservation, creation, and acquisition of suitable habitat is substantially greater than the loss of habitat under both UDA scenarios. Most importantly, habitat enhancement along streams throughout the Plan area, as well as the acquisition and enhancement of habitat for the foothill yellow-legged frogs, will result in substantial increases in the value of preserves for this species relative to existing conditions. Therefore, Plan implementation will have a net benefit for Central California roach under both UDA scenarios.

Sacramento hitch. Sacramento hitch may occur widely in perennial streams, intermittent streams, lakes, and reservoirs throughout the Plan area. Estimated impacts on perennial and intermittent stream habitats under the initial UDA scenario are the same as described for the Central California roach above. In addition, projects under the Plan will result in impacts on 12 acres of aquatic habitat (defined as open water areas in reservoirs) under both the initial and maximum UDA scenarios; these impacts would occur at Marsh Creek Reservoir, Antioch Municipal Reservoir, and Contra Loma Reservoir. Because Sacramento hitch inhabit reservoirs in addition to streams, these impacts would potentially result in the loss of 12 acres of aquatic habitat for the species. Mitigation requirements under the initial and maximum UDA scenario do not include the restoration or creation of large bodies of open water because this habitat provides limited value to wildlife. Instead, 12 acres of aquatic habitat will be preserved in ponds that provide breeding habitat for covered species (i.e., the California red-legged frog [*Rana draytonii*], California tiger salamander [*Ambystoma californiense*], western pond turtle [*Emys marmorata*], and tricolored blackbird [*Agelaius tricolor*]), and the restoration or creation of an additional 6 acres of such ponds. In-channel ponds located along streams in the Plan area would provide suitable habitat for Sacramento hitch; however, off-channel ponds would not provide habitat for this species due to a lack of connectivity. The extent of the restored or created habitat that will be located along streams is unknown; as a result, Plan implementation may result in the loss of up to 12 acres of aquatic habitat for Sacramento hitch.

Development under the Plan will avoid and minimize impacts on Sacramento hitch and their habitat by observing stream setback requirements described in Conservation Measure 1.7, implementing measures to avoid or minimize direct and indirect impacts on hydrological conditions and erosion as described in Conservation Measure 1.10, and implementing stream avoidance and minimization measures as described in Conservation Measure 2.12. Biological goals of the Plan's conservation strategy that will benefit the Sacramento hitch include the protection of at least 5 linear miles of streams within the Plan area to compensate for the

permanent loss of stream habitat, the enhancement and restoration of riparian woodland/scrub habitat, and maintaining and enhancing instream aquatic habitat for native fish. In addition, the protection of stream habitat for foothill yellow-legged frogs is expected to benefit Sacramento hitch, and the Plan will protect, maintain, or increase populations of foothill yellow-legged frogs in the Plan area, which includes the acquisition of land in Zone 4 (i.e., on the slopes of Mount Diablo and along the upper reaches of Marsh Creek) for the Preserve System. As noted for the Central California roach above, the Habitat Conservancy had protected 307,777 linear feet (58.3 miles) of streams through 2019. This protection included 12,625 linear feet (2.4 miles) of perennial streams that likely provide suitable habitat for the Sacramento hitch and 137,989 linear feet (26.1 miles) of intermittent stream, some of which may provide at least seasonally suitable habitat for the Sacramento hitch where contiguous with perennial streams supporting this fish species. In addition, the Habitat Conservancy had performed 10,745 linear feet (2.0 miles) of stream restoration through 2019. Due to the improved quality of preserved habitat compared to the habitat impacted under the Plan, and the low quality of the reservoir habitat that would be lost, Plan implementation will have a net benefit for Sacramento hitch under both UDA scenarios.

Mammals

Mountain lion. Mountain lions occur in open habitats within the Plan area, but are primarily known to occur around Mount Diablo (Bay Area Puma Project 2020). Individuals may occasionally range to the outskirts of developed areas, but they are not expected to occur within the Plan's development areas due to high levels of human activity.

Under the initial UDA scenario, impacts to potential mountain lion habitat include 2,533 acres of annual grassland, 115 acres of alkali grassland, 1,271 acres of ruderal habitat, 42 acres of oak savanna, 21 acres of oak woodland, and 30 acres of riparian woodland/scrub. Development most likely to impact mountain lions would be on the outskirts of Clayton and Pittsburg due to their proximity to Mount Diablo. Habitat preservation requirements under the initial UDA scenario that would benefit mountain lions include 13,000 acres of annual grassland, 900 acres of alkali grassland, 500 acres of oak savanna, 400 acres of oak woodland, 550 acres of chaparral/scrub, and 60 acres of riparian woodland/scrub. Open habitats near Mount Diablo fall within high-priority acquisition subzones, and the acquisition, management, and enhancement of lands within this area is expected to benefit mountain lions. Additional areas of grasslands and oak woodlands located southeast of Clayton, Nortonville, and Somersville also fall within high-priority acquisition subzones; requirements for these subzones will focus on connectivity, which will also benefit the species.

Under the maximum UDA scenario, impacts to potential mountain lion habitat increase to 4,152 acres of annual grassland, 165 acres of oak savanna, 73 acres of oak woodland, 2 acres of chaparral/scrub, and 35 acres of riparian woodland/scrub, and remain the same for alkali grassland (115 acres). Preservation requirements under the maximum UDA scenario will increase to 16,500 acres of annual grassland, 1,250 acres of alkali grassland, 500 acres of oak savanna, 400 acres of oak woodland, and 70 acres of riparian woodland/scrub, and remain the same for chaparral/scrub (550 acres). The nature of impacts and preservation/restoration measures under the initial and maximum UDA scenarios would be similar.

Management of preserve areas for covered species include goals that will benefit mountain lions, such as preserving large areas of habitat to sustain viable populations; increasing native cover and structural diversity; increasing the availability of California ground squirrel (*Otospermophilus beecheyi*) burrows; preserving movement routes and core habitat for San Joaquin kit foxes (*Vulpes macrotis mutica*); maintaining, enhancing, and restoring oak woodland habitat; and protecting and enhancing chaparral/scrub habitat. Management practices and acquisition targets for the San Joaquin kit fox, particularly the connectivity of movement corridors, will be extremely beneficial to mountain lions as well.

Through 2019, the Habitat Conservancy's conservation of suitable mountain lion habitat had far outpaced impacts, as indicated in Table 3.

Table 3. Conservation (Protection and Restoration) vs. Permanent Impacts for Potential Mountain Lion Habitat through 2019

Habitat Type	Protected		Permanently Impacted	
	Acres	Percent of 30-Year Goal	Acres	Percent of 30-Year Projections
Grassland/ruderal	8393.1	47.3	657.9	11.8
Chaparral/scrub	310.3	56.4	0.6	28.5
Oak savanna	410.3	82.1	0.1	0.0
Oak woodland	2582.5	645.5	0.7	0.9
Riparian woodland/scrub	71.1	101.6	1.23	3.5

Not only has the Habitat Conservancy protected lands far beyond the pace of impacts, most of the lands added to the Preserve System through 2019 are in areas where they may directly benefit mountain lions. The vast majority of acquisitions have occurred on and around Mount Diablo, on lands that mountain lions can use as home ranges and for dispersal, or in extensive grasslands east of Los Vaqueros Reservoir that may be important for mountain lion dispersal through the Altamont Hills between the Mount Diablo population and the population in the southern Diablo Range. All of the land acquisitions around Mount Diablo and east of Los Vaqueros Reservoir have been contiguous with other parks and open space lands, thus helping to protect mountain lion home range and dispersal habitat. These acquisitions, coupled with existing parks and open space, have nearly completed a contiguous corridor that extends from Mount Diablo southeastward almost to the Contra Costa/Alameda County line, thus helping to protect habitat connectivity for the mountain lion.

Mountain lions will experience a loss of annual grassland, alkali grassland, oak woodland, and oak savanna habitat under both the initial and maximum UDA scenarios. In particular, development on the outskirts of Clayton and Pittsburg is expected to impact mountain lions because these areas are located near Mount Diablo, where the species is primarily known to occur in the Plan area. However, the preservation of suitable habitat for mountain lions is substantially greater than the loss of such habitat under both UDA scenarios. Most importantly, habitat enhancement for covered species, such as the San Joaquin kit foxes, will result in substantial

increases in the value of preserves for mountain lions relative to existing conditions. Therefore, Plan implementation will have a net benefit for mountain lions under both UDA scenarios.

Summary of Net Effects of the Plan on New CEQA species

Table 4 summarizes the anticipated net effects of Plan activities on new CEQA species, indicating whether the Plan is expected to have a net beneficial, neutral, or adverse effect on each species. For all species, Plan impacts were determined to be less than significant, being either beneficial, neutral, or mildly adverse. This conclusion indicates that compliance with Plan conditions, including payment of the Plan fee or providing equivalent mitigation, for a covered project will be sufficient to mitigate the effects of the project on all new CEQA species. Note that for no species does the net effect of the Plan differ between the two UDA scenarios in terms of whether the effect is beneficial, neutral, or adverse.

Table 4. Summary of Net Effects of the Plan on New CEQA Species

Species	Potential Adverse Effects	Beneficial Measures	Net Effect	Rationale
Plants				
California alkali grass (<i>Puccinellia simplex</i>) Jepson's coyote-thistle (<i>Eryngium jepsonii</i>) Long-styled sand-spurrey (<i>Spergularia macrotheca</i> var. <i>longistyla</i>)	<ul style="list-style-type: none"> Loss of suitable habitat and possible population extirpation Loss of up to 4,152 acres of annual grasslands, a small portion of which may contain suitable clayey or wetland habitats, and 115 acres of alkali grasslands 	<ul style="list-style-type: none"> Improved management of alkaline grasslands Wetland and alkaline grassland preservation requirements Substantial numbers of Jepson's coyote-thistle and California alkali grass, and lesser numbers (in two populations) of long-styled sand-spurrey, have already been detected in Plan preserves 	Modestly beneficial to less-than-significant negative impact	These three species are most likely to occur in wetlands that are highly prioritized for preservation under the Plan (e.g., substantial numbers of Jepson's coyote-thistle and California alkali grass, and two populations of long-styled sand-spurrey, have already been detected in Plan preserves); many of the known populations for each species are in protected areas; and the initial UDA does not contain known populations of any of these species.
Invertebrates				
Monarch butterfly (<i>Danaus plexippus</i>)	<ul style="list-style-type: none"> Loss of trees in coastal areas that provide overwintering habitat Loss of foraging plants Loss of host plants and breeding individuals 	<ul style="list-style-type: none"> Preservation of habitat areas that support milkweeds Habitat enhancement measures such as weed control will increase habitat suitability 	Neutral or modestly beneficial	Species occurs in low numbers in the Plan area. The proposed preservation of habitat areas that support milkweeds is greater than the proposed loss of such habitat.
Crotch bumble bee (<i>Bombus crotchii</i>)	<ul style="list-style-type: none"> Loss of up to 4,152 acres of annual grasslands, 2 acres of chaparral/scrub, and 115 acres of alkali grasslands, much of which is not located within the current range of the species 	<ul style="list-style-type: none"> Preservation of 13,000 acres of annual grassland and 550 acres of chaparral/scrub, much of which is not located within the current range of the species 	Neutral	Species is very uncommon in the Plan area, and primarily occurs in the eastern portion of the Plan area where low-quality agricultural habitat is present. Impacts and preservation of higher-quality grassland and scrub habitat primarily occur in the central and western portions of the Plan area, where the species likely does not occur. Habitat enhancement may have limited benefits.

Fish				
Central California roach (<i>Lavinia symmetricus symmetricus</i>)	<ul style="list-style-type: none"> Loss of up to 0.8 mile of perennial and intermittent streams 	<ul style="list-style-type: none"> Preservation of perennial streams at a 2:1 (preserved: impacted) ratio and intermittent or ephemeral streams at a 1:1 ratio. 	Beneficial	The preservation, creation, and acquisition of suitable habitat is substantially greater than the loss of habitat. Habitat enhancement along streams and the acquisition and enhancement of stream habitat for foothill yellow-legged frogs will increase the value of preserves for this species.
Sacramento hitch (<i>Lavinia exilicauda exilicauda</i>)	<ul style="list-style-type: none"> Loss of up to 0.8 mile of perennial and intermittent streams and 12 acres of aquatic (reservoir) habitat 	<ul style="list-style-type: none"> Preservation of perennial streams at a 2:1 (preserved: impacted) ratio, intermittent or ephemeral streams at a 1:1 ratio, and reservoir at a 1:1 ratio 	Beneficial	The preservation, creation, and acquisition of suitable habitat is substantially greater than the loss of habitat. Habitat enhancement along streams and the acquisition and enhancement of stream habitat for foothill yellow-legged frogs will increase the value of preserves for this species.
Mammals				
Mountain lion (<i>Puma concolor</i>) Southern California/Central Coast ESU	<ul style="list-style-type: none"> Loss of up to 4,152 acres of annual grassland, 115 acres of alkali grassland, 165 acres of oak savanna, and 73 acres of oak woodland 	<ul style="list-style-type: none"> Acquisition, enhancement, and protection of lands such that contiguous movement corridors are maintained 	Beneficial	Individuals and habitats are more likely to benefit from preserve acquisition and management than to be impacted by development.

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