

Appendix B
**Special Status Species with Potential to Occur in
the Study Area**

Table BIO-1. Special-Status Plant Species with Potential to Occur in the Study Area

Common and Scientific Names	Status^a Federal/ State/CNPS	Distribution	Preferred Habitats	Blooming Period	Potential for Occurrence in the Study Area
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	-/-/1B.2	Inner North Coast Ranges, San Francisco Bay Area, west-central Great Valley	Coastal bluff scrub, valley and foothill grasslands, cismontane woodlands; 10–1,650 feet	March–June	No suitable habitat present in study area
Alkali milk-vetch <i>Astragalus tener</i> var. <i>tener</i>	-/-/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, east San Francisco Bay Area	Playas, on adobe clay in valley and foothill grassland, vernal pools on alkaline soils; below 200 feet	March–June	No suitable habitat present in study area
San Joaquin spearscale <i>Atriplex joaquiniana</i>	-/-/1B.2	West edge of Central Valley from Glenn to Tulare Counties	Alkali grassland, alkali meadow, alkali scrub, and saltbush scrub, below 2,750 feet	April–October	No suitable habitat present in study area
Round-leaved filaree <i>California macrophyllum</i>	-/-/1B.1	Scattered occurrences in the Great Valley, southern North Coast Ranges, San Francisco Bay Area, South Coast Ranges, Channel Islands, Transverse Ranges, and Peninsular Ranges	Cismontane woodland, valley and foothill grassland on clay soils; 50–3,950 feet	March–May	No suitable habitat present in study area
Bristly sedge <i>Carex comosa</i>	-/-/2.1	Scattered occurrences throughout California; Oregon, Washington	Coastal prairie, marshes and swamps at lake margins, valley and foothill grassland; below 2,050 feet	May–September	No suitable habitat present in study area
San Francisco Bay spineflower <i>Chorizanthe</i> <i>cuspidata</i> var. <i>cuspidata</i>	-/-/1B.2	Coastal central California, from Sonoma to San Mateo Counties	Sandy areas in coastal bluff scrub, coastal dunes, coastal prairie, and coastal scrub; below 700 feet	April–July (August)	No suitable habitat present in study area
Robust spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i>	E/-/1B.1	Coastal central California, from Marin to Monterey Counties	Sandy or gravelly areas in coastal scrub, coastal dunes, and openings in cismontane woodland; below 1,000 feet	April–September	No suitable habitat present in study area
Point Reyes bird's-beak <i>Cordylanthus</i> <i>maritimus</i> ssp. <i>palustris</i>	-/-/1B.1	Coastal northern California, from Humboldt to Santa Clara Counties; Oregon	Coastal salt marsh; below 30 feet	June–October	No suitable habitat present in study area
Blue coast gilia <i>Gilia capitata</i> ssp. <i>chamissonis</i>	-/-/1B.1	Coastal California from Sonoma County to San Francisco County	Coastal dunes, coastal scrub; below 650 feet	April–July	No suitable habitat present in study area

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Seaside tarplant <i>Hemizonia congesta</i> <i>ssp. congesta</i>	-/-/1B.2	Mendocino, Marin, San Francisco, San Mateo, Sonoma Counties	Valley and foothill grassland, sometimes roadsides; 65–1850 feet	April–November	No suitable habitat present in study area
Santa Cruz tarplant <i>Holocarpha macradenia</i>	T/E/1B.1	Coastal slope of the Santa Cruz Mountains, Monterey and Santa Cruz Counties	Coastal terrace grasslands, coastal scrub, often on light sandy to sandy clay soils; 30–720 feet	June–October	No suitable habitat present in study area
Kellogg's horkelia <i>Horkelia cuneata</i> <i>ssp. sericea</i>	-/-/1B.1	Coastal California from San Mateo to Santa Barbara Counties, formerly farther north	Openings in closed-cone coniferous forest, coastal scrub, maritime chaparral, on sandy or gravelly soils; 30–650 feet	April–September	No suitable habitat present in study area
Beach layia <i>Layia carnosa</i>	E/E/1B.1	Scattered occurrences along coastal California from Humboldt to Monterey Counties, formerly to Santa Barbara County	Coastal dunes, coastal scrub on sandy soil; below 200 feet	March–July	No suitable habitat present in study area
Rose leptosiphon <i>Leptosiphon rosaceus</i>	-/-/1B.1	Coastal California from Marin to San Mateo Counties; known now from one occurrence near Pacifica	Coastal bluff scrub; below 330 feet	April–July	No suitable habitat present in study area
Choris' popcorn-flower <i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	-/-/1B.2	Southwest San Francisco Bay Area, northern Central Coast: Santa Cruz, San Francisco and San Mateo Counties	Mesic sites in chaparral, coastal prairie, coastal scrub; 50–525 feet	March–June	No suitable habitat present in study area
Adobe sanicle <i>Sanicula maritima</i>	-/R/1B.1	Coastal Monterey and San Luis Obispo Counties; historically known from the San Francisco Bay area in Alameda* and San Francisco* Counties	Moist clay, serpentinite or ultramafic soils, in meadows and seeps, chaparral, coastal prairie, Valley and foothill grassland; 100–800 feet	February–May	No suitable habitat present in study area
Saline clover <i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	-/-/1B.2	Sacramento Valley, central western California	Salt marsh, mesic alkaline areas in Valley and foothill grasslands, vernal pools, marshes and swamps; below 1000 feet	April–June	No suitable habitat present in study area

Notes:

* = Extirpated from this county.

This table does not include any special-status plant species that occur in habitats not present in the study area (e.g., dunes, vernal pool, marsh).

^a Status explanations:

Federal

- E = listed as endangered under the federal Endangered Species Act.
- T = listed as threatened under the federal Endangered Species Act.
- = No status definition.

State

- E = listed as endangered under the California Endangered Species Act.
- R - listed as rare under the California Native Plant Protection Act.
- = No status definition.

California Native Plant Society

- 1A = List 1A species: presumed extinct in California.
- 1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
- 2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

CNPS Code Extensions:

- .1 = seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2 = fairly endangered in California (20- 80% of occurrences threatened)

Table BIO-2. Special-Status Wildlife Species with Potential to Occur in the Study Area

Common and Scientific Name	Status Federal/State	California Distribution	Habitats	Occurrence in Study Area
Birds				
California brown pelican <i>Pelecanus occidentalis californicus</i>	D/E	Present along the entire coastline, but does not breed north of Monterey County; extremely rare inland	Typically in littoral ocean zones, just outside the surf line; nests on offshore islands	High. Species forages within the open bay portion of the study area and could use the pier and other structures for resting areas. Species uses Breakwater Island.
Northern harrier <i>Circus cyaneus</i>	--/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations	Grasslands, meadows, marshes, and seasonal and agricultural wetlands	Moderate- High. Species may forage in ruderal grasslands in the study area; no nesting habitat in study area but utilizes land portion of proposed refuge area
Golden eagle <i>Aquila chrysaetos</i>	PR/SSC, FP	Foothills and mountains throughout California. Uncommon nonbreeding visitor to lowlands such as the Central Valley	Nest on cliffs and escarpments or in tall trees overlooking open country. Forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals	No-Low Potential. Species unlikely to forage in ruderal grasslands in the study area; no nesting habitat exists in study area.
Bald eagle <i>Haliaeetus leucocephalus</i>	D/E	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, stream, or the ocean	Low Potential. Species may forage within the open bay portion of the study area but this is unlikely.

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Common and Scientific Name	Status	California Distribution	Habitats	Occurrence in Study Area
Swainson's hawk <i>Buteo swainsoni</i>	--/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields	No Potential. Ranges in Central Valley and highly unlikely to utilize study area foraging or nesting.
White-tailed kite <i>Elanus leucurus</i>	--/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Moderate. Species may forage in ruderal grasslands in the study area; no nesting habitat in study area.
California clapper rail <i>Rallus longirostris</i> obsoletus	E/E, FP	Marshes around the San Francisco Bay and east through the Delta to Suisun Marsh	Restricted to salt marshes and tidal sloughs; usually associated with heavy growth of pickle-weed; feeds on mollusks removed from the mud in sloughs	No Potential. Small patches of pickleweed in the study area would not support this species.
California black rail <i>Laterallus</i> <i>jamaicensis coturniculus</i>	--/T, FP	Permanent resident in the San Francisco Bay and east-ward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations	No Potential. Small patches of pickleweed in the study area would not support this species.
Western snowy plover (coastal populations) <i>Charadrius</i> <i>alexandrinus nivosus</i> (nesting)	T/SSC	Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent	Medium - High Potential. Study area near proposed facility locations lacks foraging or nesting habitat but species is known from land portion of the proposed refuge.
Black skimmer <i>Rynchops niger</i> (nesting colony)	--/SSC	Common summer resident at the Salton Sea; colony of permanent residents on the south end of San Diego Bay	Nests on gravel bars and sandy beaches; forages in shallow, calm waters	No-Low Potential. Study area lacks foraging or nesting habitat.
California least tern <i>Sterna antillarum</i> (nesting colony)	E/E	Nests on beaches along the San Francisco Bay and along the southern California coast from southern San Luis Obispo County south to San Diego County	Nests on sandy, upper ocean beaches, and occasionally uses mudflats; forages on adjacent surf line, estuaries, or the open ocean	High. Species known to nest 1 miles from proposed facility location at the proposed refuge location; may forage in open bay portion of study area.
Western burrowing owl	--/SSC	Lowlands throughout California, including the	Level, open, dry, heavily	No-Low Potential. Ruderal areas at the proposed

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Common and Scientific Name	Status	California Distribution	Habitats	Occurrence in Study Area
<i>Athene cunicularia hypugea</i>		Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast	grazed or low stature grassland or desert vegetation with available burrows	facility location do not contain available burrows or other nesting substrates; species unlikely to forage in study area because area consists mostly of concrete.
Short-eared owl <i>Asio flammeus</i>	--/SSC	Permanent resident along the coast from Del Norte County to Monterey County although very rare in summer north of San Francisco Bay, in the Sierra Nevada north of Nevada County, in the plains east of the Cascades, and in Mono County; small, isolated populations	Freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts	No-Low Potential. Species unlikely to forage in study area; non-nesting habitat in study area.
Mammals				
Suisun ornate shrew <i>Sorex ornatus sinuosus</i>	--/SSC	Restricted to San Pablo Bay and Suisun Bay, both in Solano County	Tidal, salt, and brackish marshes containing pickleweed, grindelia, bulrushes, or cattails; requires driftwood or other objects for nesting cover	No Potential. Small patches of pickleweed in the study area would not support this species.
Salt marsh vagrant (wandering) shrew <i>Sorex vagrans halicoetes</i>	--/SSC	Restricted to southern and northwestern San Francisco Bay	Mid-elevation salt marsh habitats with dense growths of pickleweed; requires driftwood and other objects for nesting cover	No Potential. Small patches of pickleweed in the study area would not support this species.
Western red bat <i>Lasiurus blossevillii</i>	--/SSC	Scattered throughout much of California at lower elevations	Found primarily in riparian and wooded habitats. Occurs at least seasonally in urban areas. Day roosts in trees within the foliage. Found in fruit orchards and sycamore riparian habitats in the Central Valley	No-Low Potential. Unlikely to utilize study area for foraging or roosting.
Townsend's big-eared bat <i>Corynorhinus townsendii townsendii</i>	--/SSC	Coastal regions from Del Norte County south to Santa Barbara County	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings. Very sensitive to disturbances and may abandon a roost after one onsite visit	No-Low Potential. Unlikely to utilize study area for foraging or roosting.
Pallid bat	--/SSC	Occurs throughout California except the high	Occurs in a variety of	No-Low Potential. Unlikely to utilize study area for

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<i>Antrozous pallidus</i>		Sierra from Shasta to Kern County and the northwest coast, primarily at lower and mid elevations	habitats from desert to coniferous forest. Most closely associated with oak, mixed conifer, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts but also uses caves, mines, bridges, and buildings.	foraging or roosting.
Big free-tailed bat <i>Nyctinomops macrotis</i>	--/SSC	Distribution in California is uncertain because occurrences are very rare; most likely to be found in southern California, but has been recorded in Berkeley, Alameda County	Inhabits arid, rocky areas; roosts in crevices in cliffs	No-Low Potential. Unlikely to utilize study area for foraging or roosting.
Western mastiff bat <i>Eumops perotis californicus</i>	--/SSC	Occurs along the western Sierra primarily at low to mid elevations and widely distributed throughout the southern coast ranges. Recent surveys have detected the species north to the Oregon border	Found in a wide variety of habitats from desert scrub to montane conifer. Roosts and breeds in deep, narrow rock crevices, but may also use crevices in trees, buildings, and tunnels	No-Low Potential. Unlikely to utilize study area for foraging or roosting.
Salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	E/E, FP	San Francisco, San Pablo, and Suisun Bays; the Delta	Salt marshes with a dense plant cover of pickle-weed and fat hen; adjacent to an upland site	No Potential. Small patches of pickleweed in the study area would not support this species.
Southern sea otter <i>Enhydra lutris nereis</i>	T/ FP	Occurs approximately from the vicinity of Half Moon Bay south to Gaviota, California. Approximately 20 otters, including pups, are at San Nicolas Island as a result of translocation efforts to establish an experimental population	Coastal waters, typically within 1 kilometer of shoreline. Often associated with kelp beds	Low. Species may occasionally forage in the study area but unlikely to frequent the study area due to the lack of kelp beds.
Fish				
Green sturgeon (southern DPS) <i>Acipenser medirostris</i>	T/SSC	Sacramento, Klamath and Trinity Rivers (Moyle 2002)	Spawn in large river systems with well-oxygenated water, with temperatures from 8.0 to 14° C	Moderate. Species may forage in the study area.

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Tidewater goby <i>Eucyclogobius newberryi</i>	E/SSC	Occur in lagoons of coastal streams from the Smith River (Del Norte County), to the south in Agua Hedionda Lagoon (San Diego County). Extirpated from San Francisco Bay (Moyle 2002).	Coastal lagoons along California. Prefer water with high dissolved oxygen levels and salinities less than 10 parts per thousand (Moyle 2002).	No Potential. No habitat in study area.
Delta smelt <i>Hypomesus transpacificus</i>	T/T	Primarily in the Sacramento–San Joaquin Estuary, but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand. (Moyle 2002.)	No Potential. No habitat in study area.
Longfin smelt <i>Spirinchus thaleichthys</i>	T/SSC	Within California, mostly in the Sacramento River–San Joaquin River Delta, but also in Humboldt Bay, Eel River estuary, and Klamath River estuary.	Salt or brackish estuary waters with freshwater inputs for spawning.	Moderate. Species may forage in the study area.
Central California coast coho salmon <i>Oncorhynchus kisutch</i>	E/E	Includes naturally spawned populations 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	Occur in coastal streams with water temperatures < 15° C. Need cool, clear water with instream cover. Spawn in tributaries to large rivers or streams directly connected to the ocean (Moyle 2002).	No Potential. No habitat in study area.
Central California coast steelhead <i>Oncorhynchus mykiss</i>	T/--	Russian River to Soquel Creek, Santa Cruz Co.	Cold, clear water with clean gravel of appropriate size for spawning. Most spawning occurs in headwater streams.	Moderate. Species may migrate through the study area.
Central Valley steelhead <i>Oncorhynchus mykiss</i>	T/--	Sacramento River and tributary Central Valley rivers	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18° C (Moyle 2002). Habitat types are riffles, runs, and pools.	No-Low Potential. Unlikely to utilize project area for migration.
Sacramento River winter-run Chinook salmon	E/E	Mainstem Sacramento River below Keswick Dam (Moyle 2002)	Occurs in well-oxygenated, cool, riverine habitat with	No-Low Potential. Unlikely to utilize project area for migration.

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<i>Oncorhynchus tshawytscha</i>			water temperatures from 8.0 to 12.5° C. Habitat types are riffles, runs, and pools. (Moyle 2002.)	
Central Valley spring-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	T/T	Upper Sacramento River and Feather River	Has the same general habitat requirements as winter-run Chinook salmon. Coldwater pools are needed for holding adults (Moyle 2002).	No-Low Potential. Unlikely to utilize project area for migration.
Pacific herring <i>Clupea pallasii</i>	--/SSC	Along California coast to northern Baja California (Love 1996)	Spawning occurs from San Francisco Bay to San Diego Bay. January and February are peak spawning months but can start early October and continue to April. Adults move into quiet bays and estuaries and spawning occurs in shallow, intertidal waters down to 36 feet (Love 1996).	Moderate. Species could spawn and rear in the project area.

Status explanations:

Federal		
E	=	Listed as endangered under the federal Endangered Species Act.
T	=	Listed as threatened under the federal Endangered Species Act.
D	=	Delisted.
PE	=	Proposed for federal listing as endangered under the federal Endangered Species Act.
PT	=	Proposed for federal listing as threatened under the federal Endangered Species Act.
C	=	Species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.
--	=	No listing.
State		
E	=	Listed as endangered under the California Endangered Species Act.
T	=	Listed as threatened under the California Endangered Species Act.
FP	=	Fully protected under the California Fish and Game Code.
SSC	=	Species of special concern in California.
--	=	No listing.