Appendix BIO
Biological Resources Supporting Information (revised)

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Biological Resources Supporting Information

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- H.T. Harvey and Associates, 2019. Memorandum from Jeff Smith, Ph.D., Senior Raptor Ecologist, and Scott Terrill, Ph.D., Senior Ornithologist to Crescentia Brown, ESA, entitled, "Oakland A's Stadium Fireworks and Potential for Peregrine Falcon Disturbance." Project #4294-01, October 10, 2019.

TABLE BIO-1
SPECIAL-STATUS OR OTHERWISE PROTECTED PLANT SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name ***Scientific Name***	**Federal Status**	**State Status**	**CRPR Ranking**	**Habitat Description / Blooming Period**	**Potential to Occur in the Study Area**
Plant Species Listed or Proposed for Listing					
Pallid manzanita *Arctostaphylos pallida*	FT	CE	1B.1	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub. Requires fire for reproduction. 185-465 m. December – March	**No Potential**. This species is not expected as there is no suitable habitat on site
Robust spineflower *Chorizanthe robusta var. robusta*	FE	--	1B.1	Sandy or gravelly coastal dunes, coastal scrub, cismontane woodland and maritime chaparral. 3-300 m. April – September	**No Potential**. This species is not expected as there is no suitable habitat on site
Presidio clarkia *Clarkia franciscana*	FE	CE	1B.1	Serpentine outcrops in coastal scrub, and valley and foothill grassland. 25-335 m. May – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Santa Cruz tarplant *Holocarpha macradenia*	FT	CE	1B.1	Coastal prairie, valley and foothill grassland. Found on light, sandy soil or sandy clay; often with non-natives. 10-260 m. June – October	**No Potential**. This species is not expected as there is no suitable habitat on site
Contra Costa goldfields *Lasthenia conjugens*	FE	--	1B.1	Valley and foothill grassland, vernal pools, cismontane woodland, swales, low depressions, in open grassy areas. 1-445 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site
Beach layia *Layia carnosa*	FE	CE	1B.1	Sand dunes and coastal strand. 0-60 m. March – July	**No Potential**. This species is not expected as there is no suitable habitat on site
San Francisco popcornflower *Plagiobothrys diffusus*	--	CE	1B.1	Coastal prairie, and valley and foothill grasslands. 60-360 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site
Adobe sanicle *Sanicula maritima*	--	Rare	1B.1	Moist clay or ultramafic soil in chaparral, coastal prairie, meadows, seeps, and valley and foothill grassland. 30-240 m. February – May	**No Potential**. This species is not expected as there is no suitable habitat on site
California seablite *Suaeda californica*	FE	--	1B.1	Coastal salt marshes and swamps. 0-15 m. July – October	**No Potential**. This species is not expected as there is no suitable habitat on site
California Rare Plant Ranked Species					
Bent-flowered fiddleneck *Amsinckia lunaris*	--	--	1B.2	Coastal bluff scrub, cismontane woodland, and valley and foothill grassland. 3-500 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED PLANT SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	CRPR Ranking	Habitat Description / Blooming Period	Potential to Occur in the Study Area
California Rare Plant Ranked Species (cont.)					
California androsace *Androsace elongata* ssp. *acuta*	--	--	4.2	Slopes within chaparral, foothill woodland, northern coastal scrub, and coastal sage scrub. 150-1305 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site
Alkali milk-vetch *Astragalus tener var. tener*	--	--	1B.2	Alkali flats, flooded grassland, playas and vernal pools. 1-60 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site
big-scale balsamroot *Balsamorhiza macrolepis*	--	--	1B.2	Chaparral, cismontane woodland, and valley and foothill grassland; sometimes serpentine. 45-1555 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site
Mt. Diablo fairy-lantern *Calochortus pulchellus*	--	--	1B.2	Chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. 30-840 m. April – June	**No Potential**. This species is not expected as there is no suitable habitat on site
Oakland star-tulip *Calochortus umbellatus*	--	--	4.2/LS	Broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/often serpentine. 100-700m. Blooms March – May	**No Potential**. This species is not expected as there is no suitable habitat on site
coastal bluff morning-glory *Calystegia purpurata* ssp. *saxicola*	--	--	1B.2	Coastal dunes and coastal scrub. 15-105 m. April – September	**No Potential**. This species is not expected as there is no suitable habitat on site
Bristly sedge *Carex comosa*	--	--	2B.1	Lake margins, marshes, swamps, coastal prairie, and valley and foothill grasslands. 0-625 m. May – September	**No Potential**. This species is not expected as there is no suitable habitat on site
Johnny-nip *Castilleja ambigua var. ambigua*	--	--	4.2	Wet sites in coastal bluff scrub, coastal prairie, marshes and swamps, valley and foothill grassland, and at the margins of vernal pools. 0-435 m. March – August	**No Potential**. This species is not expected as there is no suitable habitat on site
Congdon's tarplant *Centromadia parryi ssp. congdonii*	--	--	1B.1	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 1-230 m. April – October	**No Potential**. This species is not expected as there is no suitable habitat on site
Point Reyes bird's-beak *Chloropyron maritimum ssp. palustre*	--	--	1B.2	Coastal salt marshes and swamps. 0-10 m. June – October	**No Potential**. This species is not expected as there is no suitable habitat on site

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED PLANT SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	CRPR Ranking	Habitat Description / Blooming Period	Potential to Occur in the Study Area
California Rare Plant Ranked Species (cont.)					
San Francisco spineflower *Chorizanthe cuspidata var. cuspidata*	--	--	1B.2	Sandy terraces and slopes of coastal bluff scrub, coastal dunes, coastal prairie and coastal scrub. 3-215 m. April – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	--	--	2B.1	Marshes and swamps in coastal areas, fresh or brackish water. 0-200 m. July – September	**No Potential**. This species is not expected as there is no suitable habitat on site
Franciscan thistle *Cirsium andrewsii*	--	--	1B.2	Coastal bluff scrub, coastal prairie, coastal mesic scrub, and broadleaf upland forest; sometimes on serpentine soils; often associated with seeps. 0-150 m. March – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Santa Clara red ribbons *Clarkia concinna* ssp. *automixa*	--	--	4.3	Chaparral and cismontane woodland. 90-1500 m. May – June	**No Potential**. This species is not expected as there is no suitable habitat on site
Western leatherwood *Dirca occidentalis*	--	--	1B.2	Broadleaf upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian for and woodland. on brushy slopes, mesic sites; mostly in mixed evergreen and foothill woodland communities. 25-425 m. January – March	**No Potential**. This species is not expected as there is no suitable habitat on site
Tiburon buckwheat *Eriogonum luteolum* var. *caninum*	--	--	1B.2	Chaparral, valley and foothill grassland, cismontane woodland, coastal prairie. Found on serpentine soils; sandy to gravelly sites. 0-700 m. May – September	**No Potential**. This species is not expected as there is no suitable habitat on site
Jepson's coyote-thistle *Eryngium jepsonii*	--	--	1B.2	Valley and foothill grassland and vernal pools. 3-300 m. April – August	**No Potential**. This species is not expected as there is no suitable habitat on site
San Joaquin spearscale *Extriplex joaquinana*	--	--	1B.2	Chenopod scrub, meadows and seeps, playas, and valley and foothill grassland. 1-835 m. April – October	**No Potential**. This species is not expected as there is no suitable habitat on site
Minute pocket moss *Fissidens pauperculus*	--	--	1B.2	North coast coniferous forest in damp, coastal soil. 10-1024 m.	**No Potential**. This species is not expected as there is no suitable habitat on site
Fragrant fritillary *Fritillaria liliacea*	--	--	1B.2	On clay, often serpentine derived soils in coastal scrub, grassland, and coastal prairie. 3-410 m. February – April	**No Potential**. This species is not expected as there is no suitable habitat on site

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED PLANT SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	CRPR Ranking	Habitat Description / Blooming Period	Potential to Occur in the Study Area
California Rare Plant Ranked Species (cont.)					
Blue coast gilia *Gilia capitata ssp. chamissonis*	--	--	1B.1	Coastal dunes and scrub. 2-200 m. April – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Dark-eyed gilia *Gilia millefoliata*	--	--	1B.2	Coastal dunes. 2-30 m. April – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Diablo helianthella *Helianthella castanea*	--	--	1B.2	On rocky soils in broadleaf upland forest, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. 60-1300 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site
White seaside (=congested-headed hayfield) tarplant *Hemizonia congesta ssp. congesta*	--	--	1B.2	Grassy valleys and hills, often on fallow fields in coastal scrub. 2-560 m. April – November	**No Potential**. This species is not expected as there is no suitable habitat on site
Water star-grass *Heteranthera dubia*	--	--	2B.2	Marshes and swamps (alkaline, still or slow-moving water). 30-1495 m. July – October	**No Potential**. This species is not expected as there is no suitable habitat on site
Loma Prieta hoita *Hoita strobilina*	--	--	1B.1	Chaparral, cismontane woodland, riparian woodland. Serpentine and mesic sites. 30-860 m. May – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Kellogg's horkelia *Horkelia cuneata ssp. sericea*	--	--	1B.1	Coastal scrub, dunes, and openings of closed-cone coniferous forests. 10-200 m. February – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Coast iris *Iris longipetala*	--	--	4.2	Coastal prairie, lower montane coniferous forest, meadows and seeps, mesic sites. 0-600 m. March – May	**No Potential**. This species is not expected as there is no suitable habitat on site
Carquinez goldenbush *Isocoma arguta*	--	--	1B.1	Valley and foothill grassland in alkaline soils. 1-20 m. August – December	**No Potential**. This species is not expected as there is no suitable habitat on site
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	--	--	1B.2	Marshes and swamps with brackish and fresh water. 0-5 m. May – July	**No Potential**. This species is not expected as there is no suitable habitat on site
bristly leptosiphon *Leptosiphon acicularis*	--	--	4.2	Chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland. 55-1500 m. April – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Rose Leptosiphon *Leptosiphon rosaceus*	--	--	1B.1	Coastal bluff scrub. 0-100 m. April – July	**No Potential.** This species is not expected as there is no suitable habitat on site.
Oregon meconella *Meconella oregana*	--	--	1B.1	Coastal prairie, coastal scrub in open, moist places. 250-500 m. March – April	**No Potential**. This species is not expected as there is no suitable habitat on site

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED PLANT SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	CRPR Ranking	Habitat Description / Blooming Period	Potential to Occur in the Study Area
California Rare Plant Ranked Species (cont.)					
Mt. Diablo cottonweed *Micropus amphibolus*	--	--	3.2	Valley grassland, foothill woodland, and mixed evergreen forest with an affinity to serpentine soils. 45-825 m. March – May	**No Potential**. This species is not expected as there is no suitable habitat on site
San Antonio Hills Monardella *Monardella antonina* ssp. *antonina*	--	--	3	Chaparral and cismontane woodland. 320-1000 m. June – August	**No Potential**. This species is not expected as there is no suitable habitat on site
Woodland woolythreads *Monolopia gracilens*	--	--	1B.2	Serpentine soils in broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland. 100-1200 m. March – July	**No Potential**. This species is not expected as there is no suitable habitat on site
Choris's popcorn-flower *Plagiobothrys chorisianus* var. *chorisianus*	--	--	1B.2	Mesic sites in chaparral, coastal scrub, and coastal prairie. 3-160 m. March – June	**No Potential**. This species is not expected as there is no suitable habitat on site.
Marin knotweed *Polygonum marinense*	--	--	3.1	Marshes and swamps with coastal salt or brackish water. 0-10 m. May – August	**No Potential**. This species is not expected as there is no suitable habitat on site
Lobb's aquatic buttercup *Ranunculus lobbii*	--	--	4.2	Cismontane woodland, north coast coniferous forest, valley and foothill grassland, and vernal pools. 15-470 m. February – May	**No Potential**. This species is not expected as there is no suitable habitat on site
Long-styled sand-spurry *Spergularia macrotheca* var. *longistyla*	--	--	1B.2	Meadows and seeps, marshes and swamps in alkaline areas. 0-255 m. February – May	**No Potential**. This species is not expected as there is no suitable habitat on site
Most beautiful jewel-flower *Streptanthus albidus* ssp. *peramoenus*	--	--	1B.2	Chaparral, valley and foothill grassland, cismontane woodland, serpentine outcrops, and on ridges and slopes. 120-730 m. April – September	**No Potential**. This species is not expected as there is no suitable habitat on site
Slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	--	--	2B.2	Marshes and swamps, in shallow, clear water of lakes and drainage channels. 15-2,310 m. May – July	**No Potential**. This species is not expected as there is no suitable habitat on site
San Francisco owl's clover *Triphysaria floribunda*	--	--	1B.2	Usually serpentinite coastal prairie, valley grasslands, and coastal scrub. 10-160 m. April – June	**No Potential**. This species is not expected as there is no suitable habitat on site
Saline clover *Trifolium hydrophilum*	--	--	1B.2	Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 0-300 m. April – June	**No Potential**. This species is not expected as there is no suitable habitat on site

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED PLANT SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	CRPR Ranking	Habitat Description / Blooming Period	Potential to Occur in the Study Area
California Rare Plant Ranked Species (cont.)					
Oval-leaved viburnum *Viburnum ellipticum*	--	--	2B.3	Chaparral, cismontane woodland, and lower montane coniferous forest. 215-1400 m. May – June	**No Potential**. This species is not expected as there is no suitable habitat on site

NOTES:

* The Project study area for terrestrial biological resources includes the Project site and landside areas adjacent to the Project site with similar habitat composition that includes developed or paved areas with long-standing industrial uses.

The "Potential for Effect" category is defined as follows:

Present = Species was observed during reconnaissance or focused surveys of the project area.

High = Species is expected to occur, habitat meets species requirements and is of moderate or high quality, and the study area is within the known species range.

Moderate = Habitat is marginally suitable (i.e. of low or moderate quality) and the study area is within the known range of the species, even though the species was not observed during biological surveys.

Low = Habitat does not meet species requirements as currently understood in the scientific community or the site is not within a species' geographic range.

No Potential = Habitat does not meet species requirements or the species is presumed to be extirpated from the project area or region based on the best scientific information available.

FESA = Federal Endangered Species Act, CESA = California Endangered Species Act,
CNDDB = California Natural Diversity Database

STATUS CODES:

Federal: U.S. Fish and Wildlife Service (USFWS)
FE = Listed as "endangered" under the FESA
FT = Listed as "threatened" under the FESA
FPD = Proposed delisted
FD = Delisted

State: California Department of Fish and Wildlife (CDFW)
CE = Listed as "endangered" under the CESA
CT = Listed as "threatened" under the CESA
CSC = CDFW designated "species of special concern"
CFP = CDFW designated "fully protected"
SC = CDFW designated "candidate threatened"
WL = CDFW designated "watch list"

California Rare Plant Rank (CRPR):
Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants presumed extirpated in California, but more common elsewhere.
Rank 2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
Rank 3 = Plants about which we need more information – a review list
Rank 4 = Plants of limited distribution – a watch list
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.

SOURCE:

CDFW, 2019. California Natural Diversity Database (CNDDB) Rarefind version 5 query of the Oakland West, Oakland East, Hunters Point, Richmond, Briones Valley and San Leandro USGS 7.5-minute topographic quadrangles, Commercial Version. Accessed February 4, 2019.

California Native Plant Society (CNPS), Inventory of Rare and Endangered Plants for Oakland West, Oakland East, Hunters Point, Richmond, Briones Valley and San Leandro USGS 7.5-minute topographic quadrangles, http://www.rareplants.cnps.org/, accessed February 21, 2019.

U.S. Fish and Wildlife Service (USFWS), 2019. My Project, IPaC Trust Resource Report and Official Species List of Federally Endangered and Threatened Species that may occur in the Oakland Waterfront Ballpark District Project location, and/or may be affected by the proposed project, February 4, 2019.

TABLE BIO-2
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	Habitat Description / Blooming Period	Potential to Occur in the Study Area
Species Listed or Proposed for Listing				
Invertebrates				
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE	--	Coastal scrub or grassland on rocky outcrops with broadleaf stonecrop (*Sedum spathulifolium*).	**No Potential.** Three known populations occur at San Bruno Mountain, Montara, and Pacifica on the San Francisco Peninsula. Suitable habitat containing host plants for this species are not found in the study area; therefore this species is not expected on site.
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	--	Serpentine grasslands with larval host plants dwarf plantain (*Plantago erectis*) and purple owl's clover (*Castilleja exserta spp. exerta*).	**No Potential.** Suitable habitat containing host plants for this species are not found in the study area; therefore this species is not expected on site.
Reptiles				
Green sea turtle *Chelonia mydas*	FT	--	Range in the eastern North Pacific Ocean from Baja California to Alaska, most commonly from San Diego South. When in nearshore foraging grounds, turtles feed on seagrasses and algae.	**Low.** Unlikely to occur in San Francisco Bay and Oakland Estuary near the Project site.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT	CT	Restricted to valley-foothill hardwood habitat of the coast ranges between Monterey and north San Francisco Bay. Inhabits south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses.	**No Potential.** Suitable foraging and dispersal habitat is not present in the study area that is almost entirely developed and lacks grasslands with shrubs; therefore, this species is not expected onsite.
Amphibians				
Foothill yellow-legged frog *Rana boylii*	--	SCT, CSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**No Potential.** Suitable stream habitat for this species is not found in Project study area; therefore, this species is not expected onsite.
California red-legged frog *Rana draytonii*	FT	CSC	Freshwater ponds and slow streams with emergent vegetation for egg attachment.	**No Potential.** No suitable breeding or upland dispersal habitat occurs in or near the Project site; therefore, this species is not expected onsite.
Birds				
Golden eagle *Aquila chrysaetos*	BCC	CFP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons and large trees in open areas provide nesting habitat.	**Low (No nesting potential).** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks grassland and large trees; therefore this species is not expected onsite.
Western snowy plover *Charadrius alexandrinus nivosus*	FT	CSC	Sandy beaches, salt pond levels and shores of alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Low (No nesting potential).** The shoreline is armored with riprap and the surrounding area is developed. Beach foraging habitat is not available onsite to attract this species.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name ***Scientific Name***	**Federal Status**	**State Status**	**Habitat Description / Blooming Period**	**Potential to Occur in the Study Area**
Species Listed or Proposed for Listing (continued)				
Birds (cont.)				
White-tailed kite *Elanus leucurus*	--	CFP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Low (No nesting potential).** Suitable foraging and nesting habitat for this species is not found in the project study area which is almost entirely developed and lacks grassland and large trees; therefore, this species is not expected onsite.
American peregrine falcon *Falco peregrines anatum*	FD	CD, CFP	Woodlands, coastal habitats, riparian areas, coastal and inland waters, human made structures that may be used as nest or temporary perch sites.	**High (Potential to nest).** Nesting on the decommissioned cranes of the Project site by the same male peregrine falcon has been documented on an annual basis since 2014 (personal communication Erika Walther).
Bald eagle *Haliaeetus leucocephalus* (nesting and wintering)	FD	CE, CFP	Nests and forages on inland lakes, reservoirs, and rivers.	**Low (No nesting potential).** Unlikely to nest in an urban environment lacking nesting habitat. May forage for fish in the San Francisco Bay and scavenge for carcasses on the shoreline.
California black rail *Laterallus jamaicensis coturniculus*	--	CT, CFP	Salt and brackish marshes; also in freshwater marshes at low elevations.	**No Potential.** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks dense marsh vegetation; therefore this species is not expected onsite.
Brown pelican *Pelecanus occidentalis californicus* (nesting colony and communal roosts)	FD	CD, CFP	Pelagic forager along ocean and bay shorelines whose breeding range extends from the Channel Islands south to Mexico.	**High (No nesting potential).** Forages in the San Francisco Bay. Could loaf on bulkheads in the Project study area and forage in the Oakland Estuary. Communal roost site is located at Alameda Breakwater.
Ridgway's rail *Rallus obsoletus obsoletus*	FE	CE, CFP	Salt marsh wetlands with dense vegetation along the San Francisco Bay.	**No Potential.** Suitable habitat is not present within the study area and the species is not known to travel long distances; therefore this species is not expected on site.
California least tern *Sternula antillarum browni*	FE	CE, CFP	Open beaches free of vegetation along the California coast.	**High (Unlikely to nest).** May intermittently forage in the Oakland Estuary, potentially near the Project site. Active nesting colony on Alameda Island.
Mammals				
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE	CE, CFP	Salt marsh habitat dominated by pickleweed.	**No Potential.** Suitable habitat is not present in the study area that is almost entirely developed and lacks saltmarsh vegetation; therefore this species is not expected onsite.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	Habitat Description / Blooming Period	Potential to Occur in the Study Area
Other Special-Status Species				
Invertebrates				
Monarch butterfly *Danaus plexippus* (overwintering population)	--	--	Eucalyptus groves (wintering sites).	**Low.** No wintering sites have been identified within the study area which contains few eucalyptus trees.
Mimic tryonia (=California brackishwater snail) *Tryonia imitator*	--	--	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County. Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.	**No Potential.** Suitable habitat not found in project area. Historical collection from Lake Merritt in Oakland but believed extirpated from that site.
Reptiles				
Western pond turtle *Actinemys marmorata*	--	CSC	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites often characterized as having gentle slopes with little vegetation or sandy banks.	**No Potential.** Freshwater habitat is not present within or near the study area; therefore this species is not expected on site.
Birds				
Cooper's hawk (*Accipiter cooperii*)	--	WL, §3503.5	Forests, woodlands, and fields. Will also inhabit trees in suburban areas in parks and neighborhoods. Typically nests in riparian growths of deciduous trees and live oak woodlands. Becoming more common as an urban breeder.	**Moderate (Potential to Nest).** Suitable foraging and nesting habitat is present in street trees abutting the Project site and within the study area.
Clark's grebe *Aechmophorus clarkii*	BCC	--	Freshwater lakes and marshes with extensive open water bordered by vegetation. Nest is typically built on floating vegetation hidden among emergent plants. Found in saltwater or brackish water environments like San Francisco Bay during winter.	**Present (No nesting potential).** Regularly observed in open water off-shore of the Project site while foraging in winter.
Tricolored blackbird *Agelaius tricolor* (nesting colony)	BCC	SCE, CSC	Nests in dense colonies within sloughs, swamps, and marshes where tall aquatic vegetation is present. Nests can extend into upland scrub habitat on colony fringes.	**Low (No nesting potential).** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks marsh vegetation. May occur on a transient basis during migration.
Birds				
Great blue heron *Ardea herodias*	--	§3503	Shallow estuaries and fresh and saline emergent wetlands.	**Moderate (No nesting potential).** May forage along the study area shoreline. Nearest rookeries are located at Lake Merritt and on the south side of Alameda Island. This species is not expected to nest on site due to lack of suitable nesting substrate and established rookery sites.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	Habitat Description / Blooming Period	Potential to Occur in the Study Area
Other Special-Status Species (cont.)				
Birds (cont.)				
Black turnstone *Arenaria melanocephala*	BCC	--	Winters in coastal areas with rocky shorelines, jetties, and piers. Breeds in sparsely vegetated coastal meadows of the arctic tundra.	**Low (No nesting potential).** May occur on riprap armoring along the Oakland Estuary within the study area while wintering in the San Francisco Bay Area.
Western burrowing owl *Athene cunicularia* (burrow sites and some wintering grounds)	BCC	CSC, §3503.5	Open grasslands with low or no vegetation where existing rodent burrows occur for occupation.	**No Potential.** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks grasslands with rodent burrows or substitute habitat elements preferred by this species; therefore, this species is not expected onsite.
Oak titmouse *Baeolophus inornatus*	BCC	§3503	Open, dry oak woodlands.	**Low (No nesting potential).** No suitable nesting or foraging habitat is present in the study area that is almost entirely developed and lacks oak trees; therefore this species is not expected on site.
Cackling (=Aleutian Canada) goose *Branta hutchinsii leucopareia* (wintering)	FD	--	Lakes, ponds, and coastal marshes. Occupies turf on steep slopes near rocky coastal areas if California during migration. Breeds in the arctic tundra.	**Low (No nesting potential).** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks marsh vegetation and turf; therefore this species is not expected onsite.
Wrentit *Chamaea fasciata*	BCC	§3503	Dense coastal scrub and chaparral of the west coast. Inland habitat is dense shrubland and thickets.	**Low (Unlikely to nest).** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks dense coastal scrub vegetation; therefore, this species is not expected onsite.
Northern harrier *Circus hudsonius*	--	CSC, §3503	Coastal salt and fresh-water marsh. Nests and forages in grasslands. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Low (No nesting potential).** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks marsh vegetation; therefore this species is not expected onsite.
Yellow rail *Coturnicops noveboracensis*	--	CSC, §3503	Occurs in densely vegetated marshes. Require sedge marshes/meadows with moist soil or shallow standing water for breeding.	**No Potential.** Suitable nesting and foraging habitat is not present in the study area that is almost entirely developed and lacks dense marsh vegetation; therefore this species is not expected onsite.
Red-throated loon *Gavia stellata*	BCC	--	Breeds in lakes and coastal areas of the alpine tundra. Winters in shallow coastal estuaries.	**Moderate (No nesting potential).** Likely to forage in the Oakland Estuary while wintering in San Francisco Bay.
San Francisco common yellowthroat *Geothlypis trichas sinuous*	BCC	CSC, §3503	Forages in various marsh, riparian and upland habitats. Nests on or near the ground in concealed locations.	**Low (No nesting potential).** No suitable nesting or foraging habitat is present in the study area that is almost entirely developed and lacks riparian vegetation; therefore this species is not expected on site.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name ***Scientific Name***	**Federal Status**	**State Status**	**Habitat Description / Blooming Period**	**Potential to Occur in the Study Area**
Other Special-Status Species (cont.)				
Birds (cont.)				
Black oystercatcher *Haematopus bachmani*	BCC	§3503	Rocky shoes along the Pacific coast from the Aleutian Islands to Baja California.	**Moderate (Unlikely to nest).** Individuals may forage among the riprap along the western shoreline of the Project site. Not expected to nest within the Project site due to the lack of suitable habitat.
California gull *Larus californicus*	--	WL, §3503	Colonial nester, sometimes with other bird species. Breeds primarily at lakes and marshes in interior western North America from Canada south to eastern California and Colorado. Birds that breed inland are migratory, most moving to the Pacific coast in winter.	**Present (Unlikely to nest).** Breeds in large numbers at Brooks Island and the salt ponds of south San Francisco Bay. May forage off-shore of the study area.
Western gull *Larus occidentalis*	--	§3503	Colonial nester on offshore islands or piers, sometimes with seabirds.	**Present (Potential to nest).** Breeds in San Francisco Bay Area. May forage within the study area and nest on building roofs of the study area.
Short-billed dowitcher *Limnodromus griseus*	BCC	§3503	Saltwater tidal flats, beaches, and salt marshes during migration.	**Low (No nesting potential).** Common winter migrant to San Francisco Bay Area. Suitable beach foraging habitat is not present in the Project site though this species could occur in the study area during low tide events.
Marbled godwit *Limosa fedoa*	BCC	§3503	Shoreline mudflats and beaches.	**Low (No nesting potential).** Common winter migrant to the San Francisco Bay Area. Suitable foraging habitat is not present in the Project site though this species could occur in the study area during low tide events.
Suisun song sparrow *Melospiza melodia maxillaris*	--	CSC, §3503	Resident of salt marshes bordering Suisun Bay from Martinez eastward along the south bayshore to Pittsburg, and within the Suisun marshlands north of the Bay. Inhabits pickleweed marshes; nests low in Grindelia (high enough to escape high tides) and in pickleweed. Will also forage in non-tidal seasonal wetlands, riparian areas, and drainages.	**Low (No nesting potential).** No suitable saltmarsh vegetation for nesting or foraging is present in the study area that is almost entirely developed; therefore this species is not expected on site.
Alameda song sparrow *Melospiza melodia pusillula*	--	CSC, §3503	Salt marshes of eastern and south San Francisco Bay.	**Low (No nesting potential).** No suitable saltmarsh vegetation for nesting or foraging is present in the study area that is almost entirely developed; therefore this species is not expected on site.
Long-billed curlew *Numenius americanus*	BCC	WL, §3503	Breeds in upland shortgrass prairies and wet meadows in northeastern California in gravelly soils. Winter visitor to the San Francisco Bay Area.	**Low (No nesting potential).** Unlikely to occur even during low tide events within the study area due to limited sandy areas for foraging.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	Habitat Description / Blooming Period	Potential to Occur in the Study Area
Other Special-Status Species (cont.)				
Birds (cont.)				
Whimbrel *Numenius phaeopus*	BCC	§3503	Saltwater tidal flats, beaches, and salt marshes during migration.	**Low (No nesting potential).** Unlikely to occur event during low tide events within the study area due to limited foraging habitat for this species.
Black-crowned night heron *Nycticorax nycticorax*	--	§3503	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	**Moderate (Potential to nest).** Known to nest in street trees of Oakland near downtown and Lake Merritt. Sycamore trees of the study area could support nesting or communal roosting.
Osprey *Pandion haliaetus*	--	WL, §3503	Habitat varies greatly and usually includes adequate supply of accessible fish, shallow waters, open and elevated nest sites (10-60 feet in height), and artificial structures such as towers. Builds large platform stick nests near or in open waters.	**High (Potential to nest).** Known to forage in San Francisco Bay and nested at Alameda Point Seaplane Lagoon in 2018 (Bangert, 2018). Decommissioned crane and other similar inactive industrial structures of the Project site and larger study area provide potential nesting sites for this species.
Double-crested cormorant *Phalacrocorax auritus*	--	WL, §3503	Rookery breeder in coastal areas and inland lakes in fresh, saline, and estuarine waters.	**High (Potential to nest).** Abundant in San Francisco Bay. May forage off-shore of the study area and nest on the decommissioned container cranes and other industrial structures of the study area.
Yellow-billed magpie *Pica nuttalli*	BCC	§3503	Oak savanna, grasslands with large trees, orchards and along streams.	**Low (Unlikely to nest).** No suitable nesting or foraging habitat is present in the study area that is almost entirely developed and open grassy areas with trees; therefore, this species is not expected on site.
Nuttall's woodpecker *Picoides nuttallii*	BCC	§3503	Oak and riparian woodlands.	**Low (No nesting potential).** No suitable nesting or foraging habitat is present in the study area that is almost entirely developed and lacks riparian vegetation and oak woodlands; therefore this species is not expected on site.
Spotted towhee *Pipilo maculatus clementae*	BCC	§3503	Dense, dry thickets and shrubby areas, forest edges, and chaparral. Nests on or near the ground.	**Low (Unlikely to nest).** Suitable habitat for this species is not found in the study area which is almost entirely developed and lacks dense shrubby habitat.
Black skimmer *Rynchops niger* (nesting colony)	BCC	CSC, §3503	Sandy beaches, gravel and shell bars with sparse vegetation along the coast. Colony breeders which nest on the ground in shallow scrape nests.	**Low (No nesting potential).** May forage over the open water off-shore of the project study area. Suitable nesting habitat is not present in the study area.
Rufous hummingbird *Selasphorus rufus*	BCC	§3503	Forest openings, meadows, yards and parks.	**Low (No nesting potential).** Does not nest locally; may occur during migration. Suitable habitat for this species is not present in the study area which is almost entirely developed and lacks foraging elements preferred by this species and therefore is not expected onsite.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES
THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	Habitat Description / Blooming Period	Potential to Occur in the Study Area
Other Special-Status Species (cont.)				
Birds (cont.)				
Allen's hummingbird *Selasphorus sasin*	BCC	§3503	Brush and woodlands.	**Moderate (Potential to nest).** May forage and nest within bottle brush shrubs lining the Market Street entrance to the Project site.
Lawrence's goldfinch *Spinus lawrencei*	BCC	§3503	Open woodlands, chaparral near fields for foraging seeds.	**Low (No nesting potential).** Suitable habitat for this species is not found in the study area which is almost entirely developed and lacks woodlands and grasslands.
Caspian tern *Sterna caspia*	BCC	WL, §3503	Nests on shorelines and feeds on fish and crustaceans in open water or shorelines.	**Present (Unlikely to nest).** Breeds in San Francisco Bay on Brooks Island. Unlikely to nest within the study area due to lack of suitable habitat. May forage in Oakland Estuary.
Willet *Tringa semipalmata*	BCC	§3503	Common to open beaches, bay shorelines, marshes, mudflats, and rocky coasts. Nest at inland marshes, prairies with ponded water and fields.	**Moderate (No nesting potential).** Does not nest locally. This species may forage among riprap armoring of the Oakland Estuary within the study area.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	--	CSC, §3503	Nests in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or ponds. Nests only where large insects are abundant, nesting timed with maximum emergence of aquatic insects.	**Low.** Suitable habitat for this species is not present in the study area which is almost entirely developed and lacks dense wetland vegetation. Transient individuals may pass through Project site.
Mammals				
Pallid bat *Antrozous pallidus*	--	CSC, WBWG: High	Prefers caves, crevices, hollow trees, or buildings in areas adjacent to open space for foraging. Associated with lower elevations in California.	**Moderate**. Suitable roosting habitat for this species is available within vacant or underutilized buildings of the Project site and study area.
Townsend's big-eared bat *Corynorhinus townsendii*	--	CSC, WBWG: High	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings of rocky areas with caves or tunnels. Roosting sites limited. Extremely sensitive to human disturbance.	**Low.** Suitable roosting habitat for this species is available within vacant or underutilized buildings of the Project site and study area; however high levels of human disturbance in the Project vicinity may discourage roost sites in this area.
Berkeley kangaroo rat *Dipodomys heermanni berkeleyensis*	--	CSC	Occurs in open, grassy hilltops and open spaces in chaparral and blue oak/digger pine woodlands with thin soils.	**No Potential.** Suitable habitat for this species is not present in the study area that is almost entirely developed and lacks grasslands or chaparral; therefore this species is not expected on site.
Silver-haired bat *Lasionycteris noctivagans*	--	CSC, WBWG-M	Maternity roosts are located in tree hollows, cavities, or beneath bark of large snags, with a cluster of trees being preferable. Forage over tree canopies, meadows and riparian areas for moths and other invertebrates.	**Low.** Suitable trees for roosting and typical foraging habitat is not present in the Project study area; therefore, this species is not expected onsite.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

Common Name *Scientific Name*	Federal Status	State Status	Habitat Description / Blooming Period	Potential to Occur in the Study Area
Other Special-Status Species (cont.)				
Mammals (cont.)				
Hoary bat *Lasiurus cinereus*	--	*, WBWG: Medium	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths; requires water. Could forage over San Francisco Bay.	**Low.** Suitable roosting sites not found within the Project site and study area. The American sycamore street trees of the project site are fairly exposed and are unlikely to support roosting sites for this species. May forage over the Oakland-Alameda Estuary.
San Pablo vole *Microtus californicus sanpabloensis*	--	CSC	Salt marshes of San Pablo Creek, on the south shore of San Pablo Bay. Constructs burrow in soft soil. Feeds on grasses, sedges and herbs. Forms a network of runways leading from the burrow.	**No Potential.** Project area is outside known species' distribution range.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	--	CSC	Forests with moderate canopy cover and brushy understory.	**No Potential.** Suitable habitat for this species is not found within the developed study area which lacks forests and shrub understory.
Big free-tailed bat *Nyctinomops macrotis*	--	CSC, WBWG-M	Low-lying arid areas in southern California. Prefers high cliffs or rocky outcrops for roost sites though will use structures or tree hollows. Feeds principally on large moths.	**Low.** Limited roost habitat found within American sycamore street trees of the Project site. Landside foraging habitat that would support large moths is not abundant within the study area.
Alameda Island mole *Scapanus latimanus parvus*	--	CSC	Only known from 18 historical collections on Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.	**No Potential. T**he species has not been recorded since 1958 thus there are no recent observations that would confirm the population is still extant. Suitable habitat for this species is not present within the developed study area which lacks grasslands.
Salt-marsh wandering shrew *Sorex vagrans halicoetes*	--	CSC	Salt marshes of the south arm of San Francisco Bay. Found at medium to high marsh 6-8 ft above sea level where abundant driftwood is scattered among pickleweed.	**No Potential.** Suitable habitat for this species is not present in the study area which is almost entirely developed and lacks salt marsh vegetation.
American badger *Taxidea taxus*	--	CSC	Open grasslands with loose, friable soils.	**No Potential.** Suitable habitat for this species is not present in the study area which is almost entirely developed and lacks grasslands.

NOTES:

* The project study area for terrestrial biological resources includes the project site and landside areas adjacent to the project site with similar habitat composition that includes developed or paved areas with long-standing industrial uses.

The "Potential for Effect" category is defined as follows:

Present = Species was observed during reconnaissance or focused surveys of the project area.

High = Species is expected to occur, habitat meets species requirements and is of moderate or high quality, and the study area is within the known species range.

Moderate = Habitat is marginally suitable (i.e. of low or moderate quality) or the study area is within the known range of the species, even though the species was not observed during biological surveys.

TABLE BIO-2 (CONTINUED)
SPECIAL-STATUS OR OTHERWISE PROTECTED ANIMAL SPECIES THAT MAY OCCUR IN THE TERRESTRIAL STUDY AREA

NOTES (cont.)

Low = Habitat does not meet species requirements as currently understood in the scientific community or the site is not within a species' geographic range.

No Potential = Habitat does not meet species requirements or the species is presumed to be extirpated from the project area or region based on the best scientific information available.

FESA = Federal Endangered Species Act
CESA = California Endangered Species Act,
CNDDB = California Natural Diversity Database

Federal: U.S. Fish and Wildlife Service (USFWS)

FE = Listed as "endangered" under the FESA
FT = Listed as "threatened" under the FESA
FPD = Proposed delisted
FD = Delisted
BCC = Bird of Conservation Concern

State: California Department of Fish and Wildlife (CDFW)

CE = Listed as "endangered" under the CESA
CT = Listed as "threatened" under the CESA
CD = Delisted
CSC = CDFW designated "species of special concern"
CFP = CDFW designated "fully protected"
SCE = CDFW designated "candidate endangered"
SCT = CDFW designated "candidate threatened"
WL = CDFW designated "watch list"

Other: Western Bat Working Group (WBWG)

L - Low = Stable population
M - Medium = Need more information about the species, possible threats, and protective actions to implement.
H - High = Imperiled or at high risk of imperilment.

§3503 = Eggs, Nests, and Nestlings Protected under Section 3503 of the California Fish and Game Code
§3503.5 = Eggs, Nests, and Nestlings of Falconiformes and Strigiformes Protected under Section 3503.5 of the California Fish and Game Code

SOURCES:

CDFW, 2019. California Natural Diversity Database (CNDDB) Rarefind version 5 query of the Oakland West, Oakland East, Hunters Point, Richmond, Briones Valley and San Leandro USGS 7.5-minute topographic quadrangles, Commercial Version. Accessed February 4, 2019.

U.S. Fish and Wildlife Service (USFWS), 2019. My Project, IPaC Trust Resource Report and Official Species List of Federally Endangered and Threatened Species that may occur in the Oakland Waterfront Ballpark District Project location, and/or may be affected by the proposed project, February 4, 2019.

TABLE BIO-3
SPECIAL-STATUS FISH AND MARINE MAMMAL SPECIES
THAT MAY OCCUR IN THE BAY WATERS OF THE STUDY AREA

Common Name ***Scientific Name***	**Federal Status**	**State Status**	**Habitat Description**	**Potential to Occur in the Study Area**	**Time Period Present in Study Area Waters**
Fish					
Green Sturgeon (Southern DPS) *Acipenser medirostris*	FT/-	CSC	Marine and estuarine environments and Sacramento River; All of San Francisco Bay-Delta	**Present.** This species migrates from the Pacific Ocean to spawning habitat in the Sacramento River watershed but may forage in or near the Project site and study area.	Year-round
Sacramento perch *Archoplites interruptus*	--	CSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of water conditions.	**No Potential.** Not expected to occur in Project area waters.	Not expected
Pacific herring *Clupea pallasii*	MSFCMA	--	S.F. Bay is a major spawning ground for species. Preferred spawning substrate is eelgrass and algae but will also use pier pilings, riprap, and other rigid, smooth structures within Bay waters.	**Moderate.** This species spawns in San Francisco Bay, and occurs in the Oakland-Alameda Estuary. Potential to spawn in eelgrass beds off western and northern shores of Alameda west of the Project site.	Adults - October to March during annual spawn with peak December to February Juveniles – summer into fall
Tidewater goby *Eucyclogobius newberryi*	FE	CSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	**Low.** Suitable habitat not found in the Project study area.	Not expected
Delta smelt *Hypomesus transpacificus*	FT	CE, CSC	Brackish-water channels and sloughs of the Sacramento – San Joaquin Delta.	**Low.** Exceedingly rare within the Delta and no suitable habitat found in the study area	Not expected
Sacramento River winter-run ESU Chinook salmon *Oncorhynchus tshawytscha*	FE/-	CE	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds	**Low**. No foraging of spawning habitat for this species is present. No streams supporting spawning runs are present within or in the vicinity of the Project site. There is a low potential for incidental occurrence of this species if individuals stray from migration routes concentrated north of the study area.	Adults - November and December Juveniles – fall and winter

TABLE BIO-3 (CONTINUED)
SPECIAL-STATUS FISH AND MARINE MAMMAL SPECIES
THAT MAY OCCUR IN THE BAY WATERS OF THE STUDY AREA

Common Name Scientific Name	Federal Status	State Status	Habitat Description	Potential to Occur in the Study Area	Time Period Present in Study Area Waters
Fish (cont.)					
Central Valley spring-run ESU Chinook salmon *O. tshawytscha*	FT/-	CT	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds	**Low.** No foraging of spawning habitat for this species is present. No streams supporting spawning runs are present within or in the vicinity of the project site. There is a low potential for incidental occurrence of this species if individuals stray from migration routes concentrated north of the study area.	Adults - late winter to spring Juveniles - fall though spring
Central Valley fall-run/late fall-run ESU Chinook salmon *O. tshawytscha.*	FSC/-	-	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from Ocean through San Francisco Bay-Delta to freshwater spawning grounds	**Low.** No foraging of spawning habitat for this species is present. No streams supporting spawning runs are present within or in the vicinity of the project site. There is a low potential for incidental occurrence of this species if individuals stray from migration routes concentrated north of the study area.	Adults - June through September Juveniles - winter through summer
Central Valley DPS steelhead *O. Mykiss*	FT/-	-	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds	**Low.** No foraging or spawning habitat for this species is present. No streams supporting spawning runs are present within or in the vicinity of the marine study area. There is a low potential for incidental occurrence of this species if individuals stray from migration routes.	Adults - winter and spring Juveniles - year-round
Central California coast DPS steelhead *O. mykiss*	FT/-	CSC	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from Ocean through San Francisco Bay-Delta to freshwater spawning grounds	**Moderate**. No foraging or spawning habitat for this species is present in the immediate vicinity of the Project site. San Leandro Creek, 5-miles southeast may support small spawning runs and fish migrating to or from these spawning grounds may occur in the Project study area.	Adults - winter Juveniles – year-round
Longfin smelt *Spirinchus thaleichthys*	FC/-	CT	Throughout the nearshore coastal waters and open waters of San Francisco Bay-Delta including the river channels and sloughs of the Delta	**Present.** This species is documented to inhabit the deep channels of Central Bay for most of the year, including the waters adjacent to the project site.	Year-round

TABLE BIO-3 (CONTINUED)
SPECIAL-STATUS FISH AND MARINE MAMMAL SPECIES
THAT MAY OCCUR IN THE BAY WATERS OF THE STUDY AREA

Common Name Scientific Name	Federal Status	State Status	Habitat Description	Potential to Occur in the Study Area	Time Period Present in Study Area Waters
Marine Mammals					
Southern Sea Otter *Enhydra lutris nereis*	FT	CFP	Nearshore environments between Santa Barbara and Half Moon Bay. Although historic inhabitants of San Francisco Bay prior to being hunted to near extinction, occasional sightings of otters within the Bay occur.	**Low.** Species is an infrequent visitor to San Francisco Bay and historically have limited their visitations to the waters between the Golden Gate and Alcatraz Island, including Richardson Bay.	Potentially Year-round
Gray whale *Eschrichtus robustus*	FDL/P	-	Predominantly coastal waters, although occasional individuals enter the Bay-Delta and have been observed swimming up the Sacramento River and into the South Bay.	**Low.** Species is an infrequent visitor to San Francisco Bay.	December to April, during migration from Alaska to Baja California, occasionally enter Bay-Delta, transient
Humpback whale *Megoptera noveangli*	FE/FD	-	Predominantly coastal waters, although occasional individuals enter the Bay-Delta	**Low.** Species is an infrequent visitor to San Francisco Bay.	April to December, during migration, occasionally enter the Bay-Delta, transient
Northern Elephant Seal *Mirounga angustirostris*	-/P	-	Northern elephant seals are the largest phocid, or "true" seal, in the Northern Hemisphere. They are found in the eastern and central North Pacific Ocean. They range as far north as Alaska and as far south as Mexico, with established Central California breeding colonies on the Farallon Islands, at Año Nuevo State Park, and near San Simeon, California. In recent years, young -of-the-year individuals have been observed hauling out on the sandy beach at Crissy field.	**Low.** Occurrence and presence within Central Bay has steadily increased over recent years with individuals entering the Bay on an annual basis. Additionally, its presence beyond the Central Bay waters between the Golden Gate and Alcatraz Island is also increasing with recent occurrences in North Bay. No sightings in south Central Bay have been reported as yet.	Primarily April to August with occasional occurrences in October and November. Not known to be present beyond the western segment of Central Bay.
Harbor porpoise *Phocoena phocoena*	-/P	-	An inshore species inhabiting shallow, coastal waters and occasional large rivers, including San Francisco Bay-Delta	**Low.** The resident population has been steadily increasing in numbers and extending its foraging range within the Bay beyond the waters between the Golden Gate and Alcatraz Island. Observations have been made as far north as the Napa River mouth to the north and the Oakland-San Francisco Bay Bridge to the south. Unlikely to occur in the Oakland-Alameda Estuary.	Year-round

TABLE BIO-3 (CONTINUED)
SPECIAL-STATUS FISH AND MARINE MAMMAL SPECIES
THAT MAY OCCUR IN THE BAY WATERS OF THE STUDY AREA

Common Name Scientific Name	Federal Status	State Status	Habitat Description	Potential to Occur in the Study Area	Time Period Present in Study Area Waters
Marine Mammals (cont.)					
Pacific harbor seal *Phoca vitulina richardsii*	-/P	-	Coastal waters, and throughout Bay-Delta	**Moderate.** Species frequents the waters of the Oakland-Alameda Estuary and Central San Francisco Bay.	Year-round
Bottlenose Dolphin *Tursiops truncatus*	-/P	_	Found along the California coastline, bottlenose dolphins segregate into coastal or oceanic ecotypes with the coastal ecotype inhabiting waters within 1- Kilometer of shore normally between Baja, California and Point Conception. During El Niño events and in recent years, bottlenose dolphins have been observed as far as San Francisco Bay with individuals making occasional forays to the Golden Gate.	**Low.** Documented Central Bay presence is currently limited to waters between the Golden Gate and Alcatraz Island; individuals are capable of foraging over a larger area if prey fish are present.	Potentially Year-round
California sea lion *Zalophus californianus*	-/P	-	Coastal waters, and throughout Bay-Delta	**Moderate.** Species frequents the waters of the Central San Francisco Bay, and may forage throughout the Oakland-Alameda Estuary.	Year-round

NOTES:
The "Potential for Occurrence within the Project Area" category is defined as follows:
High = Suitable foraging or spawning/rookeries/birthing habitat is present and/or the species has been documented to be present throughout the year and/or in substantial numbers.
Moderate = Suitable foraging or spawning//rookeries/birthing habitat is present and/or the species has been documented to be present for part of the year
Low = Suitable foraging or spawning/rookeries/birthing habitat is present, but the species has either not been documented to be present or if present, the presence is infrequent.
No Potential = Suitable foraging or spawning/rookeries/birthing habitat is not known to be present and the species has not been documented to occur.

FESA = Federal Endangered Species Act, MMPA = Marine Mammal Protection Act, CESA = California Endangered Species Act

STATUS CODES:
Federal: U.S. Fish and Wildlife Service (USFWS)
FDL = Delisted
FE = Listed as "endangered" (in danger of extinction) under FESA
FT = Listed as "threatened" (likely to become Endangered within the foreseeable future) under FESA
FC = Candidate to become a proposed species
FSC = Former "federal species of concern". The USFWS no longer lists Species of Concern but recommends that species considered to be at potential risk by a number of organizations and agencies be addressed during project environmental review. *NMFS still lists "Species of Concern".

Federal: National Oceanographic and Atmospheric Administration (NOAA) MMPA
FD = Depleted Population
P = Federally Protected
MSFCMA = Magnuson-Stevens Fishery Conservation and Management Act

State: California Department of Fish and Wildlife (CDFW)
CE = Listed as "endangered" under the CESA
CT = Listed as "threatened" under the CESA
CSC = CDFW designated "species of special concern"

TABLE BIO-3 (CONTINUED)
SPECIAL-STATUS FISH AND MARINE MAMMAL SPECIES
THAT MAY OCCUR IN THE BAY WATERS OF THE STUDY AREA

SOURCES:

Bartling, R. 2006. Pacific herring. Status of the Fisheries Report. California Department of Fish and Game

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NMFS. 2009. Endangered and Threatened Wildlife and Plants: Final Rulemaking to Designate Critical Habitat for the Threatened Southern Distinct Population Segment of North American Green Sturgeon; Final Rule. 50 CFR Part 226. Federal Register (Volume 74, Number 195): 52300 52351. National Oceanic and Atmospheric Administration, National Marine Fisheries Service. URL:

http://www.epa.gov/fedrgstr/EPA-SPECIES/2009/October/Day-09/e24067.htm. October 9, 2009.

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TABLE BIO-4
MANAGED FISH SPECIES KNOWN TO OCCUR IN CENTRAL SAN FRANCISCO BAY UNDER THE MAGNUSON-STEVENS ACT

Fisheries Management Plan	Common Name	Scientific Name	Life Stage	Abundance
Coastal Pelagic	Northern anchovy	Engraulis mordax	J, A	Abundant
	Jack mackerel	*Trachurus symmetricus*	E, L	Present
Pacific Groundfish	English sole	*Parophrys vetulus*	J, A	Abundant
	Pacific sanddab	*Citharichthys sordidus*	E, L, J, A	Present
	Starry flounder	*Platichthys stellatus*	J, A	Present
	Lingcod	*Ophiodon elongatus*	J, A	Present
	Brown rockfish	*Sebastes auriculatus*	J	Present
	Kelp greenling	*Hexagrammos decagrammus*	J, A	Present
	Leopard shark	*Triakis semifasciata*	J, A	Present
	Spiny dogfish	*Squalus acanthias*	J, A	Present
	Big Skate	*Raja binoculata*	J, A	Present
Pacific Coast Salmonids	Chinook salmon	*Oncorhynchus tshawytscha*	J, A	Seasonally Present

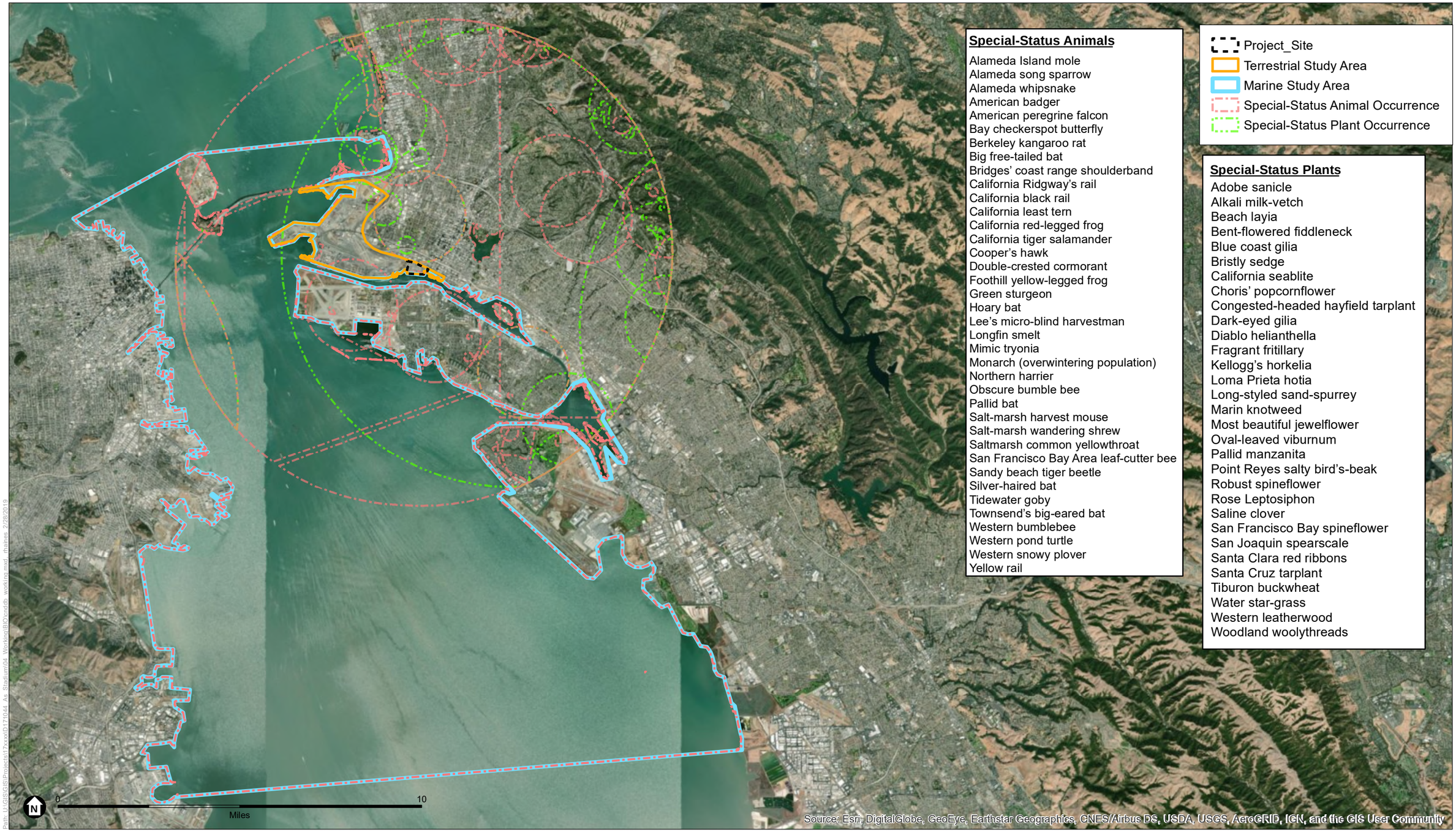
NOTES:

A = Adult J = Juvenile L = Larvae E = Egg

SOURCES:

Pacific Fishery Management Council. 2017. Coastal Pelagic FMP, Pacific Groundfish FMP, and Pacific Coast Salmonids FMP Species Lists. Available at https://www.pcouncil.org/.

California Department of Fish and Wildlife (CDFW). 2014. Interagency Ecological Program - unpublished midwater trawl data 2010-2014. Available at ftp://ftp.dfg.ca.gov/.



SOURCE: California Department of Fish and Wildlife, 2019. California Natural Diversity Database (CNDDB) GIS Database. Biogeographic Databranch, Sacramento, CA. Data dated January 2019.

Waterfront Ballpark District at Howard Terminal Project Draft EIR

Figure BIO-1
Special-Status Plant and Animal Species Occurrences
within 5-miles of the Project Site and the Marine Study Area

ESA

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H. T. HARVEY & ASSOCIATES
Ecological Consultants

Memorandum

October 10, 2019 **Project #4294-01**

To: **Crescentia Brown, ESA, Environmental Planning**

From: **Jeff Smith, Ph.D., Senior Raptor Ecologist, and Scott Terrill, Ph.D., Senior Ornithologist**

Subject: **Oakland A's Stadium Fireworks and Potential for Peregrine Falcon Disturbance**

This memo summarizes the anticipated effects of fireworks displays at Howard Terminal in Oakland, California, on peregrine falcons that have nested on the shipping container cranes at the site. Based on our extensive experience with nesting falcons and other raptors, relevant scientific literature, and the existing conditions at the site to which these falcons are already adapted (e.g., nearly constant heavy truck traffic and noisy shipping container manipulations, and pronounced ambient night-time lighting), we expect the relevant falcons will not be adversely affected by the onset of night-time fireworks displays as long as a reasonable spatial buffer (500 feet) is maintained between any occupied nest and the fireworks aerial detonation locations. Further, if properly placed and maintained around relevant nest sites, a 500-foot spatial buffer should also suffice to guard against disturbing any other raptors that might chose to nest in the area and are protected by the federal Migratory Bird Treaty Act and/or California Fish and Game Code.

Nesting peregrine falcons can be sensitive to human disturbance in some situations, but responses may vary considerably depending on the individuals involved and the environmental circumstances (Cade 1960, Hickey 1969). Moreover, in recent decades as a result of conservation action and artificial propagation in human-dominated landscapes, peregrines now routinely nest on tall buildings, smoke stacks, transmission towers, bridges, and other elevated artificial structures, and in such circumstances may readily habituate to a variety of nearby human activities (Cade and Bird 1990, Cade et al. 1996, White et al. 2002, Comrack and Lodgson 2008).

Research evaluating the effects on nesting falcons of loud noises similar to fireworks detonations generally is limited to assessing the effects of military explosions, aircraft sonic booms, and experimental surface blasts on nesting prairie falcons (*Falco mexicanus*), and it is generally thought that peregrine falcons respond similarly in common circumstances (White et al. 2002). In Idaho, nesting prairie falcons showed no detectable adverse responses when heavy equipment was operated and blasting occurred more than 50 meters (m) below and at distances of 550-1,000 m from eyries. Conversely, although nesting falcons showed behavioral reactions to experimental surface blasts 120–140 m from their eyries conducted three times per day every other day during incubation and brood-rearing, reproduction and territory reoccupancy were not affected by these 135-decibel blasts (Holthuijzen et al. 1990). Similarly, prairie falcons nesting in the Mojave Desert and in Arizona habituated to frequent low-level military flights did not react and showed insignificant responses to high noise levels,

including sonic booms (Harmata et al. 1978, Ellis et al. 1991). In contrast, military activities involving intensive tank maneuvers and firing did affect the foraging efficiency and prey delivery rates of nesting prairie falcons in Idaho (U.S. Department of The Interior 1996), and prairie falcons nesting in the Mojave Desert and New Mexico showed adverse responses to nesting close to major roads (Boyce 1982, Platt 1974).

Although fireworks may represent a relatively novel combination of explosive noises and bright lights, several considerations suggest that the peregrine falcons that nest on one of the decommissioned cranes on the Project site are unlikely to be adversely affected by such activities, as long as a reasonable buffer distance is maintained between the fireworks aerial detonation areas and the falcon eyrie. First, the male peregrine originated from an eyrie on the Fruitvale Railroad Bridge and therefore has been exposed to high levels of human activity in the Brookland Basin/Oakland Inner Harbor area since it hatched. More generally, these breeding birds are already habituated to nesting in an area of intense human activity, including heavy truck and equipment traffic, management of large shipping containers, railroad activity and associated train horn blasts known to exceed 110 decibels, and other nearby warehousing activity. In addition, the fireworks will occur exclusively at night, which means: (1) the activity will not affect the falcon's daytime foraging and provisioning efforts, and (2) although lesser agitation stress responses could occur, it is improbable that the fireworks would cause the adult peregrines to flush from their eyrie unless ambient lighting is sufficient for them to see well enough to fly at night. Lastly, although the nesting peregrines may initially respond with some agitation to the onset of fireworks displays, given the existing circumstances they are likely to quickly habituate to the periodic events and not suffer adverse consequences for their breeding attempts, again as long as a reasonable spatial buffer is maintained between the eyrie and fireworks detonations.

Published recommendations for spatial buffers to guard against human activity disturbing nesting raptors vary depending on the species, nesting circumstance, and nature of disturbance (Call 1979, Suter and Joness 1981, Richardson and Miller 1997, Romin and Muck 2002). Most promulgated recommendations advocate for restricting human activities and landscape disturbances within 0.5 miles of an occupied peregrine falcon eyrie; however, such recommendations are not well-tailored to urban settings with generally high human activity, where peregrine falcons now commonly nest. The California Department of Fish and Wildlife typically recommends maintaining 300–500-foot buffers between development activities and most nesting raptors. In this case, maintaining a 500-foot buffer between the expected fireworks aerial detonation areas and the four cranes on which the peregrine falcons have nested, or could nest in the future, should be adequate to protect these nesting birds from adverse disturbance. To further guard against disturbance during the sensitive early phase of the breeding season (i.e., the egg laying and incubation period in March/April), the fireworks shows at such times should be staged with maximum care to ensure the established spatial buffer is liberally maintained.

If the falcons initiate a nesting attempt during the first year when fireworks displays are scheduled, monitoring the night before and morning after the first several events to confirm a stable nesting pattern will help validate the effectiveness of the 500-foot buffer. Conversely, if such monitoring suggests the falcons have abandoned a nesting attempt the morning after an event, a nestling rescue effort and transfer to a qualified rehabilitation center may prevent a take event (overnight egg survival is, however, unlikely). Such a finding also would inform adaptive management to further protect the nesting falcons from adverse disturbance during future shows by, for example, adjusting the timing and/or location of the fireworks shows to further expand the disturbance buffer.

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