

*APPENDIX G.*  
*BIOLOGICAL RESOURCES*

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## SPECIAL-STATUS SPECIES TABLES

The review of the databases of the California Department of Fish and Wildlife (California Natural Diversity Database), California Native Plant Society (CNPS), National Marine Fisheries Service, and U.S. Fish and Wildlife Service (USFWS) resulted in 63 special-status plant species (presented in **Table G-1**) and 47 special-status wildlife species (**Table G-2**) that might occur within the nine-quadrangle search area of the Proposed Project. The special-status species tables describe each of these species and a justification for the determination of their potential to occur in the Biological Study Areas (BSA). See **Section 3.4.1.3** of the Draft Environmental Impact Report (EIR) for a discussion on how the likelihood of occurrence was determined.

**TABLE G-1**  
**SPECIAL-STATUS PLANT SPECIES IDENTIFIED IN RECORDS SEARCHES**

Scientific Name	Common Name	Status <sup>a/</sup>			Habitat	Blooming Period <sup>b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Acanthomintha duttonii</i>	San Mateo thorn-mint	E	E	1B.1	Chaparral and valley and foothill grasslands. Grows in serpentine soils.	April-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Allium peninsulare</i> var. <i>franciscanum</i>	Franciscan onion	-	-	1B.2	Occupies dry hillsides, woodlands, and valley grasslands, 170-1,000 feet. Prefers clay, volcanic, often serpentine soils.	(April) May-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	-	-	1B.2	Present in coastal scrub, and woodland openings in central coast and northern California, below 1,640 feet. Often found on serpentine soils.	March-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Anomobryum julaceum</i>	slender silver moss	-	-	4.2	Broadleafed upland forest, lower montane coniferous forest, and North Coast coniferous forest. Grows in damp rock and soil on outcrops, usually on roadcuts.	NA	<b>Absent.</b> No suitable habitat is present within the BSA.

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Arctostaphylos pallida</i>	pallid manzanita	T	E	1B.1	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub. Grows in siliceous shale, sandy, or gravelly soils.	December-March	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Arctostaphylos regismontana</i>	Kings Mountain manzanita	-	-	1B.2	Broad-leafed upland forest, chaparral, and North Coast coniferous forest. Grows in granitic or sandstone soils.	December-April	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	-	-	1B.2	Coastal dunes (mesic), coastal scrub, and marshes and swamps (coastal salt, streamsides).	(April) June-October	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA.
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	-	-	1B.2	Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-560 feet.	March-June	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There is one CNDDDB occurrence within 100 feet of the detailed study area; however, it is considered extirpated.
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	-	-	1B.2	Chaparral, cismontane woodland, and valley and foothill grassland. Grows in serpentine soils sometimes.	March-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Calochortus pulchellus</i>	Mt. Diablo fairy-lantern	-	-	1B.2	Chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland.	April-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Calochortus umbellatus</i>	Oakland star-tulip	-	-	4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland. Often grows in serpentine soils.	March-May	<b>Absent.</b> No suitable habitat is present within the BSA.

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Calochortus uniflorus</i>	pink star-tulip	-	-	4.2	Coastal scrub, coastal prairie, north coast coniferous forest, meadows and seeps.	May-September	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA.
<i>Carex comosa</i>	bristly sedge	-	-	2B.1	Coastal prairie, marshes and swamps (lake margins), and valley and foothill grassland.	NA	<b>Unlikely to occur.</b> Closest occurrence is approximately 9 miles away in San Francisco and is more commonly associated with calcium-rich soils of wetland meadows and ditches.
<i>Castilleja ambigua</i> var. <i>ambigua</i>	johnny-nip	-	-	4.2	Coastal bluff scrub, coastal scrub, coastal prairie, marshes and swamps, valley and foothill grassland, vernal pool margins.	March-August	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 2 miles of the detailed study area.
<i>Centromadia parryi</i> ssp. <i>congdonii</i>	Congdon's tarplant	-	-	1B.1	Valley and foothill grassland. Grows in alkaline soils.	May-October (November)	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes bird's-beak	-	-	1B.2	Coastal salt marsh.	July-October	<b>Unlikely to occur.</b> There is potentially suitable habitat within the BSA and there are four documented occurrences, three within a 10-mile radius of the study area and one within 100 feet of the BSA. However, these are historical records ranging from 1880 to 1917 and this species was last seen in 1921. This species is believed to be extirpated from all four sites.

Scientific Name	Common Name	Status <sup>a/</sup>			Habitat	Blooming Period <sup>b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	San Francisco Bay spineflower	-	-	1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, and coastal scrub. Grows in sandy soils.	April-July (August)	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower	E	-	1B.1	Chaparral (maritime), cismontane woodland (openings), coastal dunes, and coastal scrub. Grows in sandy or gravelly soils.	April-September	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Cirsium fontinales</i> var. <i>fontinale</i>	Crystal Springs fountain thistle	E	E	1B.1	Chaparral (openings), cismontane woodland, meadows and seeps, and valley and foothill grassland. Grows in serpentine seeps.	(April) May-October	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Clarkia concinna</i> ssp. <i>automixa</i>	Santa Clara red ribbons	-	-	4.3	Chaparral and cismontane woodland.	(April) May-June (July)	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Clarkia franciscana</i>	Presidio clarkia	E	E	1B.1	Coastal scrub and valley and foothill grassland (serpentinite).	May-July	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Collinsia multicolor</i>	San Francisco collinsia	-	-	1B.2	Closed-cone coniferous forest and coastal scrub. Often grows in serpentine soils.	(February) March-May	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Dirca occidentalis</i>	western leatherwood	-	-	1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland. Grows in mesic soils.	January-March (April)	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat	-	-	1B.2	Chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland. Grows in serpentinite, sandy to gravelly soils.	May-September	<b>Absent.</b> No suitable habitat is present within the BSA.

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Eriophyllum latilobum</i>	San Mateo woolly sunflower	E	E	1B.1	Cismontane woodland (often serpentinite, roadcuts), coastal scrub, and lower montane coniferous forest.	May-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Eryngium aristulatum</i> var. <i>hooveri</i>	Hoover's button-celery	-	-	1B.1	Vernal pools. Grows in mesic soils.	(June) July (August)	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Eryngium jepsonii</i>	Jepson's coyote thistle	-	-	1B.2	Valley and foothill grassland and vernal pools.	April-August	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Extriplex joaquinana</i>	San Joaquin spearscale	-	-	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Grows in alkaline soils.	April-October	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Fissidens pauperculus</i>	minute pocket moss	-	-	1B.2	North Coast coniferous forest (damp coastal soil).	NA	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Fritillaria biflora</i> var. <i>ineziana</i>	Hillsborough chocolate lily	-	-	1B.1	Cismontane woodland and valley and foothill grassland. Grows in serpentinite soils.	March-April	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Fritillaria liliacea</i>	fragrant fritillary	-	-	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Grows in serpentinite soils. Ranges over parts of southwestern Northern California, USA, especially Solano and Sonoma Counties and at coastal locations south to Monterey County.	February-April	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Gilia capitata</i> ssp. <i>chamissonis</i>	blue coast gilia	-	-	1B.1	Coastal dunes and coastal scrub.	April-July	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDB occurrences within 100 feet of the detailed study area.

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Gilia millefoliata</i>	dark-eyed gilia	-	-	1B.2	Coastal dunes.	April-July	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There is one CNDDDB occurrence within 100 feet of the detailed study area, however it is considered extirpated as it was last observed in 1863.
<i>Helianthella castanea</i>	Diablo helianthella	-	-	1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Grows in Azonal soils in partial shade (often) and rocky (usually) terrain.	March-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Hemizonia congesta</i> ssp. <i>congesta</i>	congested-headed hayfield tarplant	-	-	1B.2	Valley and foothill grassland. Grows on roadsides sometimes.	April-November	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	-	-	1B.2	Coastal bluff scrub (sandy), coastal dunes, and coastal prairie.	March-June	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.
<i>Hesperolinon congestum</i>	Marin western flax	T	T	1B.1	Chaparral, valley and foothill grassland. Grows in serpentinite soils, especially in dry native bunch grasses. Known to occur only in San Mateo, San Francisco and Marin County, California, USA.	April-July	<b>Absent.</b> No suitable habitat is present within the BSA.



Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Heteranthera dubia</i>	water star-grass	-	-	2B.2	Marshes and swamps (alkaline, still, slow-moving water).	July-October	<b>Absent.</b> Closest occurrence is approximately 7 miles away in San Francisco and is associated most often in neutral or basic, slow-moving water of lakes and rivers.
<i>Hoita strobilina</i>	Loma Prieta hoita	-	-	1B.1	Chaparral, cismontane woodland, and riparian woodland.	May-July (August-October)	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	-	-	1B.1	Coastal prairie, coastal scrub, valley and foothill grassland.	June-October	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Horkelia cuneata</i> var. <i>sericea</i>	Kellogg's horkelia	-	-	1B.1	Closed-cone coniferous forest, chaparral (maritime), coastal dunes, and coastal scrub.	April-September	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	E	-	1B.1	Vernal pools and mesic soils within cismontane woodland, playas (alkaline), and valley and foothill grassland.	March-June	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Layia carnosa</i>	beach layia	E	E	1B.1	Coastal dunes and coastal scrub (sandy).	March-July	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.
<i>Leptosiphon rosaceus</i>	rose leptosiphon	-	-	1B.1	Coastal bluff scrub.	April-July	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Lessingia arachnoidea</i>	Crystal Springs lessingia	-	-	1B.2	Cismontane woodland, coastal scrub, valley and foothill grassland.	July-October	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.
<i>Lessingia hololeuca</i>	woolly-headed lessingia	-	-	3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Grows in clay and serpentine soils.	June-October	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Malacothamnus arcuatus</i>	arcuate bush-mallow	-	-	1B.2	Chaparral and cismontane woodland.	April-September	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Meconella oregana</i>	Oregon meconella	-	-	1B.1	Coastal prairie and coastal scrub.	March-April	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Monolopia gracilens</i>	woodland woolythreads	-	-	1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), and valley and foothill grassland. Grows in serpentine soils.	(February) March-July	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Pentachaeta bellidiflora</i>	white-rayed pentachaeta	E	E	1B.1	Cismontane woodland and valley and foothill grassland (often serpentinite).	March-May	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	Choris' popcornflower	-	-	1B.2	Chaparral, coastal prairie, and coastal scrub. Grows in mesic soils.	March-June	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Plagiobothrys diffusus</i>	San Francisco popcornflower	-	E	1B.1	Coastal prairie and valley and foothill grassland.	March-June	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.
<i>Plagiobothrys glaber</i>	hairless popcornflower	-	-	1A	Meadows and seeps (alkaline) and marshes and swamps (coastal salt).	March-May	<b>Absent.</b> There is potentially suitable habitat present within the BSA; however, this species is considered extinct in California.
<i>Sanicula maritima</i>	adobe sanicle	-	R	1B.1	Chaparral, coastal prairie, meadows and seeps, and valley and foothill grassland.	February-May	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDDB occurrences within 100 feet of the detailed study area.
<i>Senecio aphanactis</i>	chaparral ragwort	-	-	2B.2	Chaparral, cismontane woodland, and coastal scrub. Grows in alkaline soils.	January-April (May)	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Spergularia macrotheca</i> var. <i>longistyla</i>	long-styled sand-spurrey	-	-	1B.2	Meadows and seeps and marshes and swamps. Grows in mesic soils.	February-May	<b>Potential to occur.</b> There is potentially suitable habitat present within the BSA. There is one CNDDDB occurrence within 100 feet of the detailed study area based on an observation prior to 1991.
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	most beautiful jewelflower	-	-	1B.2	Chaparral, cismontane woodland, and valley and foothill grassland.	(March) April-September (October)	<b>Absent.</b> No suitable habitat is present within the BSA.

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Blooming Period <sup>/b/</sup>	Potential for Occurrence within the BSA (100-foot buffer)
		Federal	State	CNPS			
<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	slender-leaved pondweed	-	-	2B.2	Marshes and swamps (assorted shallow freshwater). Grows in mesic soils.	May-July	<b>Unlikely to occur.</b> This species has only two verified occurrences, only three extant populations are extant as of 1988, and none occur within the BSA. Additionally, this species prefers shallow calcareous freshwater to slightly brackish water.
<i>Suaeda californica</i>	California seablite	E	-	1B.1	Marshes and swamps (coastal salt). Grows in mesic soils.	July-October	<b>Unlikely to occur.</b> There is potentially suitable habitat present within the BSA. There is one CNDDB occurrence within 100 feet of the detailed study area; however, it is considered extirpated as the occurrence is known from collections from 1866 to 1943.
<i>Trifolium hydrophilum</i>	saline clover	-	-	1B.2	Marshes and swamps, alkaline grassland, and vernal pools. Found in areas with alkaline soils. Majority of occurrences are within the San Francisco Bay Area.	August-June	<b>Unlikely to occur.</b> There is marginal habitat present within the BSA and there are no CNDDB occurrences within the BSA.
<i>Triphysaria floribunda</i>	San Francisco owl's-clover	-	-	1B.2	Coastal prairie, coastal scrub, and valley and foothill grassland.	April-June	<b>Unlikely to occur.</b> There is only marginally suitable habitat within and around the BSA. There are no CNDDB occurrences within 100 feet of the detailed study area.
<i>Viburnum ellipticum</i>	oval-leaved viburnum	-	-	2B.3	Chaparral, cismontane woodland, and lower montane coniferous forest.	May-June	<b>Absent.</b> No suitable habitat is present within the BSA.

/a/ Status designations are as follows:

Federal Designations:

(E) Federally Endangered

State Designations:

(E) State Endangered, (T) State Threatened, (R) Rare

California Native Plant Society (CNPS) California Rare Plant Rank:

(1A) Presumed extinct in California; (1B) Rare, threatened, or endangered in California and elsewhere; (2B) Rare, threatened, or endangered in California, but more common elsewhere; (3) More information is needed; (4) Limited distribution, a watch list

Threat Rank:

0.1 Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)

0.2 Fairly threatened in California (20 to 80% of occurrences threatened/moderate degree and immediacy of threat)

0.3 Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

/b/ Months in parentheses are additional months where blooming may occur but are outside of the typical blooming period.

NA = not applicable

**Sources:**

California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database (CNDDDB), Biogeographic Data Branch. Sacramento, CA. Accessed August 4, 2021. <https://www.wildlife.ca.gov/data/cnddb>.

California Native Plant Society (CNPS). 2021. Online Inventory of Rare, Threatened and Endangered Plants of California. Accessed August 4, 2021.

<http://www.rareplants.cnps.org/advanced.html>.

U.S. Fish and Wildlife Service (USFWS). 2021. Environmental Conservation Online System: Information, Planning and Conservation System (IPaC), 2021. Accessed August 4, 2021. <https://ecos.fws.gov/ipac/>



**TABLE G-2.  
SPECIAL-STATUS WILDLIFE SPECIES IDENTIFIED IN RECORDS SEARCHES**

Scientific Name	Common Name	Status <sup>/a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<b>Fish</b>						
<i>Acipenser medirostris</i>	green sturgeon (Southern Distinct Population Segment [DPS])	T CH	-	-	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento River. Spawns at temps between 8-14 degrees Celsius . Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	<b>Potential to Occur.</b> Designated Critical Habitat and suitable foraging habitat are present within open water and intertidal mudflats of the BSA. However, the detailed study area is located entirely on land and there are no anticipated impacts to this species.
<i>Eucyclogobius newberryi</i>	tidewater goby	E	-	-	Shallow lagoons and lower stream reaches, with fairly still but not stagnant water and high oxygen levels. Includes Sacramento/San Joaquin flowing waters.	<b>Unlikely to occur.</b> Marginally suitable habitat is present within the BSA.
<i>Hypomesus transpacificus</i>	delta smelt	T	E	-	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay. Seldom found at salinities less than 10 parts per thousand (ppt). Most often at salinities greater than 2 ppt.	<b>Absent.</b> This species resides in the Sacramento-San Joaquin Delta and the BSA exceeds salinity that this species occurs.
<i>Oncorhynchus kisutch</i>	coho salmon, Central California Coast	E	E	-	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water, and sufficient dissolved oxygen. All naturally spawned populations of Coho salmon from Punta Gorda in northern California south to, and including, the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento San Joaquin River system.	<b>Unlikely to Occur.</b> There is potentially suitable habitat for this species within the BSA due to the presence of open water. However, guidance from NMFS (2021) indicated that this species is unlikely to occur. Additionally, it is considered extirpated from the San Francisco Bay and the detailed study area is located entirely on land.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<i>Oncorhynchus mykiss</i>	steelhead, Central California Coast	T CH	-	-	Marine, estuarine, and freshwater habitats. All naturally spawned in streams from the Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay Basins.	<b>Potential to Occur.</b> Suitable foraging habitat is present within open water and intertidal mudflats of the BSA. However, the detailed study area is located entirely on land and there are no anticipated impacts to this species.
<i>Oncorhynchus tshawytscha</i>	chinook salmon, Central Valley spring run	T	T	-	Marine, estuarine, and freshwater habitats with water temperatures between 6 and 14 degrees Celsius for spawning. Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams.	<b>Unlikely to Occur.</b> Suitable foraging habitat may be present within open water and intertidal mudflats of the BSA. However, guidance from NMFS (2021) indicated that this species is unlikely to occur. Additionally, the detailed study area is located entirely on land and there are no anticipated impacts to this species.
<i>Oncorhynchus tshawytscha</i>	chinook salmon, Sacramento River winter-run	E	E	-	Marine, estuarine, and freshwater habitats. All naturally spawned populations known to occur in the Sacramento River as winter-run. Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams.	<b>Unlikely to Occur.</b> Suitable foraging habitat may be present within open water and intertidal mudflats of the BSA. However, guidance from NMFS (2021) indicated that this species is unlikely to occur. Additionally, the detailed study area is located entirely on land and there are no anticipated impacts to this species.
<i>Spirinchus thaleichthys</i>	longfin smelt	C	T	-	Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	<b>Potential to occur.</b> There is potentially suitable habitat within open water habitat of the BSA. There is one CNDDDB occurrence within the BSA. However, the detailed study area is located entirely on land and there are no anticipated impacts to this species.



Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<b>Invertebrates</b>						
<i>Bombus crotchii</i>	crotch bumble bee	-	CE	-	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	<b>Unlikely to occur.</b> Required flowering plants are unlikely and suitable habitat is not present within the BSA.
<i>Bombus occidentalis occidentalis</i>	western bumble bee	-	CE	-	Open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows.	<b>Unlikely to occur.</b> Required flowering plants and suitable habitat is not present within the BSA.
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	T	-	-	Endemic to the grasslands of the central valley, central coast mountains and south coast mountains in rain-filled vernal pools and swales.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Danaus plexippus</i>	monarch - California overwintering population	C	-	-	Closed-cone coniferous forest. Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Euphydryas editha bayensis</i>	Bay checkerspot butterfly	T	-	-	Native grasslands on outcrops of serpentine soil. <i>Plantago erecta</i> is the primary host plant; <i>Orthocarpus densiflorus</i> and <i>Orthocarpus purpurascens</i> are the secondary host plants.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Speyeria zerene myrtleae</i>	Myrtle's silverspot butterfly	E	-	-	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County.	<b>Absent.</b> No suitable habitat is present within the BSA.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<b>Amphibians</b>						
<i>Ambystoma californiense</i>	California tiger salamander - Central California DPS	T	T	-	Need underground refuges, especially ground squirrel, gopher, or other fossorial mammal burrows, and for breeding uses vernal pools or other generally seasonal water sources.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Rana boylei</i>	foothill yellow-legged frog	-	E	SSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Rana aurora draytonii</i>	California red-legged frog	T	-	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. May travel up to 2 miles in upland habitat between breeding sites, using fossorial mammal burrows, rocks, vegetation, or artificial structures for shelter.	<b>Absent.</b> No suitable habitat is present within the BSA.
<b>Reptiles</b>						
<i>Chelonia mydas</i>	green sea turtle	T	T	-	Spend most of their time in shallow, coastal waters with lush seagrass beds, inshore bays, lagoons, and shoals with lush seagrass meadows.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Emys marmorata</i>	western pond turtle	-	-	FP	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 feet elevation.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Masticophis lateralis euryxanthus</i>	Alameda whipsnake	T	T	-	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices, or abandoned rodent burrows.	<b>Absent.</b> No suitable habitat is present within the BSA.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<i>Thamnophis sirtalis tetrataenia</i>	San Francisco garter snake	E	E	FP	Vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo county and extreme northern Santa Cruz county.	<b>Absent.</b> No suitable habitat is present within the BSA.
<b>Birds</b>						
<i>Agelaius tricolor</i>	tricolored blackbird	-	T	SSC	Requires open water, protected nesting substrate which may also occur in uplands, and foraging area with insect prey within a few kilometers of the colony.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Aquila chrysaetos</i>	golden eagle	-	-	FP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Asio flammeus</i>	short-eared owl	-	-	SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	<b>Unlikely to occur.</b> Marginally suitable habitat is present within the BSA. This species often avoids human disturbance and the detailed project area is heavily disturbed.
<i>Athene cunicularia</i>	burrowing owl	-	-	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	<b>Potential to occur.</b> Suitable foraging and nesting habitat is present within the BSA. This species has been known to nest within OAK and within the BSA. Also, a mitigation site has been established at the end of Earnhart Road near the proposed parking lot along Doolittle Drive.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<i>Charadrius alexandrinus nivosus</i>	western snowy plover	T	-	SSC	Sandy beaches, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	<b>Unlikely to Occur.</b> Suitable habitat is not present within the BSA. In 1996, breeding snowy plovers were observed in the sandy area at the end of Runway 12/30; however, surveys in 2012-2013 did not find any occurrences of this species. The 2018 Biological Assessment for the Airport Perimeter Dike FEMA Improvements also concluded no suitable habitat was present in that project's action area.
<i>Circus cyaneus</i>	northern harrier	-	-	SSC	Coastal salt and fresh-water marshes, nesting and foraging habitats in grasslands and agricultural fields.	<b>Potential to occur.</b> Suitable foraging and nesting habitat is present within the BSA due to presence of salt marsh habitat. This species has been known to nest at OAK.
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	T	E	-	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Coturnicops noveboracensis</i>	yellow rail	-	-	SSC	Nests in shallow freshwater sedge marshes; winters in wet meadows and marshes with cordgrass, salt grass, sedges, and other low vegetation. Not found in deeper areas with tall vegetation, such as cattail marshes.	<b>Unlikely to occur.</b> Marginally suitable habitat is present within the BSA.
<i>Elanus leucurus</i>	white-tailed kite	-	-	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	<b>Potential to occur.</b> Suitable nesting and foraging habitat is present within the BSA due to the presence of trees. This species has been known to nest at OAK.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<i>Falco peregrinus anatum</i>	American peregrine falcon	DL	DL	FP	Wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	<b>Potential to occur.</b> Suitable foraging habitat is present within the BSA due to the presence of salt marsh. Suitable nesting habitat is not present within the BSA due to the lack of tall structures.
<i>Geothlypis trichas sinuosa</i>	salt marsh common yellowthroat	-	-	SSC	Resident of the San Francisco Bay region, in freshwater and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	<b>Potential to occur.</b> Suitable foraging habitat is present within the BSA due to the presence of salt marsh.
<i>Melospiza melodia pusillula</i>	Alameda song sparrow	-	-	SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	<b>Potential to occur.</b> Suitable foraging and nesting habitat is present within the BSA due to the presence of tidal salt marsh.
<i>Laterallus jamaicensis coturniculus</i>	California black rail	-	T	FP	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes. Needs water depth of about 1 inch that does not fluctuate during the year, and dense vegetation for nesting habitat.	<b>Potential to occur.</b> Suitable habitat is present within the BSA due to the presence of tidal salt marsh.
<i>Rallus obsoletus obsoletus</i>	California Ridgway's rail	E	E	FP	Salt water and brackish marshes with tidal sloughs. Associated with abundant growths of pickleweed but feeds away from cover on invertebrates from mud-bottomed sloughs.	<b>Potential to occur.</b> Suitable habitat is present within the BSA due to the presence of tidal salt marsh.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<i>Riparia riparia</i>	bank swallow	-	T	-	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Required vertical banks or cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Rynchops niger</i>	black skimmer	-	-	SSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	<b>Potential to occur.</b> Suitable foraging habitat is present within the BSA.
<i>Setophaga petechia</i>	yellow warbler	-	-	SSC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Sternula antillarum browni</i>	California least tern	E	E	FP	Nests along the coast from San Francisco Bay south to northern Baja California, Mexico on bare sparsely vegetated, flat substrates such as sand beaches, alkali flats, landfills, or paved areas.	<b>Unlikely to occur.</b> Suitable habitat is not present within the BSA. This species was observed in 1996 at the end of Runway 12-30 where there was sparse vegetation and rolling sand dunes. However, this area is not within the BSA. The 2018 Biological Assessment for the Airport Perimeter Dike FEMA Improvements Project also concluded no suitable habitat was present in that project's action area.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<b>Mammals</b>						
<i>Antrozous pallidus</i>	pallid bat	-	-	SSC	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Typically use three types of roosts – day roosts may be a warm, horizontal opening in attics or crevices; night roosts are in the open (such as open porches or under bridges) with nearby foliage, usually near foraging grounds; hibernation roosts may be in canyon wall crevices, caves, buildings, or cracks in rocks. Feeds on a wide variety of insects and arachnids.	<b>Unlikely to occur.</b> Marginally suitable habitat is present within the BSA.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	-	-	SSC	Occurs throughout much of the western U.S., except alpine and sub-alpine habitats. Requires large cavities for roosting, including basal tree cavities, caves, mines, tunnels, buildings, or other man-made structures; hibernation roosts are in similar locations. In summer, females form maternity colonies to raise pups, while males are generally solitary. Hibernates in tight clusters in winter. Nocturnal predator of insects, especially (and potentially almost exclusively) moths. Prefers mesic habitats.	<b>Unlikely to occur.</b> Marginally suitable habitat is present within the BSA.

Scientific Name	Common Name	Status/ <sup>a/</sup>			Habitat	Potential for Occurrence within the BSA (700 foot buffer)
		Federal	State	CDFW		
<i>Eumops perotis californicus</i>	western mastiff bat	-	-	SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	<b>Unlikely to occur.</b> Marginally suitable habitat is present within the BSA.
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat	-	-	SSC	Forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	<b>Unlikely to occur.</b> Marginally suitable habitat is present within the BSA.
<i>Nyctinomops macrotis</i>	big free-tailed bat	-	-	SSC	Low-lying arid areas in Southern California. Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Reithrodontomys raviventris</i>	salt marsh harvest mouse	E	E	FP	Only found in the saline emergent wetlands of San Francisco Bay and its estuaries. Pickleweed is primary habitat. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	<b>Potential to occur.</b> Suitable habitat is present within the BSA due to the presence of tidal salt marsh.
<i>Scapanus latimanus parvus</i>	Alameda Island mole	-	-	SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.	<b>Absent.</b> No suitable habitat is present within the BSA.
<i>Sorex vagrans halicoetes</i>	salt marsh wandering shrew	-	-	SSC	Salt marshes of the south arm of San Francisco Bay.	<b>Potential to occur.</b> Suitable habitat is present within the BSA due to the presence of tidal salt marsh.
<i>Taxidea taxus</i>	American badger	-	-	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	<b>Absent.</b> No suitable habitat is present within the BSA.



/a/ Status designations are as follows:

Federal Designations:

E = Federally Endangered, T = Federally Threatened, C = Candidate, CH = Critical Habitat, DL = Delisted

State Designations:

E = State Endangered, T = State Threatened, CE = Candidate Endangered, DL = Delisted

California Department of Fish and Wildlife (CDFW) Designations:

SSC = Species of Special Concern, FP = Fully Protected

**Sources:**

California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database (CNDDB), Biogeographic Data Branch. California Department of Fish and Wildlife. Sacramento, CA. Accessed August 4, 2021. <https://www.wildlife.ca.gov/data/cnddb>.

U.S. Fish and Wildlife Service (USFWS). 2021. Environmental Conservation Online System: Information for Planning and Consultation (IPaC). 2020. Accessed August 4, 2021. <https://ecos.fws.gov/ipac/>.

National Marine Fisheries Service (NMFS). 2021. California Species List Tool. Queried for endangered and threatened species within San Leandro USGS 7.5-minute topographic quadrangles. [https://archive.fisheries.noaa.gov/wcr/maps\\_data/california\\_species\\_list\\_tools.html](https://archive.fisheries.noaa.gov/wcr/maps_data/california_species_list_tools.html). Accessed August 4, 2021.

## DESCRIPTIONS OF SPECIES WITH POTENTIAL TO OCCUR IN THE BSA

The information included in this appendix includes natural history descriptions of special-status plant and wildlife species with potential to occur in the biological study areas (BSAs) (100-foot buffer around the detailed study area for plants; 700-foot buffer around the detailed study area for wildlife) for the Oakland International Airport Terminal Modernization and Development Project (Proposed Project).

### Plants

**Long-Styled Sand-Spurrey.** The long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*) is a California Native Plant Society (CNPS) 1B.2<sup>1</sup> plant that blooms from February to May and inhabits meadows, seeps, marshes, and swamps. This species is a perennial herb that is native to California and grows in mesic soils at elevations between 15 and 560 feet above mean sea level (msl).

### Wildlife

**Western Burrowing Owl.** The western burrowing owl (*Athene cunicularia* ssp. *hypugaea*) is a designated Species of Special Concern by the California Department of Fish and Wildlife (CDFW).<sup>2</sup> It can be found in grassland habitats throughout western and Midwestern North America.<sup>3</sup> In California, burrowing owls are distributed throughout the state, with populations in the northeast; in the Central Valley, interior San Francisco Bay Area, and Salinas Valley; on the Carrizo Plain and in the Imperial Valley; and on several of the Channel Islands.<sup>4</sup> California hosts both migratory and resident populations of burrowing owls. These owls favor flat, open grassland or gentle slopes and sparse shrubland ecosystems for breeding, though they will also readily colonize agricultural fields and other developed areas.<sup>5</sup> Mammal burrows, or other structures that mimic burrows, provide secure nesting locations and nonbreeding refuges and are a fundamental ecological requirement of burrowing owls; in California, owls are most often found in close association with California ground squirrel burrows.<sup>6</sup> Ideal habitat for burrowing owls is comprised of annual and perennial grasslands with low vegetation height, sparse or nonexistent tree or

<sup>1</sup> CNPS California Rare Plant Rank: (1B) Rare, threatened, or endangered in California and elsewhere. Threat Rank: 0.2 Fairly threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat)

<sup>2</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List. Sacramento, CA.

<sup>3</sup> Haug, E.A., B.A. Millsap, and M.S. Martell. 1993. "Burrowing Owl (*Speotyto cunicularia*)". *The Birds of North America*, No. 61. The Academy of Natural Sciences, Philadelphia, Pennsylvania; The American Ornithologists' Union, Washington, D.C.

<sup>4</sup> Gervais, J. A., D. K. Rosenberg, and L. A. Comrack. 2008. "Burrowing owl (*Athene cunicularia*)." California Bird Species of Special Concern. Studies of Western Birds No. 1. Western Field Ornithologists, Camarillo, California and California Department of Fish and Game, Sacramento, California.

<sup>5</sup> Conway, C. J., V. Garcia, M. D. Smith, L. A. Ellis, and J. L. Whitney. 2006. "Comparative demography of Burrowing Owls in agricultural and urban landscapes in southeastern Washington." *Journal of Field Ornithology* 77:280–290.

<sup>6</sup> Rosenberg, D.K., L. A. Trulio, D. Catlin, D. Chromczack, J. A. Gervais, N. Ronan, and K. A. Haley. 2007. *The Ecology of the Burrowing Owl in California*. Unpubl. report to Bureau of Land Management.

shrub cover, and an abundance of mammal burrows.<sup>7, 8, 9, 10</sup> The nesting season, as recognized by the CDFW, runs from February 1 through August 31.<sup>11</sup> After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or may migrate;<sup>12</sup> young birds disperse across the landscape, from 0.12 mile to 32 miles from their natal burrows.<sup>13</sup>

**Northern Harrier.** Northern harrier (*Circus cyaneus*) is considered a Species of Special Concern by CDFW.<sup>14</sup> They are known to forage in coastal salt marshes and freshwater marshes and adjacent habitats, and to nest in high marsh on the ground or in low-growing vegetation.<sup>15</sup> The nesting season typically occurs from March through August.<sup>16</sup>

**White-tailed Kite.** The white-tailed kite (*Elanus leucurus*) is a California Fully Protected species.<sup>17</sup> This species inhabits rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. This species forages in grasslands, marshes, riparian edges, and cultivated fields where prey species (mainly small mammals) are relatively abundant.<sup>18</sup> Kites typically nest from February through October often on the tops of trees close to good foraging locations.<sup>19</sup>

**American Peregrine Falcon.** The American peregrine falcon (*Falco peregrinus*) is a California Fully Protected species.<sup>20</sup> This species prefers open areas for foraging, typically preying on other birds and sometimes small reptiles and mammals. This species is often found near water, especially along the coast. They typically nest on cliff ledges and in hollows of dead or broken trees; in cities they may use ledges of buildings and bridges. This species does not build nests; instead, it lays eggs in a scrape or sometimes uses the

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<sup>7</sup> Ibid.

<sup>8</sup> Coulombe, H. 1971. "Behavior and Population Ecology of the Burrowing Owl, *Speotyto cunicularia*, in the Imperial Valley of California." *The Condor*, 73(2), 162-176.

<sup>9</sup> Haug, E. A., and L. W. Oliphant. 1990. "Movements, activity patterns, and habitat use of burrowing owls in Saskatchewan." *Journal of Wildlife Management* 54:27-35.

<sup>10</sup> Plumpton, D. L., and R. S. Lutz. 1993. "Nesting habitat use by Burrowing Owls in Colorado." *Journal of Raptor Research* 27:175-179.

<sup>11</sup> California Department of Fish and Wildlife (CDFW). 2012. Staff report on burrowing owl mitigation. Staff report. Sacramento, California, USA.

<sup>12</sup> Rosenberg, D.K. et al. 2007. *The ecology of the Burrowing Owl in California*. Unpubl. report to Bureau of Land Management.

<sup>13</sup> Rosier, J. R., N. A. Ronan, and D. K. Rosenberg. 2006. "Post-breeding dispersal of burrowing owls in an extensive California grassland." *American Midland Naturalist* 155:162-167.

<sup>14</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List. Sacramento, CA.

<sup>15</sup> Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. *California's Wildlife*. Vol. I-III. California Department of Fish and Game, Sacramento, California

<sup>16</sup> Zeiner, D.C., et al. 1988-1990. *California's Wildlife*.

<sup>17</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List.

<sup>18</sup> Kaufman, K. 1996. *Lives of North American Birds*. New York, NY: Houghton Mifflin Company

<sup>19</sup> Zeiner, D.C., et al. 1988-1990. *California's Wildlife*.

<sup>20</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List.

old nests of other birds.<sup>21</sup> The nesting season typically occurs from mid-March through late July.<sup>22</sup>

**Salt Marsh Common Yellowthroat.** The salt marsh common yellowthroat (*Geothlypis trichas sinuosa*) is considered a Species of Special Concern by CDFW.<sup>23</sup> A resident of the San Francisco Bay region, this species occupies both freshwater and saltwater marshes. It requires thick, continuous cover down to the water surface for foraging; nesting habitat consists of tall grasses, tule patches, and willows. The nesting season typically occurs from late-February through June.<sup>24</sup>

**Alameda Song Sparrow.** The Alameda song sparrow (*Melospiza melodia pusillula*) is considered a Species of Special Concern by CDFW.<sup>25</sup> This species is a resident of salt marshes bordering south San Francisco Bay; it inhabits pickleweed marshes and nests low (though high enough to escape high tides) in gumplant bushes and pickleweed.<sup>26</sup> They are found in all relatively large marshes of the South Bay and East Bay (e.g., Dumbarton Marsh, Palo Alto Baylands, Hayward Regional Shoreline, Emeryville, Alameda, San Leandro, San Lorenzo, and Coyote Creek) and in most remnant patches of marsh vegetation along sloughs, dikes, and levees, including some highly disturbed and urbanized sites.<sup>27</sup> The nesting season typically occurs from late-February through mid-August.<sup>28</sup>

**California Black Rail.** California black rail (*Laterallus jamaicensis coturniculus*) is state listed as threatened and is a California Fully Protected species.<sup>29</sup> This species inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes. California black rail are primarily associated with emergent tidal marshes. The species is most abundant within pickleweed at or above the mean tide level. They prefer areas with dense cover of native marsh species and moist substrate, and nest in high marsh vegetation between mid-March through June.<sup>30</sup>

**California Ridgway's Rail.** The California Ridgway's rail (*Rallus obsoletus*) (formerly California clapper rail) is federally and state listed as endangered and is a California Fully

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<sup>21</sup> Zeiner, D.C., et al. 1988-1990. *California's Wildlife*.

<sup>22</sup> California Department of Fish and Wildlife (CDFW). 2021b. American Peregrine Falcons in California. <https://wildlife.ca.gov/Conservation/Birds/Peregrine-Falcon>.

<sup>23</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List.

<sup>24</sup> Zeiner, D.C., et al. 1988-1990. *California's Wildlife*.

<sup>25</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List. Sacramento, CA.

<sup>26</sup> Shuford, W. D., and Gardali, T. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

<sup>27</sup> Zeiner, D.C., et al. 1988-1990. *California's Wildlife*.

<sup>28</sup> Ibid.

<sup>29</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List.

<sup>30</sup> Evens, J, and K. Thorne. 2015. Science Foundation Chapter 5 Appendix 5.1 – Case Study California Black Rail (*Laterallus jamaicensis coturniculus*). Baylands Ecosystem Habitat Goals Science Update.

Protected species.<sup>31</sup> Although historically more widespread, it is currently restricted to San Francisco Bay and San Pablo Bay, with the largest populations occurring in remnant salt marshes of the South Bay. No critical habitat has been proposed or designated for this subspecies.

The California Ridgway's rail occurs only within salt and brackish marshes. Important habitat components include: (1) well-developed tidal sloughs and secondary sloughs; (2) beds of cordgrass in the lower marsh zone; (3) dense salt marsh vegetation for cover, nest sites, and brooding areas; (4) intertidal mudflats, gradually sloping banks of tidal channels, and cordgrass beds for foraging; (5) abundant invertebrate food resources; and (6) transitional vegetation at the marsh edge to serve as a refuge during high tides. In South and Central San Francisco Bay and along the perimeter of San Pablo Bay, Ridgway's rails typically inhabit salt marshes dominated by pickleweed and cordgrass, with other halophytes such as gumplant, saltgrass, and fleshy jaumea (*Jaumea carnosa*).<sup>32</sup>

Breeding begins in mid-March and extends into July, with peak activity in late April to late May. California Ridgway's rail nests, constructed of wetland vegetation and platform-shaped, are placed near the ground in clumps of dense vegetation, usually in the lower marsh zone near small tidal channels. Existing marsh vegetation or drift material can be used as a canopy over the nest platform.<sup>33</sup> Although considered non-migratory, there are numerous accounts of juveniles dispersing widely between habitat areas.<sup>34</sup>

**Black Skimmer.** Black skimmer (*Rynchops niger*) is considered a Species of Special Concern by CDFW.<sup>35</sup> This species forages in flight by opening their bill and dropping their long, narrow lower mandible into the water, skimming along until they feel a fish. Black skimmers inhabit coastal areas, usually around sandy beaches and islands. Nesting birds use open sandy areas, gravel or shell bars with sparse vegetation, or broad mats of wrack in saltmarsh. Nesting typically occurs from mid-April through September.<sup>36</sup> Foraging birds frequent places that concentrate prey, including tidal waters of bays, estuaries, lagoons, creeks, rivers, ditches, and saltmarsh pools.<sup>37</sup>

**Salt Marsh Harvest Mouse.** The salt marsh harvest mouse (*Reithrodontomys raviventris*) is federally and state listed as endangered and is a California Fully Protected species.<sup>38</sup> This

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<sup>31</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List. Sacramento, CA.

<sup>32</sup> U.S. Fish and Wildlife Service (USFWS). 2013. Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California. Sacramento, California. xviii + 605 pp.

<sup>33</sup> U.S. Fish and Wildlife Service (USFWS). 1984. Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan. Portland, Oregon. 141 pp.

<sup>34</sup> Ibid.

<sup>35</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List. Sacramento, CA.

<sup>36</sup> Zeiner, D.C., et al. 1988-1990. *California's Wildlife*.

<sup>37</sup> Shuford, W. D., and Gardali, T. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

<sup>38</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List. Sacramento, CA.

species is highly adapted to its marsh habitat,<sup>39</sup> but reliance on the marshes of San Francisco Bay has made this species vulnerable as more than 90 percent of tidal marshes have been lost since the mid-1800s.<sup>40</sup> Amplifying the effect of this spatial constraint is the increasing fragmentation of remaining salt marsh harvest mouse habitat.<sup>41</sup>

The salt marsh harvest mouse is a relatively small rodent found only in and adjacent to suitable salt- and brackish-marsh habitat in the greater San Francisco Bay, San Pablo Bay, and Suisun Bay areas. Habitat associated with salt marsh harvest mouse has been described as pickleweed-dominated marsh,<sup>42</sup> although more recent studies have shown that salt marsh harvest mouse is supported equally in pickleweed-dominated and mixed-vegetation marsh (including native and non-native salt- and brackish-marsh species).<sup>43, 44</sup> Salt marsh harvest mouse have been found to inhabit brackish marshes with a developed thatch layer of vegetation, including bulrush (*Schoenoplectus* spp.), pepperweed/bulrush, and pepperweed/spearscale marshes.<sup>45</sup> In saline marshes, like those of south San Francisco Bay, habitat for salt marsh harvest mouse tends to be marshes dominated largely by low pickleweed plains with patchy cordgrass.

**Salt Marsh Wandering Shrew.** The salt marsh wandering shrew (*Sorex vagrans halicoetes*) is considered a Species of Special Concern by CDFW.<sup>46</sup> Like the salt marsh harvest mouse, the salt marsh wandering shrew inhabits salt marshes of south San Francisco Bay that consist of dense pickleweed and require upland or tidal refuge habitat and are known to occur in tidal marsh habitat.<sup>47</sup>

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<sup>39</sup> Fisler, G.F. 1965. "Adaptations and speciation in harvest mice of the marshes of San Francisco Bay." *University of California Publications in Zoology* 77: 1-108.

<sup>40</sup> Williams P. and Faber P. 2001. "Salt marsh restoration experience in San Francisco Bay." *Journal of Coastal Research* 23:203–211.

<sup>41</sup> Fisler, G.F. 1961. Speciation and Ecology of Salt-marsh Harvest Mice (*Reithrodontomys*) of the San Francisco Bay Area [dissertation]. University of California, Berkeley.

<sup>42</sup> Ibid.

<sup>43</sup> Sustaita, D., L. Barthman-Thompson, P. Quickert, L. Patterson, and S. Estrella. 2005. Annual Salt Marsh Harvest Mouse Demography and Habitat Use in Suisun Marsh Conservation Areas. Presentation at the CALFED Science Conference.

<sup>44</sup> Sustaita, D., P.F. Quickert, L. Patterson, L. Barthman-Thompson, S. Estrella. 2011. "Salt Marsh Harvest Mouse Demography and Habitat Use in the Suisun Marsh, California." *The Journal of Wildlife Management* 75(6): 1498-1507.

<sup>45</sup> Shellhammer, H.S., R. Duke, and M. Orland. 2010. "Use of brackish marshes in the south San Francisco Bay by salt marsh harvest mice." *California Fish and Game* 96(4): 256-259.

<sup>46</sup> California Department of Fish and Wildlife (CDFW). 2021a. Special Animals List.

<sup>47</sup> Zeiner, D.C., et al. *California's Wildlife*.

## CITY OF OAKLAND PROTECTED TREES IN THE BSA

The information included in this appendix includes a summary of the City of Oakland protected trees identified within the plant biological study area (BSA) (100-foot buffer around the detailed study area for the Oakland International Airport Terminal Modernization and Development Project (Proposed Project)). The City of Oakland defines “protected trees” as the following:<sup>1</sup>

1. On any property, *Quercus agrifolia* (California or coast live oak) measuring 4 inches diameter at breast height (dbh) or larger, and any other tree measuring 9 inches dbh or larger except *Eucalyptus* sp. and *Pinus radiata* (Monterey pine).
2. *Pinus radiata* (Monterey pine) trees shall be protected only on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed. Although Monterey pine trees are not protected in non-development-related situations, nor in development-related situations involving five or fewer trees per acre, public posting of such trees and written notice of proposed tree removal to the Office of Parks and Recreation is required per Section 12.36.070A and Section 12.36.080A.
3. Except as noted above, *Eucalyptus* and Monterey pine trees are not protected by this chapter.

**Table G-3** summarizes the results of a tree survey conducted within the BSA of the Proposed Project in December 2021.

**TABLE G-3. CITY OF OAKLAND PROTECTED TREES WITHIN THE PLANT BSA**

Tree Number	Common Name	Scientific Name	dbh (inches) <sup>a/</sup>	Location (lat./long.) <sup>b/</sup>	Located Within Detailed Study Area?
1	Silverleaf acacia	<i>Acacia dealbata</i>	3, 10 ,18	37.71622293/ -122.2073107	No
2	Incense cedar	<i>Calocedrus decurrens</i>	10	37.71599972/ -122.2076759	Yes
3	London plane	<i>Platanus acerifolia</i>	11, 16, 18	37.71488252/ -122.2145057	Yes
4	Chinese elm	<i>Ulmus parvifolia</i>	23	37.7138503/ -122.2141210	Yes
5	London plane	<i>Platanus acerifolia</i>	20	37.71301765/ -122.2149887	Yes
6	London plane	<i>Platanus acerifolia</i>	11, 13	37.71297464/ -122.2148875	Yes
7	Redwood	<i>Sequoia sempervirens</i>	9	37.71650964/ -122.2096693	No

<sup>1</sup> Oakland Municipal Code. Title 12, Chapter 12.36 – Protected Trees

**TABLE G-3. CITY OF OAKLAND PROTECTED TREES WITHIN THE PLANT BSA**

<b>Tree Number</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>dbh (inches)<sup>a/</sup></b>	<b>Location (lat./long.)<sup>b/</sup></b>	<b>Located Within Detailed Study Area?</b>
8	Redwood	<i>Sequoia sempervirens</i>	9.5	37.71649555/ -122.2095892	No
9	Redwood	<i>Sequoia sempervirens</i>	9.8	37.71649274/ -122.2095054	No
10	Redwood	<i>Sequoia sempervirens</i>	9.9	37.71648898/ -122.2094447	No
11	Redwood	<i>Sequoia sempervirens</i>	10	37.71605205/ -122.2117104	Yes
12	Redwood	<i>Sequoia sempervirens</i>	12.1	37.71599416/ -122.2117660	Yes
13	Redwood	<i>Sequoia sempervirens</i>	10.4	37.71588485/ -122.2119288	Yes
14	Redwood	<i>Sequoia sempervirens</i>	10.6	37.71581782/ -122.2120327	Yes
15	Redwood	<i>Sequoia sempervirens</i>	10.2	37.71577449/ -122.2121002	Yes
16	Redwood	<i>Sequoia sempervirens</i>	12.2	37.7166138/ -122.2080480	No
17	Redwood	<i>Sequoia sempervirens</i>	10.2	37.71668139/ -122.2080147	No
18	Redwood	<i>Sequoia sempervirens</i>	10.9	37.71675743/ -122.2079253	No
19	Redwood	<i>Sequoia sempervirens</i>	12	37.71674375/ -122.2078375	No
20	Redwood	<i>Sequoia sempervirens</i>	10	37.71674375/ -122.2078375	No
21	Redwood	<i>Sequoia sempervirens</i>	10.4	37.71679777/ -122.2077861	No
22	Redwood	<i>Sequoia sempervirens</i>	10.4	37.71682863/ -122.2077347	No
23	Redwood	<i>Sequoia sempervirens</i>	9	37.71686615 -122.2076901	No
24	Eucalyptus globulus	<i>Eucalyptus globulus</i>	70	37.71795245/ -122.1894951	Yes
25	London plane	<i>Platanus × acerifolia</i>	15	37.71815591/ -122.1896132	No
26	Eucalyptus sp.	<i>Eucalyptus sp.</i>	20	37.71813644/ -122.1896927	Yes



**TABLE G-3. CITY OF OAKLAND PROTECTED TREES WITHIN THE PLANT BSA**

<b>Tree Number</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>dbh (inches)<sup>/a/</sup></b>	<b>Location (lat./long.)<sup>/b/</sup></b>	<b>Located Within Detailed Study Area?</b>
27	Lombardy poplar	<i>Populus nigra</i>	10, 7	37.71828103/ -122.1897792	Yes
28	London plane	<i>Platanus acerifolia</i>	19	37.7183487/ -122.1898115	No
29	Lombardy poplar	<i>Populus nigra</i>	40, 3	37.71834233/ -122.1898706	Yes
30	Lombardy poplar	<i>Populus nigra</i>	18	37.71840433/ -122.1898888	No
31	Eucalyptus sp.	<i>Eucalyptus sp.</i>	30	37.71845635/ -122.1899909	No
32	Lombardy poplar	<i>Populus nigra</i>	11, 11, 13	37.71846102/ -122.1900704	Yes
33	Lombardy poplar	<i>Populus nigra</i>	25	37.71849635/ -122.1901184	Yes
34	Monterey pine	<i>Pinus radiata</i>	13	37.71850507/ -122.19002	No
35	Fraxinus sp.	<i>Fraxinus sp.</i>	4, 3, 4, 2, 2, 2, 3	37.71854808/ -122.1900716	No
36	Lombardy poplar	<i>Populus nigra</i>	15	37.71849004/ -122.1901982	Yes
37	Lombardy poplar	<i>Populus nigra</i>	7, 7, 5	37.71853757/ -122.190206	Yes
38	Lombardy poplar	<i>Populus nigra</i>	11, 13	37.71857408/ -122.1901807	Yes
39	Lombardy poplar	<i>Populus nigra</i>	9, 10	37.71860447/ -122.1901467	No
40	Lombardy poplar	<i>Populus nigra</i>	4, 6, 4, 6	37.71860686/ -122.1902168	Yes
41	Monterey pine	<i>Pinus radiata</i>	15	37.71863474/ -122.190245	Yes
42	Lombardy poplar	<i>Populus nigra</i>	24, 4, 12	37.71867901/ -122.1903261	Yes
43	Lombardy poplar	<i>Populus nigra</i>	4, 4	37.71877295/ -122.1903597	No
44	London plane	<i>Platanus acerifolia</i>	14	37.71924276/ -122.1909566	No
45	Eucalyptus sp.	<i>Eucalyptus sp.</i>	4, 8, 4, 6, 5, 4, 6	37.71929761/ -122.1910079	No

**TABLE G-3. CITY OF OAKLAND PROTECTED TREES WITHIN THE PLANT BSA**

<b>Tree Number</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>dbh (inches)<sup>/a/</sup></b>	<b>Location (lat./long.)<sup>/b/</sup></b>	<b>Located Within Detailed Study Area?</b>
46	London plane	<i>Platanus acerifolia</i>	14	37.71944267/ -122.1912199	No
47	Olive	<i>Olea europea</i>	15	37.71970123/ -122.191561	No

BSA: Biological Study Area

Dbh: diameter at breast height

lat.: latitude

long.: longitude

/a/ Multiple dbh values indicate trees with multiple trunks.

/b/ Global positioning system coordinates are in the North American Datum (1983).