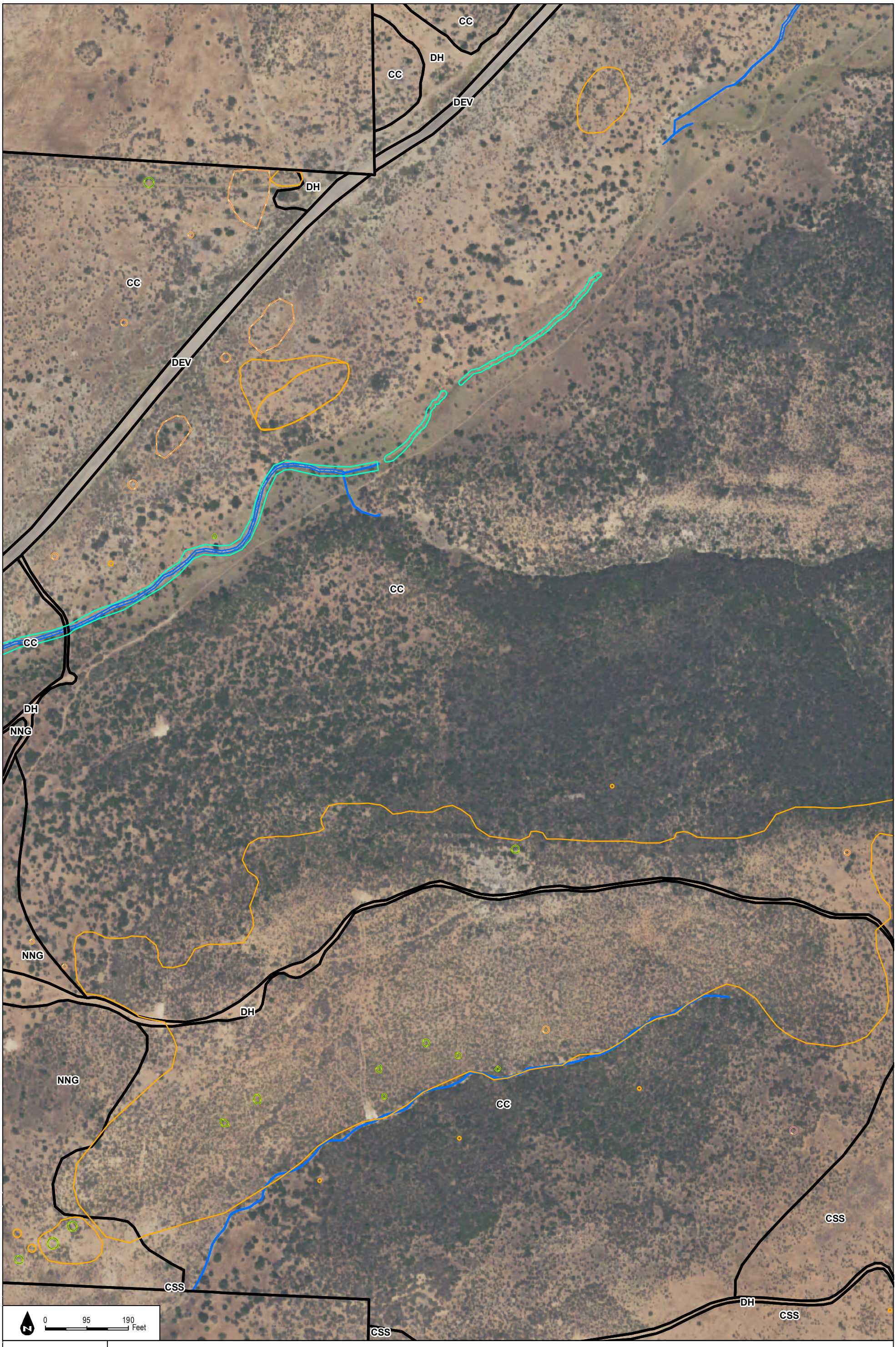

SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1u
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1v
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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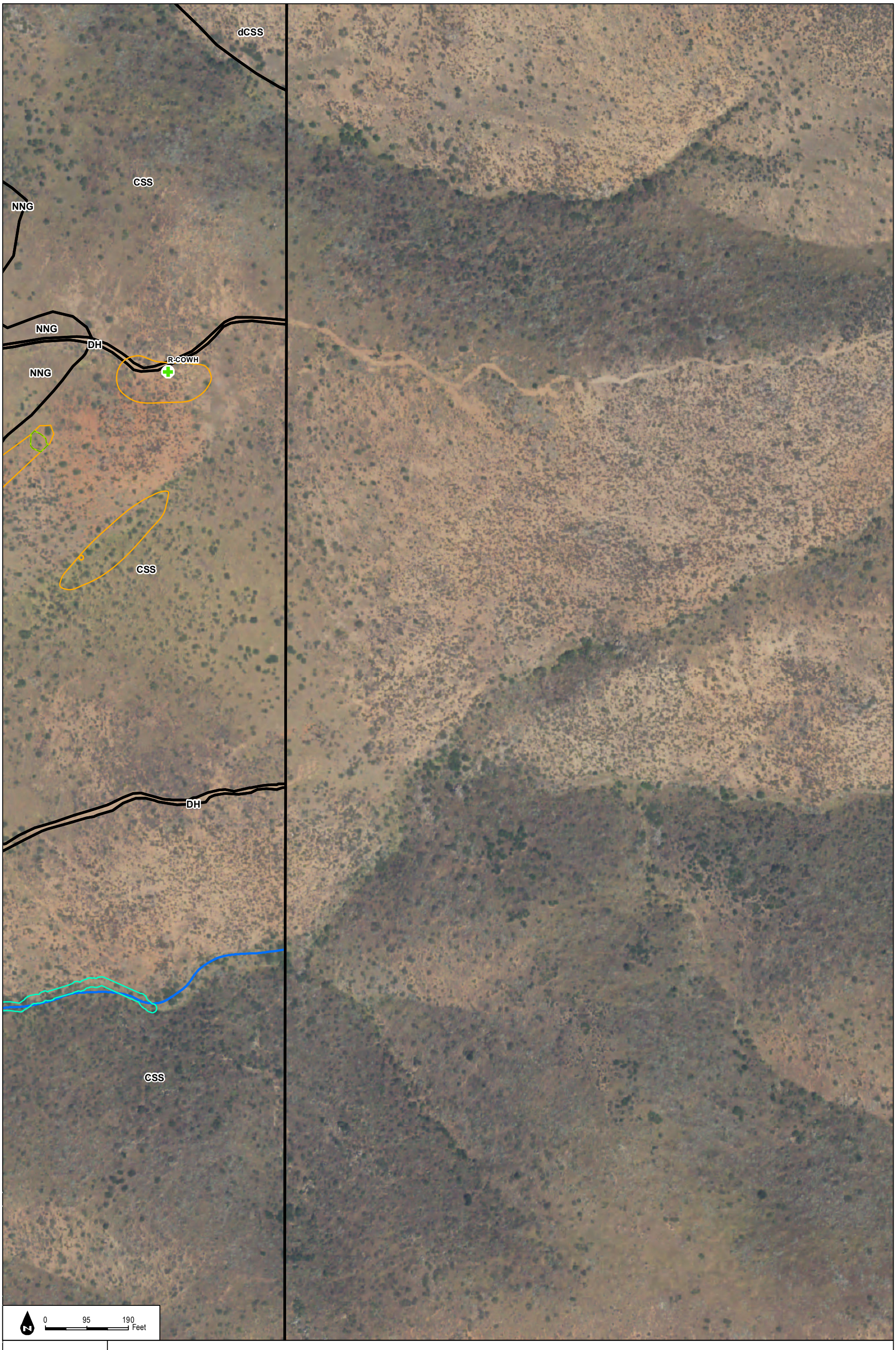

SOURCE: NAIP 2016; Hunsaker 2017

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Figure 4-1w
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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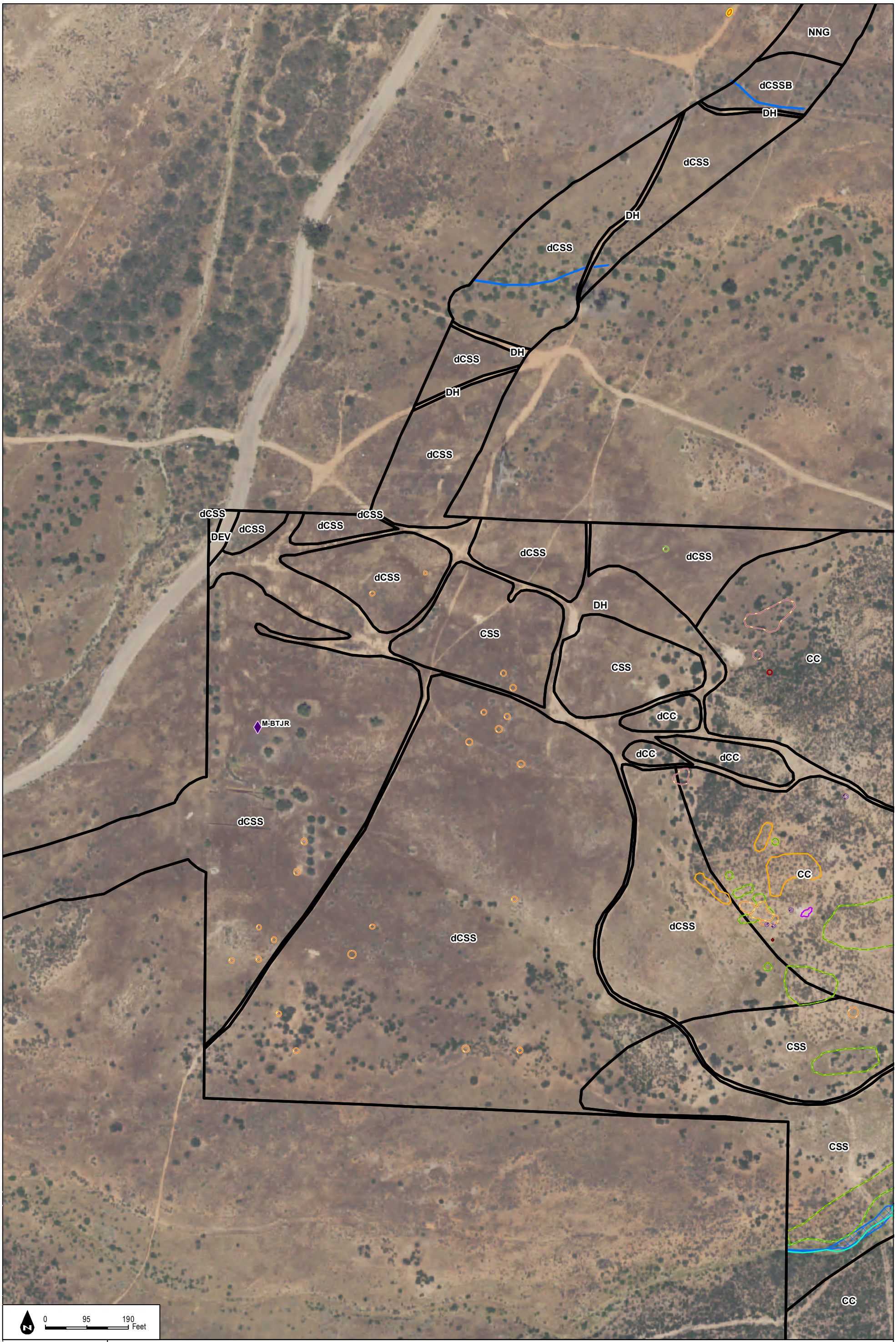

SOURCE: NAIP 2016; Hunsaker 2017

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Figure 4-1x
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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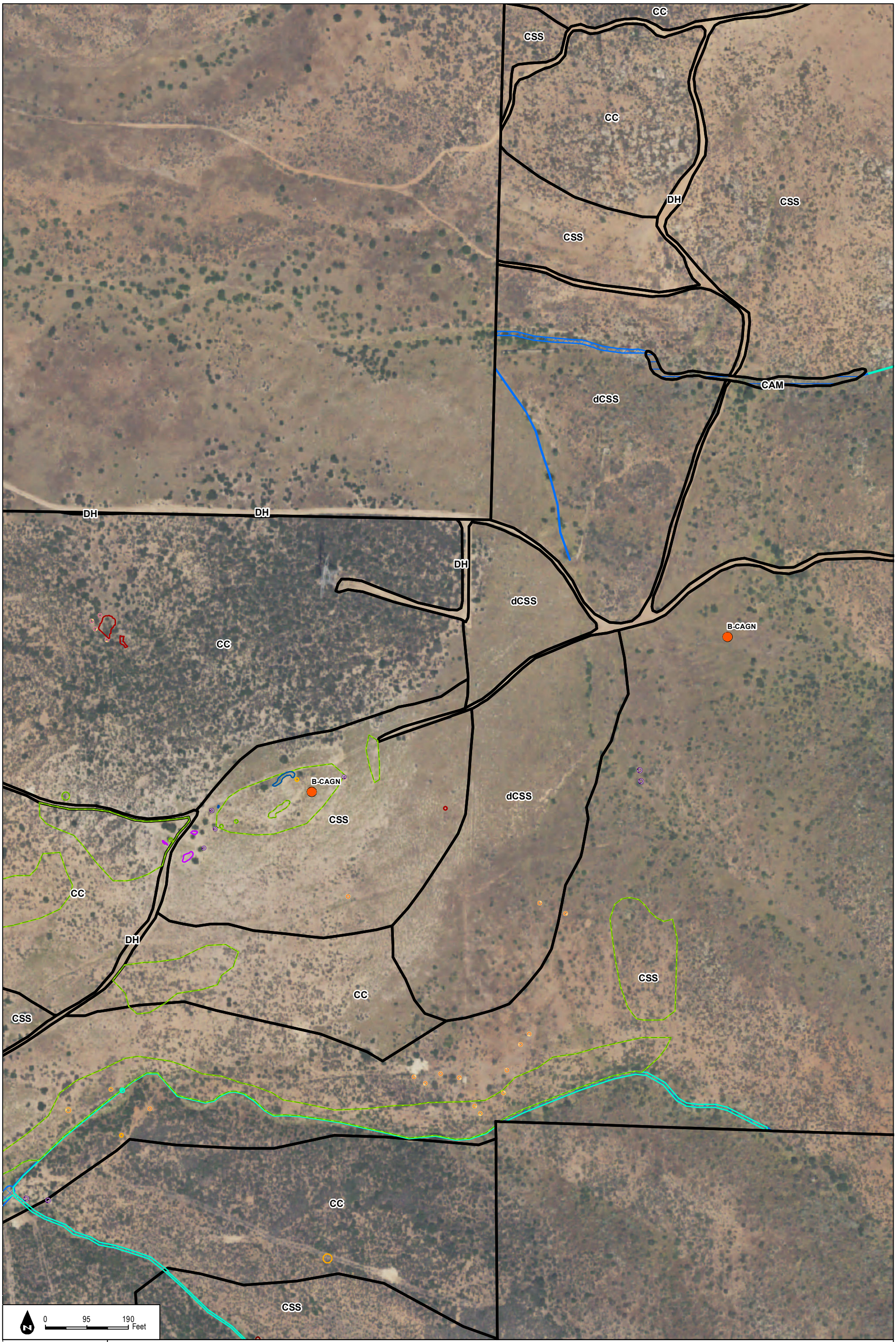

SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1y
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1z
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1aa
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1bb
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1cc
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

DUDEK

Figure 4-1dd
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

Figure 4-1ee
Biological Resources

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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SOURCE: NAIP 2016; Hunsaker 2017

Figure 4-1ff
Biological Resources

DUDEK

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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Diegan Coastal Sage Scrub (32500)

Diegan coastal sage scrub is the most widespread coastal sage scrub in coastal Southern California, extending from Los Angeles into Baja California (Oberbauer et al. 2008). The community mostly consists of drought-deciduous species such as California sagebrush (i.e., coastal sagebrush), Eastern Mojave buckwheat, white sage (*Salvia apiana*), laurel sumac, and black sage (*Salvia mellifera*). Diegan coastal sage scrub is typical on low moisture-available sites, such as steep, xeric slopes or clay-rich soils that release stored water slowly. This community integrates with types of chaparral at higher elevations. The *Artemisia californica* (California sagebrush scrub) alliance has a rank of G5S5 in CDFW (CDFG 2010; NatureServe 2014) meaning it is globally secure and secure in the state. Diegan coastal sage scrub is also the primary habitat preferred by the coastal California gnatcatcher, which is federally threatened, state Species of Special Concern (SSC), and an MSCP Covered Species.

Areas mapped as Diegan coastal sage scrub within the Land Exchange Area are dominated by coastal sagebrush, San Diego County viguiera, laurel sumac, sage (*Salvia* spp.), and Eastern Mojave buckwheat. Areas where native species were co-dominant with non-native grasses were mapped as disturbed Diegan coastal sage scrub. Diegan coastal sage scrub is the most dominant vegetation community within the Land Exchange Area, totaling 1,405.6 acres (includes disturbed forms). Of this total, approximately 416.8 acres is located within Village 14 and 968.5 acres is within the Planning Areas 16/19 (Figures 4-1 through 4-1ff).

Diegan Coastal Sage Scrub – *Baccharis* Dominated (32530)

Diegan coastal sage scrub – *Baccharis* dominated is similar to Diegan coastal sage scrub except that it is dominated by *Baccharis* species (desert broom (*B. sarothroides*) and/or coyotebrush (*B. pilularis*)) (Oberbauer et al. 2008). This community typically occurs on disturbed sites or those with nutrient-poor soils and often found within other forms of Diegan coastal sage scrub and on upper terraces of river valleys. This community is distributed along coastal and foothills areas in San Diego County. The *Artemisia californica* (California sagebrush scrub) alliance and *Baccharis pilularis* (coyotebrush scrub) alliance have a rank of G5S5 by CDFW (CDFG 2010; NatureServe 2014), meaning it is globally secure and secure in the state. Diegan coastal sage scrub – *Baccharis* dominated is not considered special status by CDFW.

Areas mapped as coastal sage scrub – *Baccharis* within the Land Exchange Area are dominated by either coyotebrush or desert baccharis, but have other coastal sage species such as Menzies' goldenbush (*Isocoma menziesii*), Eastern Mojave buckwheat, or sage (*Salvia* spp.) present. Areas where native species were co-dominant with non-native grasses were mapped as disturbed coastal sage scrub – *Baccharis* dominated. A total of 1.3 acres of Diegan coastal sage scrub – *Baccharis* dominated (includes disturbed forms) occurs within the Land Exchange Area; it is

located along Proctor Valley Road in the southern portion of the Land Exchange Area (City of San Diego Cornerstone Lands) and is associated with off-site improvement areas (Figures 4-1 through 4-1ff).

Coast Live Oak Woodland (71161)

According to Oberbauer et al. (2008), coast live oak woodland is dominated by a single evergreen species: coast live oak (*Quercus agrifolia*). Canopy height reaches 10 to 25 meters. The shrub layer is poorly developed, but may include toyon (*Heteromeles arbutifolia*), gooseberry (*Ribes* spp.), laurel sumac, or Mexican elderberry (*Sambucus mexicana*). The herb component is continuous, dominated by a variety of introduced species. Coast live oak woodland has a rank of G4S4 by CDFW (CDFG 2010), meaning it is apparently secure globally and in the state.

This vegetation community is mapped within the portion of the CDFW-owned lands in Planning Areas 16/19 that were not surveyed. Mapping within those areas was based on the San Diego Association of Governments' Western San Diego County Vegetation Mapping database (SANDAG 2012). A total of 1.1 acres of coast live oak woodland occurs within the Land Exchange Area; two patches of coast live oak woodland are located within the eastern-most CDFW-owned parcel, within the southern portion of that parcel.

Non-Native Grasslands (42200)

Non-native grasslands consist of dense to sparse cover of annual grasses with flowering culms between 0.5 to 3 feet in height (Oberbauer et al. 2008). Non-native grassland has a rank of G4S4 by CDFW (CDFG 2010), meaning it is apparently secure globally and in the state. Within the Land Exchange Area, oats (*Avena* spp.), bromes (*Bromus* spp.), stork's bill (*Erodium* spp.), and mustard (*Brassica* spp.) are the more dominant species in this community. Non-native grassland generally occurs in the flatter portions of the valley throughout the Land Exchange Area (Figures 4-1 through 4-1ff). A total of 222.4 acres of non-native grassland within the Land Exchange Area occurs within Planning Areas 16/19 (Table 4-1).

Alkali Seep (45320)

Alkali seep is described in Oberbauer (2008) as a vegetation community with low-growing perennial herbs, usually forming relatively complete cover, which grows throughout the year in areas with mild winters. Areas mapped as alkali seep usually contain relatively few species, such as salt grass (*Distichlis spicata*), San Diego marsh-elder (*Iva hayesiana*) and rush (*Juncus* spp.) These areas are permanently moist or wet alkaline seeps. The alkali seep alliance has a rank of G3S2 (CDFG 2010; NatureServe 2014), meaning it is vulnerable to extirpation or extinction globally and in the state.

A total of 0.5 acres of alkali seep is mapped within state-owned lands in the northern portion of Planning Areas 16/19 that would remain in Preserve. This portion of the state-owned lands was not surveyed by Dudek; therefore, current site conditions are unknown.

Cismontane Alkali Marsh (52310)

Cismontane alkali marsh is a wetland community dominated by low, perennial, herbaceous plants adapted to places where standing water or saturated soils are present for a considerable portion of the year. High evaporation and low input of freshwater render these marshes somewhat alkaline, especially during the summer. Plant species composition within this community tends to consist of halophytes such as San Diego marsh-elder (*Iva hayesiana*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), and certain sedges over the typical cattail–bulrush mix of freshwater marsh. The cismontane alkali marsh alliance is ranked by the CDFW (CDFG 2010) as a G1S1 alliance. This ranking indicates that globally and within California the alliance is critically imperiled (CDFG 2010; NatureServe 2014).

Cismontane alkali marsh was mapped intermittently in many of the drainages in the Land Exchange Area. The intermittent nature of its occurrence presumably is due to changes in topography that cause rapid draining in some areas and seasonal inundation in others. Areas supporting cismontane alkali marsh are evidenced by the presence of San Diego marsh-elder, and occasionally southwestern spiny rush. Saltgrass (*Distichlis spicata*) was sometimes present along the edges of the cismontane alkali marsh. Areas where native species were co-dominant with non-native grasses were mapped as disturbed cismontane alkali marsh. A total of 8.4 acres of cismontane alkali marsh (including disturbed forms) occurs within the Land Exchange Area, including along various drainages occurring in the central and northern portions of the Land Exchange Area, primarily within Planning Areas 16/19 (Figures 4-1 through 4-1ff).

Mulefat Scrub (63310)

Mulefat scrub is a depauperate, tall, herbaceous riparian scrub strongly dominated by mulefat (*Baccharis salicifolia*). This early seral community is maintained by frequent flooding. Land Exchange Area factors include intermittent stream channels with fairly coarse substrate and moderate depth to the water table (Oberbauer et al. 2008). This community type is widely scattered along intermittent streams and near larger rivers. The *Baccharis salicifolia* (mulefat thickets) alliance has a rank of G5S4 (CDFG 2010; NatureServe 2014), meaning it is globally secure and apparently secure in the state. Mulefat scrub is considered special status by the CDFW.

Areas mapped as mulefat scrub within the Land Exchange Area are dominated by mulefat and are typically found along drainages that receive intermittent water throughout the year. There are small patches of mulefat scrub mapped along the northern and southern portions of the Land Exchange Area (Figures 4-1 through 4-1ff). A total of 1 acre of mulefat scrub occurs within the Land Exchange Area (Table 4-1).

Coastal and Valley Freshwater Marsh (52410)

According to Holland (1986), coastal and valley freshwater marsh is a wetland habitat type that develops where the water table is at or just above the ground surface, such as around the margins of lakes, ponds, slow-moving streams, ditches, and seepages. Because it is permanently flooded by fresh water, there is an accumulation of deep, peaty soils. It typically is dominated by species such as cattail (*Typha* spp.), sedge (*Carex* spp.), yellow nutsedge (*Cyperus esculentus*), and bulrushes (*Scirpus* spp.). The coastal and valley freshwater marsh alliance has a rank of G3S2 (CDFG 2010; NatureServe 2014), meaning it is vulnerable to extirpation or extinction globally and in the state.

Areas within the Land Exchange Area mapped as freshwater marsh are dominated by southern cattail (*Typha domingensis*) and indicate areas where water is present for longer periods of time. A total of 0.4 acres of coastal and valley freshwater marsh occurs within the Land Exchange Area in the off-site improvement areas. Four areas of freshwater marsh are mapped along Proctor Valley Road in the very southern portion of the Land Exchange Area (Figures 4-1 through 4-1ff). These areas are all within off-site improvement areas associated with the realignment of Proctor Valley Road South.

Open Water (64100)

According to Oberbauer et al. (2008), the open water designation is primarily used to describe areas of open ocean water. One area mapped as open water is more accurately described by the Oberbauer et al. description for non-vegetated floodplain (see Non-Vegetated Floodplain or Channel (64200)). Open water does not have a global or state rank.

Previous aerial photographs from 1994 through 2016 of the Land Exchange Area show two areas within the state-owned land parcels as inundated with water at various times; therefore, these locations were mapped as open water (Figures 4-1 through 4-1ff). During the 2014 surveys, the portion of the state-owned land surveyed by Dudek did not contain water but instead was unvegetated with non-native grassland and some shrubs indicative of coastal sage scrub. During 2017 surveys, this area was again observed inundated with water and therefore, the open water

designation is retained. The open water designation within the state-owned lands not surveyed by Dudek was also retained. These open water areas are designated as Preserve.

Southern Coast Live Oak Riparian Forest (61310)

Southern coast live oak riparian forest is a dense riparian forest dominated by coast live oak (*Quercus agrifolia*), often with a herbaceous understory. This community occurs along the bottom or outer slopes of larger streams (Oberbauer et al. 2008). Areas mapped as oak riparian forest are dominated by coast live oak. The *Quercus agrifolia* (coast live oak woodland) alliance has a rank of G5S4 by CDFW (CDFG 2010), meaning it is globally secure and apparently secure in the state.

A total of 0.7 acres of southern coast live oak riparian forest occurs within the Land Exchange Area. One area of southern coast live oak riparian forest is mapped along the eastern edge of the Village 14 Development Footprint and Otay Ranch RMP Preserve boundary in a drainage that flows in an east–west direction to the Proctor Valley drainage (Figures 4-1 through 4-1ff). This is the only instance of this vegetation community and it is contained within the Otay Ranch RMP Preserve.

Southern Willow Scrub (63320)

Southern willow scrub is a dense, broad-leafed, winter-deciduous riparian thicket dominated by several willow species (*Salix* spp.), with scattered emergent Fremont cottonwood (*Populus fremontii*) and California sycamore (*Platanus racemosa*). This community was formerly extensive along the major rivers of coastal Southern California, but now much reduced (Oberbauer et al. 2008). The *Salix lasiolepis* (arroyo willow thickets) alliance has a rank of G3S4 by CDFW (CDFG 2010; NatureServe 2014), meaning it is vulnerable to extirpation or extinction globally and secure in the state.

A total of 0.3 acres of southern willow scrub occurs within the Land Exchange Area. Areas mapped as southern willow scrub are dominated by arroyo willow (*Salix lasiolepis*). Two small polygons of southern willow scrub are mapped in the northern portion of the Land Exchange Area, within the Otay Ranch RMP Preserve in Planning Area 16 (Figures 4-1 through 4-1ff).

Non-Vegetated Floodplain or Channel (64200)

Non-vegetated floodplain or channel is not recognized by Holland (1986) but is recognized by Oberbauer et al. (2008). According to Oberbauer et al. (2008), non-vegetated floodplain or channel is the sandy, gravelly, or rocky fringe of waterways or flood channels that is unvegetated on a relatively permanent basis. Vegetation may be present but is usually less than 10% total cover and grows on the outer edge of the channel. One mapped non-vegetated channel occurs along the Proctor Valley Road south, which connects to the large unnamed wash that feeds into

Lower Otay Reservoir. Other non-vegetated channels occur throughout the Land Exchange Area but have been mapped as overlays within vegetation communities. These resources are discussed more in Section 4.7, Jurisdictional Aquatic Resources. Non-vegetated floodplain or channel does not have a global or state rank.

Eucalyptus Woodland (79100)

Eucalyptus woodland is not recognized by Holland (1986), but is recognized by Oberbauer et al. (2008). This "naturalized" vegetation community is fairly widespread in Southern California and is considered a woodland habitat. It typically consists of monotypic stands of introduced Australian eucalyptus trees (*Eucalyptus* spp.). The understory is either depauperate or absent owing to high leaf litter. Although eucalyptus woodlands are of limited value to most native plants and animals, they frequently provide nesting and perching sites for several raptor species. The *Eucalyptus* (*globulus*, *camaldulensis*) (eucalyptus groves) semi-natural stands does not have a global or state rank (CDFG 2010; NatureServe 2014). A total of 5.8 acres of eucalyptus woodland occurs within the Land Exchange Area. There are five small separate areas mapped as eucalyptus woodland throughout the Land Exchange Alternative, including one patch along off-site Proctor Valley Road south (Figures 4-1 through 4-1ff).

Urban/Developed (12000)

Urban/developed refers to areas that have been constructed upon or disturbed so severely that native vegetation is no longer supported. Developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials (Oberbauer et al. 2008). Within the Land Exchange Area, the majority of urban/developed mapping is associated with Proctor Valley Road (Figures 4-1 through 4-1ff).

Disturbed Habitat (11300)

Disturbed habitats are areas that have been physically disturbed and no longer recognizable as native or naturalized vegetation association (Oberbauer et al. 2008). These areas may continue to retail soil substrate. If vegetation is present, it is almost entirely composed of non-native vegetation, such as ornamentals or ruderal exotic species. Examples of these areas may include graded landscapes or areas, graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, areas repeatedly cleared for fuel management, or repeatedly used areas that prevent revegetation (e.g., parking lots, trails that have persisted for years). Within the Land Exchange Area, dirt roads, prominent dirt trails, and off-highway-vehicle (OHV) areas are mapped as disturbed habitat (Figures 4-1 through 4-1ff).

4.3 Floral Diversity

A total of 352 vascular plant species, consisting of 254 native species (72%) and 98 non-native species (28%), were recorded within the Land Exchange Area during the 2014, 2015, 2016, and 2017 focused surveys. Of the total species observed, 22 of these species are considered special status (nine of which are MSCP Covered Species) and are discussed in further detail in Section 4.5. In addition, although it was not observed, there is critical habitat for spreading navarretia within the Land Exchange Area. Appendix G includes a cumulative list of plant species, including special-status species that have been observed within the Land Exchange Area.

4.4 Wildlife Diversity

The Land Exchange Alternative supports habitat for common upland and riparian species. Chaparral, coastal scrub, woodland, riparian, and non-native habitats (e.g., eucalyptus and non-native grassland) within the Land Exchange Area provide foraging and nesting habitat for migratory and resident bird species and other wildlife species. Rock outcroppings, chaparral, coastal scrub, and woodlands within the Land Exchange Area provide cover and foraging opportunities for wildlife species, including reptiles and mammals.

There were 156 species observed in the Land Exchange Area during 2014, 2015, 2016, and 2017 surveys. Of the total species observed, 28 (18%) of these are considered special status (11 of which are Covered Species). Species observed within the Land Exchange Area were recorded during focused surveys, habitat assessments, vegetation mapping and sensitive plant surveys. Given the resource management context of the Land Exchange Alternative (i.e., level of study for County of San Diego MSCP Subarea Plan and Otay Ranch GDP/SRP), this level of wildlife survey information is adequate to evaluate significant Land Exchange Alternative impacts to biological resources. A cumulative list of wildlife species observed during these surveys is provided in Appendix H. Species richness in the Land Exchange Area is moderate due to the property size, amount of undeveloped land, and the number of native upland habitats. Species richness is generally increased with the presence of more habitat types and ecotones. The Land Exchange Alternative is dominated by two habitat types: chamise chaparral comprises 25% and Diegan coastal sage scrub comprises 59% of the Land Exchange Area. Although species richness is moderate, the number of species and the wildlife population levels (i.e., number of individuals) is typical for undeveloped areas in this region, particularly those areas that support multiple upland habitat types. The Land Exchange Alternative supports numerous special-status wildlife species, which are addressed in Section 4.6.

4.4.1 Reptiles and Amphibians

Eleven common reptile species were observed within and adjacent to the Land Exchange Alternative during surveys. Commonly observed reptiles include western fence lizard (*Sceloporus occidentalis*) and common side-blotched lizard (*Uta stansburiana*). Special-status reptiles observed include San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), red diamond rattlesnake (*Crotalus ruber*), rosy boa (*Lichanura trivirgata*), and Blainville's horned lizard (*Phrynosoma blainvillii*). One special-status amphibian species was documented within the Land Exchange Area during surveys, western spadefoot (*Spea hammondii*), which is not an MSCP Covered Species. Special-status species are discussed further in Section 4.6.

4.4.2 Birds

Seventy-five bird species were observed within the Land Exchange Area. Commonly observed birds include western meadowlark (*Sturnella neglecta*), western scrub-jay (*Aphelocoma californica*), red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), turkey vulture (*Cathartes aura*), wrentit (*Chamaea fasciata*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), California towhee (*Melozone crissalis*), northern mockingbird (*Mimus polyglottos*), ash-throated flycatcher (*Myiarchus cinerascens*), phainopepla (*Phainopepla nitens*), spotted towhee (*Pipilo maculatus*), bushtit (*Psaltriparus minimus*), and Bewick's wren (*Thryomanes bewickii*).

Special-status birds observed include Cooper's hawk (*Accipiter cooperii*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), grasshopper sparrow (*Ammodramus savannarum*), golden eagle, burrowing owl (sign), red-shouldered hawk (*Buteo lineatus*), turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), coastal California gnatcatcher, western bluebird (*Sialia mexicana*), and common barn-owl (*Tyto alba*). Seven bird species that were observed and are MSCP Covered Species include: Cooper's hawk, southern California rufous-crowned sparrow, golden eagle, burrowing owl (sign), northern harrier, coastal California gnatcatcher, and western bluebird. Special-status species are discussed further in Section 4.6.

4.4.3 Mammals

Fourteen mammal species were detected (directly or indirectly) within and adjacent to the Land Exchange Alternative during biological surveys. Commonly observed mammals include including desert cottontail (*Sylvilagus audubonii*), brush rabbit (*Sylvilagus bachmani*), California ground squirrel (*Spermophilus beecheyi*), and coyote (*Canis latrans*). Special-status mammals observed include San Diego black-tailed jackrabbit (*Lepus californica bennettii*), mule deer

(*Odocoileus hemionus*), cougar (*Puma concolor*), and American badger (sign; *Taxidea taxus*). Special-status species are discussed further in Section 4.6. Three mammal species were observed and are MSCP Covered Species include: mule deer, cougar, and American badger.

Bats occur throughout most of Southern California and may use any portion of the Land Exchange Area as foraging habitat. There is high potential for bat species to day roost within the eucalyptus trees and small rock outcrops within the Otay Ranch RMP Preserve in Planning Area 16, the oak riparian forest in the Otay Ranch RMP Preserve within Village 14, and eucalyptus trees within with the Village 14 Development Footprint. These species include pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), Yuma myotis (*Myotis yumanensis*), and big free-tailed bat (*Nyctinomops macrotis*). Maternity roosts may occur within the large eucalyptus trees located within the Otay Ranch RMP Preserve and the Village 14 Development Footprint but have not been observed during several years of various surveys conducted within the Land Exchange Area. Because the majority of the surveys were conducted during daylight hours and surveys did not include focused efforts to locate roosting bats, no bats were detected within the Land Exchange Area. This document analyzes the potential for bat species to occur within the Land Exchange Area based on available habitat, known occurrences and ranges of the various species (see Section 4.6). Impacts to bats are based on impacts to potential foraging and roosting habitat.

4.4.4 Invertebrates

Fifty-five (55) invertebrate species were observed within and adjacent to the Land Exchange Alternative during biological surveys. Commonly observed species include painted lady (*Vanessa cardui*), Behr's metalmark (*Apodemia mormo virgulti*), funereal duskywing (*Erynnis funeralis*), checkered white (*Pontia protodice*), Sara orangetip (*Anthocharis sara*), and tarantula hawk (*Pepsis* sp.). Two fairy shrimp species were observed in some of the features in the Land Exchange Area, including both the versatile fairy shrimp and the federally endangered San Diego fairy shrimp (Figures 3-6a through 3-6i), which is discussed further in Section 4.6. One special-status invertebrate species, San Diego fairy shrimp, was observed.

4.4.5 Fish

No fish species were documented in the Land Exchange Area during the numerous surveys conducted within the Land Exchange Area. There are no large areas of open water or perennial water sources within the Land Exchange Area that would support fish species.

4.5 Sensitive Plant Species

Endangered, rare, or threatened plant species, as defined in CEQA Guidelines Section 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status plant species" in this report and include (1) endangered or threatened plant species recognized in the context of CESA and FESA (CDFW 2016b), (2) plant species with a CRPR 1 through 4, (CDFW 2016c; CNPS 2016), and (3) plant species considered "sensitive" by the County of San Diego (Table 2 in County of San Diego 2010c).

In considering rarity, the CNPS Inventory of rare and endangered vascular plants of California was the primary reference (CNPS 2016). Use of the CNPS Inventory is helpful because it clearly defines levels of endangerment and rarity for all of the species addressed in the Inventory. The Inventory divides its subject taxa into four ranks: CRPR 1 (which is further divided into 1A and 1B), 2 (which is further divided into 2A and 2B), 3, and 4. Plants with a CRPR of 1A are presumed extirpated or extinct because they have not been seen or collected in the wild in California for many years. Plants with a CRPR of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. Plants with a CRPR of 2A are presumed extirpated because they have not been observed or documented in California for many years. Except for being common beyond the boundaries of California, plants with a CRPR of 2B would have been ranked 1B. Plants with a CRPR of 3 have not had sufficient information collected to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting CRPR 3 are taxonomically problematic. All of the plants constituting CRPR 1A, 1B, 2A, 2B, and 3 meet the definitions of CESA of the California Department of Fish and Game Code, and are eligible for state listing. Plants with a CRPR of 4 are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly. Should the degree of endangerment or rarity of a CRPR 4 plant change, they will be transferred to a more appropriate rank.

Some of the plants constituting CRPR 4 meet the definitions of CESA of the California Department of Fish and Game Code, and few, if any, are eligible for state listing; this rank is considered to be a watch list. Nevertheless, many of them are significant locally, and it is strongly recommended that CRPR 4 plants be evaluated for impact significance during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, based on CEQA Guidelines Section 15125(c) and/or 15380. This may be particularly appropriate for:

- The type locality of a CRPR 4 plant
- Populations at the periphery of a species' range
- Areas where the taxon is especially uncommon

- Areas where the taxon has sustained heavy losses
- Populations exhibiting unusual morphology or occurring on unusual substrates

In addition to CRPR 1–4 species, plant species listed on County Lists A through D (County of San Diego 2010a) also were included in the consideration of sensitive plant species for this analysis.

Focused plant surveys were conducted in the Land Exchange Area to determine the presence or absence of special-status plant species that are considered endangered, rare, or threatened under CEQA Guidelines Section 15380 (14 CCR 15000 et seq.). Special-status plant species directly observed during focused surveys or known to occur in the surrounding region are described in Appendix I-1, which describes their known occurrences or potential to occur within the Land Exchange Area based on their general biology (primary habitat associations, life form, blooming period, and known elevation range). Sensitive plant species directly observed within the Land Exchange Area include the following MSCP Covered, and County List A, species: Otay manzanita (*Arctostaphylos otayensis*), San Diego goldenstar (*Bloomeria clevelandii*), Orcutt's brodiaea (*Brodiaea orcuttii*), Dunn's mariposa-lily (*Calochortus dunnii*; narrow endemic), San Miguel savory (*Clinopodium [=Satureja] chandleri*), Otay tarplant, variegated dudleya (narrow endemic), San Diego barrel cactus (*Ferocactus viridescens*), and Gander's pitcher sage (*Lepechinia gander*; narrow endemic). Special-status species not covered by the MSCP observed within the Land Exchange Area include San Diego sagewort (*Artemisia palmeri*; County List D), delicate clarkia (*Clarkia delicata*; County List A), western dichondra (*Dichondra occidentalis*; County List D), Palmer's grapplinghook (*Harpagonella palmeri*; County List D), graceful tarplant (*Holocarpha virgata* ssp. *elongata*; County List D), San Diego marsh-elder (County List B), southwestern spiny rush (County List D), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsoni*; County List A), golden-rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*; County List D), Munz's sage (*Salvia munzii*; County List B), ashy spike-moss (*Selaginella cinerascens*; County List D), San Diego County viguiera; (County List D), and San Diego County needle grass (*Stipa [=Achnatherum] diegoensis*; County List D).

Additional plant species with a high or moderate potential to occur are included in Appendix I-1. Plants that are not expected to occur or have low potential to occur are included in Appendix I-2. The appendices include all MSCP Covered Species and County Lists A–D species (County of San Diego 2010a), as well as species recorded in the Jamul Mountains quadrangle and the surrounding eight quadrangles (CDFW 2016c; CNPS 2016; USFWS 2016; SDNHM 2016). The potential-to-occur determination is based on elevation, habitat, and soils present within the Land Exchange Area and Dudek's knowledge of biological resources in the area and regional distribution of each species.

4.5.1 County List A and B Species

Plants categorized as County List A species are plants that are rare, threatened, or endangered in California and elsewhere. Plants categorized as County List B are rare, threatened, or endangered in California, but more common elsewhere (County of San Diego 2010a). County List A and B species that have been observed in the Land Exchange Area are described as follows and included in Appendix I-1. The location of the populations, within either Village 14 Development Footprint or Otay Ranch RMP Preserve, is described for each species and shown in Figures 4-1 through 4-1ff. Additional species that have moderate potential to occur are described in more detail in Appendix I-1. Many of the List A species observed within the Land Exchange Area are also MSCP Covered Species. Impacts to MSCP Covered Species are considered mitigated upon conveyance of the prescribed amount of land to the Otay Ranch RMP Preserve.

Otay manzanita (*Arctostaphylos otayensis*), List A, MSCP Covered Species

Otay manzanita is a CRPR 1B.1, MSCP Covered Species, and County List A species. This evergreen shrub typically blooms from December to June, and occurs in maritime chaparral at elevations less than 1,200 feet amsl. Several populations of 627 Otay manzanita shrubs was observed in the Otay Ranch RMP Preserve in Planning Areas 16/19 (Figures 4-1 through 4-1ff).

San Diego goldenstar (*Bloomeria clevelandii*), List A, MSCP Covered Species

San Diego goldenstar is a CRPR 1B.1, MSCP Covered Species, and County List A species. This species occurs on clay soils in chaparral, coastal scrub, and valley and foothill grasslands as well as in vernal pools. This perennial herb typically blooms from April to May and occurs at elevations ranging from 164 to 1,526 feet amsl. San Diego goldenstar was recorded in several locations, totaling 4,967 individuals. Thirteen populations, totaling 2,228 plants, are located within the Village 14 Development Footprint (including fuel modification), and the remaining eight populations, totaling 2,739 plants, are in Preserve areas, including the Planning Areas 16/19 Preserve (Figures 4-1 through 4-1ff).

Orcutt's brodiaea (*Brodiaea orcuttii*), List A, MSCP Covered Species, 1B.1

Orcutt's brodiaea is a CRPR 1B.1, MSCP Covered Species, and County List A species. This perennial herb is found at elevations below 5,250 feet amsl in creosote bush scrub and wetland-riparian habitat. This species typically blooms from May to July. Approximately 83 individuals were observed within the Otay Ranch RMP Preserve in Planning Area 16 (Figures 4-1 through 4-1ff).

Dunn's mariposa-lily (*Calochortus dunnii*), List A, MSCP Covered Species, Narrow Endemic

Dunn's mariposa-lily is state listed as rare, and is also a CRPR 1B.2, MSCP Covered Species, and County List A species. This species occurs within a variety of vegetation communities, such as coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grasslands. This annual herb typically blooms from March to May, with a lesser extent in June, and occurs at an elevation range less than 1,000 feet amsl. Several occurrences of Dunn's mariposa-lily, totaling 453 individuals, were observed within the Land Exchange Area. This species was mapped within with the Otay Ranch RMP Preserve in Planning Areas 16/19 and Village 14 (Figures 4-1 through 4-1ff).

Delicate clarkia (*Clarkia delicata*), List A

Delicate clarkia is an annual herb listed as a CRPR 1B.2 and County List A species. This plant is often found within chaparral and cismontane woodland vegetation communities at elevations ranging from 770 to 3,300 feet amsl. Delicate clarkia blooms from April to June. Five individuals were observed within the Otay Ranch RMP Preserve in Planning Areas 16/19 (Figures 4-1 through 4-1ff).

San Miguel savory (*Clinopodium chandleri*), List A, MSCP Covered Species

San Miguel savory is a perennial shrub listed as CRPR 1B.2, MSCP Covered Species, and County List A species. This shrub is often found in chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. San Miguel savory typically blooms between March and July and occurs at elevations ranging from 394 to 3,527 feet amsl. One occurrence was observed within the Planning Areas 16/19 Preserve (Figures 4-1 through 4-1ff).

Otay tarplant (*Deinandra conjugens*), Federally Threatened, State Endangered, List A, MSCP Covered Species

Otay tarplant is federally listed as threatened, state endangered, CRPR 1B.1, MSCP Covered Species, and County List A species. This annual herb is often found in coastal scrub and valley and foothill grassland on clay soils. Its typical bloom period is between May and June and it occurs on elevations ranging from 82 to 984 feet amsl. Approximately 25 individuals were recorded in the Proctor Valley Road South off-site improvement area (Figures 4-1 through 4-1ff). USFWS designated critical habitat for Otay tarplant exists on portions of Proctor Valley Road and areas located in the southwestern Land Exchange Alternative (Figure 2-2, Critical Habitat).

Variegated dudleya (*Dudleya variegata*), List A, MSCP Covered Species, Narrow Endemic

Variegated dudleya is a CRPR 1B.2, MSCP Covered Species, and County List A species. This perennial herb is found within chaparral, cismontane woodland, coastal scrub, valley foothill

grassland as well as vernal pools on clay soils. Variegated dudleya at elevation ranges less than 1,900 feet and generally blooms from April to June. Two occurrences totaling 35 individuals were observed in the southern Development Footprint of Village 14. There is potential for this species to occur within the Preserve areas, however it has not been observed during focused areas conducted within the Preserve.

San Diego barrel cactus (*Ferocactus viridescens*), List B, MSCP Covered Species

San Diego barrel cactus is a CRPR 2.1, MSCP Covered Species, and County List B species. This succulent is located at elevations less than 1,500 feet within chaparral, coastal scrub, valley and foothill grasslands and sometimes vernal pools. This species blooms from May to July. Approximately 50 San Diego barrel cactus were recorded in the Land Exchange Area. San Diego barrel cactus was observed primarily along Proctor Valley Road in the southern portion of the Land Exchange Area (Figures 4-1 through 4-1ff). Additional observations were recorded within the Village 14 Development Footprint and Preserve.

San Diego marsh-elder (*Iva hayesiana*), List B

San Diego marsh-elder is a CRPR 2.2 and County List B species. It occurs within marshes and swamps as well as playas at elevations ranging from 30 to 1,650 feet amsl. This perennial herb blooms from April to November. Population estimates for this species' occurrence within the Land Exchange Area are approximately 6,100 individuals. This species was observed commonly throughout the Land Exchange Alternative within areas mapped as cismontane alkali marsh or other riparian vegetation, and in ephemeral channels (Figures 4-1 through 4-1ff).

Gander's pitcher sage (*Lepechinia ganderi*), List A, MSCP Covered Species, Narrow Endemic

Gander's pitcher sage is a CRPR 1B.3, MSCP Covered Species, and County List A species. Gander's pitcher sage is a perennial shrub that occurs within a variety of vegetation communities including closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grasslands. This species is found at elevations ranging from 1,001 to 3,297 feet amsl and blooms between June and July. Several populations of a total of 168 individuals were observed within the Otay Ranch RMP Preserve in Planning Area 16 (Figures 4-1 through 4-1ff).

Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), List A

Robinson's pepper-grass is a CRPR 1B.2 (CNPS 2016) and County List A species (County of San Diego 2010a). This annual herb blooms from January to July. It occurs in chaparral and coastal scrub at elevations below 2,900 feet (CNPS 2016). Fourteen occurrences occur in two concentrated areas within the Village 14 Development Footprint. The population within the

Development Footprint totals 174 individuals. While additional populations may occur within the Preserve areas, this species was not detected during previous surveys.

Spreading navarretia (*Navarretia fossalis*), Federally Threatened, List A, MSCP Covered Species

Spreading navarretia is federally listed as a threatened, state endangered, CRPR 1B.1, MSCP Covered Species, and County List A species. This annual herb is often found in ditches and other artificial depressions, which often occur in degraded vernal pool habitat. Its typical bloom period is between April and June and it occurs on elevations ranging from sea level to 4,250 feet amsl. There is no spreading navarretia found within the Land Exchange Area; however, there is 4.8 acres of USFWS-designated critical habitat for this species in the southwest portion of the Land Exchange Area (Figure 2-2).

Munz's sage (*Salvia munzii*), List B

Munz's sage is a CRPR 2.3 and County List B species. This perennial evergreen shrub typically blooms from February to April. It occurs in chaparral and coastal scrub habitat types, at elevations of 394–3,494 feet amsl (CNPS 2016). Munz's sage is a common species in some of the Diegan coastal sage scrub and chamise chaparral communities within the Land Exchange Area. Although not all *Salvia* individuals could be identified to species due to the timing of the rare plant surveys, approximately 18,217 individuals were confirmed as Munz's sage. Munz's sage occurs throughout the Land Exchange Area (Figures 4-1 through 4-1ff).

4.5.2 County List C and D Species

Plants categorized as County List C species are plants that may be rare, but more information is needed to determine their true rarity status. Plants categorized as County List D are of limited distribution and are uncommon, but not presently rare or endangered (County of San Diego 2010a). No County List C species were observed in the Land Exchange Area. County List D species that have been observed in the Land Exchange Area are described as follows and included in Appendix I-1. In general, populations were not recorded for CRPR 4 and County List D plants; therefore, population numbers are not provided or shown on the figures. Additional species that have moderate or high potential to occur are described in more detail in Appendix I-1.

San Diego sagewort (*Artemisia palmeri*), List D

San Diego sagewort, a CRPR 4.2 and County List D species, occurs in a variety of vegetation communities including chaparral, coastal scrub, riparian forest, scrub and woodland, at elevations ranging from 50 to 3,000 feet amsl. This deciduous shrub blooms from May to

September. Three occurrences of this species, totaling 16 individuals, were observed within the Planning Areas 16/19 Preserve.

Western dichondra (*Dichondra occidentalis*), List D

Western dichondra is a CRPR 4.2 and County List D species. This rhizomatous herb blooms from March to May. It occurs in chaparral, cismontane woodland, coastal scrub and valley and foothill grassland at elevations of 160 – 1,650 feet (CNPS 2016). Since populations of this rhizomatous herb are difficult to discern, the extent of the occurrences were mapped but populations were not counted. There are nine occurrences within the Development Area that total 0.23 acres. In addition, 0.05 acres were observed within the Otay Ranch RMP Preserve in Planning Areas 16/19.

Palmer's grapplinghook (*Harpagonella palmeri*), List D

Palmer's grapplinghook is a CRPR 4.2 and County List D species typically found within chaparral, coastal scrub, and valley and foothill grasslands. This annual herb blooms from March to May and occurs at elevations between 50 to 3,100 feet. Palmer's grapplinghook was observed within the center of the southern Development Area at five locations totaling 40 individuals. While additional populations may occur within the Otay Ranch RMP Preserve, this species was not detected during previous surveys.

Graceful tarplant (*Holocarpha virgata* ssp. *elongata*), List D

Graceful tarplant is a CRPR 4.2 and County List D species which occurs within chaparral, coastal scrub, cismontane woodland, chaparral and valley and foothill grassland. This annual herb typically blooms from May–November and is found at elevations ranging from 200 to 3,600 feet. One population of five individuals was observed in the southern Development Area and 15 individuals were observed in the Planning Areas 16/19 Preserve. While additional populations may occur within the Otay Ranch RMP Preserve, this species was not detected during previous surveys.

Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), List D

Southwestern spiny rush is a CRPR 4.2 and County List D species found within mesic coastal dunes, meadows and alkali seeps, and coastal saltwater marshes and swamps. The typical blooming period for this rhizomatous herb is between May and June and it occurs at elevations less than 3,000 feet amsl. Approximately 577 individuals of southwestern spiny rush were observed within the Otay Ranch RMP Preserve in Planning Areas 16/19 (546 individuals), and along Proctor Valley Road South (31 individuals; Village 14) generally within vegetation such as cismontane alkali marsh, freshwater marsh, other riparian vegetation, as well as within ephemeral channels.

Golden-rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*), List D

Golden-rayed pentachaeta is a CRPR 4.2 and County List D species found at elevations of 260 to 6,070 feet amsl within a variety of vegetation communities, including chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland, as well as valley and foothill grassland. This annual herb typically blooms between March and July. During the 2014 rare plant surveys, this species was observed in the Planning Areas 16/19 Preserve, but due to its low ranking, its exact locations and populations were not recorded. The 2015 focused surveys within the exchange lands between the state and Land Exchange Alternative applicant did not result in the detection of this species. The 2016 and 2017 focused surveys for the Village 14 Development Area resulted in the detection of individuals occurring at seven locations. The population for golden-rayed pentachaeta within the Land Exchange Area totals 12,608 individuals, including 2,341 individuals within the Village 14 Development Footprint and 10,267 individuals occurring within the Planning Areas 16/19 Preserve.

Ashy spike-moss (*Selaginella cinerascens*), List D

Ashy spike-moss is a CRPR 4.1 and County List D species. This perennial rhizomatous herb occurs in chaparral and coastal scrub at elevations of 66 to 2,100 feet amsl. Ashy spike-moss was observed within throughout portions of the Land Exchange Area, totaling 6.65 acres, including occurrences of 1.61 acres within the Village 14 Development Area, 5.04 acres within the Planning Areas 16/19 Preserve, and less than 0.01 acres in off-site areas.

San Diego County viguiera (*Viguiera laciniata*), List D

San Diego County viguiera is a CRPR 4.4 and County List D species. This shrub is found at elevations ranging from 200 to 2,460 feet amsl in chaparral and coastal scrub. This species typically blooms from February to June. San Diego County viguiera occurs as a common shrub in some of the coastal sage scrub within the Land Exchange Area, as well as throughout other vegetation communities. Approximately 18,699 individuals occur throughout the Land Exchange Alternative, including 2,428 individuals observed within the Village 14 Development Area, 16,269 individuals within the Otay Ranch RMP Preserve in Planning Areas 16/19, and two individuals within the off-site areas.

San Diego County Needle Grass (*Stipa [=Achnatherum] diegoensis*), List D

San Diego County needle grass is a CRPR 4.2 and County List D species. This perennial grass is found at elevations below 7,480 feet amsl in chaparral and coastal scrub. This species typically blooms from February to June. San Diego County needle grass was observed within Otay Ranch RMP Preserve in Planning Area 16. Of the total 168 individuals were observed (Figures 4-1 through 4-1ff).

4.6 Sensitive Wildlife Species

The County of San Diego divides sensitive wildlife species into County Group 1 and County Group 2 based on the species' rarity and known threats (County of San Diego 2010a). County Group 1 species include those that have a high level of sensitivity, are listed as threatened or endangered, or have a natural history requirement that increases their sensitivity. County Group 2 species include those that are becoming less common, although not so rare that extinction is imminent without immediate action. The CDFW assigns SSC status to species whose population levels are declining, have limited ranges, and/or are vulnerable to extinction due to continuing threats (CDFW 2017). In addition, fully protected (FP) species are protected by the CDFW and Watch List (WL) species are candidates for higher sensitive status. The USFWS provides the Birds of Conservation Concern (BCC) status to migratory and non-migratory bird species that are adhere to the 1988 amendment to the Fish and Wildlife Conservation Act that mandates the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973" (USFWS 2008). County Group 1 and/or SSC species, as well as County Group 2, species that have been observed in the Land Exchange Area, or those which have a high potential to occur, are discussed in this section and included in Appendix J-1. Additional species that have moderate potential to occur are also described in more detail in Appendix J-1. Species that have been observed or have potential to occur on site, but not during the life history phase that is considered "special-status" (e.g., nesting) are described in Appendix J-2. For example, white-tailed kite was observed foraging on site, but is not expected to nest within the Land Exchange Area due to the lack of suitable nesting habitat.

The following MSCP Covered Species were observed within the Land Exchange Area: Cooper's hawk, Southern California rufous-crowned sparrow, golden eagle, burrowing owl (*Athene cunicularia*; sign only), northern harrier, coastal California gnatcatcher, western bluebird (*Sialia mexicana*), mule deer (*Odocoileus hemionus*), cougar (*Puma concolor*), American badger (*Taxidea taxus*), and Blainville's horned lizard.

Additional special-status wildlife species observed include: San Diego fairy shrimp, red diamond rattlesnake, western spadefoot, grasshopper sparrow, red-shouldered hawk, turkey vulture, California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Setophaga petechial*), common barn-owl (*Tyto alba*), monarch (*Danaus plexippus*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diegan tiger whiptail, rosy boa, long-eared owl (*Asio otus*), white-tailed kite (*Elanus leucurus*).

Two MSCP Covered Species have a high potential to occur within the Land Exchange Area: ferruginous hawk (*Buteo regalis*), and orangethroat whiptail (*Aspidoscelis hyperythra*) (Appendix J-1).

Other special-status wildlife species with a high potential to occur within the Land Exchange Area include Bell's sage sparrow (*Artemisiospiza belli belli*), Quino checkerspot butterfly (*Euphydryas editha quino*), Hermes copper butterfly,[9] pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), Yuma myotis (*Myotis yumanensis*), San Diego desert woodrat (*Neotoma lepida intermedia*), big free-tailed bat (*Nyctinomops macrotis*), San Diego banded gecko (*Coleonyx variegatus abbotti*), and Coronado skink (*Plestiodon skiltonianus interparietalis*) (Appendix J-1).

4.6.1 County Group 1 Species and/or SSC Species

County Group 1 and/or SSC species that have been observed in the Land Exchange Area, or have a high potential to occur, are described below and included in Appendix J-1. Additional species that have moderate potential to occur are described in more detail in Appendix J-1.

Amphibians and Reptiles

San Diegan Tiger Whiptail (*Aspidoscelis tigris stejnegeri*), SSC/County Group 2

The San Diegan tiger whiptail is an SSC and County Group 2 species. It is found in coastal Southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges, north into Ventura County, and south into Baja California, Mexico (Lowe et al. 1970; Stebbins 2003).

The tiger whiptail (*A. tigris*) is found in a variety of habitats, primarily in areas where plants are sparse and there are open areas for running. According to Stebbins (2003), the species ranges from deserts to montane pine forests where it prefers warmer and drier areas. The species is also found in woodland and streamside growth, and it avoids dense grassland and thick shrub growth.

One San Diegan tiger whiptail was observed during surveys in the east-central portion of the Land Exchange Area, east of the Development Footprint (Figures 4-1 through 4-1ff), and there is suitable habitat, including open scrub and chaparral, and termite food sources observed in the Land Exchange Area.

[9] Hermes copper has a moderate potential to occur, but because it's a federal candidate for listing it is included in the discussion.

Red diamond rattlesnake (*Crotalus ruber*), SSC/County Group 2

The red diamond rattlesnake is an SSC and County Group 2[10] species. It is found in a variety of habitats from the coast to the deserts, from San Bernardino County into Baja California, Mexico (below 5,000 feet amsl). It commonly occurs in rocky areas within coastal sage scrub, chaparral, juniper woodlands, and desert habitats, but can also be found in areas devoid of rocks (Lemm 2006).

Red diamond rattlesnake was observed once during surveys, and there is suitable habitat in the vegetation communities with rocky outcroppings (Figures 4-1 through 4-1ff). This species was observed in the southwestern portion of the Land Exchange Area. Since this species has a potential to throughout the Land Exchange Alternative, specific locations were not mapped.

San Diego Banded Gecko (*Coleonyx variegatus abbotti*) SSC/County Group 1

The San Diego banded gecko is an SSC and County Group 1 species. The San Diego banded gecko is only recorded in Riverside, San Diego and San Bernardino counties in California (CDFW 2016c). The San Diego banded gecko is active at night and hides in burrows during daylight (Nafis 2016). Typical breeding season for the San Diego banded gecko occurs during April and May, and hibernation is generally November to February (Nafis 2016). General habitat for this species includes coastal scrub and chaparral, and this species is typically found in granite or rocky outcrops (CDFW 2016c).

This species has high potential to occur within the Land Exchange Area. Suitable habitat within the Land Exchange Area includes chaparral (southern mixed chaparral, chamise chaparral (including disturbed), mulefat scrub, and coastal sage scrub (including disturbed).

Blainville's horned lizard (*Phrynosoma blainvillii*), SSC/MSCP Covered Species/County Group 2

Blainville's horned lizard (previously coast horned lizard) is an SSC, MSCP Covered Species, and County Group 2 species. It is found from the Sierra Nevada foothills and central California to coastal Southern California. It is often associated with coastal sage scrub, especially areas of level to gently sloping ground with well-drained loose or sandy soil, but it can also be found in annual grasslands, chaparral, oak woodland, riparian woodland, and coniferous forest between 30 and 7,030 feet amsl (Jennings and Hayes 1994). This reptile typically avoids dense vegetation, preferring 20% to 40% bare ground in its habitat. The Blainville's horned lizard can

[10] The County of San Diego's biology guidelines refer to this species as northern red diamond rattlesnake (*Crotalus ruber ruber*); species names in this report follow the naming conventions described in Section 3.2.2.

be locally abundant in areas where it occurs, with densities of near 20 adults per acre. Adults are active from late March through late August, and young are active from August through November or December. Up to 90% of the diet of the Blainville's horned lizard consists of native harvester ants (*Pogonomyrmex* spp.).

Blainville's horned lizard was observed several times during surveys and there is suitable habitat throughout open areas in coastal sage scrub and chaparral communities (Figures 4-1 through 4-1ff). Two occurrences were within the Village 14 Development Footprint, and the other two are located within the Planning Areas 16/19 Preserve. In addition, the presence of harvester ants observed within the Land Exchange Area would provide a food source for this species. Harvester ants are a primary source of food for Blainville's horned lizards (Nafis 2014).

Western spadefoot (*Spea hammondii*), SSC/County Group 2

The western spadefoot is an SSC and County Group 2 species. It is endemic to California and northern Baja California, Mexico. Western spadefoot ranges from the north end of California's Central Valley near Redding, south, west of the Sierras and the deserts, and into northwest Baja California, Mexico (Jennings and Hayes 1994; Stebbins 2003). Although the species primarily occurs in lowlands, it also occupies foothill and mountain habitats. Within its range, the western spadefoot toad occurs from sea level to 4,000 feet amsl, but mostly at elevations below 3,000 feet (Stebbins 2003).

The western spadefoot toad is almost completely terrestrial, entering temporal pools and drainages only to breed. The species aestivates in upland habitats near potential breeding sites in burrows approximately 1 meter (3 feet) in depth (Stebbins 1972). The species prefers open areas with sandy or gravelly soils in a variety of habitats, including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, river floodplains, alluvial fans, playas, and alkali flats (Stebbins 2003; Holland and Goodman 1998). However, the species is most common in grasslands with vernal pools or mixed grassland/coastal sage scrub areas (Holland and Goodman 1998).

Western spadefoot tadpoles were found in a vernal pool (identified as B2) and a road rut during fairy shrimp surveys and because of this observation, focused surveys for this species were conducted in 2017 (Figures 4-1 through 4-1ff). The vernal pool also contains San Diego fairy shrimp and is located within the Otay Ranch RMP Preserve in Village 14. This pool would remain within the Otay Ranch RMP Preserve and will not be impacted by the Land Exchange Alternative. Focused surveys detected 20 occupied features. Two occupied features are located within the Otay Ranch RMP Preserve within Village 14 (C4 and C5). Eight occupied features are located within the Development Footprint (A19, A21, AA1, B11, C7, D2, D1, and D19), and the

remaining occupied features are located within Preserve areas in Planning Areas 16/19 (A22, A23, A27, AA3, AA4, B2, B3, D23, D5, and D6).

Birds

Bell's Sage Sparrow (*Artemisiospiza belli belli*) – BCC/WL/County Group 1

The Bell's sparrow is a BCC, WL, and County Group 1 species. The recently designated Bell's sparrow (*Artemisiospiza belli*) consists of *A. b. belli* and *A. b. canescens*, both formerly considered subspecies of the sage sparrow (*Amphispiza belli*) and now split from the sagebrush sparrow (*A. nevadensis*) (Chesser et al. 2013). The nominate form of Bell's sparrow, as Bell's sage sparrow, is designated as a special-status species. This species occurs in chaparral and coastal scrub communities along the Coast Ranges of central California and in the Transverse Ranges of Southern California. This species occurs as a non-migratory resident on the western slope of the central Sierra Nevada Range, and in the coastal ranges of California, southward from Marin County and Trinity County, extending into north–central Baja California, Mexico (County of Riverside 2008). The range of this species overlaps with that of at least one other subspecies of sage sparrow (County of Riverside 2008). This species occupies semi-open habitats with evenly spaced shrubs that are 3.3 to 6.6 feet high (County of Riverside 2008). This species is uncommon to fairly common in dry chaparral and coastal sage scrub along the coastal lowlands, inland valleys, and lower foothills of the mountains within its range.

This species has moderate potential to occur within the Land Exchange Area. Suitable habitat includes chaparral (chamise chaparral including disturbed, southern mixed chaparral), mulefat scrub, non-native grassland, and coastal sage scrub (including disturbed). It is likely that this species would have been observed during the focused coastal California gnatcatcher surveys conducted across the Land Exchange Area; however, since there is suitable habitat, there is a moderate potential for this species to occur.

Ferruginous Hawk (*Buteo regalis*), BCC/WL/MSCP Covered Species/County Group 1

The ferruginous hawk is a BCC, WL, MSCP Covered Species, and County Group 1 species. The ferruginous hawk occurs throughout western North America from southernmost Canada between the Great Plains and Rocky Mountains, south to northern Arizona and New Mexico. This species breeds from southeast Alberta and extreme southwest Manitoba south to the northwest corner of Texas, west to the Great Basin, Columbia River Basin regions of eastern Oregon and southeast Washington. The ferruginous hawk most commonly winters from Southern California, Colorado, Arizona, and New Mexico to northern Texas. Northern populations are completely migratory, while birds from southern breeding locations appear to migrate short distances or to be sedentary

(Bechard and Schmutz 1995). The ferruginous hawk is an uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges of California (Polite and Pratt 1999).

Based on available habitat and range of this species, there is a high potential for ferruginous hawk to occur within the Land Exchange Area, but it has not been observed during any surveys. The ferruginous hawk forages in open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats (Polite and Pratt 1999). Within the study area, suitable habitat includes non-native grassland, cismontane alkali marsh, disturbed habitat, mulefat scrub, and disturbed coastal sage scrub.

Coastal California gnatcatcher (*Polioptila californica californica*), FT/SSC/MSCP Covered Species/County Group 1

The coastal California gnatcatcher is federally threatened, SSC, MSCP Covered Species, and County Group 1 species. This species occurs in coastal Southern California and Baja California year-round, where it depends on a variety of arid scrub habitats. The coastal California gnatcatcher occurs mainly on cismontane slopes (coastal side of the mountains) in Southern California, ranging from Ventura and northern Los Angeles Counties south through the Palos Verdes Peninsula to Orange, Riverside, San Bernardino, and San Diego Counties. The species' range continues south to El Rosario, Mexico. Initially it was reported that 99% of all coastal California gnatcatcher locality records occurred at or below an elevation of 984 feet amsl (Atwood 1990; Atwood and Bolsinger 1992). Since that time, data collected at higher elevations show that the species may occur as high as 3,000 feet amsl, but that more than 99% of the known coastal California gnatcatcher locations occurred below 2,500 feet amsl (65 FR 63680). Because of the natural topography of the Southern California hills and mountain ranges, most of the higher-elevation locations are more inland, where population densities tend to be much lower than coastal populations.

Coastal California gnatcatcher typically occurs in or near coastal scrub vegetation that is composed of relatively low-growing, dry-season deciduous and succulent plants. Characteristic plants of this community include coastal sagebrush, various species of sage, Eastern Mojave buckwheat, lemonade sumac (*Rhus integrifolia*), California brittlebush (*Encelia californica*), and cactus (e.g., *Opuntia* spp.). Coastal California gnatcatchers also occur in chaparral, grassland, and riparian vegetation communities where the coastal scrub community is close by (Bontrager 1991). The use of these vegetation communities appears to be most frequent during late summer, autumn, and winter, with smaller numbers of birds using such areas during the nesting season. The coastal California gnatcatcher tends to occur most frequently in the coastal sagebrush-dominated stands on mesas, gently sloping areas, and along the lower slopes of the

Coast Ranges (Atwood 1990). The coastal California gnatcatcher occurs in high frequencies and densities in coastal scrub communities with an open or broken canopy, whereas it is absent from coastal scrub dominated by tall shrubs and occurs in low frequencies and densities in low coastal scrub with a closed canopy (Weaver 1998).

Coastal California gnatcatchers glean insects and spiders from foliage of shrubs, primarily Eastern Mojave buckwheat and coastal sagebrush (Atwood 1993). Their diet is primarily composed of spiders, but is also composed of wasps, bees, and ants (Burger et al. 1999). Coastal California gnatcatcher habitat use has been positively associated with insect abundance and diversity (Redak et al. 1996, as cited in Diffendorfer et al. 2002).

Coastal California gnatcatcher nests usually are located in a small shrub or cactus 1 to 3 feet above the ground. Territory size varies and is influenced by season and locale (Preston et al. 1998), but is unrelated to vegetation structure (Braden et al. 1997). During the breeding/nesting season, territories in coastal areas are often smaller—averaging 5.7 acres (Atwood et al. 1998a, 1998b)—than those in more inland regions, which average 8.4 acres (Braden et al. 1997).

Focused surveys for coastal California gnatcatcher for the Land Exchange Alternative have resulted in the detection of eleven pairs (one with a pair of fledglings), two juveniles, and three lone males, for a total of 29 gnatcatchers observed (Table 4-3, Coastal California Gnatcatcher Locations and Populations within the Survey Area, and Figures 4-1 through 4-1ff). All pairs were observed in coastal sage scrub communities.

Table 4-3
Coastal California Gnatcatcher Locations and Populations within the Survey Area

Coastal California Gnatcatcher Populations Types	Total Populations within the Survey Area	Otay Ranch RMP Preserve[1]	CDFW-Owned Lands	Village 14 Development Footprint	Off-Site Improvement Areas Survey Area[2]	
					City of Chula Vista	*City of San Diego*
Juvenile	2		—	—	—	2
Male	3		1	1	1	—
Pair	10 pairs (20 birds)	4 pair (8 birds)	2 pair (4 birds)	—	1 pair (2 birds)	3 pair (6 birds)
Pair and Fledglings	1 pair, 2 fledglings (4 birds)		—	—	—	1 pair, 2 fledglings (4 birds)
Total Population	**29**	**8**	**5**	**1**	**3**	**12**

1 Total populations within the Land Exchange Area includes four pairs (eight birds) observed within the Otay Ranch RMP Preserve (Appendix K).

2 Note that some of the observations are outside the Land Exchange Area and Development Footprint. This table does not represent impacts to coastal California gnatcatcher, only the results of focused surveys.

The majority of the observations are located within the southern portion of the Land Exchange Area associated with Proctor Valley Road South and Central. Three pairs and one male were detected within the Village 14 portion of the Land Exchange Area. The lone male was observed within the Development Footprint, and the three pairs were observed within the Village 14 Otay Ranch RMP Preserve. Three pair and one male were detected within the Otay Ranch RMP Preserve in Planning Areas 16/19. Two of the pairs and the male are located within CDFW owned lands. Within the off-site improvement areas, three pairs were observed along the buffer for Proctor Valley Road South along with two juveniles and one lone male. Two pair and one male were observed along the buffer for Proctor Valley Road Central (Figures 4-1 through 4-1ff). USFWS-designated critical habitat for coastal California gnatcatcher overlaps a very small portion of the east-central Land Exchange Alternative (Figure 2-2).

Golden eagle (Aquila chrysaetos), BCC/WL; FP/MSCP Covered Species/County Group 1

The golden eagle is a BCC, WL, FP, MSCP Covered Species, and County Group 1 species. In addition, the golden eagle is protected under the federal Bald and Golden Eagle Protection Act. As a state fully protected species, take may only occur pursuant to scientific research or in connection with an authorized NCCP, such as the County's MSCP.

The golden eagle is a yearlong, diurnally active species that is a permanent resident and migrant throughout California. Golden eagles are more common in northeast California and the Coast Ranges than in Southern California and the deserts. In Southern California, the species tends to occupy mountain, foothill, and desert habitats. Foraging habitat for this species includes open habitats with scrub, grasslands, desert communities, and agricultural areas. This species nests on cliffs within canyons and escarpments and in large trees (generally occurring in open habitats) and occurs primarily in rugged, topographically complex landscapes (Garrett and Dunn 1981; Johnsgard 1990). Most nests are located on cliffs or trees near forest edges, in trees within woodland savannas, or in small stands near open habitats (Kochert et al. 2002). Nest locations tend to be more closely associated with topographic heterogeneity than with a particular vegetation type (Call 1978).

Nest building can occur almost any time during the year. This species nests on cliffs, rock outcrops, large trees, and artificial structures such as electrical transmission towers, generally near open habitats used for foraging (Garrett and Dunn 1981; Scott 1985; Johnsgard 1990; Kochert et al. 2002). Golden eagles commonly build, maintain, and variably use multiple alternative nest sites in their breeding territories, routinely refurbishing and reusing individual nests over many years. Generally, the nests are large platforms composed of sticks, twigs, and greenery that are often 3 meters (10 feet) across and 1 meter (3 feet) high (Zeiner et al. 1990a). Pairs may build more than one nest and tend multiple nests prior to laying eggs (Kochert et al.

2002). Each pair can have up to a dozen nests, especially in cliff nesting habitat where nests persist for longer than they do in trees, but generally only two to three nests are used in rotation from one year to the next. Some pairs use the same nest each year, whereas others use different alternative nests more regularly. Succeeding generations of eagles may even use the same nest (Terres 1980, as cited in CPUC and BLM 2011).

In California, golden eagles breed from January through August, with peak breeding activity occurring from February through July. Breeding typically begins in January with courtship and nest building and egg laying typically occurs in February and March (Brown 1976; WRI 2010, as cited in CPUC and BLM 2011). Golden eagles typically lay one to three eggs, which they incubate for 43 to 45 days (Beebe 1974). The hatching and feeding of nestlings takes place from March through June. After their young fledge, the adult eagles may continue to feed the young birds for several months (WRI 2010, as cited in CPUC and BLM 2011). In the prey-rich oak woodland and savannah habitats of the California Coast Ranges, established golden eagle breeding pairs typically nest in most years (Hunt et al. 1999; Hunt and Hunt 2006); however, the long breeding cycle may continue to some pairs breeding only every other year even when food is abundant (WRI 2010, as cited in CPUC and BLM 2011). In other situations, where overall ecosystem productivity is lower or more variable from year to year, pairs need to range farther in search of food and may not nest every year because of the energetic demands of securing dispersed prey (Kochert et al. 2002).

Lagomorphs (rabbits and hares) and ground squirrels are of primary importance in the diet of most golden eagles, including in San Diego County, but their diet may include a wide variety of other mammals, reptiles, and birds, and frequently includes carrion, especially during winter (Johnsgard 1990; Kochert et al. 2002; Olendorff 1976).

Golden Eagle Foraging/Nesting Potential within the Development Footprint

Golden eagles do not nest within the Land Exchange Area. All technical memorandums analyzing golden eagles related to the Land Exchange Area are included in Appendix C.

The MSCP Plan Table 3-5 lists vegetation communities that provide potential foraging habitat for golden eagles; including coastal sage scrub, chaparral, grassland, and oak woodland. The Land Exchange Alternative consists of approximately 2,387.7 acres, of which 1,529.6 acres (excluding off-sites) falls within the vegetation categories that provide foraging habitat for golden eagle. Of these 1,529.6 acres, the Land Exchange Alternative will develop/disturb 596.7 acres and preserve at least 932.9 through conveyance to MSCP/Otay Ranch RMP Preserve or through the land exchange.

The vegetation community acreages in Table 3-3 of the MSCP Plan were not based on refined or site-specific surveys. For this reason, they do not capture or describe the actual quality of the habitat on any particular parcel of land. To provide a more detailed assessment of the golden eagle foraging habitat within the Land Exchange Area, the applicant retained Dudek to conduct a vegetation survey of the Land Exchange Area in 2014. The results of the vegetation survey were provided to biologists at H.T. Harvey & Associates with golden eagle expertise. According to the MSCP's definition of golden eagle foraging habitat, 96% of the Development Footprint is suitable golden eagle foraging habitat; however, H.T. Harvey & Associates concluded that approximately 30% (176.2 acres) of the Development Footprint is not golden eagle foraging habitat because the chaparral is too dense for eagles to maneuver within and capture prey (Marzluff et al. 1997; Kochert et al. 2002; Weins et al. 2015; Appendix C).

Prey species such as black-tailed jackrabbits, desert cottontails, brush rabbits, California ground squirrels, mule deer, and coyote are known to occur in the Land Exchange Area. Lagomorphs (rabbits) and ground squirrels are of primary importance in the diet of most golden eagles, including in San Diego County (Hunsicker 1972; Hunt et al. 1999; Kochert et al. 2002; Bittner 2015 as cited in Appendix C).

HT Harvey & Associates (Appendix C) detected a substantial number of pellets (both old and relatively fresh) in coastal sage scrub and intermixed grasslands, both of which are prevalent in Planning Areas 16/19 and on the upper foothills of Village 14. This indicates that coastal sage scrub and intermixed grasslands provide sufficient protective shrub cover and forage to accommodate an abundance of both jackrabbits and smaller rabbits, with habitat structure that is highly suited to foraging by golden eagles. Conversely, the dense chamise chaparral and other shrub cover in Planning Areas 16/19 and Village 14 were generally too dense and tall to support eagle forage, despite having lagomorph abundance similar to that observed in coastal sage scrub and areas of sparse chamise chaparral.

Most of the Proctor Valley portion of the Land Exchange Area is underlain primarily with Olivenhain cobbly loam, which contains relatively high clay content and loamy/cobbly structure that is not conducive to burrowing by ground squirrels. Habitat assessments for burrowing owl within open vegetation communities conducted by Dudek, as well as golden eagle habitat assessments conducted by H.T. Harvey & Associates (Appendix C) throughout the Village 14 and Planning Areas 16/19, revealed limited evidence of ground squirrels and burrow resources except in areas of grazed grassland in Planning Areas 16/19. Ongoing research in San Diego County indicates that California ground squirrels prefer to burrow in sandy soils with higher bulk density and less silt, clay, and gravel (Lenihan 2007 and Wisinski et al. 2013 as cited in as cited in Appendix C). Unlike much of the Village 14 Development Footprint in central Proctor Valley, the upper foothills portions of Proctor Valley, and much of the land designated as Otay Ranch

RMP/MSCP Preserve extending up into the Jamul Mountains are underlain by Friant sandy loam soils, which are more compatible with ground squirrel burrowing. California ground squirrels tend to avoid steep, rugged terrain, however (Fitch 1948; Smallwood and Neher 2009). In addition, depending on the exposure, dense chaparral is more likely to occur on foothill and upper slopes, and eagles are unable to forage in these areas because of the high vegetation density.

Black-tailed jack rabbits, a primary golden eagle prey species in some areas, were observed on multiple occasions throughout the Land Exchange Area during biological surveys. Black-tailed jackrabbit home ranges may average as small as 50 acres in Northern California (Lechleitner 1958); however, in more xeric grassland and shrub environments, such as those found in interior southern San Diego County, home ranges probably average hundreds of acres in size (Smith 1990). Therefore, although the scrub and grassland communities within the Land Exchange Area represent good habitat for jackrabbits, the overall Development Footprint likely supports relatively few breeding pairs.

Based on the available and accessible evidence, it is not clear that any individual eagles currently rely on the Land Exchange Area as foraging habitat consistently or perennially (Appendix C). Given that Village 14 Development Footprint does not currently overlap any pair's core breeding territory, and the closest known recently active nests are more than 5 miles away, if a pair nesting in the San Ysidro Mountains routinely forages in Proctor Valley, the loss of foraging habitat from the Land Exchange Alternative in a peripheral portion of that pair's overall home range would not be significant or impede the MSCP's conservation goals for golden eagle (Appendix C). Moreover, such a pair would continue to have ready access to large acreages of suitable foraging habitat within the Otay Ranch RMP/MSCP Preserve in the Jamul Mountains, the foothills of Proctor Valley, possibly around San Miguel Mountain, and in the large expanse of Preserve habitat located between the Jamul Mountains and San Ysidro Mountains. Therefore, developing the Land Exchange Alternative would not significantly compromise the ability of any current breeding pairs to sustain themselves (Appendix C).

Status of Golden Eagle Breeding and Nests in the Vicinity of the Land Exchange Area

A review of pertinent documents related to the historical occurrence of golden eagle nests in the vicinity of the Land Exchange Area was conducted using Scott (1985), WRI (2005, 2010), USFWS (2011a, 2014c), and U.S. Geological Survey data (USGS 2014b). Based on these resources, one historic breeding territory was situated west of the Land Exchange Area on San Miguel Mountain (Appendix C). The MSCP Plan refers to this territory as the "Rancho San Diego" territory, but most biologists know it as the "San Miguel Mountain" territory, which is how this document refers to it. Historic maps and descriptions identify two distinct nesting areas; one on the upper eastern slope and one on the western slope of San Miguel Mountain, generally

within canyons. Radio towers are situated above the eastern nesting area on the top of San Miguel Mountain. This breeding territory area was occupied from at least the "early 1900s" through 2007 (Scott 1985; WRI 2010).

In 2000, fire destroyed the three existing nest structures that at the time were located in the nesting area on the upper east side of San Miguel Mountain, but the resident pair rebuilt one of those nests that same year. The pair continued to attempt nesting in the area through 2005, and then remained on territory but did not attempt to breed in 2006 or 2007. Then in late 2007, the Harris fire destroyed the remaining nest and collapsed the cliff face on which the eagles built the nest. Since the 2007 fire, surveys have failed to confirm a breeding pair or any newly built nests in the area (Appendix C). In short, no eagles have attempted to nest at the site since 2005, and the nesting territory has apparently been unoccupied since 2007 (WRI 2010; USFWS 2014c; Appendix C).

The USFWS and Bureau of Land Management (BLM) installed two artificial nest platforms in the region in 2013. One platform was installed on August 30, 2013 on the eastern side of San Miguel Mountain near where the most recently used historical nests were located (San Diego National Wildlife Refuge lands) and the second platform was installed on April 29, 2013 on the north end of the Jamul Mountains (BLM land) (USFWS 2011b, 2014c). Post construction monitoring, which was conducted at various intervals from January to June 2014, did not reveal nesting at either location, though golden eagles perched on the San Miguel structure (USFWS 2014c). Within the 2011 USFWS Grant Submission form, the USFWS acknowledged that this was an experimental project and that "the response of golden eagles to artificial nest structures is not well-studied." Based on data showing no nesting activity in the 10 years since the Harris fire, (WRI 2010; USFWS 2014a; Appendix C), it is assumed that the former San Miguel Mountain territory is inactive.

Eagle specialists from H.T. Harvey & Associates (Appendix C) surveyed the Land Exchange Alternative Area and surrounding area (4,000+-foot buffer area surrounding the Development Footprint) for potential territorial and breeding activity during the 2016 and 2017 breeding seasons. The study area included the locations of the former San Miguel Mountain nest sites and both artificial platforms. The surveys did not reveal any nests, or any eagles displaying territorial, courtship or nesting behavior within the San Miguel, Jamul and Proctor Valley areas.

Based on the data discussed above, there are no extant golden eagle nests within 4,000 feet of the Development Footprint, nor anywhere close to that distance from the Land Exchange Area (Appendix C). The nearest known recently active golden eagle nest (as of 2011) is located in the Cedar Canyon area near Otay Mountain, just over 5 miles from the proposed Development Footprint (USFWS 2012; Appendix C). Golden eagles observed by H.T Harvey & Associates and tracked by the U.S. Geological Survey in the Land Exchange Area mostly appeared to be transient adults and subadults that occur seasonally or periodically in these areas; however, the

U.S. Geological Survey tracking data demonstrate that the Land Exchange Area does represent a peripheral portion of the current overall foraging range of the Cedar Canyon breeding pair (Tracey et al. 2016, 2017; Appendix C).

White-tailed kite (*Elanus leucurus*), FP/County Group 1

White-tailed kite is a state FP and County Group 1 species. White-tailed kite occurs mainly in lowlands of southern and northwestern cismontane California in savannah, open woodland, marshes, cultivated fields, and partially cleared lands (Zeiner et al. 1990a). White-tailed kites hunt in the morning and late afternoon for voles and mice, usually near farmlands. The kite is non-migratory but can be nomadic and dispersive in its movements and often occurs in communal roosts (Unitt 2004). Nests are made of piled sticks and twigs and placed near the tops of oak, willow, or other trees near marshes and foraging areas (Zeiner et al. 1990a).

White-tailed kite was observed once in November 2014 toward the east-central portion of the Land Exchange Area within the Village 14 Preserve (Figures 4-1 through 4-1ff). There is suitable foraging habitat within the Land Exchange Area (45 acres); and due to the Land Exchange Alternative's proximity to Sweetwater Reservoir and Otay Reservoir where there is more suitable riparian woodland for nesting, this species likely forages in the Land Exchange Area occasionally. Foraging habitat within the Land Exchange Area consists of cismontane alkali marsh, eucalyptus woodland, mulefat scrub, oak riparian forest, and non-native grassland. Due to the lack of dense riparian or oak woodland within the Land Exchange Area, as well as lack of observations during the nesting season, this species is unlikely to nest within the Land Exchange Area.

Cooper's hawk (*Accipiter cooperi*), WL/MSCP Covered Species/County Group 1

Cooper's hawk is a WL, MSCP Covered Species and a County Group 1 species. It is found throughout California in wooded areas. It inhabits live oak, riparian, deciduous, or other forest habitats near water. Nesting and foraging usually occur near open water or riparian vegetation. Nests are built in dense stands with moderate crown depths, usually in second-growth conifer or deciduous riparian areas. Cooper's hawks use patchy woodlands and edges with snags for perching while they are hunting for prey such as small birds, small mammals, reptiles, and amphibians within broken woodland and habitat edges (Zeiner et al. 1990a).

A Cooper's hawk was observed flying overhead during biological surveys in 2014, but since much of the Land Exchange Area is likely used by this species, the observations were not mapped. There is some suitable nesting habitat in the southern willow scrub and eucalyptus within the Land Exchange Area. There are five small separate areas mapped as eucalyptus woodland throughout the Land Exchange Alternative, including one patch along Proctor Valley

Road south (Figures 4-1 through 4-1ff). Two small polygons of southern willow scrub are mapped in the northern portion of the Land Exchange Area, within the Planning Areas 16/19 Preserve (Figures 4-1 through 4-1ff). The Land Exchange Alternative may nesting opportunities within habitats with trees.

Southern California rufous-crowned sparrow (Aimophila ruficeps canescens), WL/MSCP Covered Species/County Group 1

Southern California rufous-crowned sparrow is a WL, MSCP Covered Species, and County Group 1 species. The current distribution of the Southern California rufous-crowned sparrow is restricted to a narrow belt of semiarid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California (Todd 1922; Grinnell 1926; Grinnell and Miller 1944; Bent 1968; Zeiner et al. 1990a; Unitt 1984; Collins 1999). The subspecies has also been found on San Martin Island. The Southern California rufous-crowned sparrow is considered a resident throughout its range. No true migratory movements have been recorded, though limited movements to lower elevations in some areas have been reported during especially severe winters (Collins 1999).

Southern California rufous-crowned sparrows were observed on several occasions in coastal sage scrub habitats during surveys (Figures 4-1 through 4-1ff). Of the total five individuals observed, two Southern California rufous-crowed sparrows were observed within Otay Ranch RMP Preserve in Planning Area 16 and two were observed Otay Ranch RMP Preserve in Planning Area 19. One individual was observed with the Development Footprint of Proctor Valley Road (Village 14).

Grasshopper sparrow (*Ammodramus savannarum*), SSC/County Group 1

Grasshopper sparrow is an SSC and County Group 1 species. In California, grasshopper sparrows breed (and primarily winter) on slopes and mesas containing grasslands of varying compositions (Grinnell and Miller 1944; Garrett and Dunn 1981). The species frequents dense, dry or well-drained grassland, especially native grassland with a mix of grasses and forbs for foraging and nesting. Grasshopper sparrows require fairly continuous native grassland areas with occasional taller grasses, forbs, or shrubs for song perches (Garrett and Dunn 1981). Grasshopper sparrows tend to avoid grassland areas with extensive shrub cover, and the presence of native grasses is less important than the absence of trees (Smith 1963; County of Riverside 2008).

Grasshopper sparrow was observed during surveys but the observations were not mapped. Suitable habitat for grasshopper sparrow includes non-native grassland that occurs primarily in Planning Areas 16/19 Preserve.

Long-eared owl (*Asio otus*), SSC/Group 1

Long-eared owl is an SSC and County Group 1 species. It is an uncommon yearlong resident throughout most of the state, with the exception of the Central Valley and Southern California desert regions, where is it generally a winter visitor (Zeiner et al. 1990a). Along the coastline of Southern California, the long-eared owl may be a resident breeder (Marks et al. 1994; Bloom 1994) or a rare winter visitor (Garrett and Dunn 1981).

The long-eared owl primarily uses riparian habitat for roosting and nesting, but can also use live oak thickets and other dense stands of trees (Zeiner et al. 1990a). It appears to be more associated with forest edge habitat than with open habitat or forest habitat (Holt 1997). The species usually does not hunt in the woodlands where it nests, but in open areas such as fields, rangelands, and clearings. At higher elevations, the species is found in conifer stands that are usually adjacent to more open grasslands and shrublands (Marks et al. 1994). In California, long-eared owls also nest in dense or brushy vegetation amid open habitat (Bloom 1994). Long-eared owls have also been known to nest in caves, cracks in rock canyons, and in artificial wicker basket nests (Marks et al. 1994; Garner and Milne 1998).

Long-eared owl was observed once in November 2014 toward the southern portion of the Land Exchange Area (Figures 4-1 through 4-1ff). There are some nesting records in surrounding areas to the north (Unitt 2004). Due to the lack of dense riparian woodland or oak woodland within either the Land Exchange Alternative, this species has low potential to nest.

Burrowing owl (*Athene cunicularia*), BCC/SSC/MSCP Covered/County Group 1

The burrowing owl is a USFWS BCC, CDFW SSC, MSCP Covered, and County Group 1 species. It occurs throughout North and Central America west of the eastern edge of the Great Plains south to Panama (County of Riverside 2008). The winter range is much the same as the nesting range, except that most burrowing owls apparently vacate the northern areas of the Great Plains and the Great Basin (County of Riverside 2008) in winter. The majority of burrowing owls that breed in Canada and the northern United States are believed to migrate south during September and October and north during March and April, and into the first week of May. These individuals winter within the nesting habitat of more southern populations. Thus, winter observations may include both the migratory individuals as well as the resident population (County of Riverside 2008). The burrowing owls in Northern California are believed to migrate (Coulombe 1971).

In California, burrowing owls are yearlong residents of flat, open, dry grassland and desert habitats at lower elevations (Bates 2006). They can inhabit annual and perennial grasslands and scrublands characterized by low-growing vegetation. They may be found in areas that include

trees and shrubs if the cover is less than 30% (Bates 2006); however, they prefer treeless grasslands. Although burrowing owls prefer large, contiguous areas of treeless grasslands, they have also been known to occupy fallow agriculture fields, golf courses, cemeteries, road allowances, airports, vacant lots in residential areas and university campuses, and fairgrounds when nest burrows are present (Bates 2006; County of Riverside 2008). They typically require burrows made by fossorial mammals, such as California ground squirrels. This species also prefers sandy soils with higher bulk density and less silt, clay, and gravel (Lenihan 2007).

Focused surveys for burrowing owl were conducted within the Land Exchange Area in 2014 following *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) guidelines (see Section 3.3.4 for methods). During these surveys, no burrowing owls or sign were observed. In 2015, burrowing owl sign consisting of white wash, feathers, and pellets were observed at one specific location in the central portion of the Village 14 Development Footprint during rare plant surveys (Figures 4-1 through 4-1ff). Suitable habitat within the Land Exchange Area includes 140 acres of non-native grassland and open areas of coastal sage scrub (including disturbed) that contain burrows, burrow surrogates, or fossorial mammal dens (Figure 3-3). However, based on the limited observation of burrowing owl sign, and the lack of observations during focused surveys in 2014, this species likely does not occur regularly within the Land Exchange Area. The loamy/cobbly soils underlying much of the Land Exchange Area, in particular, most of the area within the Development Footprint, are not ideal for ground squirrel burrowing. This suggests that the distribution and abundance of California ground squirrels, a primary source of burrows for the owls, within the Land Exchange Area is limited.

Red-shouldered hawk (*Buteo lineatus*), Group 1

The red-shouldered hawk is not considered special status by any state or federal agencies; however, it is a County Group 1 species. Red-shouldered hawks inhabit a broad range of North American forests, but favor mature, mixed deciduous–coniferous woodlands, especially bottomland hardwood, riparian areas, flooded deciduous swamps, oak woodlands, eucalyptus groves, and suburban areas with nearby woodlots (Dykstra et al. 2008). This species nests in riparian habitats near permanent water and forages along edges of wet meadows, swamps, and emergent wetlands (Zeiner et al. 1990a).

Red-shouldered hawk was detected within the Land Exchange Area but the observations were not mapped. Within the Land Exchange Area, there are no permanent water sources; however, ephemeral and intermittent sources are present. There is suitable foraging habitat throughout the Land Exchange Alternative. Nesting and foraging habitat for this species includes chamise chaparral, disturbed chamise chaparral, disturbed habitat, eucalyptus woodland, oak riparian forest, and non-native grassland. The Land Exchange Alternative may support nesting opportunities within habitats with large trees.

Turkey vulture (*Cathartes aura*), Group 1

Turkey vulture is not considered special status by any state or federal agencies; however, it is considered a Group 1 species by the County (2010a). In California, it is common during the nesting season and is a yearlong resident west of the Sierra Nevada Mountains, especially in coastal areas. Summer and yearlong ranges also include the southeastern United States; portions of Texas, Mexico, Central America, and South America; and some islands in the Caribbean (Kirk and Mossman 1998).

Turkey vultures use a variety of habitats while foraging on both wild and domestic carrion. They prefer open stages of most habitats. In the western United States, they tend to occur regularly in areas of hilly pastured rangeland, non-intensive agriculture, and areas with rock outcrops suitable for nesting, although they are not generally found in high-elevation mountain areas (Kirk and Mossman 1998; Zeiner et al. 1990a). Nest locations tend to be difficult to find and are usually located in a crevice among granite boulders (Unitt 2004). However, this species prefers hilly areas that provide deflective updrafts for flight and generally avoids extensive areas of row-crop farmland (Kirk and Mossman 1998).

Turkey vulture was observed foraging throughout the Land Exchange Alternative during biological surveys, but the observations were not mapped. The Land Exchange Alternative does not support suitable cliffs and large trees for nesting, but there is suitable foraging habitat within the Land Exchange Area. Suitable foraging habitat includes most vegetation communities and undeveloped land cover.

Northern harrier (*Circus cyaneus*), SSC/MSCP Covered Species/County Group 1

The northern harrier is an SSC, MSCP Covered Species, and County Group 1 species. Northern harriers use a wide variety of open habitats in California including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, estuaries, flood plains, and marshes (Macwhirter and Bildstein 2011). The species can also forage over coastal sage scrub or other open scrub communities (Bloom Biological Inc. 2007). Nesting areas are associated with marshes, pastures, grasslands, prairies, croplands, desert shrub-steppe, and riparian woodland (Macwhirter and Bildstein 2011). Winter habitats similarly include a variety of open habitats dominated by herbaceous cover. Northern harrier populations are most concentrated in areas with low vegetation.

One northern harrier was observed foraging in the northern portion of the Land Exchange Area, within the Planning Areas 16/19 Preserve (Figures 4-1 through 4-1ff). Northern harriers are known to nest in Otay River and there is suitable nesting habitat along Proctor Valley drainage; however, based on the low frequency of observations this species is likely not currently nesting within the Land Exchange Area.

Loggerhead shrike (*Lanius ludovicianus*), BCC/SSC/County Group 1

Loggerhead shrike is a USFWS BCC, CDFW SSC, and County Group 1 species. It is found in lowlands and foothills throughout California, and it remains in the southern portion of the state year-round. Preferred habitats for the loggerhead shrike are open areas that include scattered shrubs, trees, posts, fences, utility lines, or other structures that provide hunting perches with views of open ground, as well as nearby spiny vegetation or built structures (such as the top of chain-link fences or barbed wire) that provide means to skewer prey items. The species occurs most frequently in riparian areas along the woodland edge, grasslands with sufficient perch and butcher sites, scrublands, and open-canopied woodlands, although they can be quite common in agricultural and grazing areas; and they can sometimes be found in mowed roadsides, cemeteries, and golf courses, although they occur rarely in heavily urbanized areas (Zeiner et al. 1990a). Loggerhead shrikes build nests in stable shrubs or trees requiring dense foliage for well-concealed nests has the potential to nest within the Land Exchange Area. Loggerhead shrike was observed within Village 14 (Figures 4-1 through 4-1ff).

Yellow Warbler (*Setophaga petechia*), BCC/SSC/County Group 2

Yellow warbler is a BCC, SCC, and County Group 2 species. Yellow warbler inhabits riparian woodland in coastal and desert lowlands, montane chaparral, open ponderosa pine, and mixed conifer habitats (Zeiner et al. 1990a). This species breeds along the coast of California west of Sierra Nevada, and eastern California from Lake Tahoe south to Inyo County. The yellow warbler occurs in medium-density woodlands and forests with heavy brush understory and migrates to sparse to dense woodland and forest habitats.

Yellow warbler was observed foraging within Otay Ranch RMP Preserve in Planning Area 16. This species was observed during 2017 focused coastal California gnatcatcher surveys. The yellow warbler was not mapped because the bird was frequently moving and calling within sparse chaparral, and was likely to be a migrant due to unsuitable nesting habitat.

Invertebrates

San Diego fairy shrimp (*Branchinecta sandiegonensis*), FE/County Group 1

The San Diego fairy shrimp is a federally endangered, and County Group 1 species.[11] In 2015 and 2016, focused surveys were conducted within the study area which includes the Land Exchange

[11] The County's MSCP also identifies San Diego fairy shrimp as a Covered Species. As explained above, however, a 2006 federal court decision invalidated the City of San Diego's MSCP coverage for fairy shrimp, and the County's MSCP includes similar coverage provisions for the species. For this reason, the County has taken the position that the MSCP, as written, does not provide take authorization coverage for San Diego fairy shrimp.

Alternative and areas outside the Land Exchange Area along the existing segments of Proctor Valley Road. A total of 105 features were identified within the study area as potential suitable habitat for vernal pool branchiopods, such as San Diego fairy shrimp. Most of the features were located alongside or within existing dirt roads within the study area and are moderately disturbed in character. Many of the features detected show evidence of historical OHV disturbance (i.e., shaped like tire tracks). The features detected were either (1) road ruts: depressions that are typically formed by vehicular traffic within or immediately adjacent to roadways, generally lack aquatic vegetation, and are heavily disturbed by vehicular traffic; (2) ephemeral basins: surface depressions that retain sufficient water level, support aquatic vegetation, and generally lack vehicle disturbance; or (3) vernal pools: depressions that retain sufficient water level, support vernal pool indicator plant species, and support vernal pool branchiopods.

Of the 105 features surveyed, 15 supported either the non-special-status versatile fairy shrimp or the federally listed endangered San Diego fairy shrimp. An additional 11 contained immature fairy shrimp that were unidentifiable to species (i.e., *Branchinecta* sp.).

During the focused fairy shrimp surveys conducted in 2014/2015 and 2015/2016, a total of 49 features (39 features in 2014/2015 and 10 features in 2015/2016) were identified as potential suitable habitat for vernal pool branchiopods within the Land Exchange Area. Within the Land Exchange Area, 10 features were found to support fairy shrimp during the focused protocol surveys. Of these 10 features, six features had San Diego fairy shrimp and were all characterized as road ruts (A12, A22, A23, A27, D4, and D9) (Figures 3-6a through 3-6i). The only feature that would be considered a vernal pool, Feature B2, is located outside of the Development Footprint to the north of the Village 14 within lands owned by CDFW. This feature also contains San Diego fairy shrimp. Four of the features supported versatile fairy shrimp. None of the seven features containing San Diego fairy shrimp will impacted by the Land Exchange Alternative, as they are located within Otay Ranch RMP Preserve or state-owned lands.

In addition to features within the Land Exchange Area, a total of 10 features outside of the Land Exchange Area were found to support fairy shrimp during the focused protocol surveys discussed herein: 2 features (C14 and C21) supported San Diego fairy shrimp, 2 features (C8 and C12) supported versatile fairy shrimp, and 6 features (C13, C15 through C19) were occupied by immature fairy shrimp that were unidentifiable to species (i.e., *Branchinecta* sp.) (Figures 3-6a through 3-6i) and the remaining features contained no fairy shrimp.

Quino checkerspot butterfly (*Euphydryas editha quino*), FE/County Group 1

The Quino checkerspot butterfly is a FE and County Group 1 species. This species is found only in western Riverside County, southern San Diego County, and northern Baja California, Mexico

(USFWS 2003). This species is found on sparsely vegetated hilltops, ridgelines, and occasionally on rocky outcrops in open chaparral and coastal sage scrub habitat (typically at less than 3,000 feet amsl). This species requires host plants within these vegetation communities for feeding and reproduction. The primary larval host plant is dotseed plantain; however, several other species have been documented as important larval host plants, including desert plantain, sometimes called woolly plantain (*Plantago patagonica*); thread-leaved bird's beak (*Cordylanthus rigidus*); white snapdragon (*Antirrhinum coulterianum*); owl's clover; and Chinese houses (*Collinsia* spp.) (USFWS 2003). A total of 1,208.8 acres of the Land Exchange Area is USFWS-designated critical habitat for Quino checkerspot butterfly overlaps the majority of the Land Exchange Area (Figure 2-2). Although not observed within the Land Exchange Area during surveys conducted in 2015 and 2016, this species is described in more detail herein because it has previously been recorded within the Land Exchange Area (Figures 4-2a through 4-2ff, 2016 Quino Host Plant Mapping and Historical Locations, and Figures 4-3a through 4-3ff, 2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations) (CDFW 2016c; HELIX 2018 in Appendix D; USFWS 2015a). Historically, Quino checkerspot butterfly was observed within the Land Exchange Area (CDFW 2016c; HELIX 2018 in Appendix D; USFWS 2015a).

Quino Checkerspot Butterfly Status

HELIX evaluated the status of the Quino checkerspot butterfly based on current and historic observations, host plant distribution in the Development Footprint and areas of Otay Ranch RMP and MSCP Preserve (Appendix D).

Current and Historic Quino Checkerspot Butterfly Observations

No Quino checkerspot butterfly adults or larvae were observed within the Land Exchange Area by Dudek biologists in 2014 or by HELIX biologists in 2015 and 2016 (Figures 4-2a through 4-2ff and Figures 4-3a through 4-3ff). HELIX reviewed the CNDDB and USFWS databases for documented Quino checkerspot butterfly locations within and adjacent to the Land Exchange Area. The databases contain scattered Quino checkerspot butterfly locations throughout the broader Proctor Valley Region with the date of the documented sightings ranging from 1990 to 2007 and recent observations from 2017. Only one location (Historical Sighting Location 1) has been documented within the Village 14 Development Footprint. A second location occurs just north of the west-central portion of the Village 14 Development Footprint (Historical Sighting Location 2). Both historical sightings are described below.

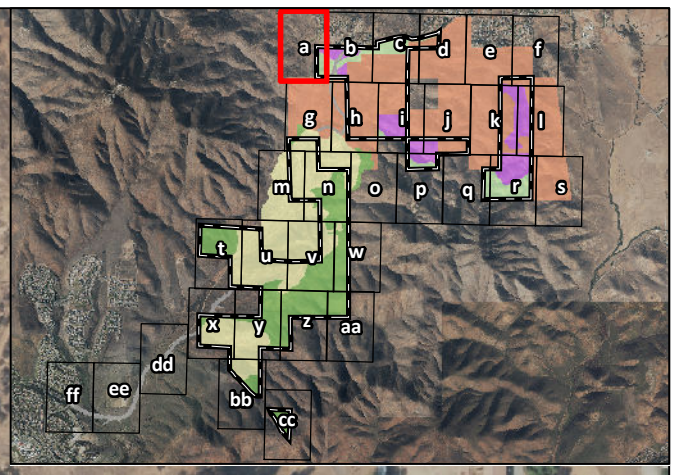
Current Observations: In 2017, several individuals were documented within the vicinity of the Land Exchange Area by USFWS (USFWS 2017). These observations are considered to be incidental because they were made during a general reconnaissance of the area and not pursuant

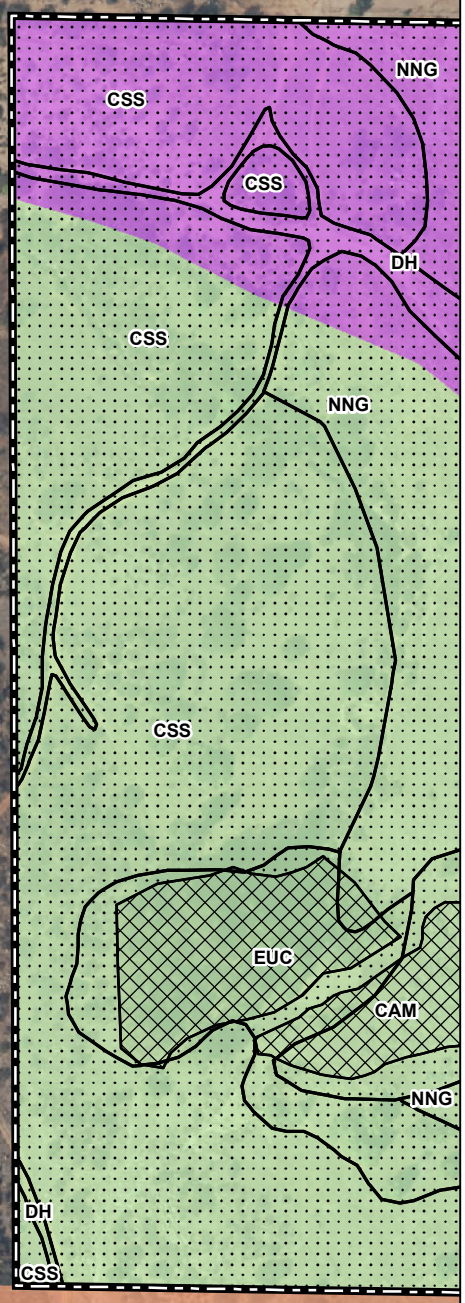
to a focused or protocol survey for the species. Two individuals were observed west of the central portion of the Village 14 Preserve, and four individuals were observed immediately off site west of Proctor Valley Road. One more individual was observed immediately east of Proctor Valley Road near property to be exchanged to the state and one individual adjacent to the northeastern portion of the property to be exchanged to the state.

Historical Sighting Location 1: In 2001, Faulkner (San Diego Natural History Museum) and Rocks (URS) documented 12 Quino checkerspot butterfly butterflies along a ridgeline on the eastern portion of the central Village 14 Development Footprint as part of a survey for an adjacent property (Rocks, pers. comm. 2015). This area contains an old road and appears to have been previously cleared of vegetation, possibly as part of historical firebreaks, past firefighting activities, or some other physical disturbance. The 2016 host plant mapping by HELIX identified two patches of Quino checkerspot butterfly host plants in the area (0.12 acres and 0.25 acres) with High densities, along with 2 High-, 3 Medium-, and several Low-density point locations of host plants. The 2015 host plant mapping by HELIX identified a 0.24-acre patch of Quino checkerspot butterfly host plants along the old disturbed roadway. There was also a smaller patch of host plants and six isolated host plant points in the vicinity. No Quino checkerspot butterflies were observed in this area during the 2015 and 2016 surveys conducted by HELIX. The area generally supports chaparral except for the disturbed areas noted above (Figures 4-2a through 4-2ff and Figures 4-3a through 4-3ff).

Historical Sighting Location 2: A second location occurs just north of the west-central portion of the Village 14 Development Footprint and was documented by Mooney Jones and Stokes as part of a USFWS-funded post-fire study associated with the 2003 Old Fire. One Quino checkerspot butterfly was observed in 2005 along a ridge top west of Proctor Valley Road consisting of burned coastal sage scrub/chamise chaparral; two Quino checkerspot butterfly were observed in the same location in 2006; and one Quino checkerspot butterfly was observed in the same location in 2007 (Borcher, pers. comm. 2015). HELIX surveyed this area in 2015 and found scattered host plant points, but no Quino checkerspot butterfly were observed. HELIX's 2016 surveys occurred adjacent to this historic sighting location and scattered host plants were mapped but again, no Quino checkerspot butterfly were observed. Under the Land Exchange Alternative, the actual data point is avoided but is located within 300 feet of proposed Development Footprint and within 250 feet of grading for Proctor Valley Road.

Project Boundary
Given or Exchanged, Otay Owned
Given or Exchanged, State Owned
Otay Ranch RMP Preserve in PA 16/19
Quino Survey Area
Excluded Areas 2016
Vegetation
CAM=Cismontane Alkali Marsh
CSS=Diegan Coastal Sage Scrub
DH=Disturbed Habitat
EUC=Eucalyptus Woodland
NNG=Non-Native Grassland





0 100 200 Feet

SOURCE: SanGIS 2014, Hunsacker 2017, HELIX 2016

DUDEK

Figure 4-2a
2016 Quino Host Plant Mapping and Historical Locations

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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Project Boundary
Given or Exchanged, Otay Owned
Given or Exchanged, State Owned
Off-Site Proctor Valley Road
Otay Ranch RMP Preserve in PA 16/19
Quino Survey Area
Excluded Areas 2016
Vegetation
CAM=Cismontane Alkali Marsh
CSS=Diegan Coastal Sage Scrub
DEV=Developed
DH=Disturbed Habitat
EUC=Eucalyptus Woodland
MFS=Mulefat Scrub
NNG=Non-Native Grassland
dCSS=disturbed Coastal Sage Scrub

Host Plants

Plantago erecta
1-99
100-999

Plantago erecta
100-999

a b c d e f g h i j k l m n o p q r s t u v w x y z aa bb cc dd ee ff

Echo Valley Road

NNG DH CSS dCSS DEV CAM MFS

0 100 200 Feet

SOURCE: SanGIS 2014, Hunsacker 2017, HELIX 2016

DUDEK

Figure 4-2b
2016 Quino Host Plant Mapping and Historical Locations

Otay Ranch Village 14 and Planning Area 16/19 - Land Exchange Alternative

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