

4.3 Biological Resources

This section assesses the effects of the proposed Project on biological resources. The section begins with a description of the existing conditions for terrestrial and marine biological resources that occur, or have the potential to occur, on the Project site or in the immediate vicinity.

Regulations and guidelines relevant to biological resources are discussed next, followed by an impact analysis that evaluates the potential effects on biological resources that could result from construction and operation of the proposed Project. Cumulative effects of the proposed Project in combination with past, present, and reasonably foreseeable future projects are discussed.

Appendix BIO provides additional supporting information on biological resources.

The NOP (Notice of Preparation) for this EIR received one comment related to biological resources that primarily identified animal species which use the Oakland-Alameda Estuary (Estuary) including wading birds who forage on the Project site shoreline; the seasonally present California least tern (*Sternula antillarum browni*; federal and State-listed endangered) nesting colony which annually occupy a former airfield at Point Alameda while breeding, nesting and rearing young; osprey which have been known to nest on structures within nearby terminals; and marine mammals which hunt and feed in the marine habitat. These resources and potential effects of the proposed Project are included in the following analysis.

This section also analyzes the Maritime Reservation Scenario, focused on environmental conditions, regulations, impacts and mitigation measures that are different from those identified for the proposed Project.

4.3.1 Environmental Setting

Study Area and Data Sources

This section identifies Project study areas for both terrestrial and marine biological resources. The proposed Project's potential area of influence relevant to each biological resource was considered in order to assess potential impacts to biological resources. Information on natural communities, plant and animal species, and sensitive biological resources was obtained from regional databases, plans, and reports relevant to the proposed Project, including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) (CDFW, 2019), the California Native Plant Society Electronic Inventory (CNPS, 2019), the U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay (NOAA, 2007), long-term regional studies such as the Regional Monitoring Program for Water Quality in San Francisco Bay (SFEI, 2015), the Interagency Ecological Program for San Francisco Bay (IEP, 2015), standard biological literature, citizen-science web applications (eBird, 2019a; eBird, 2019b), biological reports and studies on other waterfront locations in the Project vicinity, and a reconnaissance-level survey of the Project site. Reconnaissance-level surveys of the Project site for terrestrial botanical resources, terrestrial and marine wildlife and associated habitat were conducted on February 6, 2019 by an ESA senior wildlife biologist to characterize existing conditions, assess habitat quality, and assess the potential presence of special-status species and sensitive natural communities. The reconnaissance survey consisted of a pedestrian assessment of

the terrestrial portion of the Project site and adjacent landside parcels publically accessible. The marine assessment was conducted from landside portions of the Project site overlooking the Estuary and observing exposed or visible intertidal and subtidal habitat for elements consistent with known marine habitats of San Francisco Bay.

For the purposes of this assessment, the Project study area for terrestrial biological resources includes the Project site and adjacent landside areas with similar habitat composition including developed or paved areas with long-standing industrial or Port of Oakland related uses along the Estuary from Embarcadero West to the north, the Estuary to the south, Harrison Street to the east, and the edge of Port of Oakland active use areas to the west (east of Middle Harbor Shoreline Park). The marine/aquatic biological resources study area includes the Estuary shoreline along the Project site and waters immediately adjacent to the Project site, although marine resources documented in all waters of the Central San Francisco Bay basin (Central Bay) from the north side of Treasure Island to the San Bruno Shoals, which demark the southern border of the Central Bay, were considered in this analysis. The shoreline, adjacent Estuary, and Central San Francisco Bay waters comprising the marine resources study area have been extensively modified from their historic natural condition; however, they remain ecologically productive habitats.

Figure 4.3-1, Terrestrial Biological Resources Study Area, and Figure 4.3-2, Marine Biological Resources Study Area, depict, respectively, the generalized study areas for the terrestrial and marine biological resources considered in this analysis.

Regional Setting

The Project site is located in the San Francisco Bay Area, which hosts a diverse variety of natural communities ranging from the open waters of San Francisco Bay to salt and brackish marshes to chaparral and oak woodlands. The climate is Mediterranean in nature, with relatively mild, wet winters and warm, dry summers. The high diversity of vegetation and wildlife found in the region is a result of soils, topography, and microclimate diversity that promotes relatively high levels of endemism.¹ This, in combination with a long history of uses that have altered the natural environment and the increasingly rapid pace of development in the region, has endangered some of the local flora and fauna.

San Francisco Bay is the second largest estuary in the United States and supports numerous marine habitats and biological communities. This assessment focuses on the southern portion of the Central Bay basin area of San Francisco Bay. Depending on the use, the Central Bay basin has different geographic boundaries. For the purposes of this analysis, the geographic boundaries for the Central Bay basin are between the Richmond-San Rafael Bridge and the San Bruno Shoal, located 11.5 miles south of the San Francisco-Oakland Bay Bridge. The Central Bay basin connects to the Pacific Ocean through the Golden Gate. The regional setting for purposes of evaluating marine biological resources includes both the shoreline intertidal habitats and the shallow water habitats, also known as the baylands and the deeper waters of San Francisco Bay itself that are located in the southernmost area of the Central Bay basin (Goals Project, 1999). The

¹ Endemism refers to the degree to which organisms or taxa are restricted to a geographical region or locality and are thus individually characterized as endemic to that area.

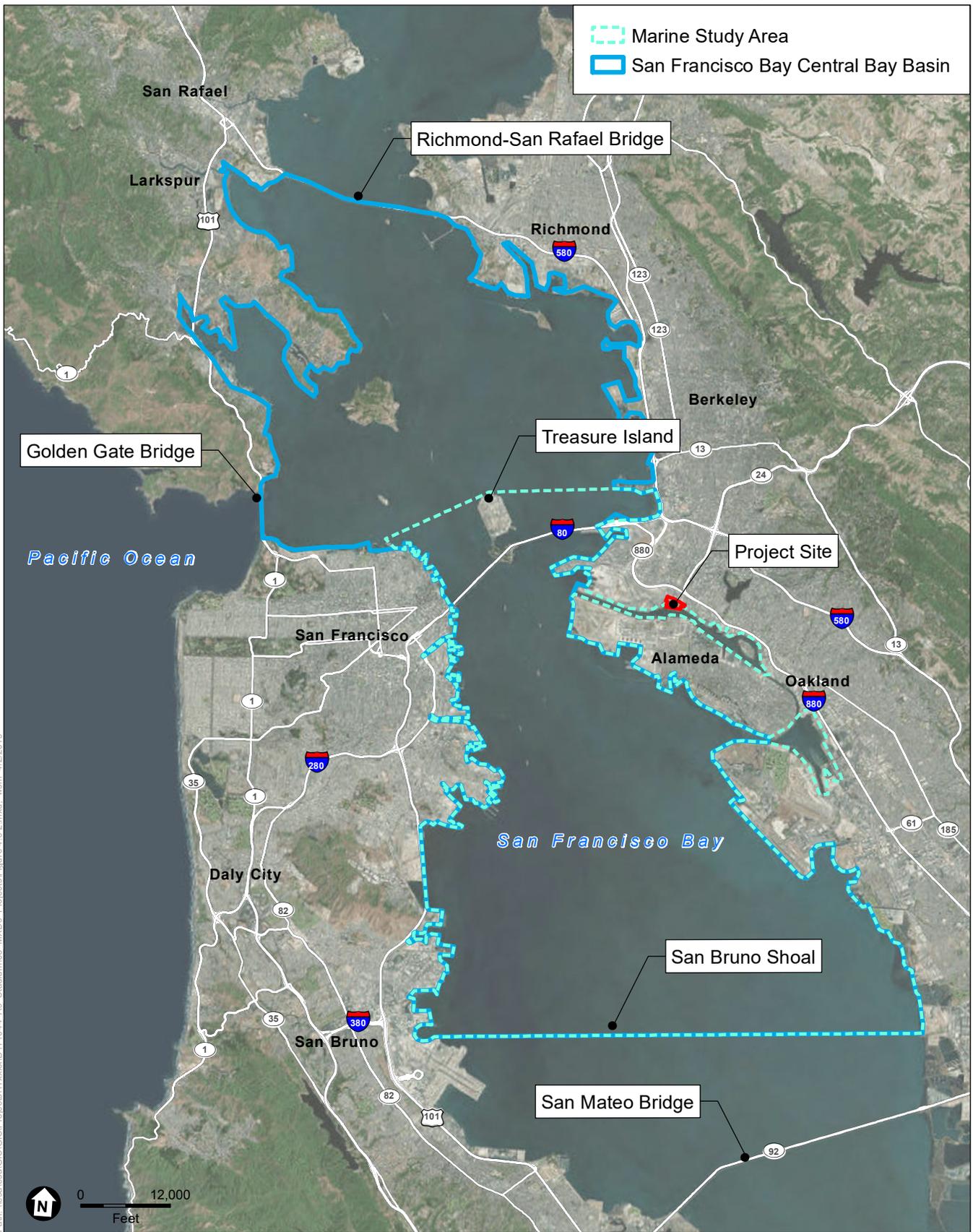


SOURCE: ESA, 2019

Waterfront Ballpark District at Howard Terminal Project Draft EIR

Figure 4.3-1
Terrestrial Biological Resources Study Area





SOURCE: ESA, 2019

Waterfront Ballpark District at Howard Terminal Project Draft EIR

Figure 4.3-2
Marine Biological Resources Study Area



marine biological biota found in the Central Bay basin includes the invertebrate infauna² and mobile epifauna³ that inhabit San Francisco Bay sediments; sessile⁴ and encrusting invertebrates and marine vegetation on natural and human-made hard substrates; and planktonic organisms, fish, marine mammals, and marine birds that inhabit or use the open waters of San Francisco Bay. These habitats and their associated biological communities are described below in more detail.

Project Site Setting

As discussed in Chapter 3, *Project Description*, the Project site consists of 55-acres located on the Port of Oakland's Charles P. Howard Terminal (Howard Terminal) and adjacent properties along the north shore of the Estuary, including the Peaker Power Plant and Oakland Fire Station 2. Collectively, the terrestrial Project site is entirely developed with no natural or undeveloped landside habitat. Land uses to the north, west, and east of the Project site are also developed and support the active Port of Oakland and industrial, transportation and warehouse uses with some commercial and residential uses. The south portion of the Project site is a pile-supported wharf structure with a below-grade rock dike adjacent to the Estuary as the site's shoreline. The Estuary, which connects to San Francisco Bay, lies directly south of the Project site.

Terrestrial Vegetation Communities and Wildlife Habitats

Natural communities are assemblages of plant and wildlife species that occur together in the same area, which are defined by species composition and relative abundance. The terrestrial biological resources study area contains a single habitat type: developed/landscaped/ruderal; which was identified during the reconnaissance survey on February 6, 2019.

Developed/Landscaped/Ruderal

The entirety of the terrestrial Project site is currently developed and paved for maritime support uses such as truck parking, loaded and empty container storage and staging, longshoreperson training facilities, and berthing vessels. The site contains several structures and buildings supporting these uses. The terrestrial biological resources study area surrounding and including the Project site is also developed, in keeping with the conditions and previous uses of the Project site. Trees within the Project site consist of 25 non-native American sycamore (*Platanus occidentalis*) street trees located along Embarcadero West, Martin Luther King Jr. Way, and Clay Street; five landscaped redwood (*Sequoia sempervirens*) trees located on Embarcadero West at the Market Street entrance to the Project site; and several non-native crimson bottle brush (*Callistemon citrinus*) trees located along the Market Street entrance to the Howard Terminal portion of the Project site from Embarcadero West. Landscaped shrubs also occur along Clay Street. Other vegetation within the Project site is considered ruderal, defined as often temporary assemblages of opportunistic non-native plants that thrive in disturbed areas. These areas are limited to few occurrences of non-native and invasive species growing along the upper margins of the western shoreline riprap and between cracks in the pavement throughout the Howard Terminal; species include Italian ryegrass (*Festuca perennis*), slender oat (*Avena barbata*), smilo

² Infauna are organisms living in the sediments of the San Francisco Bay floor.

³ Epifauna are organisms living on the surface of the San Francisco Bay floor, or attached to submerged objects or aquatic animals or plants.

⁴ Sessile means permanently attached or established; not free to move about.

grass (*Stipa miliacea*), Bermuda buttercup (*Oxalis pes-caprae*), French broom (*Genista monspessulana*), poison hemlock (*Conium maculatum*), and pampas grass (*Cortaderia jubata*). A few native coyote bush (*Baccharis pilularis*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*) shrubs with native California polypody (*Polypodium californicum*) plants also occur in the narrow vegetated strip between shoreline riprap and pavement along the western boundary of the Howard Terminal.

Developed, landscaped, and ruderal areas can provide cover, foraging, and nesting habitat, albeit somewhat limited compared to natural habitats, for a variety of birds as well as some reptiles and small mammals, especially those that are tolerant of disturbance and human presence. Birds commonly found in such areas are typically seed-eating or accustomed to scavenging human litter. In the terrestrial biological resources study area, these include non-native species, such as house sparrow (*Passer domesticus*), rock pigeon (*Columba livia*), and European starling (*Sturnus vulgaris*). Native bird species found in such an environment include house finch (*Haemorhous mexicanus*), American goldfinch (*Spinus tristis*), white-crowned sparrow (*Zonotrichia leucophrys*), Brewer's blackbird (*Euphagus cyanocephalus*), and mourning dove (*Zenaidura macroura*). These species are common to highly developed urban areas and each could nest within the ruderal shrub vegetation, in street trees, or within or on the roofs of buildings of the Project site. The Project site's location on the Oakland-Alameda Estuary also supports loafing gulls. Ring-billed, California, and western gulls (*Larus californicus*, *L. delawarensis*, *L. occidentalis*) were each observed on the Howard Terminal portion of the site during the reconnaissance survey. Other wildlife that are expected within the urbanized Project site include striped skunk (*Mephitis mephitis*) and raccoon (*Procyon lotor*), and non-natives such as Virginia opossum (*Didelphis virginiana*), Norway rat (*Rattus norvegicus*), black rat (*Rattus rattus*), and feral cat, though current uses do not attract such species due to the high level of vehicular activity throughout the majority of the Project site. Vacant or infrequently used buildings on the Project site (e.g., the Peaker Power Plant) can serve as roosting sites for local bats or as nesting sites for common urbanized birds such as rock pigeon. Common bats, such as the Mexican free-tailed bat (*Tadarida brasiliensis*), can adapt to living in urban areas near water. Bats will forage over brackish waterbodies, such as the Estuary, especially in the shallows near shore, and may roost in structures that provide adequate thermal regulation.

Marine Communities

Intertidal habitat, subtidal habitat, and open water habitat comprise the marine communities within the marine study area identified during the reconnaissance survey on February 6, 2019.

Intertidal Habitat

Intertidal habitats, or the regions of the Bay that lie between low and high tides, in the Central Bay include sandy beaches, natural and artificial rock (quarried rip-rap), concrete bulkheads, concrete, composite and wood pier pilings and mud flats. These intertidal habitats provide highly diverse and varied locations for marine flora and fauna. The Central Bay's proximity to the Pacific Ocean has resulted in an intertidal zone inhabited by many coastal as well as estuarine species. Intertidal habitat consisting of concrete pier pilings and rip-rap occur below the existing Project site wharf.

Algae species common to the Central Bay intertidal zones include sea lettuce (*Ulva* spp.) and rockweed (*Fucus gardeneri*), the red algae species (*Polyneura latissima* and *Gigartina* spp.) and the non-native brown algae species (*Sargossum muticum*) (NOAA, 2007). Typically, sea lettuce dominates the high intertidal zone; sea lettuce, rockweed, and red algae dominate the middle intertidal zone; and brown algae dominates the low intertidal zone (NOAA, 2007). Invertebrate taxa which commonly inhabit intertidal portions of the shoreline include balanoid barnacles (Balanidae) in the high and middle intertidal zones; and limpets, *Mytilus* mussels, and scattered individual native Olympia oysters (*Ostrea lurida*) in the lower middle and low intertidal zones. Sandpipers such as spotted sandpiper (*Actitis macularius*), western sandpiper (*Calidris mauri*), and least sandpiper (*Calidris minutilla*), may forage along the rocky shoreline during low tide within the intertidal zone of the marine study area (eBird, 2019). These aquatic species were not observed during the reconnaissance survey but are common inhabitants of the intertidal zones of San Francisco Bay and are expected to occupy this habitat where present within the marine study area and beneath the existing wharf portion of the Project site.

Subtidal Habitat

Central San Francisco Bay contains both soft sediment and hard substrate subtidal (below the low tide line) habitat. Soft bottom substrate ranges between soft mud with high silt and clay content and areas of coarser sand. These latter tend to occur in locations subjected to high tidal or current flow. Soft mud locations are typically located in areas of reduced energy that enable deposition of sediments that have been suspended in the water column, such as in protected slips, under wharfs, and behind breakwaters and groins. There is very limited naturally occurring hard substrate habitat in Central San Francisco Bay. Rocky subtidal habitat occurs mainly as scoured low-relief bedrock, and is comprised of small, isolated outcroppings dispersed throughout the Central Bay. The majority of hard substrate habitat in San Francisco Bay is formed by artificial structures and shoreline armoring, as found below the existing Project site wharf. Both soft sediment and hard substrate subtidal habitat is present below the existing Project site wharf.

Artificial hard substrate subtidal areas provide habitat for an assemblage of marine algae, invertebrates and fishes, similar to the hard substrate in the intertidal zone of the Central Bay (e.g., pier pilings, rock, bulkheads, etc.). Submerged hard bottom substrate is typically covered with a mixture of turf organisms that is dominated by hydroids, bryozoans, tunicates, encrusting sponges, encrusting diatoms, and anemones. In the intertidal and near subtidal zones, the barnacles (*Balanus glandula*, *Amphibalanus amphitrite*, and *A. improvisus*) are commonly present along with the Bay mussel, *Mytilus trossulus/gallopровincialis*, the invasive Asian mussel (*Musculista senhousia*), and Olympia oyster. Barnacles can also be found subtidally on pier pilings, exposed rock outcropping and debris (NOAA, 2007). At least six species of sponges, seven species of bryozoans, and the hydrozoans (*Ectopleura crocea* and *Garveia franciscana*) are found inhabiting both natural and man-made hard substrate (NOAA, 2007). Marine isopods and amphipods include the surface deposit feeders, algae grazers, and carnivores (NOAA, 2007).

In addition, three species of caprellids (i.e., detritivores, carnivores, and deposit feeders) are commonly observed only in the Central Bay (NOAA, 2007). Pacific rock crab (*Cancer antennarius*) and the red rock crab (*C. productus*) inhabit rocky, intertidal and subtidal areas in the Pacific Ocean, and likely use San Francisco Bay as an extension of their coastal habitats

(Hieb, 1999). Adult (age 1+) Pacific rock crabs are most commonly found in Central Bay in both the fall and spring months while juveniles are most common in the Central Bay from January to May and in South Bay from July to December (Hieb, 1999). Pacific rock crabs move seasonally from channels (January to April) to shoals (June to December) (Hieb, 1999). The Pacific and red rock crabs are frequently the targets of sport anglers from piers and jetties.

The predominant seafloor habitat within Central San Francisco Bay is unconsolidated soft sediment composed of combinations of mud/silt/clay and, in lesser quantities, sand and pebble/cobble, with varying amounts of intermixed shell fragments (NOAA, 2007). Sediment from Oakland's shoreline and creeks is carried by the tidal current to shoals and sandbars, causing siltation of the nearby shipping channels. The open waters adjacent to the study area are typical of San Francisco Bay waters in general and have primarily silty mud and sand substrates that are naturally no more than 25 feet deep. The Federal shipping channel in the Oakland-Alameda Estuary and the berths in the Middle and Inner Harbor are dredged to maintain a depth of 50 feet Mean Lower Low Water (DVA, 2012).

The muddy-sand benthic community of the Central Bay consists of a diverse polychaete community represented by several subsurface deposit feeding capitellid species, a tube dwelling filter feeding species (*Euchone limnicola*), a carnivorous species (*Exogone lourei*), and the malidanid polychaete *Sabaco elongatus*. There are also several surface deposit feeding polychaete worms that are present throughout the year (NOAA, 2007).

The harbor and main channel areas of the Central Bay are characterized as a mix of the benthic communities from surrounding areas (deep and shallow-water and slough marine communities) and include the obligate amphipod filter-feeder *Ampelisca abdita* and the tube dwelling polychaete *Euchone limnicola*. As a result of increased water flow and sedimentation in the harbor areas of the Central Bay, the majority of the species reported inhabiting seafloor sediments in this region of the Bay are deposit and filter feeders, including the amphipods *Grandidierella japonica*, *Monocorophium acherusicum*, and *Monocorophium alienense*, and the polychaetes *Streblospio benedicti* and *Pseudopolydora diopatra*. There is also a relatively high number of subsurface deposit feeding polychaetes and oligochaetes in these areas including *Tubificidae* spp., *Mediomastus* spp., *Heteromastus filiformis*, and *Sabaco elongatus*. There is also sufficient community complexity and abundance to support relatively high abundances of three carnivorous polychaete species: *Exogone lourei*, *Harmothoe imbricata*, and *Glycinde armigera*.

The most common large mobile benthic invertebrate organisms in the Central Bay include blackspotted shrimp (*Crangon nigromaculata*), the bay shrimp (*Crangon franciscorum*), Dungeness crab (*Metacarcinus magister*), and the slender rock crab (*Cancer gracilis*). Although other species of shrimp are present in the Central Bay, their numbers are substantially lower when compared to the number of bay and blackspotted shrimp present (NOAA, 2007). All of these mobile invertebrates are present throughout the Central Bay and provide an important food source for carnivorous fishes, marine mammals, and birds in San Francisco Bay's food web. Dungeness crabs use most of the bay as an area for juvenile growth and development prior to returning to the ocean as sexually mature adults (Tasto, 1979).

Because of the strong ocean influence in the Central Bay, additional species of red and brown algae are found attached to submerged intertidal hard substrate, including pier pilings. These include *Cladophora sericea*, *Codium fragile*, *Fucus gardneri*, *Laminaria sinclairii*, *Egregia*, *Halymenia schizyenioides menziesii*, *Sargassum muticum*, *Polyneura latissima*, *Cryptopleura violacea*, and *Gelidium coulteri* (NOAA, 2007). In addition, the species *Codium fragile* subspecies *tomentosoides*, *Bryopsis hypnoides*, *Chondracanthus exaspertatus*, and *Ahnfeltiopsis leptophyllus* can be found inhabiting either hard or soft substrate (NOAA, 2007). Based on regional surveys performed in the San Francisco Bay from 2003 to 2014, no eelgrass (*Zostera marina*) beds are documented or known to occur within the Project's marine study area (Merkle & Associates, 2014). All submerged aquatic vegetation in the Central Bay is considered critical essential fish spawning habitat for Pacific herring.⁵ The aquatic species described above were not observed during the reconnaissance survey but are expected to occupy subtidal habitat where present within the marine study area and beneath the existing wharf portion of the Project site.

Open Water (Pelagic) Habitat

The open waters of the Oakland-Alameda Estuary constitute the southern boundary of the Project site. The Estuary was originally a tidal slough, but was partially dredged in the mid- to late 1800s to create a viable port and shipping channel. The shipping channel is now dredged on an annual basis to a depth of approximately 50 feet mean high water mark to support shipping operations within the port of Oakland Middle and Inner Harbors (BCDC, 2018). The Estuary is influenced by both freshwater and marine water. It receives freshwater inflow from a combination of natural creeks, human-made stormwater drainage facilities, and direct surface runoff. The Estuary is also influenced by the marine waters of the Bay and is subject to tidal currents. Sediment from Oakland's shoreline and creeks is carried by the tidal current to shoals and sandbars, causing siltation of the nearby shipping channels.

Because of its close proximity to the Pacific Ocean, the open water (pelagic zone) environment of the Central San Francisco Bay is very similar to the open water coastal environment. Pelagic habitat is the predominant marine habitat in Central San Francisco Bay and includes the area between the water surface and the seafloor. The water column can be further subdivided into shallow-water/shoal and deepwater channel areas (NOAA, 2007). The pelagic water column habitat is predominantly inhabited by planktonic organisms that either float or swim in the water, fish, marine birds, and marine mammals.

Marine Birds

The Project site is mostly located on terrestrial habitat with the exception of marine intertidal and subtidal habitat beneath the existing wharf portion of the Project site. In addition, the open water of the Oakland-Alameda Estuary beneath and adjacent to the terrestrial Project site provides foraging, resting, and loafing habitat for a variety of marine birds. Typical marine birds regularly using the open waters of the study area include double-crested and Brandt's cormorants (*Phalacrocorax auritus* and *P. penicillatus*), pigeon guillemot (*Cepphus columba*), herring gull (*Larus argentatus*), mew gull (*L. canus*), Western gull, California gull, ring-billed gull, eared grebe (*Podiceps nigricollis*), western and Clark's grebe (*Aechmophorus occidentalis* and

⁵ The MSA defines "essential fish habitat" as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

A. clarkii), common loon (*Gavia immer*), Caspian tern (*Hydroprogne caspia*), California least tern, and California brown pelican (*Pelecanus occidentalis californicus*). Among the diving benthivores guild, the canvasback (*Aythya valisineria*), greater scaup (*A. marila*), lesser scaup (*A. affinis*), and surf scoter (*Melanitta perspicillata*) are common. Western and Clark's grebe and Brandt's cormorants were observed in the Estuary near the Project site during the reconnaissance survey.

Marine Mammals

Few species of marine mammals are found within the San Francisco Bay; only Pacific harbor seals (*Phoca vitulina richardsi*), California sea lions (*Zalophus californianus*), and harbor porpoises (*Phocoena phocoena*) are sighted year-round and have potential to occur in the Project study area. Most cetacean sightings tend to occur north of the San Francisco – Oakland Bay Bridge, outside of the Project study area.

In general, the presence of marine mammals in the San Francisco Bay is related to distribution and presence of prey species and foraging habitat. Additionally, harbor seals and sea lions use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding (NOAA, 2007). California sea lions are noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest; these are not found within the Project site or adjacent waters. California sea lions may occasionally forage in the waters offshore of the Project site in the adjacent Oakland-Alameda Estuary. Within the vicinity of the Project site, harbor seals are known to use Breakwater Island at Alameda Point and a small floating pier within the breakwater as haul-out sites. Breakwater Island is located on the southern side of Alameda Island, south of the Project site. The nearest known harbor seal haul-out is located on the southeast side of Yerba Buena Island, approximately four miles northwest of the Project site.

Sensitive Natural Communities

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. The CNDDDB reports Northern Coastal Salt Marsh, Northern Maritime Chaparral, Serpentine Bunchgrass, and Valley Needlegrass Grassland within the Oakland West, Oakland East, Hunters Point, Richmond, Briones Valley and San Leandro U.S. Geological Survey 7.5-minute topographic quadrangles including and surrounding the terrestrial study area (CDFW, 2019). While occurrences of these communities are documented within the six quadrangle search area, these sensitive natural communities are not found within the terrestrial study area or Project site. In addition, no terrestrial sensitive natural communities were identified on the Project site during the reconnaissance survey.

Within San Francisco Bay, there are many marine communities and habitats that can be considered particularly sensitive to disturbance or that possess unique or special ecological value (California State Coastal Conservancy et al., 2010). Additionally, certain waters of the U.S. may be recognized “special aquatic sites,” including sanctuaries and refuges, mudflats, wetlands, vegetated shallows, eelgrass and oyster beds, and coral reefs, due to their unique ecological values. Within San Francisco Bay, the two sensitive natural communities that are afforded special attention are eelgrass and native oyster beds.

Eelgrass beds are found in the Oakland-Alameda Estuary approximately two miles northwest of the Project site, adjacent to the northern edge of Alameda Point, and in small patches westward of the Alameda Ferry Terminal, within one mile west of the Project site (California State Coastal Conservancy et al., 2010; Merkel 2014). The Port of Oakland, in conjunction with the United States Army Corps of Engineers (USACE), has created the Middle Harbor Enhancement Area within the former U.S. Navy Fleet and Industrial Supply Center Oakland site. Ten acres of eelgrass suitable habitat have been created, and eelgrass plantings are scheduled to occur in 2019, with the goal of creating 15 acres of eelgrass habitat. This site is located approximately two miles west of the Project site, adjacent to Middle Harbor Shoreline Park and the Port. Additionally, a long term monitoring site for native oysters is located on the southern shore of Alameda Island at the Encinal Boat ramp, approximately two miles south of the Project site. This sensitive natural community has not been identified in the Project development footprint, which includes waters beneath the existing wharf and immediately offshore of the landside portion of the Project site, or in nearshore waters. The nearest known eelgrass beds, at two miles distant, are beyond the Project's sphere of influence; hence, eelgrass beds are not discussed further in this section.

The Olympia oyster (*Ostrea lurida*), also known as the “native oyster,” is native to most of western North America, and it was a key component of the San Francisco Bay marine ecosystem prior to overharvesting and increased siltation from hydraulic mining in the mid-nineteenth century (NOAA, 2008). Thought to have gone extinct in San Francisco Bay, Olympia oysters have been observed slowly reestablishing their presence in the San Francisco Bay. Because of its special importance as a keystone species in the Bay, the restoration and reestablishment of Olympia oysters in the San Francisco Bay is a NOAA Fisheries (also known as National Marine Fisheries Service [“NMFS”]) and CDFW priority (NOAA, 2007).

In their natural state, Olympia oysters form sparse to dense beds in coastal bays and estuaries and in drought conditions will move up into channels and sloughs, dying off when wetter conditions return. Individual oysters are expected in rocky intertidal, subtidal habitats of the Project site such as riprap and piles below the existing wharf, though not in dense quantities that would qualify as oyster beds. Native oyster beds are not known or expected to occur in the Project development footprint, which includes waters beneath the existing wharf and immediately offshore of the landside portion of the Project site, or in nearshore waters. Hence, native oyster beds are not discussed further in this section.

Wetlands and Other Jurisdictional Waters

Oakland-Alameda Estuary and San Francisco Bay

The Project site is adjacent to the Oakland-Alameda Estuary and connected to San Francisco Bay which the USACE classifies as jurisdictional navigable “waters of the U.S.” Navigable waters of the U.S. refer to non-wetland aquatic features (other waters) which are regulated by the Federal Clean Water Act. “Waters of the State” of California are defined as “any surface water or groundwater, including saline waters, within the boundaries of the State” (California Water Code section 13050[e]) and include all federally jurisdictional waters.

As navigable waters of the U.S., the Oakland-Alameda Estuary and San Francisco Bay are regulated by the USACE under Section 10 of the Rivers and Harbors Act up to the mean high water mark, and under Section 404 of the Clean Water Act up to the high tide line. These waters are also regulated by the Regional Water Quality Control Board (RWQCB) as “Waters of the State.”

In addition, the San Francisco Bay Conservation and Development Commission (BCDC) regulates the fill, extraction of materials, and substantial changes in use of land, water, and structures within the Bay and within 100 feet of the bay shoreline (100 feet inland of the mean high water mark). As discussed in Section 4.10, *Land Use, Plans and Policies*, and illustrated in Figure 4.10-6, on the Project site, BCDC’s jurisdiction extends 100 feet inland from the mean high water mark and includes a portion of the Project site.

See *Regulatory Setting* for additional discussion of federal and State waters, and jurisdiction over San Francisco Bay and near-shore areas.

The reconnaissance survey observations confirmed that no wetlands occur in either the marine or terrestrial Project study areas.

Wildlife Movement Corridors

The Project site is not part of an established terrestrial wildlife movement corridor because it does not provide a connection between different terrestrial habitat areas; rather, upland site conditions are consistent with surrounding industrial and commercial use areas within the terrestrial study area that provide the same limited habitat opportunities for local wildlife. Migrating birds that forage in intertidal and marine environments may use the Oakland-Alameda Estuary and San Francisco Bay during migration; however, because the terrestrial study area and reinforced shoreline are developed or highly disturbed, they do not offer high-quality habitat for migrating birds. Additionally, with the exception of the pile-supported wharf structure and stormwater outfall structures, the marine portions of the study area are outside of the active Project site.

Special-Status and Otherwise Protected Species

A number of fish and wildlife species known to occur in either the marine or terrestrial study areas are protected pursuant to federal and/or State endangered species laws, have been designated as species of special concern by federal and/or state agencies, or are afforded certain protection through regulatory means such as by California Fish and Game Code. Species recognized under these terms are collectively referred to as *special-status species*. For the purpose of this EIR, special-status species include the following:

1. Species listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 Code of Federal Regulations (CFR) 17.12 [listed plants], 17.11 [listed animals], and various notices in the Federal Register [proposed species]).
2. Species that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (61 CFR 40, February 28, 1996).
3. Species of special concern, as designated by the USFWS or NOAA Fisheries.

4. Species listed or proposed for listing by the state as threatened or endangered under the California Endangered Species Act (14 California Code of Regulations 670.5).
5. Species described by the CDFW as species of special concern.⁶
6. Species designated as fully protected by the state (there are about 37, most of which are also listed as either endangered or threatened).
7. Raptors (birds of prey), which are specifically protected by California Fish and Game Code (FGC) section 3503.5, thus prohibiting the take, possession, or killing of raptors and owls, their nests, and their eggs.⁷
8. Plants listed as rare or endangered under the California Native Plant Protection Act (FGC section 1900 et seq.).
9. Species that meet the definitions of rare and endangered under CEQA. CEQA section 15380 provides that a plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (CEQA Guidelines, section 15380).
10. Plants considered to be “rare, threatened or endangered in California” under the California Rare Plant Ranking system, which includes Rank 1A, 1B, 2A, and 2B plant species.⁸

In addition, this EIR addresses active nests of any birds, which are protected by California Fish & Game Code section 3503 and migratory birds protected under the Migratory Bird Treaty Act (MBTA).

Lists of special-status plant and animal species assessed for their potential to occur within the study area for terrestrial biological resources were compiled based on data contained in the CNDDDB (CDFW, 2019) and the CNPS Inventory of Rare and Endangered Plants (CNPS, 2019) for the Oakland West, Oakland East, Hunters Point, Richmond, Briones Valley and San Leandro USGS 7.5-minute topographical quadrangles, and the USFWS Official Species List and CallPaC Trust Report (USFWS, 2019). Due to the historic and current uses of the site, no locally significant plants are expected on the Project site. Marine special-status species were compiled from the USFWS, NOAA Fisheries, and CDFW listings, Federal Register notifications, and assorted published and non-published literature relevant to the marine study area of the Central Bay basin. Several additional species were identified based on the findings of technical reports and environmental literature. Lists for terrestrial and marine species that may occur in the Project study areas are addressed separately. Three tables in Appendix BIO (Table BIO-1: Special-Status or Otherwise Protected Plant Species that May Occur in the Study Area, Table BIO-2: Special-Status or Otherwise Protected Terrestrial Animal Species that May Occur in the Study Area, and

⁶ A California species of special concern is one that has been extirpated from the state; meets the state definition of threatened or endangered but has not been formally listed; is undergoing or has experienced serious population declines or range restrictions that put it at risk of becoming threatened or endangered; and/or has naturally small populations susceptible to high risk from any factor that could lead to declines that would qualify it for threatened or endangered status.

⁷ The inclusion of birds protected by FGC Section 3503.5 is in recognition of the fact that these birds are substantially less common in California than most other birds, having lost much of their habitat to development, and that the populations of these species are therefore substantially more vulnerable to further loss of habitat and to interference with nesting and breeding than most other birds. It is noted that a number of raptors and owls are already specifically listed as threatened or endangered by state and federal wildlife authorities.

⁸ California Rare Plant Ranking system rankings are defined in detail in Regulatory Setting.

Table BIO-3: Special-Status Fish and Marine Mammals that May Occur within the Bay Waters of the Study Area) present the special-status species considered in the analysis, including each species' legal or protective status, habitat requirements, and blooming period (for plants), and the potential for occurrence within either the terrestrial or marine Project study areas. Figure BIO-1 in Appendix BIO identifies the locations of regional special-status species occurrences as reported in the CNDDDB within five miles of the Project site.

In determining species' presence in the Project area, as identified in Appendix BIO, a species was considered to have "no potential" to occur if (1) its specific habitat requirements (e.g., serpentine grasslands, as opposed to grasslands occurring on other soils) are not present; or (2) it is presumed to be extirpated from the area or region based on the best scientific information available. A species was designated as having a "low" potential for occurrence if (1) its known current distribution or range is outside of the study area; or (2) only limited or marginally suitable habitat is present within the study area. A species was designated as having a "moderate" potential for occurrence if (1) there is low to moderate quality habitat present within the study area or immediately adjacent areas; and (2) the study area is within the known range of the species, even though the species was not observed during biological surveys. A species was designated as having a "high" potential for occurrence if (1) moderate to high quality habitat is present within the study area; and (2) the study area is within the known range of the species. A species was designated as "present" if it was observed within the Project site during reconnaissance or focused surveys.

Special-Status and Otherwise Protected Plants

The special-status or otherwise protected plant species identified in Appendix BIO, Table BIO-1 are considered to have either no potential to occur in the terrestrial study area or a low potential to occur in the terrestrial study area due to the heavily disturbed or developed (paved, landscaped, or ruderal) nature of the Project site and corresponding absence of suitable habitat for rare species. Due to existing development, no potential habitat that could support special-status plant species was observed during the pedestrian reconnaissance survey of the Project site. No special-status plants are expected on the Project site due to the industrial nature of the site, which is not conducive to special status plants, and they are, therefore, not considered further in this analysis.

Special-Status and Otherwise Protected Terrestrial Animals

Many of the special-status terrestrial animals identified in Appendix BIO, Table BIO-2 have no potential to occur in the terrestrial study area or a low potential to occur in the terrestrial study area due to the absence of suitable habitat that is required by the animal species or necessary for their survival. Similar to the absence of suitable habitat for special-status plants within the Project site, the paved, landscaped, or ruderal condition of the existing site does not contain vital habitat elements, such as adequate prey species, forage, or shelter, required to support sensitive animal species which might otherwise occur in the region where suitable habitat is present. However, several special-status bird and bat species were determined to have at least a moderate potential to occur in the terrestrial study area where suitable habitat for these species is present. While many special-status bird species may occur in the terrestrial and marine Project study areas, particularly in a foraging capacity, nesting habitat for these species is mostly absent from the developed Project site due to a lack of necessary ecological components. For example, Clark's grebe -will

overwinter in the San Francisco Bay, but leave to breed and nest at inland freshwater lakes and marshes with dense border vegetation. Vegetation of the Project site that could support nesting birds includes street trees along Embarcadero West, Market, and Clay streets, and ruderal grasses, coyote bush, marsh gumplant, French broom, poison hemlock, and pampas grass along the shoreline riprap of the east boundary of the Project site. This vegetation provides some nesting substrate for birds but is generally meager and relatively isolated among the otherwise developed terrestrial study area. This built environment, however, can be attractive to some nesting birds that form scrape nests on rooftops, build mud nests in building eaves, or stick nests on building supports. Only those special-status species known to occur within the study area or considered to have at least a moderate potential to occur in the study area were considered in the impact analysis; these species are described below.

Specific individuals in the following groups of terrestrial special-status animals have at least a moderate potential to occur in the terrestrial study area:

- Special-Status Birds
- Other Resident and Migratory Birds
- Special-Status Bats

Special-Status Birds

Special-status birds that have at least a moderate potential to occur onsite are discussed below.

American Peregrine Falcon

The American peregrine falcon (*Falco peregrines anatum*) is a California fully protected species that is regularly observed in the study area. This raptor commonly hunts other birds in flight from perches or from high in the air. The American peregrine falcon nests on cliff ledges in natural environments, but it has adapted to nesting on shelves of tall buildings or structures in urban environments (Sibley, 2001b). Peregrine falcons in the San Francisco Bay area typically begin courtship activities and siting nest locations in January and February then nest from March through May. A banded male offspring from the Fruitvale Bridge nesting pair began nesting on the cranes within the Project site in 2015 and has since been documented nesting at this same location on an annual basis, including in 2019, with a few different mates (Z. Glucs, personal communication, March 6, 2019; S. Doell, personal communication, March 19, 2019).

Osprey

The osprey (*Pandion haliaetus*) is on the CDFW Watch List⁹ and they are also protected under FGC section 3503.5. These large fish-eating raptors can be found around nearly any water body, including salt marshes, rivers, ponds, reservoirs, estuaries, and oceans. Historically, ospreys nested throughout much of California, but by the 1960s much of the osprey population declined in the central and southern California areas. This decline was attributed to harassment, habitat

⁹ The California Department of Fish and Wildlife maintains a “watch list” consisting of taxa that were previously designated as “Species of Special Concern” but no longer merit that status, or which do not yet meet Species of Special Concern criteria, but for which there is concern and a need for additional information to clarify status.

alteration, and DDT¹⁰ use. The osprey prefers to nest within sight of permanent water and readily builds its nest on human-made structures, such as telephone poles, channel markers, duck blinds, and elevated nest platforms designed especially for it. Osprey have made several attempts to nest at various locations in Alameda since 2012 with inconsistent success (Bangert, 2016). In 2018, a nest at Alameda Point's Seaplane Lagoon on an old navigation light stand fledged three chicks (Bangert, 2018). Suitable nesting structures for osprey occur within the Project site on the decommissioned container cranes along the south border with the Oakland-Alameda Estuary and on similar structures within the larger surrounding study area. Foraging habitat is present within the Estuary and San Francisco Bay.

California Gull

The California gull is on the CDFW Watch List. Nesting colonies in California are carefully monitored even though the species has established large breeding colonies in the San Francisco Bay Area (Ackerman et al., 2006:61). The California gull is a medium-sized gull with a yellow bill with a black ring, and pale green-grey legs. The species breeds primarily at lakes and marshes in interior western North America from Canada south to eastern California and Colorado (Sibley, 2001a). Birds that breed inland are migratory, most moving to the Pacific coast in the winter. They nest in colonies, sometimes with other bird species. California gull have been breeding in large numbers at the salt ponds of southern San Francisco Bay. Brooks Island south of Richmond also hosts an active nesting colony (BRN, 2019). The nest is a shallow depression on the ground lined with vegetation and feathers. The female usually lays two or three eggs, and both parents feed the young birds. California gulls forage in flight or pick up objects while swimming, walking, or wading and primarily eat insects, fish, and eggs. They also scavenge at garbage dumps and docks. While California gulls forage in the San Francisco Bay, they are unlikely to nest in the study area or on the Project site in its present condition due to the absence of suitable nesting habitat on the Project site, and the lack of historical nesting in the study area.

California Brown Pelican

A State fully protected Species, California brown pelicans occur in estuarine, marine subtidal, and marine pelagic waters throughout coastal California (Zeiner et al., 1990a). Important habitat for pelicans during the nonbreeding season includes roosting and resting areas, such as offshore rocks, islands, sandbars, breakwaters, and pilings. Nesting and communal roost sites are protected by CDFW. Suitable areas need to be free of disturbances, including regular human activity. This species rests temporarily on the water or isolated rocks, but roosting requires a dry location near food and a buffer from predators and humans. The California brown pelican is a common post-breeding resident (May through November) of the open waters of central San Francisco Bay. Nesting habitat does not occur on the Project site; San Francisco Bay is located outside of the species' breeding range, which is limited to the Channel Islands south to central Mexico. A communal roost site is located on the south side of Alameda on the Alameda Breakwater.

¹⁰ DDT, or dichloro-diphenyl-trichloroethane was developed as the first of the modern synthetic insecticides in the 1940s. It was initially used with great effect to combat malaria, typhus, and the other insect-borne human diseases among both military and civilian populations. It also was effective for insect control in crop and livestock production, institutions, homes, and gardens.

Brown pelican presence within or near the Project site would be limited to loafing on the bulkheads and foraging in the Oakland-Alameda Estuary and adjacent environs.

Double-Crested Cormorant

The double-crested cormorant is on the CDFW Watch List. A year-round resident along the entire coast of California, the species is common along the coast and in estuaries and salt ponds. They forage mainly on fish, crustaceans, and amphibians. These birds sometimes feed cooperatively in flocks of up to 600, often with pelicans, and nest in colonies of a few to hundreds of pairs (Zeiner et al., 1990b). There are breeding colonies on Alcatraz, the Richmond-San Rafael Bridge, electrical towers of the South Bay, and the eastern span of the Bay Bridge (Cabanatuan, 2017; Davis, 2009). This species forages in the San Francisco Bay and is regularly observed offshore of the Project site. Although unlikely, the species has the potential to nest on the decommissioned cranes of the Project site and on other inactive industrial structures within the study area.

Caspian Tern

The Caspian tern is considered a Bird of Conservation Concern¹¹ by the USFWS and it is on the CDFW Watch List. This species is common along the California coast and at scattered locations inland. It nests in colonies from April through early August on sandy estuarine shores, on levees in salt ponds, and on islands in alkali and freshwater lakes. Breeding adults often fly substantial distances to forage in lacustrine,¹² riverine, and fresh and saline emergent wetland habitats. Brooks Island south of Richmond hosts the largest Caspian tern nesting colony in the San Francisco Bay area (BRN, 2019). Nesting has not been documented in the Project study area but Caspian terns may forage in the Oakland-Alameda Estuary.

California Least Tern

The California least tern is federally and State-listed as endangered and a California fully protected Species. This species is the smallest of the North American terns, with grey upper plumage, white under plumage, a distinctive black cap, and black stripes from the cap across the eyes to the beak (USFWS, 2017). The species feeds on small fishes, shrimp, and invertebrates in shallow, estuarine waters nearby breeding sites. Least terns create scrape nests in the sand or among shell fragments at established breeding colonies (USFWS, 2017). This species usually arrives at breeding territory in late April in southern California to mid-May in Northern California. Breeding colonies are located in Southern California along marine and estuarine shores, and in San Francisco Bay within abandoned salt ponds and at the former Alameda Naval Air Station on Alameda Island, located approximately 1.5 miles southwest of the Project site. The Naval Air Station on Alameda Point has hosted a breeding colony since at least 1976, though this site may have been used by California least terns for breeding and rearing young prior to documentation (CDFW, 2019). Least Terns may intermittently use the Oakland-Alameda Estuary within the study area for foraging but are not expected to breed within the Project site due to

¹¹ The USFWS “Birds of Conservation Concern” designation identifies migratory and non-migratory bird species (beyond those already designated as Federally threatened or endangered) that represent the highest USFWS conservation priorities.

¹² Habitat surrounding inland depressions or dammed riverine channels containing standing water such as lakes.

current existing operations at the Howard Terminal and close proximity of the established breeding colony on Alameda Point with preferential habitat conditions.

Black Oystercatcher

The Black oystercatcher (*Haematopus bachmani*) is considered a Bird of Conservation Concern by the USFWS. This species inhabits rocky shores and islands along the Pacific coast from the Aleutian Islands to Baja California. Black oystercatchers feed on marine invertebrates, especially mussels, worms, echinoderms, crustaceans, barnacles, and limpets, and sometimes fish (Ehrlich et al. 1988b). Pairs develop long-term bonds and feeding territories are defended year-round. Nests are typically located above the high tide line and consist of a slight depression lined with rock or shell bits (Ehrlich et al. 1988b). This species has been documented in the Project study area within the Oakland-Alameda Estuary (eBird, 2019a). Individuals may forage among the riprap along the western shoreline of the Project site though are unlikely to nest in the Project site due to the lack of suitable habitat.

Clark's grebe

The Clark's grebe is considered a Bird of Conservation Concern by the USFWS. This species winters in coastal saltwater and brackish water estuaries and is commonly observed communing in large rafts within San Francisco Bay. Clark's grebes forage on marine insects, invertebrates, fish and amphibians (Ehrlich et al., 1988a). They engage in extensive courtship displays prior to breeding, which occurs in freshwater lakes and ponds with ample perimeter marsh vegetation. Nests are built on anchored, vegetative rafts in shallow water. Overwintering and migrant Clark's grebe are known to forage offshore from the Project site.

Red-throated loon

The Red-throated loon (*Gavia stellata*) is considered a Bird of Conservation Concern by the USFWS. This species can be observed foraging aquatic invertebrates while wintering in San Francisco Bay. Red-throated loon do not breed locally but within low tundra wetlands, bogs, and forest ponds of the Arctic Tundra. Overwintering and migrant red-throated loons may occur offshore of the Project site within study area waters.

Other Resident and Migratory Birds

Although many native birds are not considered to be special-status species, their nests are protected by the MBTA and California Fish and Game Code. A few resident and migratory birds were identified that could nest in existing street trees and in ruderal vegetation between shoreline riprap and paved areas along the western Project site boundary and in or on existing buildings within the study area. The Black-crowned night heron (*Nycticorax nycticorax*), Cooper's hawk (*Accipiter cooperii*), and American crow (*Corvus brachyrhynchos*) could roost or nest in street trees of the study area and black phoebes (*Sayornis nigricans*) could build mud nests on the outside of existing buildings of the Project site. Other passerine species, such as house finch, lesser goldfinch (*Spinus psaltria*), Allen's hummingbird (*Selasphorus sasin*) and Anna's hummingbird (*Calypte anna*), could build nests in street trees or other landscaped or ruderal vegetation of the Project site and surrounding study area, while killdeer (*Charadrius vociferous*) and mourning doves build nests on the ground. Great blue herons (*Ardea herodias*) and spotted sandpipers (*Actitis macularius*) could also forage within the exposed intertidal shoreline along the

western boundary of the site; however, nesting habitat for these species does not occur in the Project study area.

Special-Status and Otherwise Protected Bats

Pallid bat (*Antrozous pallidus*), considered a California Species of Special Concern by the CDFW and a high-priority species by the Western Bat Working Group (WBWG),¹³ has a moderate potential to roost within the Project study area. The common Mexican free-tailed bat (*Tadarida brasiliensis*), which have no special-status, have been documented with abundance in the San Francisco Bay Area urban environment in locations with open space near water and more recent surveys in the South Bay provide evidence that Mexican-free tailed bat forage over open tidal waters (Krauel, 2009; Brickley, 2012). Suitable roosting habitat for these bat species within the Project site primarily includes open spaces, cracks, and crevices within existing buildings, though these species are also known to roost in tree foliage, beneath the exfoliating bark of trees, and in tree cavities. Of the existing buildings and structures on the Project site, the portions of the Peaker Power Plant complex may be suitable for bat roosts due to the lack activity within the building and identified entry points.

Special-Status Fish and Marine Mammals

Special-status or otherwise protected fish and marine mammal species with potential to occur in the marine study area are identified in Appendix BIO, Table BIO-3. Fish species present in the Central Bay basin that are included in Fishery Management Plans (FMP) prepared by regional Fishery Management Councils under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) are identified in Appendix BIO, Table BIO-4. Specific individuals in the following groups of marine special-status animals have at least a moderate potential to occur in the marine study area:

- Special-Status Fish
- Special-Status Marine Mammals
- Managed U.S. Fisheries Species
- Other Special-Status Marine Species

Special-Status Fish

Green sturgeon

The federally threatened, southern Distinct Population Segments (DPS) of North American green sturgeon (*Acipenser medirostris*) are the most widely distributed member of the sturgeon family and the most marine-oriented of the sturgeon species, entering rivers only to spawn. Within bays and estuaries, sufficient water flow is required to allow adults to successfully orient to the incoming flow and migrate upstream to spawning grounds. Green sturgeon migrating between the Pacific Ocean and spawning habitat in the Sacramento River watershed rarely travel south of the San Francisco Bay Bridge. Typically, adults take a more direct route from San Pablo Bay, passing through Raccoon Strait adjacent to Angel Island, and out the Golden Gate Bridge (Kelly et al., 2007). So while sturgeon do have the potential to temporarily occur year-round within the

¹³ The WBWG is composed of agencies, organizations, and individuals interested in bat research, management, and conservation from the 13 western states and provinces. Species are ranked as High, Medium, or Low Priority in each of 10 regions in western North America. The CDFW's CNNDDB list tracks California bat species that are Medium or High Priority.

Oakland-Alameda Estuary waters adjacent to the Project site, their preferred migration routes suggest a low-likelihood for presence. However, green sturgeon have the potential to be present throughout all marine portions of the Project study area at any time of the year.

Chinook salmon

The Chinook salmon (*Oncorhynchus tshawytscha*) that inhabit the San Francisco Bay are comprised of three distinct races: winter-run, spring-run, and fall/late fall-run.¹⁴ These races are distinguished by the seasonal differences in adult upstream migration, spawning, and juvenile downstream migration. Chinook salmon are anadromous fish, spending three to five years at sea before returning to fresh water to spawn. These fish pass through San Francisco Bay waters to reach their upstream spawning grounds. In addition, juvenile salmon migrate through the Bay en route to the Pacific Ocean.

Sacramento River winter-run Chinook salmon, listed as endangered under the federal and State endangered species acts, migrate through the San Francisco Bay from December through July with a peak in March (Moyle, 2002). Central Valley spring-run Chinook, listed as threatened under the federal and State endangered species acts, migrate to the Sacramento River from March to September with a peak spawning period between late August and October (Moyle, 2002). The Central Valley fall/late fall-run Chinook salmon is a California species of special concern.

While adult and juvenile (smolts) winter-run, spring-run, and fall-run Chinook salmon may occasionally occur in waters adjacent to the Project site during migration, telemetry studies tracking the movement of juvenile salmonids suggest that the primary migration corridor is through the northern reaches of Central San Francisco Bay (Raccoon Strait and north of Yerba Buena Island) (Jahn, 2011). Additionally, evaluation of 30-years of Interagency Ecological Program (IEP) monthly mid-water fish trawl data and three-years of acoustic tag data of hatchery-raised salmonids suggest that out-migrating salmonids (steelhead and salmon) penetrate very little into the southern portions of San Francisco Bay (Jahn, 2011). No spawning or rearing habitat for listed runs of Chinook salmon exist in close proximity to the Project site. Thus, there is only a low likelihood of occurrence for Chinook within the vicinity of the Project site.

Steelhead

Similar to Chinook salmon, steelhead (*O. mykiss*) within California are subdivided into Distinct Population Segments based on their life history. Within the Central San Francisco Bay, both the federally threatened Central California Coast (CCC) and federally threatened California Central Valley steelhead may use the channel habitat adjacent to the Project study area as a migratory corridor from the Pacific Ocean to spawning habitat.

CCC steelhead have small spawning runs in multiple Bay tributaries including San Leandro Creek, approximately five miles southeast of the Project site (Goals Project, 2000). Fish migrating to and from these spawning grounds may occur in Project study area waters, including the Oakland-Alameda Estuary. Juvenile steelhead travel episodically from natal streams during fall, winter, and spring high flows, with peak migration occurring in April and May (Fukushima and Lesh, 1998). Emigrating CCC steelhead use tributaries of San Francisco Bay and portions of

¹⁴ These races are referred to as Evolutionarily Significant Units.

the San Francisco Bay for rearing and as a migration corridor to the ocean. Although data regarding the emigration timing of steelhead smolts from nearby watersheds is lacking, steelhead smolts in other streams within the DPS including those draining to San Francisco Bay, typically emigrate from March through June (Fukushima and Lesh, 1998). Critical habitat for CCC steelhead includes all river reaches and estuarine areas accessible to steelhead in coastal river basins, from the Russian River to Aptos Creek (inclusive), and the drainages of San Francisco and San Pablo Bays. Also included are adjacent riparian zones, all waters of San Pablo Bay west of the Carquinez Bridge, and all waters of San Francisco Bay to the Golden Gate. Therefore, critical habitat for this DPS includes the waters adjacent to the Project site.

Longfin smelt

The longfin smelt (*Spirinchus thaleichthys*) is a small, slender-bodied pelagic fish listed as threatened under the California Endangered Species Act and are a candidate for listing under the Federal Endangered Species Act. Longfin smelt are most likely to occur within the Central San Francisco Bay during the late summer months before migrating upstream in fall and winter. During winter months, when fish are moving upstream to spawn, high outflows may push many fish back into the San Francisco Bay.¹⁵ Longfin smelt have moderate likelihood of occurrence during spring and summer months, but are unlikely to be present during the fall / winter period.

Pacific herring

Pacific herring (*Clupea pallasii*) are a CDFW managed species¹⁶ and are protected within the San Francisco Bay under the state Marine Life Management Act which provides guidance, in the form of Fisheries Management Plans, for the sustainable management of California's historic fisheries. The department, in partnership with the fishing industry and conservation groups, is currently updating the Pacific Herring Fisheries Management Plan, which will formalize a strategy for the future management of the fishery.

The Pacific herring is a small schooling marine fish that enters estuaries and bays to spawn. This species is known to spawn along the Oakland and San Francisco waterfronts and attach its egg masses to eelgrass, seaweed, and hard substrates such as pilings, breakwater rubble, and other hard surfaces. An individual can spawn only once during the season, and the spent female returns to the ocean immediately after spawning. Spawning usually takes place between October and March with a peak between December and February. After hatching, juvenile herring typically congregate in the San Francisco Bay during the summer and move into deeper waters in the fall.

Portions of the Oakland-Alameda Estuary have been identified as a potential herring spawning locations with habitat consisting man-made rip-rap, pilings, and boat hulls and subtidal eelgrass, hard sand, and oysters (Watters et al., 2004). However, while suitable habitat exists, no herring spawning has been observed along this portion of the Oakland waterfront since CDFW began mapping the herring spawn in the 2012-2013 survey year (see annual CDFW reporting, in particular 2013 through 2018 survey years; CDFW, 2018). Annual reporting on herring spawning

¹⁵ Moyle, P.B., *Inland Fishes of California*, University of California Press, Berkeley and Los Angeles, CA, 2002.

¹⁶ The Pacific herring fishery is managed by the State of California through CDFW and the Fish and Game Commission. Major elements of the management system are limited entry permitting, seasonal closures, annual surveys, fishing limits, and mesh size restrictions.

within San Francisco Bay has consistently observed herring spawning on the Central Bay-facing side of Alameda Island, adjacent to the Ballena Isle Marina, but it has not observed herring within the Estuary (CDFW, 2018).

Special-Status Marine Mammals

Pacific harbor seal

Pacific harbor seal (*Phoca vitulina richardsi*) is a permanent resident in the San Francisco Bay and is commonly seen in waters near the Project site. Harbor seals are protected under the Federal Marine Mammal Protection Act (MMPA). They have been observed as far upstream in the Delta and Sacramento River as the City of Sacramento, though their use of the habitat north of Suisun Bay is irregular (Goals Project, 2000). The closest location to the Project site where harbor seals are known to haul out year-round are on the southeast side of Yerba Buena Island, on U.S. Coast Guard property, approximately four miles northwest of the Project site. Individual seals may occasionally haul out farther to the west and southwest of the main haul out site, depending on space availability and conditions at the main haul out area. Another haul out site in the study area is located on a floating dock between Encinal Beach and the U.S.S. Hornet Sea, Air, and Space Museum on the south side of Alameda Island (Goals Project, 2015); more than five miles from the site by aquatic access. Harbor seals feed in the deepest waters of the Bay, with the region from the Golden Gate Bridge to Treasure Island and south to the San Mateo Bridge, being the principal feeding sites (Kopec et al., 1995).

California sea lion

Like the harbor seal, the California sea lion (*Zalophus californianus*) lives in the San Francisco Bay-Delta and is protected by the MMPA. A common, abundant marine mammal, they are found throughout the West Coast, generally within 10 miles of shore. They breed in Southern California and the Channel Islands, after which they migrate up the Pacific coast to the Bay. They haul out on offshore rocks, sandy beaches, and onto floating docks, wharfs, vessels, and other man-made structures in the Bay and coastal waters. California sea lions feed on a wide variety of seafood, mainly squid and fish and sometimes even clams. Commonly eaten fish and squid species include salmon, hake, Pacific whiting, anchovies, herring, schooling fish, rockfish, lamprey, dog fish, and market squid (Southwest Fisheries Science Center, 2015). California sea lions may forage in the Oakland-Alameda Estuary waters adjacent to the Project site and occur in the larger Central San Francisco Bay.

Harbor porpoise

Harbor porpoise (*Phocoena phocoena*) inhabit northern temperate and subarctic coastal and offshore waters and are protected by the MMPA. In the North Pacific, they are found from Japan north to the Chukchi Sea and from Monterey Bay, California to the Beaufort Sea. They are most often observed in bays, estuaries, harbors, and fjords less than 650 feet deep, like the Central San Francisco Bay and the Oakland-Alameda Estuary waters adjacent to the Project site. The primary food for harbor porpoises is fish and squid.

Managed U.S. Fisheries Species

Under the MSA (see *Regulatory Setting*, for a description), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), NOAA Fisheries, Fishery Management Councils,

and federal agencies are required to cooperatively protect Essential Fish Habitat (EFH) for commercially important fish species such as Pacific coast groundfish, salmon, and coastal pelagic fish and squid. As defined by the U.S. Congress, EFH includes “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Fish species present in the Central Bay basin that are included in Fishery Management Plans (FMP) prepared by regional Fishery Management Councils under the MSA are listed in Appendix BIO, Table BIO-4.

Eelgrass in particular is designated as EFH for various federally-managed fish species within the Pacific Coast Groundfish and Pacific Coast Salmon FMPs. Eelgrass is also considered a habitat area of particular concern (HAPC) for various species within the Pacific Coast Groundfish FMP. An HAPC is a subset of EFH; these areas are rare, particularly susceptible to human-induced degradation, especially ecologically important, and/or located in an environmentally stressed area. As previously described under “*Sensitive Natural Communities*,” eelgrass beds are found in the Oakland-Alameda Estuary approximately two miles northwest and west of the Project site, but are not expected in waters immediately offshore of the Project site or within the development footprint (California State Coastal Conservancy et al., 2010; Merkel 2014).

Critical Habitat

The USFWS and NOAA Fisheries designate critical habitat for species that they have listed as threatened or endangered. “Critical habitat” is defined in Section 3(5)(A) of the Federal Endangered Species Act as those lands (or waters) within a listed species’ current range that contain the physical or biological features that are considered essential to the species’ conservation, as well as areas outside the species’ current range that are determined to be essential to its conservation. The Project site is not located within designated critical habitat for any USFWS-listed species (USFWS, 2019). Critical habitat for green sturgeon and Central California coast steelhead, both of which are NOAA Fisheries-listed species, is designated in San Francisco Bay and includes the waters of the Oakland-Alameda Estuary adjacent to the Project site.

4.3.2 Regulatory Setting

This section briefly describes federal, State, and local regulations, permits, and policies pertaining to both terrestrial and marine biological resources found on or within the Project study areas.

Federal Regulations

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) (16 U.S. Code section 1531 et seq.) designates threatened and endangered animal and plant species and provides measures for their protection and recovery. The “take” of listed species, defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct,” is prohibited without first obtaining a federal permit. Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage (i.e., harm) the habitat of listed wildlife species require approval from the USFWS or NOAA Fisheries. The act also generally requires determination of critical habitat for listed species.

For projects that require a federal permit (e.g., the proposed Project would require a permit from the USACE for effects to jurisdictional other waters), the lead federal agency is required by FESA Section 7 to ensure that any action they authorize, implement, or fund will not jeopardize the continued existence of any federally threatened or endangered species or destroy or adversely modify designated critical habitat. Under the FESA Section 7 consultation process, the lead federal agency (e.g., the USACE) submits a biological assessment that analyzes whether the project is likely to adversely affect listed species or their critical habitat, and proposes suitable avoidance, minimization, or compensatory mitigation measures. If the action would adversely affect the species, the USFWS and/or NOAA Fisheries then responds to the biological assessment by concurring that no adverse effects are anticipated, or issuing its Biological Opinion determining whether and how the project is likely to adversely affect the species and the extent to which it may jeopardize the continued existence of the species or result in adverse modification of critical habitat.

Migratory Bird Treaty Act

The Federal Migratory Bird Treaty Act (MBTA) (16 United States Code, section 703, Supp. I, 1989) generally prohibits the killing, possessing, or trading of migratory birds, bird parts, eggs, and nests, except as provided by the statute. This act authorizes the Secretary of the Interior to regulate the taking of migratory birds. It further provides that it is unlawful, except as permitted by regulations, “to pursue, hunt, take, capture, kill or attempt to take, capture, or kill any migratory bird, or any part, nest or egg of any such bird...” Solicitor opinions for various U.S. administrations have varied in their interpretation of “take,” and current guidance excludes incidental take as a violation of the MBTA. However, there are examples of Circuit court cases in which non-intentional harm has been determined to be a violation. As interpreted by U.S. Department of the Interior Solicitor’s Opinion M-37050 in December 22, 2017 and subsequently by USFWS guidance issued on April 11, 2018, the accidental or incidental take of birds resulting from an activity is not prohibited by the Act when the underlying purpose of the activity is not to take birds. However, such actions may be prohibited by Fish and Game Code.

Marine Mammal Protection Act

The MMPA of 1972, and as amended, establishes a federal responsibility for the protection and conservation of marine mammal species by prohibiting the harassment, hunting, capture, or killing of any marine mammal. The primary authority for implementing the act belongs to the USFWS and NOAA Fisheries.

Federal Regulation of Wetlands and Other Waters

Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The federal government defines and regulates other waters, including wetlands, in Section 404 of the Clean Water Act. Wetlands are “areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires the presence of three identification parameters: wetland hydrology, hydric soils, and hydrophytic vegetation.

The regulations and policies of various federal agencies (e.g., the USACE, U.S. Environmental Protection Agency (U.S. EPA), and the USFWS) mandate that the filling of wetlands be avoided unless it can be demonstrated that there is no practicable alternative to filling. The USACE has primary federal responsibility for administering regulations that concern waters and wetlands in the Project study area under the statutory authority of the Rivers and Harbors Act (Sections 9 and 10) and the Clean Water Act (Section 404).

Pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 United States Code section 403), the USACE regulates the construction of structures in, over, or under, excavation of material from, or deposition of material into *navigable waters*. In tidal areas, the limit of navigable water under Section 10 is the elevation of mean high water mark; in nontidal waters it is the ordinary high water mark. Larger streams, rivers, lakes, bays, and oceans are examples of navigable waters regulated under Section 10 of the Rivers and Harbors Appropriation Act. The act prohibits the unauthorized obstruction or alteration of any navigable water (33 United States Code section 403). Navigable waters under the act are those “subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (33 CFR Section 3294). Typical activities requiring Section 10 permits are construction of or modifications to piers, wharves, bulkheads, marinas, ramps, floats, intake structures, cable or pipeline crossings, and dredging and excavation.

Section 404 of the Federal Clean Water Act (33 United States Code 1251–1376) prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a permit from the USACE. The jurisdiction of the USACE in tidal waters under Section 404 extends to the high tide line or high tide mark, simply indicating a point on the shore where water reaches a peak height at some point each year. The Clean Water Act prohibits the discharge of any pollutant into jurisdictional waters without a permit. Implicit in the Clean Water Act definition of pollutant is the inclusion of dredged or fill material regulated by Section 404 (22 United States Code 1362). The discharge of dredged or fill material typically means adding into waters of the U.S. materials such as concrete, dirt, rock, pilings, or side-cast material for the purpose of replacing an aquatic area with dry land or raising the elevation of an aquatic area. Activities typically regulated under Section 404 include the use of construction equipment such as bulldozers, and the leveling or grading of sites where jurisdictional waters occur.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 United States Code 1801–1884) of 1976, as amended in 1996 and reauthorized in 2007, applies to fisheries resources and fishing activities in federal waters. Federal waters extend to 200 miles offshore. Conservation and management of U.S. fisheries, development of domestic fisheries, and phasing out of foreign fishing activities are the main objectives of the legislation.

The MSA defines essential fish habitat as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The act, as amended through 2007, sets forth a number of new mandates for the NOAA Fisheries, regional Fishery Management Councils, and federal action agencies to identify essential fish habitat and to protect important marine and anadromous fish habitat. The MSA provided the NOAA Fisheries with legislative authority to

regulate fisheries in the United States in the area between 3 miles and 200 miles offshore and established eight regional Fishery Management Councils that manage the harvest of the fish and shellfish resources in these waters. The councils, with assistance from the marine fisheries service, are required to develop and implement Fishery Management Plans, which include the delineation of essential fish habitat for all managed species. A Fisheries Management Plan is a plan to achieve specified management goals for a fishery and is comprised of data, analyses, and management measures. Essential fish habitat that is identified in a management plan applies to all fish species managed by that plan, regardless of whether the species is a protected species or not. Federal agency actions that fund, permit, or carry out activities that may adversely affect essential fish habitat are required under Section 305(b), in conjunction with required Section 7 consultation under the Federal Endangered Species Act, to consult with the NOAA Fisheries regarding potential adverse effects of their actions on essential fish habitat and to respond in writing to the NOAA Fisheries' recommendations.

The waters of the Central Bay basin of the San Francisco Bay are designated as essential fish habitat for fish managed under three Fisheries Management Plans. In total, 13 species of commercially important fish and sharks managed in the Pacific Coast Groundfish and Coastal Pelagic Species management plans use this region of San Francisco Bay as either essential fish habitat or a habitat area of particular concern. In addition, the Pacific Coast Salmon management plan, which includes Chinook salmon, identifies all of the San Francisco Bay as essential fish habitat (USACE, 2009).

State Regulations

California Endangered Species Act

Under the California Endangered Species Act (CESA), CDFW has the responsibility for maintaining a list of threatened and endangered species (FGC Section 2070). CDFW also maintains a list of candidate species, which are species formally under review for addition to either the list of endangered species or the list of threatened species.

CESA prohibits the take of species that the California Fish and Game Commission has designated as either threatened or endangered in California. Take in the context of this regulation means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill a listed species (FGC Section 86). The take prohibitions also apply to candidates for listing under CESA. However, CESA Section 2081 allows CDFW to issue permits for the minor and incidental take of species by an individual or permitted activity listed under the act.

In accordance with the requirements of CESA, an agency reviewing a project within its jurisdiction must determine if any State-listed endangered, threatened, or candidate species could be present in the project area. The agency also must determine if the project could have a potentially significant impact on such species.

California Fish and Game Code

Fully Protected Species

Certain species are considered fully protected, meaning that the California Fish and Game Code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Fully protected amphibians and reptiles, fish, birds, and mammals are listed in FGC sections 5050, 5515, 3511, and 4700, respectively.

Protection of Birds and Their Nests

Under FGC Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. FGC Section 3503.5 prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Migratory non-game birds are protected under FGC Section 3800. FGC Section 3513 adopts the federal definition of migratory bird take, which is defined by the Secretary of the Department of the Interior under provisions of the MBTA. FGC Section 3513 does not prohibit the incidental take of birds if the underlying purpose of the activity is not to take birds.

State Regulation of Wetlands and Other Waters

California's authority in regulating activities in wetlands and waters in the project area resides primarily with the State Water Resources Control Board (SWRCB). The SWRCB, acting through the San Francisco Bay RWQCB, must certify that a proposed USACE permit action meets state water quality objectives (Clean Water Act Section 401). Any condition of water quality certification is then incorporated into the USACE Section 404 permit authorized for the project.

The SWRCB and RWQCB also have jurisdiction over waters of the State under the Porter-Cologne Water Quality Control Act (Porter-Cologne). The SWRCB and RWQCB evaluate proposed actions for consistency with the RWQCB's Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan), and authorize impacts on waters of the State by issuing Waste Discharge Requirements or, in some cases, a waiver of Waste Discharge Requirements.

The San Francisco Bay Conservation and Development Commission (BCDC or Commission) has jurisdiction over coastal activities occurring within and around the San Francisco Bay and Suisun Marsh. The Commission was created by the McAteer-Petris Act (California Government Code sections 66600–66682). The Commission regulates fill, extraction of materials, and substantial change in use of land, water, and structures in the San Francisco Bay and development within 100 feet of the mean high water mark. The Commission has jurisdiction over all areas of the San Francisco Bay that are subject to tidal action, including subtidal areas, intertidal areas, and tidal marsh areas that are between mean high tide and five feet above mean sea level

Assembly Bill No. 734

The Project has applied for certification by the Governor pursuant to California Environmental Quality Act: Oakland Sports and Mixed-Use Project [Assembly Bill 734 (AB 734)], approved on September 30, 2018, and if certified by the Governor, the EIR will be subject to the procedural requirements of that statute. The bill requires that project design and implementation comply with

the City of Oakland's Bird Safety Measures, adopted in 2013. The bill also requires that nighttime programming apply best management practice strategies to avoid and reduce potential collision hazards for migratory and resident birds, to the extent feasible.

Local Plans, Ordinances and Policies

City of Oakland General Plan

The *Estuary Policy Plan* of the Oakland General Plan presents recommendations related to land use, development, urban design, shoreline access, public spaces, regional circulation, and local street improvements within the 5.5-mile long Estuary Planning Area which extends from Adeline Street on the west to 66th Avenue on the east, between the Nimitz Freeway and the Oakland-Alameda Estuary. The Jack London District of the Estuary Planning Area, extending from Adeline Street to Oak Street includes the portion of the proposed Project site east of Jefferson Street (i.e., not the Howard Terminal). The Estuary Plan objectives, policies, and recommendations pertaining to natural resources include the following:

Shoreline Access and Public Spaces Objective SA-5: Enhance natural areas along the shoreline. Enhance remnant tidal marshes and other natural areas to add visual enjoyment and diversity to the shoreline, expand wildlife habitat for birds and other species, and foster outdoor learning experiences.

The *Open Space, Conservation, and Recreation (OSCAR) Element* of the City of Oakland General Plan was adopted in 1996. OSCAR policies pertaining to natural resources with potential relevance to adoption and development under the Specific Plan include the following:

Open Space

Policy OS-7.1: Promotion of Beneficial Waterfront Uses. Require land uses along the shoreline which promote the beneficial uses of the Estuary and Bay waters, including a balanced mix of commercial shipping facilities; water-dependent industry, commerce, and transportation; recreation; water-oriented services and housing; and resource conservation.

Policy OS-9.2: Use of Natural Features to Define Communities. Use open space and natural features to define city and neighborhood edges and give communities within Oakland a stronger sense of identity. Maintain and enhance city edges, including the greenbelt on the eastern edge of the city, the shoreline, and San Leandro Creek. Use creeks, parks and topographical features to help define neighborhood edges and create neighborhood focal points.

Policy OS-12.1: Street Tree Selection. Incorporate a broad and varied range of tree species which is reflected on a city-maintained list of approved trees. Street tree selection should respond to the general environmental conditions at the planting site, including climate and micro-climate, soil types, topography, existing tree planting, maintenance of adequate distance between street trees and other features, the character of existing development, and the size and context of the tree planting area.

Policy OS-12.2: Street Tree Maintenance. Maintain street trees to promote their natural forms, eliminate hazardous conditions, provide adequate vertical clearance over streets and sidewalks, and abate pest and disease problems.

Policy OS-12.3: Street Tree Removal. Remove street trees only if they are hazardous, severely and incurably infested with insects or blight, or are severely and irreversibly damaged and deformed. Provide replacement trees in all cases where the site is suitable for street trees.

Conservation

Policy C0-4.2: Drought-Tolerant Landscaping. Require use of drought-tolerant plants to the greatest extent possible and encourage the use of irrigation systems which minimize water consumption.

Policy C0-6.1: Creek Management. Protect Oakland's remaining natural creek segments by retaining creek vegetation, maintaining creek setbacks, and controlling bank erosion. Design future flood control projects to preserve the natural character of creeks and incorporate provisions for public access, including trails, where feasible. Strongly discourage projects which bury creeks or divert them into concrete channels.

Policy C0-6.5: Protection of Bay and Estuary Waters. Protect surface waters of the San Francisco Bay Estuary system, including San Francisco Bay, San Leandro Bay, and the Oakland Estuary. Discourage shoreline activities which negatively impact marine life in the water and marshland areas.

Policy CO-6.6: Restriction on Bay Fill. Prohibit bay fill unless there is compelling evidence that its benefits will outweigh the environmental and other costs. In such instances, support compliance with the mitigation requirements of the Bay Conservation and Development Commission and other regulatory agencies.

Policy C0-7.2: Native Plant Restoration. Encourage efforts to restore native plant communities in areas where they have been compromised by development or invasive species, provided that such efforts do not increase an area's susceptibility to wildfire.

Policy C0-7.4: Tree Removal. Discourage the removal of large trees on already developed sites unless removal is required for biological, public safety, or public works reasons.

Policy C0-9.1: Habitat Protection. Protect rare, endangered, and threatened species by conserving and enhancing their habitat and requiring mitigation of potential adverse impacts when development occurs within habitat areas.

Policy C0-11.2: Migratory Corridors. Protect and enhance migratory corridors for wildlife. Where such corridors are privately owned, require new development to retain native habitat or take other measures which help sustain local wildlife population and migratory patterns.

Oakland Municipal Code

City of Oakland Protected Tree Ordinance

The City of Oakland Protected Tree Ordinance (OMC Chapter 12.36) permits removal of protected trees under certain circumstances. To grant a tree removal permit, the City must determine that removal is necessary in order to accomplish one of the following objectives:

- to ensure public health and safety,
- to avoid an unconstitutional taking of property,

- to take reasonable advantage of views,
- to pursue acceptable professional practice of forestry or landscape design, or
- to implement the vegetation management prescriptions in the S-11 site development review zone.

Protected trees include the following:

- *Quercus agrifolia* (California or coast live oak) measuring four inches diameter at breast height (dbh) or larger, and any other tree measuring nine inches dbh or larger except *Eucalyptus* spp. and *Pinus radiata* (Monterey pine); provided, however, Monterey pine trees on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be Protected trees.

The Port of Oakland currently has jurisdiction over tree removal in the Port area and approves tree removal consistent with Oakland's Tree Ordinance.

City of Oakland Creek Ordinance

The City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) provides a high level of protection for creeks within city limits. Aside from the Estuary, which is considered a waterway under the City's ordinance, no traditional creeks occur on the Project site or in the larger Project study area. The ordinance is intended to address potential water quality impacts from stormwater and other discharges into identified waterways. This ordinance is not applicable to lands under Port permitting authority; however, the City and the Port are cooperating to establish a shared regulatory framework under which the Project will be subject to the Creek Protection Ordinance.

4.3.3 Significance Criteria

The City of Oakland has established thresholds of significance for CEQA impacts that incorporate those in Appendix G of the CEQA Guidelines (City of Oakland, 2016). The Project would cause significant adverse impacts to biological resources if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
3. Have a substantial adverse effect on federally protected wetlands (as defined by section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means;
4. Substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan;

6. Fundamentally conflict with the City of Oakland Tree Protection Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) by removal of protected trees under certain circumstances;¹⁷ or
7. Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources.¹⁸

The changes to Appendix G of the State CEQA Guidelines effective in December 2018 were intended to reflect recent changes to the CEQA statutes and court decisions. Many of these recent changes and decisions are already reflected in the City's adopted significance thresholds, which have been used to determine the significance of potential impacts. To the extent that the topics or questions in Appendix G are not reflected in the City's thresholds, these topics and questions have been taken into consideration in the impact analysis below. Specifically, criteria (c) under Appendix G has been revised to include State or federal protected wetlands. The City of Oakland's criterion (3) already includes consideration of State protected wetlands and thus is consistent with Appendix G.

Approach to Analysis

Impacts on biological resources are identified and evaluated based on relevant CEQA and federal, State, and local standards, policies, and guidelines; on the likelihood that special-status species, sensitive habitats and natural communities, wetlands and waters of the U.S., and wildlife corridors are present within the Project site (as described in Section 4.3.1, *Environmental Setting*); and on the likely effects that Project construction, operation, and maintenance might have on these resources. Special-status species or other sensitive resources determined to be absent or have low potential to occur in the Project study area (as presented in Appendix BIO) are not considered in the impact analysis.

This section analyzes potential Project impacts to biological resources during the construction, operations, and maintenance phases of the proposed Project. The impact analysis does not differentiate between the phasing of Project construction activities because adverse effects associated with construction activities are assumed to occur on a block-by-block or parcel-by-parcel basis and would be similar as each parcel/block is developed, regardless of the construction phase (i.e., Phase 1 and Buildout). Any associated mitigation measures, if recommended to avoid or reduce such effects, would be implemented as parcels are developed, including shoreline parcels, regardless of the development's phasing. The exception to this assumption includes the proposed and potential as-needed temporary in-water construction work

¹⁷ Factors to be considered in determining significance include the number, type, size, location and condition of (a) the protected trees to be removed and/or impacted by construction and (b) protected trees to remain, with special consideration given to native trees. Protected trees include *Quercus agrifolia* (California or coast live oak) measuring four inches diameter at breast height (dbh) or larger, and any other tree measuring nine inches dbh or larger except eucalyptus and *Pinus radiata* (Monterey pine); provided, however, that Monterey pine trees on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be protected trees.

¹⁸ Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of riparian and/or aquatic habitat through (a) discharging a substantial amount of pollutants into a creek, (b) significantly modifying the natural flow of the water, (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability, or (d) adversely impacting the riparian corridor by significantly altering vegetation or wildlife habitat.

(see *Considerations for Analysis of Construction Impacts – In-water Work*, below) would occur in Phase 1 and have different environmental effects associated with in-water work than those associated with development of inland blocks/parcels. Any proposed mitigation associated with potential as-needed temporary in-water construction work would specifically apply to those activities.

This impact analysis is divided into two broad categories: terrestrial (includes aerial species) and marine. This analysis addresses potential direct, indirect, and cumulative impacts of the Project to special-status species, sensitive natural communities, wetlands and waters of the U.S., and other biological resources. Direct impacts are those resulting from the Project and that occur at the same time and place. Indirect impacts are caused by the Project, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the Project. Impact analyses typically characterize effects to biological resources as temporary or permanent, with a permanent impact referring to areas that are developed or otherwise precluded from restoration to a pre-project state.

For the purposes of this EIR, the word “substantial” as used in the significance criteria above is defined by the following three principal components:

- i. Magnitude and duration of the impact (e.g., substantial/not substantial)
- ii. Uniqueness of the affected resource (rarity)
- iii. Susceptibility of the affected resource to disturbance

Considerations for Analysis of Construction Impacts

The analysis discusses special-status terrestrial and marine animals that could occur in these two respective study areas and identifies the potential temporary impacts, such as those that could affect species or their habitat only during the construction period, and permanent impacts, including substantial alteration or loss of habitat, on those species as a result of construction. The analysis is based on the results of a site reconnaissance survey, database search results, and technical reports, and describes applicable regulations and Project construction activities.

In-water Work

The proposed Project includes temporary in-water work related to relocation and construction of stormwater and drainage facilities (including the necessary installation of a sandbag berm or steel cofferdam around the proposed outfall opening), as needed, in the southeast area of the Project site. In addition, although the Project is anticipated to be designed to avoid the need for new in-water piles, the retention of the wharf and cranes in overwater areas (wharf) may require reinforcement of waterfront areas, and in particular, the limited addition of in-water piles to support the wharf, improvements, and the cranes. If needed, such support work is anticipated to require approximately 0.01 acre (500 square feet) of new in-water piles. The potential need for these new in-water piles, and the associated impacts of construction, are analyzed in this analysis should this work be necessary. Piles would be vibrated during the allowable fish windows. Impact hammers shall only be used after piles have reached the point of refusal with vibratory methods.

Considerations for Analysis of Operational Impacts

Upon completion of Project construction, operations would consist of entertainment, residential, commercial, recreational, parking and open space land uses and would generally be restricted to the Project footprint. Onsite biological resources would include landscaped park and open space areas among buildings and adjacent to and including the Oakland-Alameda Estuary shoreline. Potential long-term, operational impacts on terrestrial and marine biological resources would include potential bird collisions with Project buildings, light and noise disturbance associated with ballpark events, and indirect effects of stormwater runoff to the San Francisco Bay via the Estuary.

Topics Considered and Determined to Have No Impact

The following topics are considered to have no impact to the Project based on the proposed Project characteristics, its geographical location, and underlying site conditions. Therefore, these topics are not addressed further in this document for the following reasons:

- ***Habitation Conservation Plan / Natural Community Conservation Plan*** (Criterion 5). Review and comparison of the setting circumstances and Project characteristics with the significance criteria clearly show that no impacts would be associated with criterion “5,” as no adopted habitat conservation plan or natural community conservation plan covers the Project site and therefore the Project could not conflict with these plans. The closest Habitat Conservation Plan is the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP), located more than 15 miles east of the Project site (East Contra Costa County Habitat Conservancy, 2006).

4.3.4 Impacts of the Project

Special-Status, Resident and Migratory Birds

Impact BIO-1: The Project could have a substantial adverse effect, either directly or through habitat modifications on resident and/or migratory birds and/or on bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Criterion 1) (*Less than Significant with Mitigation*)

Construction Impacts

Phase 1 and Buildout

Construction activities within the Project site, especially those that involve heavy machinery, may adversely affect nesting birds, if present on or near the Project site during the nesting season (February 1–August 15). The bulk of the Project site is developed and is subject to industrial uses that are not conducive to bird nesting. Vegetation suitable for nesting birds within the Project site and immediate vicinity is limited to street trees and a few landscaping shrubs on Embarcadero West, Martin Luther King Jr. Way, Market and Clay streets, and ruderal vegetation along the western boundary of the site. Existing buildings and other structures (e.g., container cranes) also provide suitable habitat to support nesting even with existing high levels industrial and transportation-related activity onsite. The container cranes are known to host nesting American peregrine falcon

and other building and structures within and nearby the Project site could support nesting osprey and double-crested cormorant, which are also likely to forage in offshore waters.

As previously described in the *Approach to Analysis*, in-water construction would be limited to the proposed relocation and construction of stormwater and drainage outfall facilities, as needed, in the southeast area of the Project site, in addition to the reinforcement of waterfront areas, in particular, the limited addition of in-water piles to support the wharf, improvements, and the cranes in overwater areas (wharf). If needed, such support work is anticipated to require approximately 0.01 acre (500 square feet) of new in-water piles. The piles would be vibrated (during the allowable fish windows), with impact hammers only used after piles have reached the point of refusal with vibratory methods. Project in-water construction activities would not substantially disrupt foraging activities of California least tern, California brown pelican, Clark's grebe, or red-throated loon, which may use the open water habitat and shoreline of the Project site as these species would be able to forage in similar shoreline waters elsewhere in the Oakland-Alameda Estuary during periods of in-water work. These species do not nest locally, and therefore, the Project would not adversely affect breeding or nesting behavior. The Cooper's hawk and common species, such as the house sparrow, house finch, Anna's hummingbird, Allen's hummingbird, mourning dove, black phoebe, black-crowned night heron and American crow also have the potential to nest in street trees or existing landscaped shrub vegetation, on the ground, or within or on top of existing buildings/structures of the Project site.

Project construction activities are expected to generate noise and visual disturbances that could adversely affect bird breeding and nesting behaviors at the Project site and nearby. Proposed Project construction activities may cause visual disturbance, alter the ambient noise environment, or introduce short-term loud noise events, resulting in avoidance response (flushing). Both long- and short-term loud noises can affect bird foraging and roosting by temporarily disturbing these behaviors and may deter bird use of an area (including for nesting) if such noises persist over the long term. Noise disturbance generally falls into two main categories: impulse and continuous. Impulse disturbances often used in demolition activities include single actions like blasts, or multiple actions like jackhammers and pile drivers. Continuous noise includes typical construction work area activities and roadway noise. Bird disruption from visual or noise disturbance varies, but typically birds will avoid disturbance areas and move to more preferable environments. However, some species inhabit noisy areas and may indirectly benefit from reduced competition and predation (Francis et al., 2009).

Birds currently residing in both the terrestrial and marine study areas are accustomed to varying levels of ambient noise emanating from existing human activities in the study area. For example, truck and train traffic, ferry operations, heavy metal recycling activities at the Schnitzer Steel site, and Port of Oakland shipping operations occur throughout the day. In the Project site vicinity, the primary sources of noise are the Schnitzer Steel recycling activities, Port of Oakland shipping operations, trains, and traffic on local streets and Interstate 880. As discussed in Section 4.11, *Noise and Vibration*, typical noise levels for some limited construction activities anticipated during Project implementation would exceed ambient levels near the Project site for some periods of time. Construction activities that would substantially alter the noise environment could disrupt birds attempting to nest, disrupt parental foraging activity, or displace mated pairs with territories

in the Project study area. Given the duration for the buildout period for the proposed Project, the potential impacts of noise and visual disturbance on breeding birds are likely to occur over several nesting seasons, with the highest potential impacts associated with initial disturbance to idle areas of the site. As the Project construction progresses and the level of disturbance on the site increases with development, nesting birds are less likely to be attracted to the site, and the potential for construction-related impacts on birds and their nests would decrease. Common birds protected by the MTBA may still attempt to nest on-site during this period, for example, in interim landscaping, and their nests could be subject to disturbance.

Project construction activities such as vegetation removal, tree trimming or removal, ground disturbing activities (excavation and grading), and pile driving for building foundations could result in direct impacts to nesting birds. Noise, visual disturbance, and a general increase in human activity associated with construction could indirectly affect nesting efforts at the Project site and surrounding vicinity. The loss of an active nest occupied by a bird species protected by the federal MBTA or California Fish and Game Code would be considered a significant impact under CEQA. Potential nest abandonment, mortality to eggs and chicks, as well as stress from loss of foraging areas would also be considered potentially significant impacts. Moreover, disruption of nesting migratory or native birds is not permitted under the federal MBTA or California Fish and Game Code, as it could constitute unauthorized take. Thus, the loss of any active nest by, for example, removing a tree or shrub containing an active nest or causing visual or noise disturbance which leads to nest abandonment, must be avoided under federal and California law.

The implementation of **Mitigation Measure BIO-1a, Disturbance of Birds during Nesting Season**, would limit tree and vegetation (suitable for nesting birds) removal during the breeding season (February 1 – August 15) to the extent feasible. Should tree and vegetation removal during breeding bird season be necessary, Mitigation Measure BIO-1a requires preconstruction surveys of trees and/or vegetation to be removed within the Project site to verify the presence or absence of nesting birds within 15 days of the start of tree removal. Should active nests be identified during surveys, protective nest buffers shall be established around the active nest(s) until the young have successfully fledged, as determined by a qualified biologist.

Mitigation Measure BIO-1a would avoid direct and indirect impacts to nesting birds associated with tree removal, and additionally protects birds that may be nesting on the ground or non-tree structures in the Project area. With this measure, construction would not have a substantial adverse effect, either directly or through habitat modifications on resident or migratory birds or on bird species identified as a candidate, sensitive, or special-status species. This measure would reduce potential impacts on special-status and migratory birds to a less-than-significant level.

Mitigation Measure BIO-1a: Disturbance of Birds during Nesting Season.

To the extent feasible, initial Project activities that include ground disturbance, tree or vegetation removal, building/structure demolition/modification, or pile driving shall not occur during the bird breeding season of February 1 to August 15. If such activities must occur during the bird breeding season, work areas plus an appropriate buffer area determined by a qualified biologist shall be surveyed by a qualified biologist to verify the

presence or absence of nesting raptors or other birds. Pre-construction surveys shall be conducted within 15 days prior to the start of work and shall be submitted to the City for review and approval. If the survey indicates the potential presence of nesting raptors or other nesting birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged, such that nesting birds are not disturbed by the Project activity. The size of the nest buffer will be determined by the biologist in coordination with the California Department of Fish and Wildlife, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest, as necessary to avoid disturbance of nesting birds.

Significance After Mitigation: Less than Significant.

Operational Impacts

Phase 1 and Buildout

Aerial Avian Collisions

The Project site is located within the Pacific Flyway along the eastern shoreline of the Oakland-Alameda Estuary and San Francisco Bay. These collective waters provide valuable stopover habitat for migratory birds that forage and replenish energy stores during spring and fall migrations. Open space, even in highly urbanized areas, attracts avifauna, and any habitat in proximity to the proposed new buildings, such as park lands, landscape vegetation, or the Bay, that could be used for foraging, roosting, or rest by birds on the wing (in flight) may increase the risk of bird collisions, particularly if large amounts of reflective or artificially lighted surfaces are included in the Project's design. Many bird collisions are induced by artificial night lighting. The tendency of birds to move toward lights at night when migrating, and their reluctance to leave the sphere of light influences for hours or days once encountered, has been well documented (Gauthreaux et al., 2006).

Development of the proposed Project would increase the amount of light and glare, and the character and height of the light sources at the Project site and immediate surrounding vicinity, including from nighttime lighting of building exteriors and facades, ballpark and special event lighting, internal night lighting, sources visible through windows of building exteriors, new streetlights, pedestrian lights within and adjacent to the site, and headlights from Project-generated traffic. The Project site is located within an urban setting with extensive lighting under baseline conditions. The proposed Project would incrementally increase the overall amount of lighting along the Oakland Inner Harbor waterfront or light trespass into the Oakland-Alameda Estuary as a whole. Although the Port's active shipping piers are west of the Project site, existing nighttime lighting conditions within the Project site include downward-cast lighting to illuminate trucking operations. Further, surrounding development, from the Port of Oakland active shipping terminal at the mouth of the Oakland-Alameda Estuary and west of the Project site east to the Lake Merritt Channel Inlet east of Jack London Square includes substantial existing levels of ambient light. As described in detail in Section 4.1, *Aesthetics*, the spill light or trespass from the Project site into the Estuary (Receptor Location 2 – Inner Harbor Turning Basin) at approximately 190 feet above the

surface of the water would be a maximum of approximately 1.8 lux at full build-out during night games when businesses are open, and 1.1 lux after businesses are closed as compared to 1.2 lux at the same location under existing conditions.¹⁹ Measurements of existing conditions were 5.7 lux at the center of the turning basin at ground level (Receptor Location 2A – Turning Basin Line-of-Sight), and would be a maximum of approximately 0.5 lux at full build-out during night games when businesses are open, and 0.4 lux after businesses are closed. While existing conditions data for the remainder of the Estuary are not available to compare with the operational forecast, spill light in the turning basin at approximately 25 and 64 feet above the surface of the water was determined based on the geometric relationship of the receptor location to light sources. A maximum of approximately 1.5-1.7 lux at full build-out during night games when businesses are open, and 1.0 lux after businesses are closed are anticipated at these locations. For reference, existing spill light into the Estuary at the active terminal approximately 1.5 miles east of the Project site was measured at approximately 2.0 to 2.2 lux. Thus, this range of spill over light would be less than that of a nearby active terminal, and not at a level which would be expected to adversely affect birds on the wing or significantly affect the behavior of resting birds in the water.

Despite existing nighttime light levels, however, the type of special-purpose lighting often used around stadiums and to highlight special events (e.g., architectural feature lighting and spotlights) could attract birds in flight during migration, increasing the potential for avian collisions with glass or reflective surfaces used in the proposed buildings which could result in mortality, and could be a significant impact under CEQA. In compliance with AB 734, which is a requirement of the Project, Project design and implementation would comply with the City of Oakland’s Bird Safety Measures. AB 734 also requires that nighttime programming apply best management practice strategies to avoid and reduce potential collision hazards for migratory and resident birds to the extent feasible.

The Implementation of **Mitigation Measure BIO-1b, Bird Collision Reduction Measures**, would reduce this potentially significant impact through incorporating specific design elements into the development and adapting landscaping schemes to avoid or minimize avian collisions with buildings or other Project features, such as avoiding placement of bird-friendly attractants (e.g., landscaping) near glass and application of bird-friendly glazing treatments to windows and glass up to 60 feet above the ground.

Mitigation Measure BIO-1b specifies mandatory measures the Project sponsor must implement and requires the development of a Bird Collision Reduction Plan which would tailor bird strike reduction strategies to various Project parameters. Specifically, the Project sponsor would be required to include measures appropriate to limit Project site light and glare spillover from prominent light sources (e.g., the ballpark) to the night sky during periods of avian migration and to adjacent habitat areas (e.g., landscaped Waterfront Promenade and Park and Oakland-Alameda Estuary). The reduction in bird collisions during operations would be achieved through Project design considerations that are managed during review and approval by the City of Oakland Bureau of Building, to maintain consistency with the City’s *Bird Safety Measures*, as required by AB 734.

¹⁹ “Lux” is the measure of illumination cast on a surface. For reference, one 60-watt incandescent light bulb will generate 1 lux at a distance of approximately 26 feet.

The Oakland Athletics Howard Terminal Ballpark: Draft Environmental Impact Report Technical Lighting Analysis (HLB Lighting Design, 2020) findings shall inform the final Bird Collision Reduction Plan measures that, once implemented, would reduce the Project's adverse impacts associated with avian bird collisions and the proposed Project would not have a substantial adverse effect on resident or migratory birds or on bird species identified as a candidate, sensitive, or special-status species; therefore, Project compliance with Mitigation Measure BIO-1b, would avoid or minimize adverse effects of avian collisions resulting from the proposed Project to a less-than-significant level.

Mitigation Measure BIO-1b: Bird Collision Reduction Measures.

The Project sponsor shall comply with the most recent City of Oakland *Bird Safety Measures* (currently 2013) during Project design, as administered by the City of Oakland Bureau of Building. This measure applies to all construction elements that include glass as part of the building's exterior AND at least one of the following: (a) The project is located immediately adjacent to a substantial water body (i.e., Oakland-Alameda Estuary); OR (b) The project is located immediately adjacent to recreation area or park larger than one acre and which contains substantial vegetation; OR (c) The project includes a substantial vegetated or green roof (roofs with growing medium and plants taking the place of conventional roofing such as asphalt, tile, gravel or shingles) but excluding container gardens; OR (d) The project includes an existing or proposed substantial vegetated area (generally contiguous one acre in size or larger) located directly adjacent to Project buildings.

Prior to the approval of a construction-related permit, the Project sponsor shall prepare and submit a Bird Collision Reduction Plan to the City of Oakland Bureau of Building for review and approval to reduce potential bird collisions to the maximum feasible extent. The Plan shall include all of the following mandatory measures, as well as applicable and specific Project Best Management Practice (BMP) strategies, described below, to reduce bird strike impacts to the maximum feasible extent. The Project sponsor shall implement the approved Plan. Mandatory measures include all of the following:

- i. For large buildings subject to federal aviation safety regulations, install minimum intensity white strobe lighting with three second flash instead of solid red or rotating lights.
- ii. Minimize the number of and co-locate rooftop-antennas and other rooftop structures.
- iii. Avoid the use of mirrors in landscape design.
- iv. Avoid placement of bird-friendly attractants (e.g., landscaped areas, vegetated roofs, water features) near glass unless shielded by architectural features taller than the attractant that incorporate bird friendly treatments no more than two inches horizontally, four inches vertically, or both (the "two-by-four" rule), as explained below.
- v. Apply bird-friendly glazing treatments to no less than 90 percent of all windows and glass between the ground and 60 feet above ground or to the height of existing adjacent landscape or the height of the proposed landscape. Examples of bird-friendly glazing treatments include the following:
 - Use opaque glass in window panes instead of reflective glass.

- Uniformly cover the interior or exterior of clear glass surface with patterns (e.g., dots, stripes, decals, images, abstract patterns). Patterns can be etched, fritted, or on films and shall have a density of no more than two inches horizontally, four inches vertically, or both (the “two-by-four” rule).
 - Install paned glass with fenestration patterns with vertical and horizontal mullions no more than two inches horizontally, four inches vertically, or both (the “two-by-four” rule).
 - Install external screens over non-reflective glass (as close to the glass as possible) for birds to perceive windows as solid objects.
 - Install UV-pattern reflective glass, laminated glass with a patterned UV-reflective coating, or UV-absorbing and UV-reflecting film on the glass since most birds can see ultraviolet light, which is invisible to humans.
 - Install decorative grilles, screens, netting, or louvers, with openings no more than two inches horizontally, four inches vertically, or both (the “two-by-four” rule).
 - Install awnings, overhangs, sunshades, or light shelves directly adjacent to clear glass which is recessed on all sides.
 - Install opaque window film or window film with a pattern/design which also adheres to the “two-by-four” rule for coverage.
- vi. Reduce light pollution in non-ballpark structures and apply best management practices to nighttime programming for field lighting and concert and event light shows at the ballpark to avoid and reduce potential collision hazards for migratory and resident birds, to the extent feasible. Examples may include the following:
- Direct field lighting at the ballpark in a downward direction to the extent feasible.
 - Minimize night-time architectural illumination treatments during bird migration season, except with respect to nighttime programming at the ballpark for field lighting and event and concert light shows, which shall apply best management practices (e.g., install time switch control devices or occupancy sensors on non-emergency interior lights; reduce perimeter lighting whenever possible; install full cut off, shielded or directional lighting to minimize light spillage, glare or light trespass) to avoid and reduce potential collision hazards for migratory and resident birds (February 15 to May 15 and August 15 to November 30).
 - Install time switch control devices or occupancy sensors on non-emergency interior lights that can be programmed to turn off during non-work hours and between 11:00 p.m. and sunrise.
 - Reduce perimeter lighting to the extent feasible taking into consideration safety, crowd control and Homeland Security concerns.
 - Install full cutoff, shielded, or directional lighting to minimize light spillage, glare, or light trespass with respect to best management practices for field lighting or event and concert light shows.
 - Do not use upward beams of lights during the spring (February 15 to May 15) or fall (August 15 to November 30) migration except with respect to nighttime programming at the Ballpark for field lighting and event and concert light shows,

which shall apply best management practices to avoid and reduce potential collision hazards for migratory and resident birds.

- vii. Develop and implement a building operation and management manual that promotes bird safety. Example measures in the manual may include the following:
- Donation of discovered dead bird specimens to an authorized bird conservation organization or museums (e.g., UC Berkeley Museum of Vertebrate Zoology) to aid in species identification and to benefit scientific study, as per all federal, state and local laws.
 - Distribution of educational materials on bird-safe practices for the building occupants. Contact Golden Gate Audubon Society or American Bird Conservancy for materials.
 - Asking employees to turn off task lighting at their work stations and draw office blinds, shades, curtains, or other window coverings at end of work day.
 - Install interior blinds, shades, or other window coverings in windows above the ground floor visible from the exterior as part of the construction contract, lease agreement, or CC&Rs.
 - Schedule nightly maintenance during the day or to conclude before 11 p.m., if possible.

Significance after Mitigation: Less than Significant.

Noise

General Operations. Following construction, the urbanized upland portions of the Project site would continue to provide little in terms of wildlife benefits. The Project site would continue to support common disturbance-tolerant species that occur on the site, such as house sparrow, rock pigeon, European starling, house finch, and mourning dove. These species readily nest in street trees, or within or on the roofs of buildings near urban noise sources. As discussed in Section 4.11, *Noise and Vibration*, operational noise associated with the ballgame events (both daytime and those lasting into nighttime) would not result in a significant increase in noise levels above existing levels (i.e., an increase of 5 dBA or more). Concert event noise levels are expected to exceed existing daytime and nighttime levels with an increase of 5 dBA or more, which is significant under the Section 4.11, *Noise and Vibration*, thresholds, and requiring mitigation (NOI-2a, Sound Control Plan for Concert Events) to reduce the severity of potential noise impacts associated with amplified music within the ballpark for concerts planned per year under the proposed Project. The disturbance-tolerant bird species that may nest on the Project site are adapted to both human disturbance from vehicles and pedestrians. Bird nesting is not expected in the interior of the ballpark or any areas that would be subject to severe noise generated from events or concerts; hence, the effects of noise on birds from day-to-day use of the venue would be less than significant with no mitigation required. Nonetheless, reduction of noise levels during some events as a result of implementing Mitigation Measure NOI-2a would further reduce noise levels and may further reduce the less than significant impact on disturbance-tolerant nesting birds.

Fireworks. Noise impacts on sensitive human receptors resulting from ballpark event firework displays were determined to be less than significant given the brief duration (30-45 minutes for a

notable display) and limited number of firework displays that would occur at the ballpark (described as occasional). Noise monitoring data indicate a consistent average noise level on the wharf during both daytime and nighttime hours of 58 to 59 dBA; attributed to existing heavy-duty container truck operations on the Project site that would be relocated as part of the Project (see section 4.1.1, Noise and Vibration). Display fireworks can emit sound levels as high as 150-175 decibels (dB) near the launch platform. Sound levels associated with a commercial firework display over Monterey Bay in 2001 were documented to peak at 82 dB and average 70-78 dB at a 5-mile distance (NOAA, 2011); similar sound levels would be expected as a result of Project firework displays over the Oakland-Alameda Estuary.

Noise and visual disturbance associated with firework displays can result in adverse effects on nearby birds during the nesting season should fireworks cause adults to abandon an active nest or flush from the nest for an extended amount of time. For a bird nesting within the Project site, noise associated with display fireworks at the ballpark could flush birds from active nests depending on the ambient noise environment when fireworks occur, where the fireworks are directed relative to the nest, and the tolerance of the particular birds to disturbance. Due to the rate of sound level dissipation over distance, fireworks displays at the ballpark would not adversely affect birds nesting beyond the immediate vicinity of the Project site; for example, the California least tern colony on Alameda Island (located approximately 1.5 miles southwest) would not be affected by noise associated with fireworks displays to a degree to cause altered foraging or nesting behavior, flushing, or nest abandonment, as sound levels at this distance would not substantially increase above ambient levels.

Avian nesting habitat within the proposed Project would consist of relatively small landscape trees and shrubs and buildings and other structures, like the container cranes. Birds nesting in trees and shrubs may include common passerine species such as house finch, rock dove, American crow, and northern mockingbird. Noise effects to such common species would be negligible, as they readily adapt to brief disturbances.

Peregrine falcons have nested on the easternmost crane on the Project waterfront since approximately 2015, and are expected to continue nesting during Project construction and into ballpark operations. An analysis of the potential effects of fireworks displays at Howard Terminal on peregrine falcons nesting in on-site cranes was performed by H.T. Harvey (2019) raptor ecologists in October 2019. Their review, based on direct experience with Peregrine falcon and other falcon species, a scientific literature review, and existing conditions at the site to which these falcons are already adapted (e.g., regular heavy truck traffic and shipping container manipulations, and pronounced ambient night-time lighting), concluded that nesting falcons and nearby nesting raptors would not be impacted by the onset of night-time fireworks displays so long as a reasonable spatial buffer (500 feet) is maintained between any occupied nest and the fireworks aerial detonation locations (H.T. Harvey, 2019).

The analysis notes that 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. Moreover, in recent decades as a result of conservation action and artificial propagation in human-dominated landscapes, peregrines now routinely nest on tall

buildings and other elevated artificial structures, and in such circumstances may readily habituate to a variety of nearby human activities. Moreover, the fireworks would occur exclusively at night, which means: (1) the activity would 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 (H.T. Harvey, 2019). Additionally, although the nesting peregrines may initially respond with 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 so as long as a reasonable spatial buffer is maintained between the eyrie and fireworks detonations (H.T. Harvey, 2019).

Peregrine falcon is fully protected by CDFW and considered a bird species of conservation concern by USFWS, and take of eggs or young as a result of Project operation would be a significant impact. Implementation of **Mitigation Measure BIO-1c, Peregrine Falcon Firework Display Surveys, Buffer, and Monitoring**, would reduce potential impacts on nesting peregrine falcons within the Project site associated with ballpark firework displays during the breeding season by providing a survey for active peregrine falcon nesting sites on the Project site, establishing a 500-foot buffer between the fireworks detonation area and nest sites, and requiring focused surveys to monitor peregrine nest behavior prior to and immediately after firework displays. Depending upon the response of the birds, adjustments would be made to future fireworks displays at the ballpark to further minimize impacts to nesting falcons. The container cranes would be retained on the Project site if possible; however, if all four container cranes are removed from the site, it would occur during the non-nesting season so that neither the eggs, young, or active nest would be harmed by the removal activity. Should crane removal during breeding bird season be necessary, Mitigation Measure BIO-1a requires preconstruction surveys of the Project site to verify the presence or absence of nesting birds within 15 days of the start of demolition activities. Should active nests be identified during surveys, protective nest buffers shall be established around the active nest(s) until the young have successfully fledged, as determined by a qualified biologist. Following crane removal, with the absence of potential Peregrine falcon nesting sites, the Project would have no impact to active peregrine falcon nests from fireworks displays and Mitigation Measure BIO-1c would not be required.

Mitigation Measure BIO-1c: Peregrine Falcon Firework Display Surveys, Buffer, and Monitoring.

1. During the first operational year, a qualified biologist shall survey cranes on Project site for nesting peregrine falcons prior to start of the regular baseball season (approximately late March/early April) to identify active peregrine falcon nest sites. The survey shall be conducted prior to the first fireworks display to occur within the peregrine breeding season. If survey results are negative, then no further action would be required under this measure.
2. Should an active peregrine falcon nest be identified during surveys, a 500-foot buffer shall be maintained between the nest site and the fireworks aerial detonation location. This initial starting buffer distance may be adjusted based on site conditions, with concurrence from the California Department of Fish and Wildlife. For example, if the nest is shielded from potential impacts, then a smaller buffer distance may be warranted.

3. The nest site shall be monitored by a qualified biologist immediately prior to and the morning after the first five ballpark fireworks events to examine bird responses to the fireworks event. Surveys shall examine the stability patterns of the nest and evaluate the effectiveness of the 500-foot buffer. The monitor will document peregrine falcon behavioral disturbance at the nest site associated with the fireworks display and confirm if flushed adults return to the nest site following the display. If possible, video monitoring shall assist in documenting bird behavior. The qualified biologist will review the nest site the morning after the display to document the presence or absence of adults at the nest site.
4. Following nest monitoring events, the qualified biologist shall determine if the nesting stage (i.e., egg incubation, nestling, fledgling) and level of disturbance observed warrant temporary adjustments to future fireworks displays at the ballpark (e.g., adjustments to the 500-foot buffer), to avoid potential take of an egg, nest, or nestling resulting from fireworks disturbance. If such monitoring suggests that falcons have abandoned a nesting attempt the morning after an event, a nestling rescue effort and transfer to a qualified rehabilitation center shall be required to prevent a take event. Nest monitoring would also inform adaptive management to further protect nesting falcons during future shows by, for example, adjusting the timing and/or location of the fireworks shows to further reduce effects on bird behavior.
5. Should nesting within the Project site not be identified during surveys for 3 more consecutive seasons, it will be assumed that local peregrine falcons have selected another nesting location and annual surveys and monitoring in advance of ballpark firework displays shall no longer be necessary to avoid or minimize disturbance to this species and their nests.

Significance after Mitigation: Less than Significant.

Special-Status and Otherwise Protected Bats

Impact BIO-2: The Project could have a substantial adverse effect, either directly or through habitat modifications on bats identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Criterion 1) (*Less than Significant with Mitigation*)

Construction Impacts

Phase 1 and Buildout

While bat roosting has not been confirmed on the Project site, pallid bat, a California species of special concern, and common Mexican free-tailed bat have the potential to roost in existing vacant or underutilized buildings, and other human-made structures on or near the site. In particular, portions of the Peaker Power Plant building, which would be retained under the proposed Project, provide potential roosting habitat for bats due to the partial vacancy of the building, architectural features allowing entry to cracks and crevices within the building with supportive surfaces to establish roosts, and proximity to foraging sites along the Oakland-Alameda Estuary and western shoreline of San Francisco Bay. Other buildings on the Project site that would be demolished under the proposed Project offer varying roost habitat value to bats depending on the condition of the building and regularity of human activity. While some bat

species that prefer to roost beneath the exfoliation bark or trees or among leaves might occur in the Project study area (e.g., silver-haired bat [*Lasionycteris noctivagans*]), the street trees along Embarcadero West, Martin Luther King Way, Market and Clay streets that would be trimmed or removed under the Project do not provide suitable roost habitat given the consistent human disturbance along these streets and low tree density. Removal of these trees is not anticipated to adversely affect special-status or common bats.

Bats and other non-game mammals are protected in California under the California Fish and Game Code Section 4150. Maternity roosts are roosts occupied by pregnant females or females with non-flying young. Non-breeding roosts are day roosts without pregnant females or non-flying young. Destruction of an occupied, non-breeding bat roost, resulting in the death of bats; disturbance that causes the loss of a maternity colony of bats (resulting in the death of young); or destruction of hibernacula are prohibited under CEQA and would be considered a significant impact (although hibernacula generally are not formed by bat species in the Bay Area due to sufficiently high temperatures year round). Construction-associated noise or vibration, or increased human activity in the area during general construction could result in behavioral alterations including the temporary avoidance of work areas by foraging bats during construction. Such temporary alteration of flight or foraging behavior during specific construction activities or at specific locations within the Project site while such activities occur would not affect active maternity roosts or colonies, or hibernacula; and would therefore be a less-than-significant impact.

Construction of the proposed Project would involve demolition of buildings or structures that could host roosting bats. Demolition of buildings and structures could result in direct mortality of or indirect disturbance to roosting bats (e.g., bats avoid routine foraging or fail to return to a maternity roost due to an increase in human presence on the Project site), if present. Mortality of special-status bats resulting from direct actions (e.g., destruction of an occupied roost) or indirect actions (e.g., elevated noise or vibration which causes maternity roost or young abandonment) attributable to Project construction would be a significant impact. Additionally, common bats may establish maternity roosts in these same locations and disturbance that results in loss of a maternity colony would be a significant impact. The implementation of **Mitigation Measure BIO-2, Pre-Construction Assessments and Protection Measures for Bats**, would reduce potential impacts on special-status bats and common bat maternity roosts to a less-than-significant level by requiring preconstruction surveys and implementing avoidance measures if potential roosting habitat or active roosts are located.

Mitigation Measure BIO-2: Pre-Construction Assessments and Protection Measures for Bats.

The following measure shall be implemented to identify potential bat roosting habitat on the Project site.

1. A qualified biologist²⁰ who is experienced with bat surveying techniques (including auditory sampling methods), behavior, roosting habitat, and identification of local bat

²⁰ Typical experience requirements for a qualified biologist include a minimum of four years of academic training and professional experience in biological sciences and related resource management activities, and a minimum of two years of experience conducting surveys for each species that may be present within the project area.

species shall be consulted prior to demolition or modification of buildings on site that could provide bat roosting habitat (i.e., portions of the Peaker Power Plant building, the fire station [if demolition is pursued], and various loading/unloading shelters), to conduct a pre-construction habitat assessment of the Project site to characterize potential bat habitat and identify potentially active roost sites. No further action is required should the pre-construction habitat assessment not identify bat habitat or signs of potentially active bat roosts within the Project site (e.g., guano, urine staining, dead bats, etc.). The period that the habitat assessment is valid will depend upon available habitat quality and survey findings, and will be stated in the assessment.

The following additional measures shall be implemented should potential roosting habitat or active bat roosts be identified during the habitat assessment in buildings to be demolished or modified under the proposed Project:

2. In areas identified as potential roosting habitat during the habitat assessment, initial building demolition or modification shall occur to the extent feasible when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid the bat maternity roosting season and period of winter torpor.²¹
3. Depending on temporal guidance as defined below, the qualified biologist shall conduct pre-construction surveys of potential bat roost sites identified during the initial habitat assessment no more than 14 days prior to building demolition or modification.
4. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species. A no-disturbance buffer shall be established around roost sites until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer would be determined by the qualified biologist and would depend on the species present, roost type, existing screening around the roost site (such as dense vegetation or a building), as well as the type of construction activity that would occur around the roost site.
5. If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist in coordination with the California Department of Fish and Wildlife to ensure the roosts are not disturbed. Such measures may include postponing the removal of buildings or structures, establishing exclusionary work buffers while the roost is active (e.g., 100-foot no-disturbance buffer), or other avoidance measures.
6. The qualified biologist shall be present during building demolition or modification if potential bat roosting habitat or active bat roosts are present. Buildings with active roosts shall be modified or demolished only under clear weather conditions when precipitation is not forecast for three days and when daytime temperatures are at least 50 degrees Fahrenheit.
7. The demolition or modification of buildings containing bat roosting habitat or active bat roosts shall be done under the supervision of the qualified biologist. When appropriate, buildings may be partially dismantled to significantly change the roost

²¹ Torpor refers to a state of decreased physiological activity with reduced body temperature and metabolic rate.

conditions, causing bats to abandon and not return to the roost, likely in the evening and after bats have emerged from the roost to forage. Under no circumstances shall active maternity roosts be disturbed until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist.

8. Depending on timing, repeat or additional bat habitat assessments may be necessary to support construction phasing and should precede following the steps outlined above.

Significance after Mitigation: Less than Significant.

Operational Impacts

Phase 1 and Buildout

Operation of the proposed Project is not expected to result in impacts on special-status bats or bat maternity roosts. Following Project construction, foraging opportunity over the Oakland-Alameda Estuary would be similar if not unchanged from existing conditions with development of the southern shoreline park and associated landscaping potentially increasing the availability of insects for local bats to forage. Roost opportunity within buildings of the Project site may provide similar habitat over time among buildings and structures and beneath landscaped tree bark, although the anticipated human presence onsite following Project development may deter bats from establishing roosts onsite. Operational uses of the Project site would not cause the disruption of active bat roosts; as there would either be no active bat roosts on the site during operations; buildings would likely be constructed in a manner that excludes bats from roosting; or bats would colonize portions of the site that are relatively sheltered from site activities; hence, no impact would occur to active bat roosts.

Mitigation: None required.

Special-Status Marine Species

Impact BIO-3: The Project could have a substantial adverse effect, either directly or through habitat modification, on marine species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or National Oceanic and Atmospheric Administration. (Criterion 1) (*Less than Significant with Mitigation*)

Construction Impacts

Phase 1 and Buildout

The waters of the Oakland-Alameda Estuary and Central San Francisco Bay are home to or occasionally support a number of State and federally protected marine species and habitats; and for a few of these species, the Bay is considered their critical habitat. These species include multiple runs of steelhead and Chinook salmon, green sturgeon, longfin smelt, and Pacific herring. Additionally, portions of the Project study area fall within waters designated as Essential Fish Habitat for more than a dozen species of fish managed under three federal fisheries management plans. While no endangered or threatened marine mammals occur within the San

Francisco Bay, multiple species protected under the MMPA are either permanent inhabitants or frequent visitors to bay waters. Those most likely to occur within the Project study area are harbor seals and California sea lions. There is the potential for significant impacts to a range of protected marine resources to occur during Project construction in and adjacent to the San Francisco Bay.

In-water Work

Planned shoreline improvements at the Project Site primarily occur shoreward or upland of the mean high water mark and their implementation is not anticipated to have any effect on aquatic resources. Exceptions include the proposed relocation and construction of stormwater and drainage outfall facilities and the potential need for the limited addition of in-water piles. As described under *Approach to Analysis* in this section, limited amount of in-water work would occur under the proposed Project to install a sandbag berm or steel cofferdam around the proposed outfall opening that would facilitate the relocation and reconstruction of a stormwater outfall in the southeast area of the site. The relocation of the outfall would first entail the installation of a temporary sandbag berm or steel cofferdam bayward of the existing shoreline, but over the footprint of the rock dike. This is expected to result in the temporary loss of a small area of the rock dike and associated non-sensitive sessile marine invertebrate community where personnel and equipment would work on the new outfall. These disturbances are expected to be minor with recovery to pre-disturbance conditions occurring fairly quickly.

If a sandbag berm cannot be used, steel pipe piles at 5-foot spacing would be inserted into the rock dike around the outfall opening at low tide and steel panels would be placed against the pipe piles to isolate the area from tidal inundation.

In addition to in-water work described above for the proposed stormwater drainage outfall facilities, the retention of the wharf and cranes in overwater areas (wharf) may require reinforcement of waterfront areas, and in particular, the limited use of in-water piles to support the wharf, improvements, and the cranes. If needed, such support work is anticipated to require approximately 0.01 acre (500 square feet) of new in-water piles. Piles would be vibrated during the allowable fish windows. Impact hammers shall only be used after piles have reached the point of refusal with vibratory methods. During installation of the piles, potential underwater noise generated when using vibratory or impact hammers could have a deleterious effect on special-status fish species and marine mammals. Pile driving hammers to install piling can produce high-intensity noise and result in damage to soft tissues, such as gas bladders or eyes (barotraumas), and/or harassment of fish and marine mammals such that they alter swimming, sleeping, or foraging behavior or temporarily abandon forage habitat.

The striking of certain pile types by a pile-driving hammer creates a pulse of sound that propagates through the pile, radiating out through the water column, seafloor, and air. Sound pressure pulses, as a function of time are referred to as a waveform. Peak waveform pressure underwater is typically expressed in decibels (dB) referenced to 1 microPascal (μPa). Sound levels are generally reported as peak levels (peak) and sound exposure levels (SEL). In addition to the pressure pulse of the waveform, the frequency of the sound, expressed in hertz (Hz) is also important to evaluating the

potential for sound impacts. Low frequency sounds are typically capable of traveling over greater distances with less reduction in the pressure waveform than high frequency sounds.

Installing steel sheet piling by a pile driver can be expected to generate in-water noise levels of 177 dB (peak), 163 dB (RMS) and 162 dB (SEL) with use of a vibratory hammer is used and 205 dB (peak), 189 dB (RMS), and 179 dB (SEL) if an impact hammer is used. Ambient underwater noise for a major harbor like San Francisco is estimated at approximately 150 dB (Caltrans, 2015).

Scientific investigations on the potential effect of noise on fish indicate that sound levels below 183–187 dB do not appear to result in any acute physical damage or mortality to fish depending on their size (Dalen and Knutsen, 1986; Caltrans, 2015). Smaller fish experience acute effects at sound levels over 183 dB and larger fish at 187 dB (SEL). Noise levels that result in startle responses in steelhead and salmon have been documented to occur at sound levels as low as 140 dB at a frequency of 100 Hz and between 180 and 186 dB in Pacific herring (San Luis and Delta Mendota Water Authority, 1996). Any disturbance to special-status fish species that results in altered swimming, foraging, movement along a migration corridor, or any other altered normal behavior would be considered harassment under the ESA and a significant impact under CEQA.

During pile driving activities, fish are not expected to be present within a zone of several meters (6 to 8 feet) of the piles, since the movement of the piling through the shallow water and initial contact with the Bay seafloor would result in any fish that are present quickly leaving the immediate area. Any salmon, longfin smelt, green sturgeon, Pacific herring, or MSA-managed fish species swimming near pile driving activities are therefore not expected to experience any acute effects or barotraumas from vibratory pile driving. However, longfin smelt, salmon, and green sturgeon are observed in shallow water regions of the Bay, so there is a greater probability that they would be present in the Project area during pile driving. Although the potential for acute barotrauma to occur is limited, behavioral changes in fish movement or activity can be expected to occur during the relatively brief pile installation period. The use of vibratory pile drivers and other BMPs can reduce underwater pile driving noise to substantially reduced noise levels so that the potential impact is less-than-significant.

As indicated in the discussion above, the installation of steel piling with a vibratory hammer can be expected to result in underwater noise levels that exceed 183 or 187 dB depending on the final design approach used, what size and type of piling is used, and the distance of the piling from surrounding fish. Specifically, the noise levels from a vibratory hammer can be anticipated to generate noise levels of 183 dB at a distance of 14 meters (46 feet) and 187 dB at a distance of 7 meters (23 feet), when driving steel piling, which generally are below the levels that could cause acute damage or mortality to fish (Dalen and Knutsen, 1986; Caltrans, 2015; Fisheries Hydroacoustic Working Group, 2008).

Based on the potential for underwater noise generated from vibratory hammer installation of steel piles, the potential impact to special-status fish species, including, MSA managed fish species, longfin smelt, green sturgeon, and salmon, as well as multiple marine mammal species, including harbor seals and California sea lions could result in a significant impact. The implementation of

Mitigation Measure BIO-3, Management of Pile Driving in the Water Column for Protection of Fish and Marine Mammals, would reduce the potential impact to a less-than-significant level by avoiding periods when the most sensitive special-status fish (e.g., salmonids and Pacific herring) are present in the Project area, and employing noise attenuation measures to minimize aquatic impacts, such as the use of vibratory pile installation, working at low tides, and use of blocks to reduce underwater noise levels to acceptable levels. As discussed below under Impact BIO-5, in-water work would require a 404 permit from the USACE, which could trigger the Corps' consultation requirements with NOAA Fisheries and USFWS.

Mitigation Measure BIO-3: Management of Pile Driving in the Water Column for Protection of Fish and Marine Mammals.

Prior to the start of any in-water construction that involves the construction of piles, the Project sponsor shall develop a NOAA Fisheries and CDFW-approved sound attenuation reduction and monitoring plan to avoid significant impacts to special status fish and marine mammals, including acute damage or mortality. This plan shall provide detail on the sound attenuation system, detail methods used to monitor and verify sound levels during pile driving activities, and all BMPs to be taken to reduce impact hammer and/or vibratory hammer pile-driving sound in the marine environment to an intensity level of less than 183 decibels (dB). The plan shall incorporate but not be limited to the following:

- Steel piles shall be installed using vibratory hammers. Impact hammers shall only be used after piles have reached the point of refusal with vibratory methods.
- Any impact hammer installed steel piles shall be conducted in strict accordance with the Long Term Management Strategy (LTMS) defined work windows of June 1 to November 30, during which periods the presence of special-status species in the Project Site is expected to be minimal. (USACE et al., 2001).
- A contingency plan using bubble curtains or an air barrier will be implemented to attenuate sound levels to acceptable levels.
- Other BMPs may be implemented in coordination with NOAA Fisheries or CDFW, such as working at low tides, reducing steel-to-steel contact through the use of a wooden block, or use of double-walled piles, as appropriate to reduce underwater noise levels to acceptable levels.

Water Quality Impacts on Marine Species

Commensurate with any construction activity adjacent to, or within, an aquatic environment is the potential for the accidental discharge of contaminants into the Bay. The potential for releasing such contaminants is considered minimal, given federal, State, and local oversight; however, is described here as a potential impact mechanism for aquatic species. Near-shore construction activities could pose a short-term and temporary risk of exposing resident marine taxa to toxic contaminants. Demolition, grading and building foundation construction activities at the Project site could also result in extensive ground disturbance and increased surface run-off through existing stormwater drains to the San Francisco Bay, resulting in increased sedimentation and organic and inorganic contaminant loading to San Francisco Bay waters and low-level exposure to protected species.

Relocation and reconstruction of the stormwater and drainage outfall facilities, or the use of in-water piles required to reinforce overwater areas (wharf), may cause short-term impacts to water quality through the resuspension of benthic sediments that could occur during in-water construction depending on construction methods employed to relocate and install the outfall. Sediment resuspension caused by construction (e.g., dredging) or operation (vessel activity) is defined as those sediment particles suspended into the water column that do not rapidly settle out of the water column following resuspension. The presence of excess suspended solids in the water column are known to affect fish species by disrupting normal feeding behavior, reducing growth rates, increasing stress levels, and reducing respiratory functions. However, due to the limited scope of the proposed in-water work on structures that would be suspended within the water column or rest on existing riprap beneath the wharf, any increased turbidity levels would be relatively short-lived and generally confined to within a few hundred yards of the activity. As the existing stormwater outfall is suspended over riprap beneath the wharf, construction activities associated with relocation of the outfall structure to other portions of the wharf above riprap have a low potential for disturbing any soft substrate on the Estuary floor which would be most prone to compromising water quality through sediment resuspension. Similarly, the relocated outfall would be located below the wharf at tidal elevation where riprap is present and construction is not anticipated to result in a substantial degradation of water quality through sediment resuspension which would adversely affect fish.

The implementation of water quality protection mitigation measures identified in Section 4.9, *Hydrology and Water Quality*, and compliance with various regulations for maintaining water quality in San Francisco Bay, would further ensure that any potential water quality impacts of outfall relocation would be less than significant.

Implementation of standard construction and demolition best management practices (BMPs) would be required as part of the City of Oakland, Alameda County, and State (Bay Conservation and Development Commission and Regional Water Quality Control Board/State Water Resources Control Board) permits to prevent toxic contaminants and disturbed sediments from reaching storm drains and subsequently San Francisco Bay waters, such as installing drip pans beneath stationary equipment, using sediment curtains and storm drain covers and regularly sweeping streets. For a more detailed description of State and local regulations governing stormwater management during Project construction, see Section 4.9, *Hydrology and Water Quality*, which indicates that the Project's regulatory compliance with the numerous requirements and **Mitigation Measure HYD-1a** (Creek Protection Plan) would ensure a less than significant impact on water quality during construction.

Operational Impacts

Phase 1 and Buildout

Water Quality

Section 4.9, *Hydrology and Water Quality*, discusses how the Project's regulatory compliance with numerous requirements, and **Mitigation Measure HYD-1b** (NPDES Stormwater Requirements) would ensure a less-than-significant impact on water quality during operation. All on-site Project stormwater would discharge into the City stormwater mains within the Project site

and be under the jurisdiction of the City's NPDES Permit conditions and ordinances. Therefore, there would be no impact from operational stormwater discharges on marine biological resources.

Light Trespass

As previously discussed, the Project may increase the amount of lighting along the Oakland Inner Harbor waterfront along the western shoreline of the Oakland-Alameda Estuary, but not in a manner that is expected to significantly affect the behavior of birds on the wing or resting birds in the water. Mitigation Measure BIO-1b (Bird Collision Reduction Measures) requires downward cast lighting and shields to minimize light trespass from the Project site, including that which would spill into the Estuary. As described in detail in Section 4.1, *Aesthetics*, and under Impact BIO-1, the spill light or trespass from the Project site into the Estuary (Receptor Locations 2, 2A, 2B, and 2C) would be a maximum of 0.5-1.8 lux at full build-out during night games when businesses are open, and 0.4-1.1 lux after businesses are closed (see Section 4.1, *Aesthetics*, Table 4.1-3, Spill Light Measured at Adjacent and Nearby Receptor Locations). Measurements of existing conditions were 1.2 lux at the center of the turning basin at approximately 159 feet above the surface of the water, and 5.7 lux at the center of the turning basin at ground level. For reference, existing spill light into the Estuary at the active terminal approximately 1.5 miles east of the Project site was measured at approximately 2.0 to 2.2 lux. Thus, this range of spill over light would be less than that of a nearby active terminal, and not at a level which would be expected to adversely affect occupying marine species. Also, as delineated in a generalized spill light Exhibit 136 in Appendix AES.1 (HLB Technical Lighting Analysis) spill light could range from 20.0 lux to 50.0 lux on the waters east and southeast of ballpark at full buildout during night games. Nearby aquatic areas on the Oakland waterfront currently experience a relatively significant amount of lighting, and the additional lighting from this project would have negligible, or less than significant impacts to fish species. Even with relatively higher luminance levels under the project, adherence to Mitigation Measure BIO-1b, which requires the use of full cutoff, shielded, or directional lighting to minimize light spillage, glare, or light trespass outside of the project area, will further reduce impacts to aquatic habitat. With adherence to this measure, indirect effects of lighting are not expected to affect steelhead, green sturgeon, longfin smelt or other sensitive fish species in the project area. This is similar to the impact conclusion for the San Francisco–Oakland Bay Bridge Bay Lights art installation on the bridge's western span (H.T. Harvey, 2012). Hence, potential impacts to marine species within the Estuary resulting from light trespass over open water would be less than significant.

Shadow

The Project upon buildout would introduce new side-cast shadows to the immediate vicinity, as described in detail in Section 4.1, *Aesthetics*; however, the Project would result in no new overwater structures or mid-day shadows over water. Hence, the potential impacts to marine species within the Estuary resulting from shadow over open water would be less than significant.

No other potential impacts to candidate, sensitive, or special-status marine species were identified associated with operation of the proposed Project.

Mitigation Measure BIO-3: Management of Pile Driving in the Water Column for Protection of Fish and Marine Mammals. (see above)

Mitigation Measure HYD-1a: Creek Protection Plan. (see Section 4.9, Hydrology and Water Quality)

Mitigation Measure HYD-1b: NPDES Stormwater Requirements. (see Section 4.9, Hydrology and Water Quality)

Significance after Mitigation: Less than Significant.

Sensitive Natural Communities

Impact BIO-4: The Project would not have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or National Marine Fisheries Service. (Criterion 2) (*Less than Significant*)

Terrestrial Biological Resources

The Project site is fully developed and no riparian habitat or other sensitive terrestrial natural communities are present on or near the Project site. As such, no impacts from construction or operation on sensitive terrestrial natural communities would result from implementation of the proposed Project.

Marine Biological Resources

Construction Impacts

Phase 1 and Buildout

Critical habitat for green sturgeon and central California coast steelhead is designated in San Francisco Bay and the Oakland-Alameda Estuary and includes the waters adjacent to the Project site. Additionally, essential fish habitat (EFH) is present within study area waters as covered under the Pacific Groundfish, Coastal pelagics, and Pacific Coast Salmon Fisheries Management Plans. Within the San Francisco-Bay Delta region, the National Marine Fisheries Service has identified eelgrass beds (*Zostera marina*) and native oyster beds as a habitat area of particular concern (HAPC), a subset of EFH. These habitat areas of particular concern are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function.

Eelgrass beds have been documented along portions of Alameda Island, approximately two miles northwest of the Project site, adjacent to the northern edge of Alameda Point, and in small patches westward of the Alameda Ferry Terminal, within one mile west of the Project site; no eelgrass beds are currently known to exist within the waters immediately offshore of the Project site (California State Coastal Conservancy et al., 2010; Merkel 2014). Eelgrass beds are also present in the Middle Harbor Enhancement Area approximately 2 miles west of the Project site. Native Olympia oysters are expected in rocky intertidal, subtidal habitats adjacent to the Project site on existing riprap, pilings, and other hard substrates as they occur throughout San Francisco Bay on natural and artificial shoreline substrate; however, large oyster beds that would be considered a HAPC are not expected on the existing substrate of the Project site wharf and existing other in-water structures.

The limited potential in-water construction activities described for the proposed Project would occur over a short period of time and in an area that does not support sensitive natural communities (e.g., eelgrass beds or native oyster beds). Neither EFH nor designated critical habitat would be harmed or substantially modified during or following construction, and potential impacts to fish would be less than significant, as described in Impact BIO-3. As discussed in the setting, native oyster beds are not expected to occur in the Project area; hence, no impact would occur to such areas. Limited disturbance to few native oyster individuals is expected during relocation of the existing outfall; however, CDFW does not regulate areas with individual oysters as native oyster beds and their removal would have no impact on native oyster beds. Overall, Project construction would have no impact to sensitive natural communities in the marine study area (native oyster beds and eelgrass beds) and impacts to EFH and designated critical habitat, which occur throughout the Estuary and greater San Francisco Bay, would be less than significant with no mitigation required.

Operational Impacts

Phase 1 and Buildout Operations

No riparian habitat or sensitive natural communities were identified on the Project site or adjacent areas in the Estuary, and no potential impact mechanisms were identified to sensitive natural communities (i.e., eelgrass beds and native oyster beds) in the Estuary. Hence, no potential impacts to such resources were identified associated with operation of the proposed Project.

Mitigation: None required.

Wetlands and Waters

Impact BIO-5: The Project could have a substantial adverse effect on federally protected wetlands or other waters (as defined by section 404 of the Clean Water Act) or state protected wetlands or waters, through direct removal, filling, hydrological interruption, or other means. (Criterion 3) (*Less than Significant with Mitigation*)

Construction Impacts

Phase 1 and Buildout

The Oakland-Alameda Estuary and greater San Francisco Bay are considered navigable waters of the United States and are therefore considered jurisdictional waters of the U.S. regulated by the USACE under Section 404 of the Clean Water Act up to the high tide line, and under Section 10 of the Rivers and Harbors Act up to the mean high water mark. These waters also are regulated by the RWQCB under Section 401 of the Clean Water Act as waters of the State. Under the McAteer-Petris Act, the San Francisco BCDC has jurisdiction over all areas of San Francisco Bay that are subject to tidal action (mean high tide line or up to 5 feet above mean sea level), as well as the shoreline band extending inland for 100 feet from the San Francisco Bay shoreline, saltponds, and managed wetlands. As discussed in the *Environmental Setting*, wetlands do not occur on the terrestrial or marine portions of the Project site, and as Impact BIO-4 describes, habitat areas of particular concern, such as eelgrass beds and native oyster beds, either do not occur on or adjacent to the Project site or would not be significantly impacted by the proposed Project. However, portions of

the proposed Project may occur within Clean Water Act Sections 401 and 404, Rivers and Harbors Act Section 10, and McAtteer-Petris Act jurisdiction.

Fill of San Francisco Bay

The proposed Project includes components that could result in placement of temporary fill for construction within jurisdictional waters of the San Francisco Bay. These components include the potential in-water work previously described: the proposed relocation and construction of stormwater and drainage outfall facilities, as needed, and the limited addition of in-water piles to support the wharf, improvements, and the cranes in overwater areas (wharf). If needed, such support work is anticipated to require approximately 0.01 acre (500 square feet) of new in-water piles; some of which may replace existing piles. These are the only Project components proposed or planned, as-needed, to occur below the high tide line or mean higher high water line that would affect the Bay. The Project could be implemented in a manner that avoids permanent fill of the San Francisco Bay in which case, implementation of this mitigation measure is not required.

Permanent and temporary Project activities resulting in the placement of bay fill²² or other disturbance to jurisdictional waters (i.e., below the high tide line) would require permit approval from the USACE, and a Water Quality Certification and/or Waste Discharge Requirements from the RWQCB. Projects within San Francisco Bay or within the shoreline band also require a permit from the BCDC. Collectively, these regulatory agencies and the permits and authorizations they issue for the proposed Project would require that placement of new fill in jurisdictional waters be avoided or minimized to the maximum extent practicable while still accomplishing the proposed Project's purpose, and they would specify an array of measures and performance standards as conditions of Project approval to ensure natural resource protection. These permits would require water quality protection measures to avoid and/or minimize temporary impacts from in-water and above-water construction activities as described in Section 4.9, *Hydrology and Water Quality*. Section 4.9, Impact HYD-1 additionally discusses how the Project would not conflict with the City of Oakland creek protection ordinance; requiring preparation of a Creek Protection Plan to comply with the provisions of the Creek Protection Ordinance to protect water quality on-site and in the Estuary (see **Mitigation Measure HYD-1a, Creek Protection Plan**). Additionally, as discussed in Section 4.8, *Hazards and Hazardous Materials*, Impact HAZ-1, compliance with the numerous laws and regulations and City ordinances discussed in that section that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the accidental release of hazardous materials that could enter stormwater runoff and degrade surface or groundwater water quality.

Construction of the proposed relocated and reconstructed stormwater and drainage outfall facilities would result in new structures installed approximately at the mean lower low water

²² Under CWA section 404, a permit is required for the 'discharge of dredged or fill material' into waters of the United States. Fill material is any substance placed (also described as discharged) in waters of the United States where the material has the effect of either replacing any portion of a water of the United States with dry land or changing the bottom elevation of any portion of a water. Examples of fill material include rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure (such as outfall pipes and/or bulkheads under the proposed project) in waters of the United States. [USACE SPN-2003-01 and 33 Code of Federal Regulations 323.2(5) (e)(1)]

elevation, similar to the elevation of the existing stormwater outfall at the Project site, and consequently would not affect the Bay floor.

Aside from the potential limited addition of in-water piles beneath the waterfront decking to support the wharf, improvements, and the cranes in overwater areas (wharf), no other placement of permanent fill in the San Francisco Bay is proposed for this Project. Implementation of **Mitigation Measure BIO-4, Compensation for Fill of Jurisdictional Waters**, would reduce potential Project-related impacts on the Bay to a less-than-significant level. Therefore, the construction impacts of the Project on jurisdictional waters would be less than significant with mitigation.

Mitigation Measure BIO-4: Compensation for Fill of Jurisdictional Waters.

The Project sponsor shall minimize all in-water construction activities associated with maintenance or installation of new structures in the San Francisco Bay if required and as further determined by the regulatory agencies with authority over the Bay during the permitting process.

If the Project includes the placement of permanent fill, the Project sponsor shall mitigate for new fill-related impacts in consultation with the applicable regulatory agencies at a ratio consistent with the “no net loss” policy for the functions and values of impacted wetlands and waters. With resource agency concurrence, suitable mitigations may include one or more of the following strategies: 1) the acquisition of mitigation credits at an agency-approved mitigation bank for affected listed species; 2) onsite or offsite shoreline improvements or intertidal/subtidal habitat enhancements along the Bay waterfront through removal of solid fill such as chemically treated wood material (e.g., pilings, decking, etc.) by pulling, cutting, or breaking off piles at least 1 foot below mudline, or; 3) removal of other un-engineered debris (e.g., concrete-filled drums or large pieces of concrete) at a ratio consistent with regulators’ “no net loss” policy for the functions and values of impacted wetlands and waters.

Mitigation Measure HYD-1a: Creek Protection Plan. (see Section 4.9, *Hydrology and Water Quality*)

Significance after Mitigation: Less than Significant.

Operational Impacts

Phase 1 and Buildout Operations

Operation of the proposed Project would be landside with the exception of the stormwater outfall flows from the Project site into the Oakland-Alameda Estuary, construction of which is discussed above. The proposed Project operations would therefore have no impact on federal and State protected waters of San Francisco Bay.

Mitigation: None required.

Wildlife Movement

Impact BIO-6: The Project would not interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Criterion 4) (*Less than Significant*)

Terrestrial Biological Resources

Construction Impacts

Phase 1 and Buildout

As discussed above under Impact BIO-1, construction of the proposed Project could affect birds attempting to nest within the Project site directly through nest destruction or mortality, and indirectly through an increase in the ambient noise environment that might disrupt breeding behavior, discourage nesting, or cause nest abandonment. This would be a potentially significant impact. The implementation of Mitigation Measure BIO-1a (Disturbance of Birds during Nesting Season) and compliance with California Fish and Game Code (i.e., §3511, fully protected bird species; §3503 birds and their nests; §3503.5 Falconiformes [hawks], Strigiformes [owls], or their nests and eggs; §3800, migratory non-game birds, and; §3513, definition of migratory bird take) would reduce potential construction-related effects on birds nesting within the Project site and surrounding vicinity to ensure that this impact would be less than significant.

Operational Impacts

Phase 1 and Buildout

As discussed above under Impact BIO-1, operation of the proposed Project could result in an increase in avian collisions associated with the increase in light, glare and reflective surfaces from Project components. The implementation of Mitigation Measure BIO-1b (Bird Collision Reduction Measures), would reduce this potentially significant impact through incorporating specific design elements into the development and adapting landscaping schemes to avoid or minimize avian collisions with buildings or other Project features while moving locally through the Project vicinity or during migration to a less-than-significant level.

Marine Biological Resources

Construction and Operational Impacts

Phase 1 and Buildout

Central San Francisco Bay serves as a migration corridor for special-status anadromous fish between the Pacific Ocean and spawning habitat, primarily within the Sacramento and San Joaquin River watersheds, but also in a handful of tributaries to San Francisco Bay. Those that use the San Francisco Bay as a migration corridor to the Central Valley watersheds rarely stray south of the San Francisco-Bay Bridge, though Central California Coast steelhead have been known to spawn in San Leandro Creek, approximately five miles southeast of the Project site (Goals Project, 2000). If special-status anadromous fish species were to occur within the vicinity of the Project site their presence would only be temporary, as they move between spawning habitat and the Pacific Ocean, and would likely occur outside the window in which pile driving or other in-water work would occur due to the brief amount of time these species are expected in the region and the limited in-water work under the proposed Project.

Pacific herring are known to breed on in-water structures and utilize this habitat along the Oakland-Alameda Estuary waterfront. Abundant suitable spawning habitat, including eelgrass beds within the Project study area, makes their occurrence on Project site in-water structures less likely relative to other areas along the waterfront where spawning habitat is more favorable. Of all the special-status fish species, longfin smelt have the greatest potential to occur within the water adjacent to the Project site due to the other species only using the Bay as a migration corridor. However, because longfin smelt distribution within the San Francisco Bay-Delta is driven by fluctuations in salinity, they are unlikely to occur in large numbers near the Project site outside of late summer.

In general, the presence of marine mammals in San Francisco Bay is related to distribution and presence of prey species and foraging habitat. Harbor seals and sea lions use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding. California sea lions are noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest. Marine mammal haul-out locations do not occur in the Project site waters of the Oakland-Alameda Estuary; as such, the presence of marine mammals is likely to be confined to a few rafting or foraging individuals and not the large numbers seen elsewhere within San Francisco Bay. In addition to the low likelihood of occurrence of special-status marine species, the limited scope of proposed in-water work makes a substantial impact to marine movement corridors unlikely; therefore, Project impacts to marine migratory corridors and nursery sites would be less than significant.

Commercial and Recreational Watercraft

While operation of the proposed Project may indirectly result in increased ferry traffic to and from the Jack London Square Ferry Terminal, or an indirect increase the presence of recreational watercraft within the Estuary during ballpark events, the Project could indirectly result in increased ferry service to and from established ferry landings and recreational boating in the vicinity. The Estuary is an active shipping and boating area that experiences regular commercial and recreational traffic. As a result, birds that use this portion of the Oakland waterfront are accustomed to existing vessel traffic and any minor increases are expected to be less than significant. The potential increase in recreational watercraft (e.g., kayakers) in the Estuary under Project operation would also not be expected to substantially disrupt waterbirds rafting near the Project site due to the small scale of individual crafts, slower operating speeds, and relative infrequency of use in comparison with commercial ferry traffic, anticipated for recreational users at several hours during home game events versus ferry service which would operate several times daily. For these reasons, the impact on rafting waterbirds or marine mammals from operation of the Project from continued commercial or recreational watercraft would be less than significant.

Mitigation: None required.

Tree Protection Ordinance Conflicts

Impact BIO-7: The Project would not fundamentally conflict with the City of Oakland Protected Tree Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) by removal of protected trees under certain circumstances. (Criterion 6) (*Less than Significant*)

Construction Impacts

Phase 1 and Buildout

Construction of the proposed Project may result in the removal of street trees located along Embarcadero Way, Market Street, Martin Luther King Jr. Way, and Clay Street in the vicinity of the Project site. These trees are primarily non-native American sycamore with a few landscaped redwood and other trees located at the Market Street entrance to the Project site. The City of Oakland Protected Tree Ordinance defines a protected tree as coast live oak trees measuring four inches diameter at breast height (dbh) or larger, and any other tree species measuring nine inches dbh or larger except eucalyptus species and Monterey pine and permits removal of such trees as necessary to ensure public health and safety, avoid unconstitutional taking of property, to take reasonable advantage of views, to pursue acceptable professional practice of forestry or landscape design, or to implement the vegetation management prescriptions in the S-11 site development review zone. Existing street trees which may be trimmed or removed under the Project could qualify for protection under the ordinance if they measure nine inches or larger dbh.

Pursuant to the City's Tree Protection Ordinance (OMC chapter 12.36), the Project sponsor will be required obtain a tree removal permit to remove any protected trees and comply with replacement standards identified by the Ordinance. Through the permitting process, potential conflicts with the Protected Tree Ordinance would be avoided and Project-related impacts to protected trees would be less than significant.

Mitigation: None required.

Operational Impacts

Phase 1 and Buildout

Operation of the proposed Project would not conflict with the City of Oakland Protected Tree Ordinance as all tree removal would occur during construction; therefore, no impact would occur.

Maritime Reservation Scenario

As discussed in Section 3.5.1, *Major Project Components*, the proposed Project includes a Maritime Reservation Scenario. Under this scenario, the Port of Oakland may retain up to approximately 10 acres of wharf from the Project site to accommodate possible future expansion of the turning basin that is used to turn large vessels accessing berths in Oakland's Inner Harbor.

If this option is exercised, that portion of the proposed Project site would not be developed, although the amount of proposed development on the site (i.e., the ballpark and other uses) would be the same. As a result, both terrestrial and marine construction methods would be similar to that described for the proposed Project. The reconfigured Project site would become approximately

10 acres smaller, although the impacts relative to biological resources on the Project site would be similar as those discussed above for the proposed Project: potential impacts to nesting birds during construction and operations would be similar under this scenario; the removal or modification of existing buildings would have similar impacts on roosting bats that may potentially occur on the site; this scenario would not encounter or impact any riparian habitat or sensitive natural communities; in-water pile-driving that may be required to support retained cranes would have identical impacts to those described for the Project, including permanent fill of Bay waters and noise effects to fish and marine mammals. All of the mitigation measures identified for the proposed Project would still apply under the Maritime Reservation Scenario.

The Maritime Reservation Scenario would result in the same maximum building heights than those considered under the proposed Project, although there would be fewer development blocks. Hence, potential collision hazards to birds from shoreline buildings would be similar to the proposed Project, and structures would be subject the same bird collision reduction measures required by Mitigation Measure BIO-1b, and the use of bird-friendly glazing treatments to windows and glass would only be required for areas up to 60 feet above the ground. Unlike the Project, where the cranes may potentially be removed if not feasible to retain them, the Maritime Reservation Scenario would require removal of the two westernmost cranes. This would have similar impacts to those described previously. No additional impacts to biological resources are anticipated from the retention of two cranes on the site.

Any impacts from the removal of a portion of the wharf and construction and operation of an expanded turning basin, if proposed by the Port, would be analyzed by the Port of Oakland under a separate CEQA document.

4.3.5 Cumulative Impacts

Impact BIO-1.CU: The Project, in combination with other past, present, existing, approved, pending, and reasonably foreseeable future projects within and around the Project area, could have a considerable contribution to any cumulative impacts related to biological resources. (*Less than Significant with Mitigation*)

Geographic Context

The geographic scope of potential cumulative impacts on biological resources encompasses the species occurrences, habitats, and sensitive natural communities that are biologically linked to the Project vicinity. For biological resources, the geographic scope of analysis is based on species distribution and landforms surrounding the Project site and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The analysis considers potential effects at different scales for different species, with the analysis generally concentrating on resources that occur in San Francisco Bay or on the Oakland-Alameda Estuary waterfront.

The cumulative impact analysis assumes that construction and operations of other projects in the geographical area would have to comply with the same regulatory requirements as the Project, which would serve to avoid and reduce many impacts to less-than-significant levels on a project-

by-project basis. The temporal scope of cumulative effects on biological resources encompasses the duration of all construction, and operation and maintenance activities. The analysis then considers whether or not there would be a significant, adverse cumulative impact associated with Project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether or not the Project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's cumulative effects to rise to the level of significance.

Section 4.0 in this chapter provides a description of projects considered in the cumulative analysis, which are listed in **Appendix DEV**, *Oakland Major Development Projects List – March 2019*. Given the concentrated level of urban development in terrestrial areas east of the Project site and related scarcity of sensitive biological resources in this area, the cumulative analysis conservatively considered current and reasonably foreseeable projects generally located within five miles of the Project site in the cumulative impacts analysis. At this distance, the cumulative impact analysis on biological resources considers all potential biological resource receptors in the Project region. The majority of landside development projects within five miles of the proposed Project are within urban areas which support few terrestrial biological resources, similar to the Project site. Other projects containing more diverse habitat (e.g., salt marsh or oak woodland) with higher potential for special-status species presence than the proposed Project are not considered in the cumulative analysis as the Project would not contribute to cumulative impacts on such biological resources. Future Oakland-Alameda Estuary and other East Bay waterfront projects, when viewed individually, may not have a significant impact on biological resources; however, their cumulative impact may reach a different level of significance. Thus, the cumulative impacts of all proximate projects, including the proposed Project, are analyzed below.

All of the cumulative projects listed in Appendix DEV will undergo, are currently undergoing, or have undergone, environmental review; consistent with CEQA requirements, environmental impacts will be or have been avoided or minimized to the extent feasible. Based on their location within the built-out urban environment, most of the projects are expected to have negligible or temporary impacts on biological resources that are generally limited to impacts to nesting birds, during the construction phase. These include projects such as the Brooklyn Basin PUD, Jack London Square PUD, Oakland Municipal Auditorium, Coliseum Area Specific Plan, and Oak Knoll Redevelopment. Other projects in open space areas, such as Shoreline Park, Gateway and South Parks, and Channel Park, could result in long-term beneficial effects on biological resources through improved foraging opportunities and nesting or roosting habitat for terrestrial wildlife. The focused terrestrial and marine impact analysis is presented below.

Cumulative Impact and Project Contribution

Terrestrial Biological Resources

The proposed Project would have a limited effect on terrestrial biological resources that inhabit the Project site and surrounding vicinity primarily because the existing built environment within the study area offers marginal habitat value to resident species. Short-term construction impacts identified above in Impact BIO-1 (Special-Status, Resident and Migratory Birds) and Impact BIO-2 (Special-Status and Otherwise Protected Bats) include potential disturbance to nesting birds and roosting bats during Project construction. Development of the other reasonably foreseeable

projects on the Oakland-Alameda Estuary waterfront are likely to have limited effects on nesting birds and roosting bats, similar to the proposed Project due to the extent of existing development along the Estuary waterfront and resulting limited habitat for nesting birds and roosting bats. This is due to the similarity of developed upland habitat conditions in these areas, and the related limited opportunity for nesting birds and roosting bats within this geographic area; also, special-status species are largely absent from the urbanized terrestrial portions of the site. Further, the majority of these proximate Project sites are located inland of the Estuary waterfront among increasingly dense, existing development, and thus, offer less habitat for such terrestrial resources than the Project site. In addition, all the projects listed in Appendix DEV are required to comply with applicable regulatory requirements protecting these biological resources and are likely to adopt project-specific protection measures similar to those of the proposed Project during the environmental review process and consistent with CEQA requirements.

As with the proposed Project, many of the projects identified in Appendix DEV would generate noise and visual disturbance above baseline conditions during construction or operation and some of the projects would require tree and/or vegetation removal in areas that seasonally support nesting birds. These combined effects, of the proposed Project and the cumulative projects considered that offer similar nesting opportunity for birds, would result in a potentially significant cumulative impact.

The proposed Project would implement Mitigation Measure BIO-1a (Disturbance of Birds during Nesting Season), which limits tree and vegetation removal during the breeding season (February 1–August 15), requires preconstruction surveys of trees and/or vegetation to be removed within the Project site, and protects active nests until the young have successfully fledged, as determined by a qualified biologist. This measure is a standard project Condition of Approval in the City of Oakland; hence, other similar projects in the City would be required to implement similar bird protection measures. The measure would avoid direct and indirect impacts to nesting birds associated with ground disturbance, tree or vegetation removal, or building/structure demolition/modification, or pile driving under the proposed Project, and also avoid or minimize impacts to birds nesting on the ground or other artificial structures, such as American peregrine falcon or osprey which could nest on container cranes along the waterfront. With mitigation, the proposed Project's incremental contribution to impacts on nesting birds nesting resulting from increased noise and visual disturbance during construction, excavation, grading, and building demolition would not be cumulatively considerable. Mitigation Measure BIO-1a would reduce the Project's contribution to cumulative impacts on nesting birds during initial Project disturbance (e.g., building demolition, excavation, asphalt removal) and other activities that might impact nesting birds (e.g., pile driving) outside of nesting season, by requiring pre-construction nesting bird surveys prior to the start of construction or demolition activities during nesting season, and establishing protective no-disturbance buffers around active nests identified within the Project site or monitoring active nests during construction. These protective requirements implemented during construction would avoid and minimize the Project's contribution to significant cumulative impacts on nesting birds.

Long-term operational impacts of the proposed Project on birds moving locally or during migration include a less than significant increased risk of bird collisions with Project buildings or features,

because the Project would be designed to minimize avian risks resulting from collision with structures through the implementation of Mitigation Measure BIO-1b (Bird Collision Reduction Measures). This measure was based on the City of Oakland's Standard Conditions of Approval that would require other cumulative projects within the City to prepare a project-specific Bird Collision Reduction Plan, tailoring bird protection and collision reduction strategies to various project parameters, ensuring any long-term cumulative impact to birds resulting from collisions while on the wing would be less than significant.

Operation of the proposed Project has potential to impact peregrine falcon nesting on structures of the Project site during ballpark firework displays in breeding bird season due to increased noise levels that could cause adult peregrines to flush from or abandon an active nest. Implementation of the Mitigation Measure BIO-1c (Peregrine Falcon Firework Display Surveys, Buffer, and Monitoring) would reduce the Project's contribution to a cumulative operational impact on nesting peregrine falcon by requiring surveys to confirm presence or absence of nesting peregrine falcon within the Project site, establishing buffers to avoid fireworks impacts to nests, and monitoring peregrine behavior at active nest sites prior to and after firework displays, and adjusting buffer sizes as needed to avoid impacting falcons. These measures implemented during Project operation would further avoid or minimize the Project's contribution to significant cumulative impacts on nesting birds such that the cumulative impact would be less than significant with mitigation.

The proposed Project and many of the cumulative projects identified above would include demolition and/or construction activities that generate noise and increase human activity above baseline conditions during construction. These activities could have a substantial adverse effect on special-status bats and/or maternal roosts, if present, which in combination would be a significant cumulative impact. The proposed Project's incremental contribution, without mitigation, would result from disturbance associated with increased noise, human activity, and building demolition and construction if special-status bats or maternal roosts are present and adversely affected by such activities, which is cumulatively considerable. Implementation of Mitigation Measure BIO-2 (Pre-Construction Assessments and Protection Measures for Bats) would reduce the Project's contribution to cumulative impacts on special-status and roosting bats by preferentially removing structures when bats are active, establishing no-disturbance buffers around roost sites, removing structures containing active bat roosts under the oversight of a qualified biologist and in a manner that encourages the bats to safely leave the roost.

Other cumulative projects that may potentially impact roosting bats would be subject to CEQA review and would likely be required to implement similar measures to comply with CDFW regulations, such that special-status bats, their roosts, and common bat maternity roosts would be avoided during sensitive periods (i.e., when maternity roosts are active and during periods of hibernaculum) to minimize direct impacts and bats would be safely removed, when necessary, during appropriate non-sensitive periods. In addition, no current or historic bat roosts are known or described from the Oakland waterfront. Based on the absence of freshwater habitats, riparian forests, and similar natural habitats that produce forage species, few bats are expected to use this area. Thus, the Project's contribution to cumulative impacts on roosting bats would be less than significant with mitigation.

In summary, while adverse effects to nesting birds and special-status bats or maternal roosts could occur under the Project or the cumulative projects, after the implementation of Mitigation Measures BIO-1a, BIO-1c.1, BIO-1c.2, and BIO-2, and state and federal regulations protecting nesting birds, special-status bats and maternal bat roosts, the cumulative impact on these terrestrial biological resources would be less than significant with mitigation. Through compliance with the Mitigation Measure BIO-1b, the cumulative impacts to birds related to collisions would be less than significant.

The proposed Project would comply with the City of Oakland's Protected Tree Ordinance by obtaining a tree removal permit, which requires the Project sponsor to protect trees that are retained by the Project and mitigate for trees that are removed under the Project. Other cumulative projects located in Oakland would be required to comply with the City's Standard Conditions of Approval that protect trees to also avoid conflicts with the ordinance. Therefore, the cumulative impact of conflicts with the City of Oakland's Protected Tree Ordinance would be less than significant and not cumulatively considerable.

Marine Biological Resources

For marine resources, the geographic scope for cumulative impacts includes the Oakland-Alameda Estuary. Shoreline projects that may involve in-water construction, and that, in combination with the proposed Project, have the potential to result in a significant cumulative impact on aquatic resources include the Jack London Square PUD, Brooklyn Basin PUD, and Coliseum Area Specific Plan projects. The in-water construction activities that would occur under the cumulative projects listed in Appendix DEV would include the remediation of harmful chemicals within bay sediment, dredging, construction of docking facilities for vessel traffic, and the enhancement and restoration of dilapidated shoreline habitat for public use. The potential impacts described above for the proposed Project are similar or less severe than those that can be expected to occur with implementation of cumulative projects. Other projects may also include more extensive in-water work (e.g., dredging, in-water pile driving) that have greater associated adverse effects on marine biological resources than the proposed Project.

Project construction impacts on marine biological resources were identified under Impact BIO-3 related to in-water work. As identified above, the installation of steel pipe piles, if used to support the wharf, improvements, and the crane in overwater areas (wharf), would create underwater noise that could have significant impacts on special-status fish and marine mammals. The implementation of Mitigation Measure BIO-3 (Management of Pile Driving in the Water Column for Protection of Fish and Marine Mammals) would reduce Project impacts from in-water noise associated with the placement in-water piles to a less-than-significant level. Similar to the Project, other cumulative projects with in-water activities would also be subject to permitting and regulation from the NOAA Fisheries, USFWS, and CDFW, which would result in performing work only during non-sensitive work windows, and providing monitoring for actions that have the potential to harm special-status fish or marine mammals. Due to the regulatory environment that would require similar protective measure for these resources for cumulative projects, the incremental contribution of the Project in combination with other past, present and reasonably foreseeable projects would not be cumulatively considerable. Cumulative impacts resulting from impacts to fish and marine mammals from underwater noise during construction would be less than significant.

Impact BIO-4 (Sensitive Natural Communities), Impact BIO-5 (Wetlands and Waters), and Impact BIO-6 (Wildlife Movement) include temporary alterations to existing subtidal and intertidal habitat and impacts to water quality associated with the relocation of the stormwater outfall. These impacts under the proposed Project would be less than significant given the replacement of similar subtidal habitat substrate (outfalls), limited scope and duration of in-water work and with implementation of standard BMPs, regulatory compliance with requirements protecting water quality, and Mitigation Measure HYD-1a. The other cumulative projects would also be required to comply with the City of Oakland Standard Conditions of Approval, regulations, and implement standard BMPs protecting water quality to ensure potential cumulative impacts to water quality would be less than significant. The Project impact to subtidal and intertidal habitat would be less than significant and its incremental contribution in combination with other past, present and reasonably foreseeable projects would not be cumulatively considerable. Cumulative impacts resulting from impacts to subtidal and intertidal habitat and water quality during construction would be less than significant.

The Project may result in the placement of temporary fill in the Oakland-Alameda Estuary from the proposed as-needed relocation and construction of stormwater and drainage outfall facilities, as needed, and the limited addition of in-water piles to support the wharf, improvements, and the cranes in overwater areas (wharf). Other cumulative projects may also fill the Estuary through construction of new utilities, new vessel docking facilities, and shoreline protection activities, which in combination with the proposed Project would result in a significant cumulative impact on marine biological resources. Implementation of Mitigation Measure BIO-4, Compensation for Fill of Jurisdictional Waters, would reduce the Project's incremental contribution to cumulative impacts on marine biological resources associated with the placement of fill to a less-than-significant level. Other cumulative projects that may result in the placement of fill would also be required to implement project-specific compensatory measures to comply with federal, state, and local regulations; therefore, cumulative impacts resulting from the placement of fill in San Francisco Bay would be less than significant with mitigation.

Operational impacts on marine biological resources were identified under Impact BIO-3 (Special-Status Marine Species) associated with water quality impairment. Other cumulative projects along the Oakland-Alameda Estuary would be required to comply with the City of Oakland Standard Conditions of Approval (projects within the City of Oakland) or similar mitigation measures (Mitigation Measure HYD-1b) protecting water quality from stormwater runoff and pollution; therefore, the cumulative impact on water quality affecting marine biological resources and resulting from stormwater runoff would be less than significant.

Operation of the Project would not directly result in an increase in ferry traffic to and from the Jack London Square Ferry Terminal immediately southeast of the site, or increase the presence of recreational watercraft within the Estuary during ballpark events. However, the Project could indirectly result in increased ferry service or an increase in recreational watercraft (e.g., kayakers) in the Estuary under Project operation. Similarly, there would be additional shipping traffic in the Estuary over time to accommodate additional cargo handling needs through 2050, and the Bay Area's seaports can expect long-term cargo growth (The Tioga Group and Hackett Associates, 2020).

Several studies outside of the San Francisco region have shown that boat traffic disturbance can cause waterbirds to expend energy flying and flushing from roosting and foraging sites and thereby spend less time feeding (Korschgen and Dahlgren, 1992). Flying is a high-energy activity for waterfowl, and frequent or repeated flight could contribute to the loss of energy that could be stored for breeding or migration. This potential impact was identified by the San Francisco Bay Water Emergency Transportation Authority (WETA) in the programmatic EIR for the Expansion of Ferry Transit Service in the San Francisco Bay Area (URS, 2003) and has received considerable attention. To further study the potential issue, the U.S. Geological Survey (USGS) began a series of ecological studies in 2004, funded in part by WETA and by the 34th America's Cup race sponsors, to study the effects of commuter ferries and vessel traffic on waterbirds in San Francisco Bay. Study objectives were to examine species-specific behaviors of waterbirds from ferry traffic, examine waterbird avoidance behavior of watercraft, and document the distribution of waterbirds along ferry routes using aerial surveys.

As of January 2018, the preliminary findings of the USGS waterbird studies have not been formalized and studies have not been publically released. Based on discussions with the USGS, the initial findings suggest that waterbirds alter their behavior to avoid passing watercraft and some bird species respond more negatively to vessel traffic than others. The USGS has prioritized the mapping of high-quality waterbird foraging areas in San Francisco Bay, which includes shallow shoal and mudflat areas (i.e., shallow submerged ridges, banks, or bars covered by sand or other unconsolidated materials). Aquatic habitat in the near-Project vicinity is maintained as deep water for vessel traffic and does not contain shoal or mudflat areas.

While USGS studies have documented behavioral changes in waterbirds as the birds move to avoid passing ferry traffic, which reduces the amount of uninterrupted waterbird rafting habitat, published studies have not identified ferry traffic as contributing to reduced bird vigor or productivity. The approach by WETA to reduce the potential for inadvertent waterbird flushing has been to consolidate ferry routes within common corridors, have ferries travel down deeper channel areas as much as possible, and use the shortest routes across shallow areas to leave as much undisturbed shallow open-water habitat as possible. With such remedies, the increased flushing impact of waterfowl by ferry traffic has been considered less than significant (URS, 2003).

Due to the deep water in the aquatic habitats and the presence of existing ferries and watercraft in the Estuary, the presence of additional ferries on existing transit routes and recreational use of the Estuary are not expected to be substantially disrupt rafting waterbirds rafting near the Project site or disrupt marine mammals in the Estuary, and potential impacts related to operational water uses are expected to be less than significant. No other projects were identified that would cause impacts to rafting waterbirds or marine mammals; hence, this impact is considered less than significant.

As discussed in Impact BIO-1 and Mitigation Measure BIO-1b, the use of full cutoff, shielded, or directional lighting would minimize light spillage, glare, or light trespass into the Estuary. The anticipated amount of spill over light, which would be similar to light from a full moon is not expected to adversely affect birds on the wing or significantly affect the behavior of resting birds in the water. No reasonably foreseeable probable future projects were identified in Section 4.0.4

(Cumulative Analysis) that would cause light trespass impacts on wildlife in the Estuary. Any such projects with near-water elements would be subject to the same lighting best management practices as the proposed Project, which would minimize or eliminate lighting of the Estuary to a less than significant level. Hence, such projects in combination with the proposed Project would not be cumulatively considerable.

The Project upon buildout would introduce new sidecast shadows to the immediate vicinity, as described in detail in Section 4.1, *Aesthetics*; however, the Project would result in no new overwater structures or mid-day shadows over water. In the absence of direct overwater shading, no project-level or cumulative impacts would occur from overwater shading.

Mitigation Measure BIO-1a, Disturbance of Birds during Nesting Season. (see Impact BIO-1)

Mitigation Measure BIO-1b: Peregrine Falcon Firework Display Surveys, Buffer, and Monitoring. (see Impact BIO-1)

Mitigation Measure BIO-1c: Bird Collision Reduction Measures. (see Impact BIO-1)

Mitigation Measure BIO-2: Pre-Construction Assessments and Protection Measures for Bats. (see Impact BIO-2)

Mitigation Measure BIO-3: Management of Pile Driving in the Water Column for Protection of Fish and Marine Mammals. (see Impact BIO-3)

Mitigation Measure BIO-4: Compensation for Fill of San Francisco Bay. (see Impact BIO-5)

Mitigation Measure HYD-1a: Creek Protection Plan. (see Section 4.9, Hydrology and Water Quality)

Mitigation Measure HYD-1b: NPDES Stormwater Requirements. (see Section 4.9, Hydrology and Water Quality)

Significance after Mitigation: Less than Significant.

Maritime Reservation Scenario - Cumulative

As discussed above, under the Maritime Reservation Scenario, an approximately 10-acre portion of the Project site would not be developed, although the amount of proposed development on the site (i.e., the ballpark and other uses) would be the same. As a result, both terrestrial and marine construction methods would be similar to that described for the proposed Project. The reconfigured Project site would become approximately 10 acres smaller, although the cumulative impacts relative to biological resources on the Project site would be similar as those discussed above for the proposed Project. All of the mitigation measures identified for the proposed Project would still apply under the Maritime Reservation Scenario.

Any impacts from the removal of a portion of the wharf and construction and operation of an expanded turning basin, if proposed by the Port, would be analyzed by the Port of Oakland under a separate CEQA document. As described above for the proposed Project, other cumulative projects may include more extensive in-water work (e.g., dredging) that have greater associated adverse effects on marine biological resources than the proposed Project. Similar to the Project, other cumulative projects with in-water activities would also be subject to permitting and regulation from NOAA Fisheries, USFWS, and CDFW, which would result in performing work only during non-sensitive work windows, and providing monitoring for actions that have the potential to harm special-status fish or marine mammals. Due to the regulatory environment that would require similar protective measure for these resources for cumulative projects, the incremental contribution of the Project in combination with other past, present and reasonably foreseeable projects would not be cumulatively considerable under the Maritime Reservation Scenario.

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