APPENDIX B

Marine Biological Resources Report

MARINE BIOLOGICAL RESOURCES REPORT

Haynes Generating Station Intake Channel Infill Project

PREPARED BY

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CEMP	California Eelgrass Mitigation Policy
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CGP	Construction General Permit
CNDDB	California Natural Diversity Database
CWA	Clean Water Act
DO	dissolved oxygen
EFH	Essential Fish Habitat
EIR	environmental impact report
FEI	Field Environmental Instruments Inc.
FMP	Fishery Management Plan
GIS	geographic information system
HAPC	Habitat Area of Particular Concern
LADWP	Los Angeles Department of Water and Power
LCWA	Los Cerritos Wetlands Authority
MAMP	monitoring and adaptive management plan
MBC	MBC Aquatic Sciences
MHWL	mean high water line
MLLW	mean lower low water
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PFMC	Pacific Fishery Management Council
psu	practical salinity unit
RWQCB	Regional Water Quality Control Board
SEADIP	South East Area Development and Improvement Plan
SEASP	Southeast Area Specific Plan 2060
SR	State Route
SWPPP	stormwater pollution prevention plan
TDS	total dissolved solids
WEAP	Worker Environmental Awareness Program

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1 INTRODUCTION

This report documents the methods and results of surveys and analysis to assess the existing conditions related to marine biological resources within the circulating cooling water intake channel at the Los Angeles Department of Water and Power (LADWP) Haynes Generating Station (Haynes). The report also provides analyses and conclusions regarding potential impacts to existing biological resources that may result from implementation of the Haynes Generating Station Intake Channel Infill Project (referred to herein as the project or proposed project), which would fill the channel within the boundaries of Haynes (Haynes Intake Channel) with earthen material. This report provides information to support determinations related to regulatory requirements of the California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), Los Angeles Regional Water Quality Control Board (RWQCB), National Marine Fisheries Service (NMFS), and the U.S. Army Corps of Engineers (USACE).

1.1 Project Location

Haynes is located at 6801 East 2nd Street in the City of Long Beach, California, immediately south of State Route (SR) 22 (Garden Grove Freeway–East 7th Street) and approximately 1 mile east of SR-1 (Pacific Coast Highway). Access to Haynes is provided from East 2nd Street, which forms the southern site boundary of the generating station. East 7th Street (SR-22) serves as the northern boundary, the San Gabriel River channel as the western boundary, and an Orange County flood control channel as the eastern boundary of Haynes.

The site of Haynes was acquired by LADWP in 1957 for the purpose of constructing a steam-boiler generating facility to replace the Seal Beach Steam Generating Plant, which had been operating in the area since the mid-1920s. Generation Units 1 and 2 at Haynes (the southernmost of the original generators) were placed into operation in 1962 and 1963, respectively; Units 3 and 4 were placed into operation in 1964 and 1965, respectively; and Units 5 and 6 were placed into operation in 1966 and 1967, respectively. Unit 7 (a small diesel emergency backup power generator) was added in 1970. The six original steam-boiler units all used an ocean-water once-through cooling (OTC) system for generator cooling, drawing water from a marine bulkhead intake structure located in the southeast corner of Alamitos Bay Marina, on the west side of the San Gabriel River channel. From the marina, the water passes beneath the San Gabriel River channel via seven 1,150-foot-long enclosed pipes. An open channel extends from the east side of the San Gabriel River approximately 1 mile northeast to the 2nd Street bridge and the southern boundary of Haynes. The Haynes Intake Channel then proceeds approximately 2,150 feet north within Haynes, to the east of the original six generation units (Figure 1, Project Site Location). The OTC water was pumped from the Haynes Intake Channel into the generation unit condensers, passed through the condensers to condense exhaust steam, and discharged into the San Gabriel River channel, located along the western boundary of Haynes. In this report, the section of the Haynes Intake Channel north of the southern edge of the 2nd Street bridge is termed the northern portion of the Haynes Intake Channel, and the section south of the bridge is termed the southern portion of the Haynes Intake Channel. The project site is defined as the northern portion of the Haynes Intake Channel.

In 2004, a combined-cycle generating system (Units 8, 9, and 10) replaced steam-boiler Units 3 and 4, which were decommissioned. The combined-cycle generating system, which consists of one steam-turbine generator that is operationally paired with two natural-gas combustion turbine generators, adapted the OTC system from Units 3 and 4. In 2013, a simple cycle generation system consisting of six combustion turbine generators (Units 11 through 16) replaced steam-boiler Units 5 and 6, which were decommissioned. Instead of adapting the Units 5 and 6 OTC system, the simple cycle generation system uses a closed-cycle dry cooling system; therefore, upon commissioning of the simple cycle generation system, the Units 5 and 6 OTC systems were decommissioned. The original steam-boiler Units 1 and 2, including the OTC system, remain operational. However, in accordance with an agreement between LADWP and the California State Water Resources Control Board pursuant to the Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Policy), all remaining OTC systems will be removed from service by no later than the end of 2029.

Within Haynes, the intake channel is trapezoidal in cross-section and has earthen embankments that have been stabilized with a grouted stone material along the upper extent, to below the high water line. The channel has a depth of approximately 26 to 28 feet when measured from the top of bank. The average width is 30 feet at the bottom of the channel and 165 feet at the top of bank. The actual width at the top of bank within the project boundaries ranges from approximately 140 feet in the northern portions to approximately 185 feet in the southern portions.

At the top of bank, the total project area encompasses approximately 8.8 acres, of which approximately 0.8 acres is located south of the Haynes fence line and beneath the 2nd Street bridge. Because the water level in the Haynes Intake Channel remains substantially below the top of bank, the surface area of the water encompassed by the project boundaries is approximately 7.64 acres. This is established by the evident staining left by water on the side walls of the Haynes Intake Channel. The stain generally demarcates the maximum extent of both the mean higher high water and the ordinary high water mark based on nearly 60 years of channel operations.

1.2 Project Description

LADWP proposes to fill the northern portion of the Haynes Intake Channel from the south edge of the 2nd Street bridge to the channel's northern terminus using engineered fill. The proposed infill project would occur in a phased manner based on the retirement of the individual OTC systems, the intakes for which require access to the water in the Haynes Intake Channel while the OTC systems are still functional. As discussed above, original steam-boiler Generation Units 5 and 6 were repowered in 2013, and the replacement simple cycle generation system (Units 11 through 16) was developed with a separate dry cooling system that does not require an OTC flow. Since Units 5 and 6 were decommissioned, the OTC system, including the associated intake structures in the Haynes Intake Channel, have also been out of service. Therefore, the northernmost approximately 475 feet of the Haynes Intake Channel, encompassing the intakes for Units 5 and 6 but staying north of the Unit 8 intakes (which are still operational), would be Phase I of the proposed project (see Figure 2, Project Phasing). Phase I of the project is scheduled to begin construction in late 2021 and to be completed in early 2023.

The OTC systems for Generation Units 1, 2, and 8 are still operational, but, as discussed above, they will be removed from service no later than the end of 2029 to comply with the OTC Policy deadline for cessation of use of OTC systems at Haynes. Therefore, the balance of the Haynes Intake Channel south of Phase I (approximately 1,675 feet in length), encompassing the Units 1, 2, and 8 intake structures and extending 2 feet south of the 2nd Street bridge, would be Phase II of the proposed project. Based on the OTC deadline, Phase II is scheduled to begin construction in 2030 and to be completed in 2032.

The project construction, whether during Phase I or II, would involve several primary tasks. The site preparation task would include the construction of cofferdams across the Haynes Intake Channel to isolate project areas and allow for the infilling to proceed, the removal of inoperative utilities and structures at the Haynes Intake Channel, and the relocation of still required utilities. The site dewatering task would entail the removal of both the water in the channel north of the cofferdam (i.e., the project site) and the groundwater under the project site to prevent intrusion during the actual infilling process. The channel infilling task would involve the over-excavation of the Haynes Intake Channel bottom so that backfill material could provide a stable load-bearing foundation for future facility development on the project site and the importation, placement, and compaction of fill material in the channel. At the conclusion of project construction, the cofferdam installed at the 2nd Street bridge during Phase II would remain to provide a division between the water in the channel south of the cofferdam and the fill material behind the cofferdam.

The project would permanently alter the existing environment in the intake channel within Haynes, south to the southern edge of the 2nd Street bridge, by replacing the open water in the Haynes Intake Channel with earthen material.

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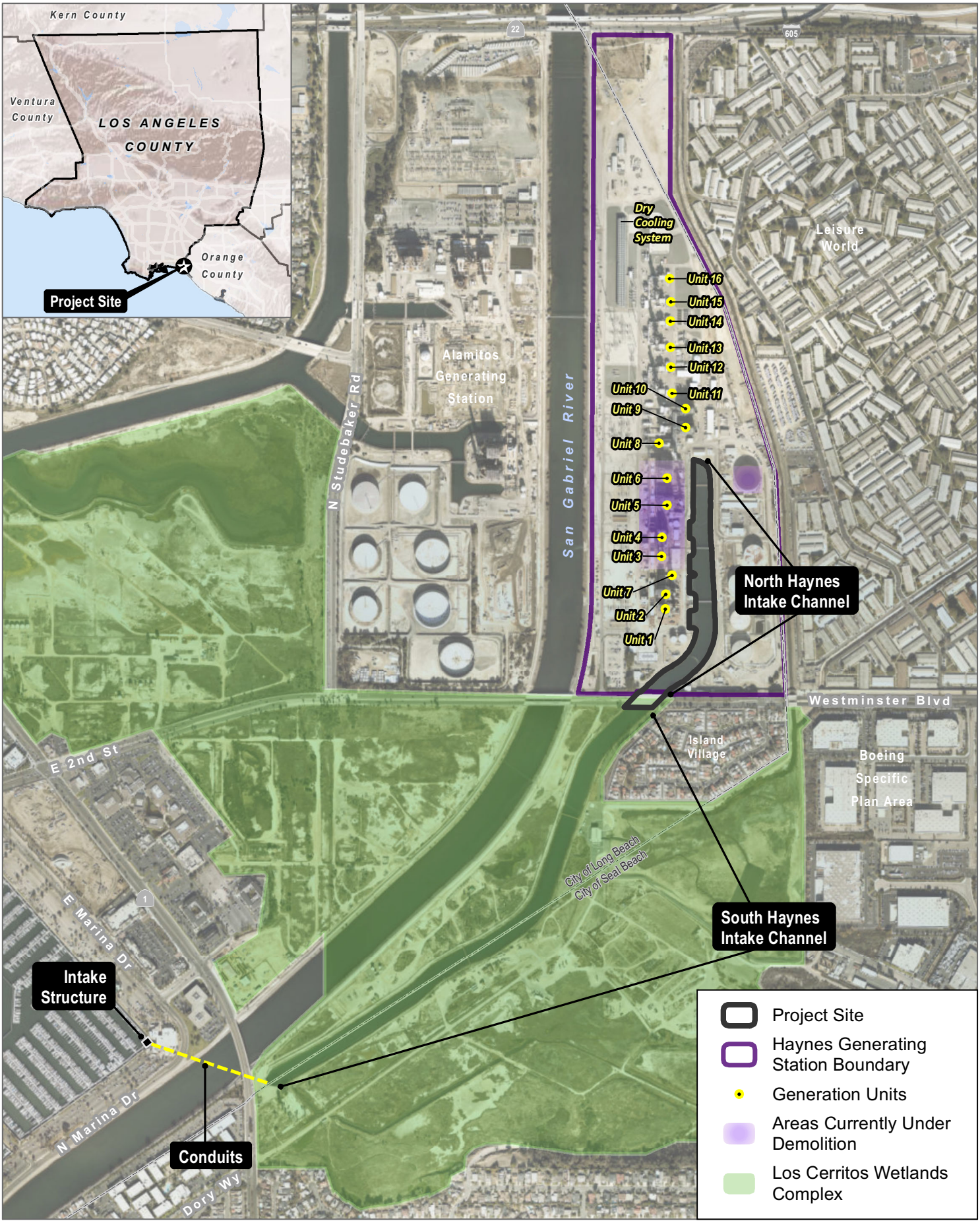

SOURCE: ESRI World Imagery

Los Angeles Department of Water & Power

0 500 1,000 Feet

FIGURE 1

Project Site Location

Haynes Generating Station Intake Channel Infill Project Marine Biological Resources Report

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SOURCE: ESRI World Imagery

LA DWP Los Angeles Department of Water & Power

0 135 270 Feet

FIGURE **2**

Project Phasing

Haynes Generating Station Intake Channel Infill Project Marine Biological Resources Report

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2 REGULATORY SETTING

2.1 Federal Laws and Regulations

2.1.1 Federal Regulation of Wetlands and Waters of the United States

USACE has regulatory authority for activities within wetlands under the Clean Water Act of 1977, as amended (CWA), which serves as the primary federal law protecting the quality of the nation's surface waters. Section 404 of the CWA establishes a program that is administered by USACE to regulate discharge of dredged or fill material into waters of the United States. The term "waters" includes wetlands and non-wetland bodies of water that meet specific criteria, as defined in the Code of Federal Regulations. In general, a permit must be obtained under Section 404 of the CWA before fill can be placed in wetlands or other waters of the United States. The type of permit depends on the amount of acreage and the purpose of the proposed fill, subject to the discretion of USACE. Under Section 404, general permits may be issued on a nationwide, state, or regional basis for particular types of activities that will have only minimal adverse impacts. Individual permits are required for projects with potentially significant impacts.

USACE generally takes jurisdiction within tidal waters to the high tide line, which encompasses spring high tides and other high tides that occur with periodic frequency. For non-tidal rivers and streams, USACE takes jurisdiction to the ordinary high water mark, which is determined by erosion, the deposition of vegetation or debris, and changes in vegetation. USACE defines jurisdictional wetlands as areas that contain hydrophytic vegetation, hydric soils, and wetland hydrology, in accordance with the procedures established in the Corps of Engineers Wetlands Delineation Manual (USACE 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Additionally, USACE regulates the construction of structures and the excavation and deposition of materials into navigable waters under Section 10 of the Rivers and Harbors Act of 1899. Navigable waters include areas that are subject to tidal flow and/or that are currently used, or have been used in the past, to transport interstate or foreign commerce.

Under Section 401 of the CWA, the California RWQCBs have regulatory authority over actions in waters of the United States through issuance of Water Quality Certifications, which are issued in combination with permits issued by USACE under Section 404 of the CWA. A CWA Section 401 Water Quality Certification is required from the RWQCB with jurisdiction whenever improvements are made within jurisdictional waters of the United States. Potential jurisdictional waters within the project site are identified in Section 4.4, Aquatic Resources Jurisdictional Delineation, of this report.

2.1.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801−1884) of 1976, as amended in 1996 and reauthorized in 2007 (Magnuson-Stevens Act), is intended to protect fisheries resources and fishing activities within 200 miles of shore. The amended law, also known as the Sustainable Fisheries Act (Public Law 104-297), requires all federal agencies to consult with the Secretary of Commerce on proposed projects authorized, funded, or undertaken by

that agency that may adversely affect Essential Fish Habitat (EFH). The main purpose of the EFH provisions is to avoid loss of fisheries due to disturbance and degradation of habitat. EFH is regulated under the Magnuson-Stevens Act, protecting waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC 1801 et seq.). Substrates that are considered include sediment, hard bottom, structures underlying waters, and associated biological communities.

The Pacific Fishery Management Council (PFMC) is one of eight regional fishery management councils established by the Magnuson-Stevens Act. Under the Magnuson-Stevens Act, the federal government has jurisdiction to manage fisheries in the Exclusive Economic Zone, which extends from the outer boundary of state waters (3 nautical miles from shore) to a distance of 200 nautical miles from shore. With jurisdiction over the 822,817 square kilometers (317,690 square miles) of Exclusive Economic Zone off Washington, Oregon and California, the PFMC manages fisheries for approximately 120 species, including salmon, groundfish, coastal pelagic species (sardines, anchovies, and mackerel), and highly migratory species (tunas, sharks, and swordfish). The PFMC is also active in international fishery management organizations that manage fish stocks that migrate through the PFMC's area of jurisdiction, including the International Pacific Halibut Commission, the Western and Central Pacific Fisheries Commission (for albacore tuna [*Thunnus alalunga*] and other highly migratory species), and the Inter-American Tropical Tuna Commission (for yellowfin tuna [*T. albacares*] and other highly migratory species) (PFMC 2018). Management measures developed by the PFMC are recommended to the Secretary of Commerce through NMFS. Management measures are implemented by the NMFS west coast regional offices and enforced by the National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement, the 11th and 13th Coast Guard Districts, and local enforcement agencies (PFMC 2018).

Congress defined EFH to mean those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. In 2002, NMFS further clarified EFH with the following definitions (50 CFR 600.05–600.930):

- "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate.
- "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities.
- "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

The entire coastal region of California is designated as EFH in the Pacific Coast Groundfish Fishery Management Plan (FMP). This FMP manages more than 90 species over a large and ecologically diverse area extending from the Pacific coast border between California and Mexico to the Pacific coast border between Washington and Canada (PFMC 2016). Because the EFH determination from the Pacific Coast Groundfish FMP addresses such a large number of species, it covers areas out to 11,483 feet in depth, shoreline areas up to mean higher high water, and areas up coastal rivers where ocean-derived salinity is at least 0.5 practical salinity units (psu) during average annual low flows. The designated EFH includes coastal waters and some tidally influenced inland water bodies in the area of Haynes. The Haynes Intake

Channel itself is not specifically mapped by NOAA as EFH under any FMP (NOAA 2018). EFH in the project site is described in Section 4.3, Essential Fish Habitat Assessment, of this report.

Habitat Areas of Particular Concern

Habitat Areas of Particular Concern (HAPCs) are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function. The HAPC designation does not necessarily mean that additional protections or restrictions are required for an area, but the designation helps to prioritize and focus conservation efforts. EFH guidelines identify HAPCs as types or areas of habitat that are identified based on one or more of the following considerations:

- The importance of the ecological function provided by the habitat
- The extent to which the habitat is sensitive to human-induced environmental degradation
- Whether, and to what extent, development activities are or will be stressing the habitat type
- The rarity of the habitat type

These areas are detailed in EFH sections of FMPs and are summarized within the Regional Council Approaches to the Identification and Protection of Habitat Areas of Particular Concern (NMFS 2001). Current HAPC types are estuaries, canopy kelp, seagrass, rocky reefs, and marine protected areas or areas of interest (such as banks, seamounts, and canyons). No marine protected areas occur in or adjacent to the project site; therefore, they would not be affected by the proposed project and are not analyzed in this report.

Estuaries

Estuaries are semi-enclosed regions where saltwater and freshwater mix, leading to a unique and biodiverse community of plant and animal species. Estuaries are characterized by high productivity, sediment deposition, varying salinity, and high biodiversity. Due to the variable salinity, tides, outflow, and water properties, many organisms have adapted in a myriad of ways to exploit the environment. Estuaries are vital habitats for marine fishes that use the shallow protected habitat as rearing zones for juveniles. Without these important habitats, juveniles would be exposed to physical forces beyond their swimming capabilities, as well as high predatory pressure due to a lack of shelter. The nutrient input, calm waters, and sedimentation of estuaries allow many plant species to thrive, forming the base of a very productive ecosystem that influences many habitats and species beyond its borders. Estuaries also provide habitat for a variety of seabirds, invertebrates, marine mammals, and turtles.

Canopy Kelp

Giant kelp (*Macrocystis pyrifera*), perhaps the most recognized species of brown macroalgae, forms the more southern kelp forests, from the southern Channel Islands, California, to northwestern Baja California, Mexico. In California, there are two dominant species: Giant kelp and bull kelp (*Nereocystis luetkeana*). Considered an ecosystem engineer, kelp provides a physical substrate and habitat for kelp forest communities. A wide range of sea life uses kelp forests for

protection or food, including fish (particularly rockfish) and many invertebrates, such as amphipods, shrimp, marine snails, bristle worms, and brittle stars. Many marine mammals and birds are also found, including seals, California sea lion (*Zalophus californianus*), whales, sea otter (*Enhydra lutris*), gulls, terns, snowy egret (*Egretta thula*), great blue heron (*Ardea herodias*), and cormorants (*Phalacrocorax* spp.), as well as some shorebirds. In California giant kelp forests, the nudibranch *Melibe leonina* and skeleton shrimp (*Caprella californica*) are closely associated with surface canopies; the kelp perch (*Brachyistius frenatus*), rockfishes (*Sebastes* spp.), and many other fishes are found within the stipitate understory; brittle stars and turban snails(*Tegula* spp.) are closely associated with the kelp holdfast, while various herbivores, such as sea urchins and abalones (*Haliotis* spp.), live under the prostrate canopy; many sea stars, hydroids, and benthic fishes live among the benthic assemblages; and solitary corals, various gastropods, and echinoderms live over the encrusting coralline algae.

Seagrass

Seagrasses are one of the only flowering plants, or angiosperms, that can grow in a marine environment. These plants support a diversity of life and can form extensive beds in shallow, protected, estuarine, or other nearshore environments. Two common seagrasses that occur in the west coast region are eelgrass (genus *Zostera*) and surfgrass (genus *Phyllospadix*), with eelgrass being the most prevalent in California. Eelgrass (*Zostera marina* and *Z. pacifica*) beds are located in soft, sandy, sheltered seafloor environments, typically in shallow bays and estuaries. Eelgrass beds function as nursery grounds and provide habitat for juvenile fish, snails, sea stars, anemones, crabs, and clams, and further serve as potential foraging habitat for sea turtles. Surfgrass beds are located in the rocky intertidal and subtidal zones with turbulent surf. Surfgrass beds are habitat for several species of invertebrates, juvenile fish, and epiphytic algae. Eelgrass beds are recognized by federal and state statutes as highly valuable and sensitive habitats. Eelgrass has been designated as EFH for various fish species managed under the Magnuson-Stevens Act, and has been listed as a HAPC, identifying it as rare, especially vulnerable to human impacts, particularly important ecologically, and/or located in environmentally stressed areas.

Rocky Reefs

Rocky reefs are submerged rock outcrops with varying relief, known to be rich in both fish abundance and species diversity. In these systems, rocky reefs provide prey, shelter, and refuge for recruiting, juvenile, and adult fishes. Rocky reefs also provide surface area for colonization of algae and invertebrates. It is the physical structure itself of rocky reefs that is the most beneficial to the marine ecosystem. Nearshore rocky reefs receive enough light for photosynthesis and are inhabited by algae, invertebrates, and groundfishes. Rocky reefs in deeper waters do not receive enough light for photosynthesis and are therefore dominated by sessile invertebrates, deep-sea corals, and groundfishes. Several species of groundfish, such as lingcod (*Ophiodon elongatus*), many species of rockfish, and cabezon (*Scorpaenichthys marmoratus*), prefer rocky reefs. These species inhabit rocky reefs because they can find shelter from predators inside the structure they provide. In reefs close to the surface, algae can attach to the rocks and provide the base of a food chain, making rocky reefs highly productive. When reefs exist at depth below where sunlight can penetrate, invertebrate filter feeders dominate the community, capturing prey as they pass by in the current.

2.1.3 Endangered Species Act

The federal Endangered Species Act (ESA; 16 USC 1531 et seq.) is implemented by the U.S. Fish and Wildlife Service (USFWS) through a program that identifies and provides for protection of various species of fish, wildlife, and plants deemed to be in danger of or threatened with extinction. As part of this regulatory act, ESA Section 3(5)(A) provides for the designation of critical habitat, which is defined as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and that "may require special management considerations or protection." Critical habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species." The potential for species listed by the ESA to occur in the project site is described in Section 4.7, Special-Status Species, of this report.

2.1.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource (16 USC 703–712). The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. Each of the treaties protects selected species of birds and provides for closed and open seasons for hunting game birds. The Migratory Bird Treaty Act protects more than 800 species of birds, which are listed in the Code of Federal Regulations (50 CFR 10.13). The Migratory Bird Treaty Act prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the Migratory Bird Treaty Act, "take" is defined as pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do so. In December 2017, Department of the Interior Principal Deputy Solicitor Jorjani issued a memorandum (M-37050) that interprets the Migratory Bird Treaty Act's "take" prohibition to apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs. Unintentional or accidental take is not prohibited (M-37050). Two species of eagles that are native to the United States, bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*), were granted additional protection within the United States under the Bald and Golden Eagle Protection Act (16 USC 668–668d) to prevent the species from becoming extinct.

2.2 State Laws and Regulations

2.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires identification of a project's potentially significant impacts on biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts. The CEQA Guidelines define endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15380[b][1)]). A rare animal or plant is defined in the CEQA Guidelines as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant

portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act" (14 CCR 15380[b][2]). Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

2.2.2 California Coastal Act

In 1972, voters concerned about coastal development, including impacts to public access and coastal resources, passed the California Coastal Zone Conservation Initiative (Proposition 20), in turn creating CCC. This initiative declared the California Coastal Zone (Coastal Zone) as a distinct and valuable natural resource belonging to all people and existing as a delicately balanced ecosystem, requiring conservation and protection of remaining natural and scenic resources for the Coastal Zone. As a result, it was determined that, to promote public safety, health, and welfare and to protect public and private property, wildlife, marine fisheries, other ocean resources, and the natural environment, it was necessary to preserve the ecological balance of the Coastal Zone and prevent its further deterioration and destruction. The initiative also determined that it is the policy of the state to preserve, protect, and where possible restore the resources of the Coastal Zone for the enjoyment of the current and succeeding generations. In 1976, the California State Legislature enacted the California Coastal Act, which is the primary law governing the decisions of CCC. The California Coastal Act guides new development in an effort to improve public access to coastal areas. The Coastal Zone encompasses 1.5 million acres of land, stretching from 3 miles at sea to an inland boundary that varies from several blocks in urban areas to as many as 5 miles in less developed areas. The Coastal Zone extends into federal waters under the federal Coastal Zone Management Act, covering approximately 1,100 miles of California coastline from Oregon to Mexico, including 287 miles of shoreline surrounding nine offshore islands.

The California Coastal Act directs CCC to preserve, protect, and restore wetlands. The California Coastal Act defines wetlands as "lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens." In addition, the California Coastal Act defines environmentally sensitive areas in a manner that includes rivers, streams, and other aquatic habitat. CCC uses the Cowardin Wetland Classification System (Cowardin et al. 1979), which includes both wetlands and deepwater habitats as defined by USFWS, to guide implementation of its wetland protection policies.

2.2.3 California Fish and Game Code

2.2.3.1 Lake and Streambed Alteration Agreement

In accordance with California Fish and Game Code (CFGC) Sections 1600–1616 (Streambed Alteration), CDFW regulates activities that "will substantially divert, obstruct, or substantially change the natural flow or bed, channel or bank, of any river, stream, or lake designated by the Department [CDFW] in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." A Streambed Alteration Agreement (CFGC Section 1602 et seq.) is required for impacts to jurisdictional resources, including streambeds and associated riparian habitat.

CDFW takes jurisdiction to the top of bank of the stream, or the limit of the adjacent riparian vegetation. Applications to CDFW must include a complete certified CEQA document.

The California Fish and Game Commission defines "stream" as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that support or have supported riparian vegetation. Within estuarine environments, a "preponderance of evidence" standard is necessary where it is not readily apparent where Section 1600 jurisdiction ends. Under this standard, the geometry of the water feature, the predominant salinity of the waters, the composition of vegetation, and the predominant fauna are used to determine the limits of CDFW jurisdiction under Section 1600. Waters are not regulated under Section 1600 where waters are principally marine, aquatic shorelines are shaped principally by tidal current and wave action rather than by fluvial processes, vegetation is saline marsh and not brackish or freshwater vegetation, and marine fish and invertebrate communities are prevalent. Conversely, areas dominated by fresh and brackish salinities and freshwater aquatic species, with fluvial erosion patterns, are regulated under Section 1600.

2.2.3.2 California Endangered Species Act

CDFW administers the California Endangered Species Act (CESA) (CFGC Section 2050 et seq.), which prohibits the take of plant and animal species designated by the California Fish and Game Commission as endangered or threatened in California. Under CESA Section 86, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy."

Sections 3511, 4700, and 5515 of the CFGC designate certain birds, mammals, and fish as "fully protected" species. These species may not be taken or possessed without a permit from the California Fish and Game Commission, and such take may only occur pursuant to scientific research or in connection with an authorized natural community conservation plan. No incidental take of fully protected species is allowed. The CFGC lists the fully protected species in Section 3511 (birds), Section 4700 (mammals), Section 5050 (reptiles and amphibians), and Section 5515 (fish).

CESA Sections 2080 through 2085 address the taking of threatened, endangered, or candidate species by stating, "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act (CFGC Sections 1900–1913), or the California Desert Native Plants Act (Food and Agricultural Code, Section 80001)."

Sections 2081(b) and 2081(c) of the CFGC authorize take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. In such cases, CDFW issues the applicant an incidental take permit, which functions much like an incidental take statement in the federal context. Sections 2081(b)

and 2081(c) also require CDFW to coordinate consultations with USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, Section 2080.1 of CESA allows CDFW to adopt a federal incidental take statement or a 10(a) permit as its own, based on its findings that the federal permit adequately protects the species and is consistent with state law.

2.2.3.3 Birds and Mammals

According to Sections 3511 and 4700 of the CFGC, which regulate birds and mammals, a fully protected species may not be taken or possessed. CDFW may not authorize the take of such species except for necessary scientific research, for the protection of livestock, or when the take occurs for fully protected species within an approved natural community conservation plan.

2.2.3.4 Resident and Migratory Birds

CDFW affords protection over the destruction of nests or eggs of native bird species (CFGC Section 3503) and states that no birds in the orders of Falconiformes or Strigiformes (birds of prey) can be taken, possessed, or destroyed (CFGC Section 3503.5). Separate from federal and state designations of species, CDFW designates certain bird species as species of special concern based on declining population levels, limited ranges, and/or continuing threats that have made them vulnerable to extinction.

2.2.3.5 California Native Plant Protection Act

The Native Plant Protection Act of 1977 (CFGC Sections 1900–1913) directed CDFW to carry out the legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as endangered or rare, and to protect endangered and rare plants from take. When CESA was passed in 1984, it expanded on the original Native Plant Protection Act, enhanced legal protection for plants, and created the categories of threatened and endangered species to parallel the federal ESA. CESA categorized all rare animals as threatened species under CESA, but did not do so for rare plants, which resulted in three listing categories for plants in California: rare, threatened, and endangered. The Native Plant Protection Act remains part of the CFGC, and mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and project proponents.

2.3 Regional and Local Plans

2.3.1 Los Cerritos Wetlands Restoration Plan

The Los Cerritos Wetlands Restoration Plan "identifies conceptual restoration designs for approximately 503 acres of land and water located on the border of Orange County and Los Angeles County in the cities of Seal Beach and Long Beach. The program area contains large expanses of open space, including wetland habitat" (LCWA 2020) The plan area is located south and southwest of the project site. The plan was prepared by the Los Cerritos Wetlands Authority (LCWA), which was formed in 2006 under a joint powers agreement between the San Gabriel and Lower Los Angeles

Rivers and Mountains Conservancy, State Coastal Conservancy, City of Long Beach, and City of Seal Beach. LCWA was created "to provide for a comprehensive program of acquisition, protection, conservation, restoration, maintenance and operation and environmental enhancement of the Los Cerritos Wetlands area consistent with the goals of flood protection, habitat protection and restoration, and improved water supply, water quality, groundwater recharge, and water conservation." LCWA, which has authority to acquire and own real property, owns property immediately south of East 2nd Street, along the Haynes Intake Channel.

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3 METHODS

The description of existing biological resources within and immediately surrounding the Haynes Intake Channel north of East 2nd Street is based on the review of background documents and a series of field surveys conducted by Dudek in September 2019 and by Dudek subconsultant MBC Aquatic Sciences (MBC) in October and December of 2019. Information on documented occurrences of biological resources (whether special status or common), including plant species and fish, invertebrate, and other wildlife species, was obtained through literature review and database searches. The literature review included sources with information on species occurrences within the Haynes Intake Channel, San Gabriel River, and Alamitos Bay. The following databases and documents were reviewed to develop the survey methods and determine the potential for sensitive and managed biological resources and special-status species to occur within the project site:

- Haynes Units 5 & 6 Repowering Project Environmental Impact Report (EIR; LADWP 2010)
- Marine Biological Studies, Haynes Unit 5 & 6 Repower Project (MBC 2009)
- A 5-mile-radius CDFW California Natural Diversity Database (CNDDB) query that included all or a portion of the following U.S. Geological Survey 7.5-minute quadrangles: Long Beach (3311872), Long Beach OE S (33118-F2), Seal Beach (3311861), and Los Alamitos (3311871) (CDFW 2020)
- California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2018)
- Southeast Area Specific Plan Draft Program EIR (City of Long Beach 2016)
- Los Cerritos Wetlands Habitat Assessment Report: Habitat Types and Special-Status Species (Tidal Influence 2012)
- Biological and Technical Report for Los Cerritos Wetlands and Oil Consolidation and Restoration Project (GLA 2017)
- USFWS Species Occurrence and Critical Habitat Data (USFWS 2020a)
- USFWS National Wetlands Inventory, Wetlands Mapper (USFWS 2018)
- USFWS Information for Planning and Consultation (USFWS 2020b)
- Pacific Coast Groundfish Fishery Management Plan (PFMC 2016)
- Coastal Pelagic Species Fishery Management Plan (PFMC 2018)
- California Spiny Lobster Fisheries Management Plan (CDFW 2016)
- CDFW Commercial Landing Data (CDFW 2019a)
- CDFW Special Animals List (CDFW 2019b)
- Haynes Generating Station Clean Water Act Section 316(b) Impingement Mortality and Entrainment Characterization Study (MBC 2007a)

Following the initial literature review, focused surveys were conducted in September, October, and December 2019. As discussed below, the survey boundaries included two areas: the project area and the potential eelgrass mitigation site. The project area is the portion of the Haynes Intake Channel north of the southern edge of the 2nd Street bridge, which would be filled under the proposed project. Since it was known prior to the surveys that eelgrass was present in the Haynes Intake Channel where the proposed infill would occur, the channel south of 2nd Street (i.e., outside the envelope of the project area) was surveyed to identify potential eelgrass mitigation areas as required.

3.1 Environmental Setting

3.1.1 Regional Setting

The project site is located in the south-central portion of the main Haynes industrial site, and in the northern terminus portion of the Haynes Intake Channel, entirely within the City of Long Beach. Regionally, the project site is situated in the southwest portion of the Los Angeles Basin, a relatively flat coastal plain bounded to the north by the Santa Monica Mountains; to the east by several hill ranges, from Hollywood Hills south to Chino Hills and the Santa Ana Mountains; to the south by the San Joaquin Hills; and to the west by the Pacific Ocean and the Palos Verdes Peninsula. The region is characterized by plains, mountain ranges, and broad valleys. The proximity to the ocean and topography contribute to a mild climate that is tempered by cool sea breezes and occasional periods of hot weather, winter storms, and Santa Ana Winds. The closest hills to the project site are the Whittier Hills, approximately 14 miles to the northeast, with a peak elevation of 1,390 feet above mean sea level (at Workman Hill).

The immediate surroundings of the project site are mostly developed lands interspersed with open space, golf courses, and small local parks and recreational facilities. Land uses near Haynes include residential and commercial developments to the north, east, and south; industrial and commercial associated with the Boeing Integrated Defense Systems Specific Plan to the southeast; open space, oil and gas extraction, and recreational land uses within the Los Alamitos Retarding Basin and Los Cerritos Wetlands Complex (Wetlands Complex) properties to the southwest; and the San Gabriel River channel to the west, with the AES Alamitos Generating Station immediately across the San Gabriel River.

The Wetlands Complex surrounds the southern portion of the Haynes Intake Channel, south of the 2nd Street bridge. Properties within the Wetlands Complex, as identified in the Los Cerritos Wetlands Restoration Plan Draft Program EIR, consist of approximately 503 acres under various ownership, including approximately 165 acres owned by LCWA. The Wetlands Complex provides habitat to diverse flora and fauna, including four coastal plant communities (southern coastal salt marsh, alkali meadow, coastal sage scrub, and mulefat scrub) and special-status species such as the southern tarplant (*Centromadia parryi* ssp. *australis*), Pacific green sea turtle (*Chelonia mydas*), California least tern (*Sterna antillarum browni*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), and burrowing owl (*Athene cunicularia*) (Tidal Influence 2012). The Wetlands Complex is actively conserved and restored by multiple groups and partners, including Los Cerritos Wetlands Land Trust; LCWA is currently the only landowning entity in the conservation area.

3.1.2 Watershed and Soil Setting

The project site occurs within the Central (Split) Hydrologic Subarea (405.15) of the Coastal Plain Hydrologic Area (405.10), which occurs within the larger Los Angeles–San Gabriel Hydrologic Unit (405.00) (LARWQCB 1994). According to the U.S. Geological Survey, the project site occurs within the Lower San Gabriel subwatershed (USGS HUC10: 1807010606) of the larger San Juan watershed (USGS HUC8: 18070106). The Lower San Gabriel subwatershed encompasses a drainage area of approximately 50,240 acres, which comprises approximately 11% of the drainage area for the entire San Gabriel River watershed. The subwatershed has been extensively modified and receives flow dominated by effluent from several municipal facilities and urban runoff, which have impaired beneficial uses, as evidenced by ambient toxicity and bioaccumulation of metals in fish tissue (LARWQCB 1994). More recently, total maximum daily loads for metals established for the San Gabriel River by the U.S. Environmental Protection Agency provided an overall picture of water quality during both dry and wet weather. The data review confirmed the existence of impairments for some of the metals identified in the 1998 and 2002 CWA Section 303(d) lists. The more recent data indicate additional dry-weather impairments not included on the 303(d) list. Based on the conclusions drawn from the data review, total maximum daily loads were developed for several reaches due to higher levels of copper, lead, zinc, and selenium (EPA 2007). In the reach nearest to the project site (estuary), copper was the primary metal of concern (EPA 2007).

The U.S. Department of Agriculture Natural Resources Conservation Service's Official Soil Series Descriptions (USDA 2018a) and Supplement to the Soil Survey of Los Angeles County, California, Southeastern Part (USDA 2017) were consulted, and two mapping units were identified as occurring throughout the project site: Urban Land–Typic Xerorthents, dredged spoil complex, 0% to 2% slopes (1231); and Water (W). Urban Land–Typic Xerorthents, dredged spoil complex, 0% to 2% slopes (1231) consists of very deep, poorly drained soils that formed in human-transported materials overlying mixed alluvium. These soils occur on filled and drained wetlands (USDA 2017). This mapping unit supports little to no vegetation. The Water (W) mapping unit, which is not part of a typical soil series, consists of open water. According to the Hydric Soils List of California (USDA 2012), neither of these mapping units is listed as hydric.

3.2 Survey Areas

The survey boundaries for the project area are depicted on Figure 3, Biological Surveys. The Haynes Intake Channel within Haynes and south to the southern edge of the 2nd Street bridge was surveyed for benthic, demersal, and open water habitats. The survey area for terrestrial plants was defined as an area 100 feet beyond the intake channel within Haynes, including the graveled bank of the Haynes Intake Channel itself. The survey boundary for birds included an additional area defined as extending 300 feet out from the intake channel within Haynes (i.e., north of East 2nd Street).

3.3 Field Surveys

Focused surveys were conducted in September, October, and December 2019, as shown in Table 1. Focused surveys included in-field water quality sampling and testing, subsurface eelgrass bed mapping, marine fish and invertebrate surveys, an EFH assessment, marine bird surveys, and jurisdictional wetland assessment and mapping. During these

focused efforts, all observed terrestrial and aquatic wildlife, algae, and plant species, including special-status species, were recorded to generate full marine and terrestrial inventories. All terrestrial and aquatic fieldwork was conducted by Dudek senior marine biologist John Davis IV and marine biologists Nick Lorenzen and Andrea Dransfield on September 11–12, 2019. Side scan sonar surveys for eelgrass were conducted on October 22, 2019, and bathymetric surveys were conducted on December 2 and 3, 2019.

Table 1 Survey Date and Type Conducted, Personnel, and Atmospheric Conditions

Date	Hours	Survey Type	Marine Biologists[a]	Atmospheric Conditions
09/11/2019	0700–1700	Marine,[b] bird, terrestrial plant, aquatic resource	JD, AD, NL	Clear; 60°F–75°F, 1–5 mph winds
09/12/2019	0730–1500	Marine,[b] bird	JD, AD, NL	Clear; 60°F–79°F, 1–5 mph winds
10/22/2019	0700–1530	Marine[c]	JR, DS	Clear; 68°F–97°F, 0–9 mph winds
12/02/2019	0630–1600	Marine[d]	LH, JR, DS	Clear; 52°F–68°F, 0–9 mph winds
12/03/2019	0700–1645	Marine[d]	LH, JR, DS	Clear; 54°F–64°F, 0–6 mph winds

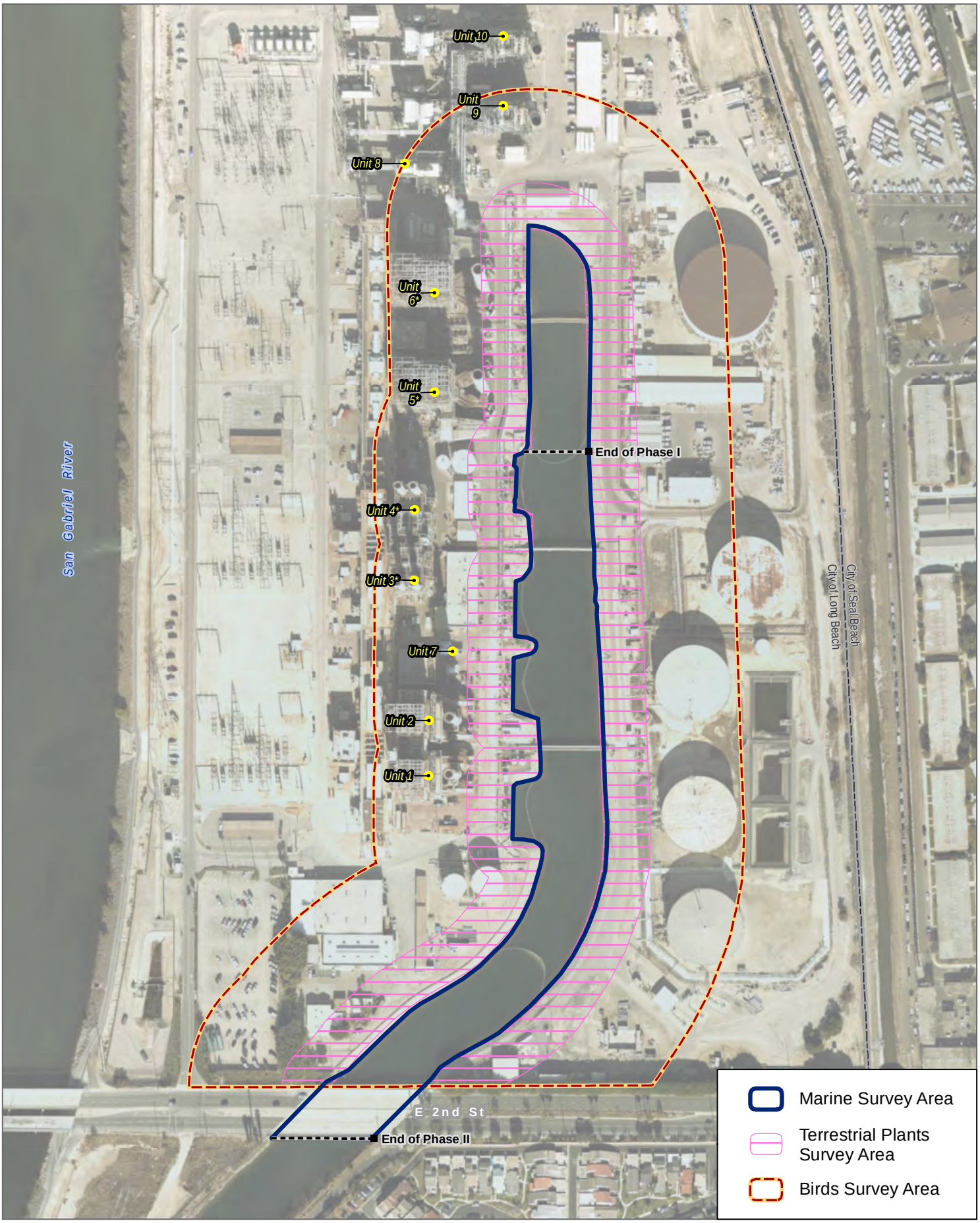
Notes:

[a] All biologists are with Dudek unless otherwise specified.
[b] Marine = benthic, water column, and water quality.
[c] Marine = benthic – sonar.
[d] Marine = benthic – bathymetry.

Marine Biologists: AD = Andrea Dransfield; DS = D.J. Schuessler (MBC Aquatic Sciences); JD = John Davis IV; JR = Jen Rankin (MBC Aquatic Sciences); LH = Lindsay Hornsby (MBC Aquatic Sciences); NL = Nick Lorenzen.

3.3.1 Benthic Habitat

Benthic (bottom dwelling) plants, algae, and animals are associated with soft and hard substrates. Both substrate types are colonized by a distinct and characteristic group of organisms, although environmental factors such as substrate type, water depth, water motion, and water temperature will affect the types and abundances of these organisms. The Haynes Intake Channel within the project site includes soft-bottom habitat; however, riprap is present near the 2nd Street bridge, and the banks of the channel are stabilized with a grouted stone surface to just below the high water line in the balance of the project site. These maintained areas are located primarily outside the marine environment. The focus of the benthic surveys over soft-bottom habitat was on eelgrass, demersal fish, and macro infauna and epifauna invertebrates. The survey methods for benthic habitat surveys are described in the following sections.



SOURCE: ESRI World Imagery

Los Angeles Department of Water & Power

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FIGURE 3

Biological Surveys

Haynes Generating Station Intake Channel Infill Project Marine Biological Resources Report

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3.3.1.1 Eelgrass and Algae

Eelgrass baseline surveys were conducted within the project site in accordance with the California Eelgrass Mitigation Policy (CEMP; NMFS 2014a). Eelgrass surveys were conducted using both visual (scientific dive) and acoustic (sonar) survey methods. Surveys documented both vegetated eelgrass cover and unvegetated areas within eelgrass habitat. Per the CEMP, the following parameters were assessed for eelgrass: spatial distribution, areal extent, percent of cover (vegetated), and turion (leaf shoot) density.

To encompass fluctuating eelgrass distribution and functional influence around eelgrass cover, eelgrass habitat is defined as areas of vegetated eelgrass cover bounded by a 5-meter-wide perimeter of unvegetated area (NMFS 2014a). Therefore, the boundary of eelgrass habitat was delineated by a continuous boundary around all vegetated eelgrass cover extending outward a distance of 5 meters (16 feet), excluding gaps within the vegetated cover that have individual plants more than 10 meters (33 feet) from neighboring plants (spatial distribution). Where such separations occurred, either a separate area was defined or a gap in the area was defined. The extent of the eelgrass habitat was then quantitatively assessed with the total area (acres) divided into amount of vegetated cover and unvegetated habitat (areal extent). This areal extent was delineated in the field, as described below, and calculated in ArcGIS. The percent bottom cover within eelgrass habitat was determined by totaling the area of vegetated eelgrass cover and dividing by the total eelgrass habitat area (percent vegetated cover). Vegetated cover occurred when one or more leaf shoots (turion) per square meter (11 square feet) were present. Where appropriate, the habitat was subdivided into percent cover classes. Lastly, turion density was determined; this was calculated as the mean number of eelgrass leaf shoots per square meter within mapped eelgrass vegetated cover (turion density). Turion counts were made within replicated 1-meter-square (3.3-foot-square) quadrats. Raw numbers and mean values were calculated. Per the CEMP, turion density was reported as mean ± standard deviation of replicate measurements. Turion densities are only determined within vegetated areas of eelgrass habitat, and turion density is determined for each cover class.

All mapping efforts were completed during the active growth period for eelgrass (typically March through October for Southern California).

3.3.1.2 Scientific Dive Surveys

Scientific diving operations were staged and conducted from shore with assistance from an above-water biologist in a kayak. Scientific dives were employed to examine the project site. These surveys were composed of (1) initial subsurface diver surveys, which consisted of an overall site assessment of each site, identifying wildlife (fish and invertebrates) and aquatic plant and algae species encountered and determining approximate locations and sizes of eelgrass beds; (2) swimming transect lines running parallel to the eastern and western shores; and (3) surveying the intake concrete box structures (from outside the structures). Dive survey time, conditions, and personnel involved are summarized in Table 2.

Table 2 Eelgrass Survey Times, Personnel, and Conditions

Date	Dive Hours	Marine Biologists[a]	Haynes Intake Channel Conditions	
			Temperature	*Visibility*
09/11/2019	10	JD, AD, NL	72°F to 76°F	10 to 15 feet[b]
09/12/2019	7.5	JD, AD, NL	72°F to 76°F	10 to 15 feet
Total	17.5	—	—	—

Notes:

[a] The three marine biologists rotated between scientific diving and topside kayak support, including mapping of eelgrass beds using a GPS unit and collecting water quality data. Only two biologist-divers were in the water at any one time conducting surveys. Dive hours shown are the combined hours for all biologist-divers.

[b] Visibility near the intakes was 5 feet.

Marine Biologists: AD = Andrea Dransfield; JD = John Davis IV; NL = Nick Lorenzen.

To document the locations of eelgrass, the biologist-divers identified the eelgrass beds with in-water assistance from a topside support biologist in a kayak. When eelgrass beds were observed, the diving biologist deployed a small surface float, and the surface support staff member then tracked the biologist-diver using above-water portable GPS units with sub-meter accuracy to record the perimeter of the individual beds. These GPS boundaries were then uploaded, corrected for sub-meter accuracy, and digitized by geographic information system (GIS) technicians using ArcGIS software. During the eelgrass bed surveys, biologist-divers recorded turion counts and eelgrass bed health assessments on dive slates with waterproof datasheets.

Biologist-divers conducted transect surveys through eelgrass habitat as a scientific population sampling method to determine percent cover of eelgrass. Transect surveys were performed in September 2019, as shown in Table 2. The survey effort included mapping eelgrass bed polygons (Figure 4, Transect Surveys).

The biologist-divers laid out 30- to 100-meter (approximately 100- to 330-foot) transects and collected ecological data, including eelgrass density, fish and invertebrate observations, depth, and temperature data. For each transect, the team's designated surface support recorded GPS locations of the start and endpoints of each transect. Staging areas for biologist-divers were dependent on the location of transects and access. Transect locations were reached by surface swimming from shore with a kayak escort for support. Biologist-divers were equipped with dive slates, 1-meter-square quadrats, reels, and floats for the purposes of collecting all necessary project data. As biologist-divers were slowly swimming approximately 1.0 meters (3.3 feet) above the soft bottom while laying out the transect tape, they collected fish occurrence data. On their return, biologist-divers collected percent eelgrass cover and turion density as well as invertebrate data.

During all dives, biologist-divers recorded native and non-native algae, plant, and marine wildlife species encountered using dive slates with waterproof datasheets. Corresponding abiotic conditions, such as depth, visibility, and temperature, were also recorded. Latin and common names for marine plant/algae species follow Oberbauer et al. (2008), the Latin and common names of fish species follow the American Fisheries Society (2013), and invertebrate naming follows the Southern California Association of Marine Invertebrate Taxonomists (2018).

SOURCE: ESRI World Imagery

Los Angeles Department of Water & Power

0 65 130 Feet

FIGURE 4

Transect Surveys

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3.3.1.3 Sonar and Bathymetry

MBC was contracted by Dudek to conduct an acoustic survey of eelgrass and a bathymetric survey of the Haynes Intake Channel. The side scan sonar survey for eelgrass in the Haynes Intake Channel was conducted on October 22, 2019. An Edgetech 4125 Side Scan Sonar (600 and 1,600 kilohertz) was used to acoustically collect an image of the seafloor to determine the location of eelgrass in the Haynes Intake Channel. Survey locations were determined using a Garmin GPS. The survey was conducted by running three approximately parallel survey lines in a small inflatable boat along the full length of the Haynes Intake Channel. The spacing of the three lines allowed for overlapping coverage of the entire width (to the minimum depth possible for the equipment) of the Haynes Intake Channel. All data were processed in SonarWiz 7 V7.04 and ArcGIS 10.7. Vegetation (eelgrass and algae) was differentiated from the processed image and ground-truthed by biologist-divers on site.

MBC also conducted a bathymetric survey of the Haynes Intake Channel on December 2 and 3, 2019. The single-beam depth finder used was a CEESCOPE with a Hemisphere Eclipse GNSS GPS. All data were collected and processed with HYPACK 2018 v1.18. Bathymetric data were acquired by running an initial survey down the center for the length of the Haynes Intake Channel, then perpendicular lines from edge to edge every 50 feet for the length of the channel (Figure 5, Bathymetric Survey Routes).

3.3.1.4 Fish and Invertebrates

Focused fish and invertebrate surveys within and above the benthic habitat occurred in two ways: exploratory surveys and surveys along transects that included the soft-bottom substrate to open water approximately 1 meter (3.3 feet) above the benthic habitat for fish species. In each case, data for fish (species, quantity, and size) and macroinvertebrates were recorded on dive slates. Invertebrates covered the entire survey area, were recorded whenever observed, and often were photographed. Invertebrates have long been recognized as indicators of water quality due to their sensitivities to toxins and pollutants. In September 2019, visibility was good; therefore, conditions were conducive to the fish and invertebrate surveys as described. Dive time totaled 17.5 dive hours over the 2 days (see Table 2), with approximately one-quarter of that time devoted to fish surveys; however, fish and invertebrates were recorded whenever observed, often concurrently with eelgrass surveys. Invertebrates were present within the entire survey area.

The Latin and common names of fish species follow the American Fisheries Society (2013) and invertebrate naming follows the Southern California Association of Marine Invertebrate Taxonomists (2018).

3.3.2 Water Column

3.3.2.1 Fish

As described in Section 3.3.1, Benthic Habitat, fish surveys in the shallow water column of the Haynes Intake Channel were primarily exploratory in nature. Prior to eelgrass surveys and at the beginning and end of each eelgrass transect, biologist-divers would engage in exploratory surveys for coastal fish species, recording the species, quantity, and size of

the fish on dive slates. In September 2019, visibility was good; therefore, conditions were conducive to the fish surveys as described. The Latin and common names of fish species follow the American Fisheries Society (2013).

3.3.2.2 Water Quality

Water quality sampling was conducted in the Haynes Intake Channel to establish a baseline for conditions. Water column measurements of physical and chemical characteristics of seawater, such as water temperature, hydrogen ion (pH) concentration, and salinity, are reliable indicators of the water quality of the marine ecosystem. Water quality was sampled concurrently with scientific dive surveys. Water quality sampling locations were evenly distributed throughout the Haynes Intake Channel. All water quality sampling locations were positioned at the beginning of each eelgrass transect, typically the north end, with the exception of a few east- to west-trending transects, which were then sampled at the east end (see Figure 4). Water quality was sampled from the surface and during all subsurface survey activities. Temperature readings were recorded on dive slates by biologist-divers during each water quality sampling event. Water quality instruments were calibrated prior to use (Appendix A, Water Quality Instrument Calibration).

A Horiba U-50 series multi-parameter water quality meter was employed. This unit was rented from Field Environmental Instruments Inc. (FEI) and was 5 months old when used. Calibration was performed by FEI and conformed to manufacturer's specifications. Appendix A provides the AquaRead Calibration Certificate provided by FEI. The inclusion of this instrument for these survey efforts allowed for a more comprehensive profile of water quality parameters. The Horiba U-50 is able to measure temperature (°C), pH, pH (millivolts), conductivity (millisiemens per centimeter [mS/cm]), dissolved oxygen (DO; milligrams per liter), percent DO, total dissolved solids (TDS; grams per liter), salinity (psu), and seawater specific gravity (sigma-t). The water quality meter was deployed into the water column from a kayak. Water quality sampling occurred at eight locations in the project site. Figure 4 depicts the water quality sampling locations.

3.3.3 Essential Fish Habitat Assessment

To comply with the Magnuson-Stevens Act (16 USC 1801 et seq.), and in accordance with NMFS regulations, the project site was assessed and surveyed for EFH. The main purpose of the EFH provisions is to avoid loss of fisheries due to disturbance and degradation of the fisheries habitat; therefore, waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity are protected (Magnuson-Stevens Act, 16 USC 1801 et seq.). To further specify the needs of fish species of special concern, EFH is assessed and managed under various fishery management plans (FMPs) for specified fisheries groups. FMPs are extensive documents that are regularly updated. The goals of FMPs include the development and sustainability of an efficient and profitable fishery, optimal yield, adequate forage for dependent species, and long-term monitoring.

According to the NOAA EFH Mapper and based on the geographical location of the project site, the Pacific Coast Groundfish FMP would be the only applicable FMP (PFMC 2016); however, due to the presence of topsmelt (*Atherinops affinis*), an "ecosystem component" species, within the project site, the Coastal Pelagic Species FMP would also apply (NOAA 2018; PFMC 2018). Furthermore, the Pacific Coast Groundfish FMP also includes Habitat Areas of Particular Concern (HAPCs; see Section 2.1.2, Magnuson-Stevens Fishery Conservation and Management Act).

SOURCE: ESRI World Imagery

LA DWP Los Angeles Department of Water & Power

0 65 130 Feet

FIGURE 5

Bathymetric Survey Routes

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The Haynes Intake Channel conveys seawater to Haynes from a bulkhead intake structure located in Alamitos Bay (Figure 1). Water passes through seven 8-foot-diameter closed conduits fitted with vertical trash bars, which are 3/8 of an inch by 3 inches and spaced on center every 6 inches. The closed conduits measure approximately 1,150 feet in length and transport water underneath the San Gabriel River and SR-1 before daylighting north of SR-1 into the open Haynes Intake Channel and extending north to its terminal at Haynes (Figure 1). Only six of the seven intake tunnels at Haynes are used during normal operation. The calculated average velocity of the intake is 3.2 feet per second (LADWP 2010). Surface water flows directly from the Pacific Ocean and Alamitos Bay; consequently, the system is entirely marine. However, the water levels in the open channel, which is physically segregated from the open water of Alamitos Bay by the closed conduits, are regulated primarily by the continuously running OTC condenser pumps rather than the local tidal cycles. The pumps control the velocity and flow of water; therefore, depending on pumping rates, water levels in the channel may be higher or lower than tide levels at any given time.

An EFH assessment was conducted within the project site by biologist-divers recording underwater observations on dive slates. The EFH assessment evaluated potential impacts/disturbance associated with proposed construction activities on fish, fish habitat, and other marine resources within the project site that may contribute to the health of the EFH.

3.3.4 Birds and Other Wildlife

The study area for faunal surveys included a diurnal pedestrian survey of the entire project site and a 300-foot buffer (see Figure 3). While there is potential for foraging nocturnal species (e.g., owls, black-crowned night heron [*Nycticorax nycticorax*], and black skimmer [*Rynchops niger*]), surveys were not performed during the evening or night periods due to a lack of potential roosting or nesting sites for these species. Wildlife species detected during the field surveys by sight, calls, tracks, scat, or other sign were recorded. Binoculars (7–15 × 50 magnification) were used to aid in the identification of observed terrestrial wildlife. Expected wildlife use of the project site was also determined by known habitat preferences of local species and knowledge of their relative distributions in the area.

Latin and common names of terrestrial animals follow Crother (2017) for reptiles and amphibians, American Ornithological Society for birds (AOS 2017), Wilson and Reeder (2005) for mammals, and North American Butterfly Association (NABA 2016) or San Diego Natural History Museum (SDNHM 2002) for butterflies. Latin and common names of marine wildlife follow Humann and DeLoach (2008) or the American Fisheries Society (2013) for this proposed project.

3.3.5 Terrestrial Plants

The survey area for focused floristic surveys consisted of the 100-foot buffer around the project site and upper slopes of the Haynes Intake Channel (Figure 3). Haynes is an industrial facility and manages encroachment of plants onto the site to reduce the potential for fire or impedance of facilities management. All terrestrial species encountered during the field survey were identified and recorded. Those species that could not be identified in the field were brought into the laboratory for further investigation, where online and printed identification resources were used.

Latin and common names for terrestrial plant species follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2018), and common names follow the List of Vegetation Alliances and Associations (CDFG 2010) or the U.S. Department of Agriculture's PLANTS Database (USDA 2018b).

3.4 Survey Limitations

A Secchi disk was used to determine general water visibility/transparency from the water surface. While primarily used for limnology studies (i.e., inland aquatic ecosystem research), the Secchi depth (depth of disappearance) is a good measurement of water clarity. Water transparency directly affects the amount of light penetration into a body of water. In effect, assessing visibility using a Secchi disk is another method of measuring turbidity. The scientific dive surveys (i.e., eelgrass bed mapping and marine fish and invertebrate surveys) that were conducted on September 11 and 12, 2019, had generally good visibility (Secchi disk reading at 10 feet; water visibility 10 to 15 feet). However, closer to the intake units, which were in operation, the water column had an increase in suspended sediment and overall decrease in visibility (Secchi disk reading at 4 feet, water visibility less than 5 feet).

General visibility/transparency of the water column in the Haynes Intake Channel is quite clear, especially when the intakes are not in operation; however, when in operation, the intakes resulted in more turbid waters.

Climatic conditions during the surveys were favorable for the identification of terrestrial flora and fauna. Surveys were conducted during the day to maximize visibility for the detection of plants and most animals. Birds represent the largest component of the vertebrate fauna, and because they are active during the day, diurnal surveys maximize the number of observations of this portion of the fauna. In contrast, daytime surveys usually result in few observations of mammals, many of which may be active at night. In addition, many species of reptiles and amphibians are nocturnal or cryptic in their behavior and are difficult to observe using standard transects, such as those employed in this survey effort.

4 SURVEY RESULTS

4.1 Benthic Habitat

4.1.1 Eelgrass

Table 3 summarizes the results of the eelgrass survey at the project site (see also Figure 6, Eelgrass Survey Results). Photographs from the scientific dive surveys are provided in Appendix B, Photographic Documentation.

Table 3 Eelgrass Survey – Area and Percentage of Eelgrass Beds within the Project Site

Project Site	Eelgrass Bed	Eelgrass 5-Meter Buffer	Total Eelgrass Area	Percent Eelgrass Area[a] on Project Site
Acres				
7.64	0.70	1.49	2.19	29%

Note:

[a] Includes eelgrass bed and 5-meter (16-foot) buffer (i.e., total eelgrass area) divided by the entire project site area.

Eelgrass was generally evenly distributed across the project site, with 0.70 vegetated acres mapped. Of these 0.70 vegetative acres, 0.04 acres are mapped as 1% to 25% cover, 0.35 acres are mapped as 26% to 50% cover, and 0.31 acres are mapped as 76% to 100% cover (Table 4 and Figure 6). Depths of eelgrass locations ranged from 0.33 to 20.67 feet (0.01 to 6.30 meters) across the Haynes Intake Channel. In total, 0.70 vegetated acres were mapped and an additional 1.49 unvegetated acres (i.e., within the 5-meter [16-foot] buffer) were mapped in the project site, with an overall average percent cover of 35%. Within the project site, there was a 32% (i.e., 0.70 acres/2.19 acres) vegetated bottom cover within eelgrass habitat.

Table 4 provides a summary of turion density (counts) for the project site. Eelgrass turion density for the 12 transects where eelgrass was located within the project site was 24 ± 20 (n = 12 transects; total 85 replicates). The lowest turion density where eelgrass was present was observed in transect 2 (near Unit 6) and transects 12 and 13 (near Unit 1). The highest turion densities were reported in transect 1 (near Unit 1), with a mean density of 61 ± 38 (n = 5 replicates).

Table 4 2019 Transect Survey – Percent Cover and Turion Results within the Project Site

Transect	Percent Cover Eelgrass	Cover Class	Number of 1-Meter Quad Samples (Replicates, n)	Turion Count (Median)	Turion Count (Mean per Square Meter)	Turion Density (Standard Deviation)
Eelgrass Absent						
3	0%	0%	5	0	0	0
4	0%	0%	5	0	0	0
6	0%	0%	5	0	0	0
Average	*0%*	—	—	*0*	*0*	*0*

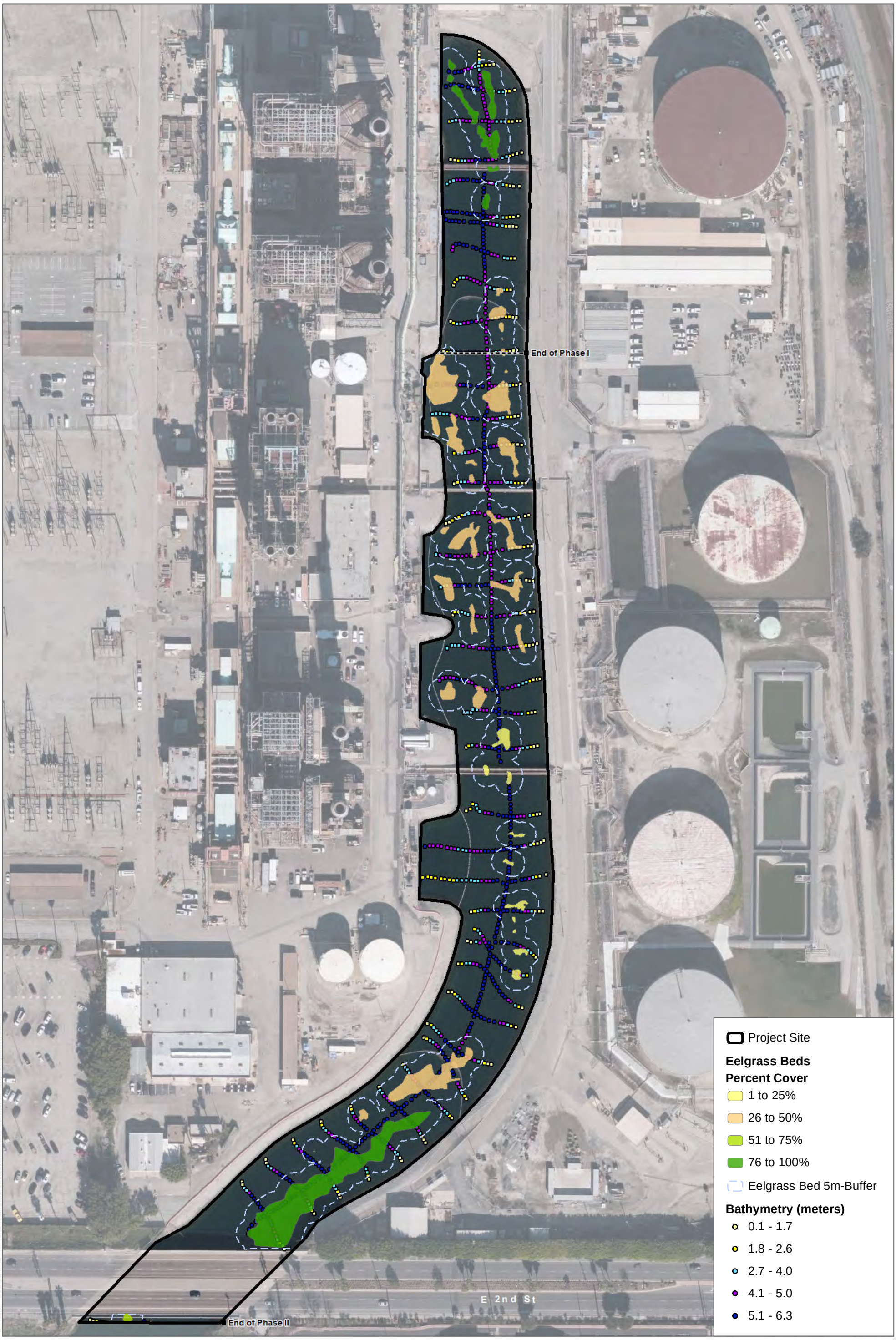
Table 4 2019 Transect Survey – Percent Cover and Turion Results within the Project Site

Transect	Percent Cover Eelgrass	Cover Class	Number of 1-Meter Quad Samples (Replicates, n)	Turion Count (Median)	Turion Count (Mean per Square Meter)	Turion Density (Standard Deviation)
Eelgrass Present						
1	23%	1% to 25%	5	67	61	38
2	89%	76% to 100%	7	0	0	0
5	26%	26% to 50%	10	5	5	11
7	43%	26% to 50%	5	23	37	15
8	48%	26% to 50%	10	22	32	21
9	36%	26% to 50%	10	10	12	12
10	28%	26% to 50%	2	19	21	3
11	27%	26% to 50%	3	82	53	48
12	23%	1% to 25%	12	3	6	6
13	40%	25% to 50%	5	5	6	6
14	43%	26% to 50%	9	9	17	14
15	99%	76% to 100%	7	34	38	16
Average	*44%*	—	—	*23*	*24*	*20*[a]
Total Average	35%	—	—	18	18	20[b]

Notes:

[a] Standard deviation for transect samples (n = 12).

[b] Standard deviation for transect samples (n = 16).



SOURCE: ESRI World Imagery, MBC (Sonar and Bathymetry)

Los Angeles Department of Water & Power

0 65 130 Feet

FIGURE 6

Eelgrass Survey Results

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4.1.2 Algal Species

During eelgrass dive surveys in the project site, all flora and fauna were recorded. Four species of marine algae were found in the survey area. Of these species, three were native: acid weed (*Desmarestia* sp.), red algae (*Plocamium cartilagineum*), and sea lettuce (*Ulva lactuca*); one was non-native: Japanese wireweed (*Sargassum muticum*). Japanese wireweed is a large, brown, invasive seaweed with a high growth rate of up to 10 centimeters (4 inches) per day. It grows in depths of up to 10 meters (33 feet) on rocky substrate and is tolerant of a wide range of water properties. Japanese wireweed can outcompete native species by sequestering nutrients as well as preventing light penetration in the water column for photosynthesis (DeAmicis and Foggo 2015).

In some areas, sea lettuce covered the bottom in large mats, outcompeting eelgrass (Zertuche-Gonzalez et al. 2009; Appendix B). Similar to the Japanese wireweed, this species can tolerate a wide range of conditions, and when present in large quantities, can prevent sunlight from reaching eelgrass. When sea lettuce dies, the decomposing bacteria depletes the oxygen available to other species, suffocating them or driving them away. A list of plant/algae species observed within the project site is presented in Appendix C, List of Plant Species Observed on Site.

4.1.3 Invertebrate Species

A total of 25 invertebrate species were observed during surveys. As shown in Table 5, all invertebrate species encountered except ghost anemone (*Diadumene leucolena*) were native, and none was considered a managed species. A list of these invertebrates and other wildlife observed on site is provided in Appendix D, List of Wildlife Species Observed on Site.

Table 5 Invertebrate Species Observed during Surveys

Scientific Name	Common Name	FMP/Status	Native, Non-Native, or Invasive
Aplysia californica	California sea hare	—	Native
Astropecten armatus	Armored sand star	—	Native
Bulla gouldiana	California bubble snail	—	Native
Cancridae (family)	Cancer crab	—	Native
Clavelina huntsmani	Lightbulb tunicate	—	Native
Corynactis californica	Club tipped anemone	—	Native
Crassadoma giganteum	Rock scallop	—	Native
Diadumene leucolena	Ghost anemone	—	Non-Native
Diaperoforma californica	Southern staghorn bryozoan	—	Native
Diaulula sandiegensis	San Diego dorid (ringed nudibranch)	—	Native
Kelletia kelletii	Kellet's whelk	—	Native
Lophophorata (clade)	Encrusting bryozoan	—	Native
Megastraea undosa	Wavy turban snail	—	Native
Navanax inermis	California aglaja	—	Native

Table 5 Invertebrate Species Observed during Surveys

Scientific Name	Common Name	FMP/Status	Native, Non-Native, or Invasive
Neobernaya spadicea	Chestnut cowrie	—	Native
Norrisia norrisii	Norris snail	—	Native
Octopus bimaculoides	California two-spot octopus	—	Native
Pachycerianthus fimbriatus	Tube-dwelling anemone	—	Native
Panulirus interruptus	California spiny lobster	—	Native
Parapholas californica	California piddock	—	Native
Patiria miniata	Bat star	—	Native
Pisaster ochraceus	Ochre star	—	Native
Pododesmus macrochisma	Rock oyster	—	Native
Pseudoceros luteus	White flatworm	—	Native
Salmacina tribranchiata	Fragile tube worm	—	Native

Notes: FMP = fishery management plan; — = non-listed.

4.1.4 Fish Species (Benthic and Water Column)

A total of 12 native species of fish were observed during surveys. As shown in Table 6, only one of the species directly observed during the field survey was an FMP managed species: topsmelt. A list of fish species and other wildlife observed on site is provided in Appendix D. The low number of species observed during surveys is supported by observations made in other studies in the Haynes Intake Channel, most notably by MBC (2009), wherein trawl and seine studies for fish and macroinvertebrates recorded low total catch, with 17 fish caught, 10 of which were round stingray (*Urobatis halleri*). Of the remaining four species represented in that catch, only diamond turbot (*Pleuronichthys guttulata*) and kelp bass (*Paralabrax clathratus*) were represented by more than one individual.

Table 6 Fish Species Observed during Surveys

Scientific Name	Common Name	FMP/Status	Native, Non-Native, or Invasive
Atherinops affinis	Topsmelt	PCGF, CPS/None	Native
Embiotoca jacksoni	Black perch	—	Native
Girella nigricans	Opaleye	—	Native
Hermosilla azurea	Zebraperch	—	Native
Heterostichus rostratus	Giant kelpfish	—	Native
Paralabrax maculatofasciatus	Spotted sand bass	—	Native
Paralabrax nebulifer	Barred sand bass	—	Native
Paralabrax clathratus	Kelp bass	—	Native
Pleuronichthys coenosus	C-O sole	—	Native
Pleuronichthys guttulata	Diamond turbot	—	Native

Table 6 Fish Species Observed during Surveys

Scientific Name	Common Name	FMP/Status	Native, Non-Native, or Invasive
Pleuronectiformes (order)	Flatfish	—	Native
Urobatis halleri	Round stingray	—	Native

Notes: FMP = fishery management plan; PCGF = Pacific Coast Groundfish Fishery Management Plan (PFMC 2016); CPS = Coastal Pelagic Species Fishery Management Plan (PFMC 2018); — = non-listed.

4.2 Water Quality

The results of the water quality sampling for the Haynes Intake Channel are summarized in Table 7 and establish baseline water quality conditions representative of conditions at the time of the surveys. Results by water sampling station within the project site are provided in Appendix E, Water Quality Sampling Results.

Table 7 Summary of Water Quality Sampling Results by Constituent

Water Quality Constituent	Low	High
Temperature (°C)	22.10	27.83
Salinity (psu)	32.80	34.00
Seawater specific gravity (σt)	43.93	46.95
Conductivity (mS/cm)	44.21	68.95
pH	6.55	8.22
Dissolved oxygen (mg/L)	6.00	7.53
Dissolved oxygen (%)	86.10	107.50
Total dissolved solids (g/L)	43.28	44.71

Notes: psu = practical salinity units; σt = sigma-t; mS/cm = millisiemens per centimeter; mg/L = milligrams per liter; g/L = grams per liter.

4.2.1 Temperature

Temperature is an important factor to consider when assessing water quality. Temperature influences several other parameters and can alter the physical and chemical properties of water. Temperature affects metabolic rates and photosynthesis production, compound toxicity, DO, conductivity and salinity, oxidation reduction potential, pH, and water density. For example, colder waters can hold more DO, result in a lower pH, and decrease water density. Temperature can also affect plant respiration and photosynthesis (Wetzel 2001). In general, algal photosynthesis will increase with temperature, although different species will have different peak temperatures for optimum photosynthetic activity (Wetzel 2001). Above and below this peak temperature, photosynthesis will be reduced.

The thermal limit for eelgrass is 30°C (86°F). Episodes of warm seawater temperatures can damage seagrasses. Temperature affects enzyme activity and metabolism, influencing how organisms grow. Rising water temperatures increase rates of seagrass respiration faster than rates of photosynthesis, which makes them more susceptible to the effects of grazing by herbivores. Increased temperature also increases seagrass light requirements, influences nutrient

uptake, and can make seagrasses more susceptible to disease (e.g., wasting disease and pathogens). The overall average temperature recorded in the Haynes Intake Channel was 23.56°C (74.41°F; n = 30; see Appendix E). This is slightly warmer than the temperature at the mouth of the San Gabriel River, which ranges from 18°C to 22°C (64°F to 72°F) during late summer and fall, as well as the average summer temperature of 21.3°C (70.3°F) in Alamitos Bay, according to the AES Alamitos Generating Station National Pollutant Discharge Elimination System (NPDES) monitoring program (MBC 2007b).

4.2.2 Salinity

Salinity is the total concentration of all dissolved salts in water. These electrolytes form ionic particles as they dissolve, each with a positive and negative charge. Therefore, salinity is a strong contributor to electrical conductivity. Salinity can be measured by passing an electric current between the two electrodes of a salinity meter in a sample of water. The electrical conductivity of a water sample is influenced by the concentration and composition of dissolved salts. Salinity is not measured directly; instead, it is derived from the conductivity measurement. This is known as practical salinity. These derivations compare the specific conductance of the sample to a salinity standard, such as seawater. Conductivity and salinity have a strong correlation, as does DO content. Salinity is important because it affects DO solubility (Miller et al. 1988). The higher the salinity level, the lower the DO concentration. In general, marine species can tolerate a wide range of salinity values, ranging from 10.00 to 35.00 psu, with more fish species preferring a 20–35 psu range. As indicated in Table 7, salinity values in the Haynes Intake Channel ranged from 32.80 to 34.00 psu. The AES Alamitos Generating Station's NPDES monitoring program found a salinity range of 32.3–33.6 psu in the summer in Alamitos Bay, while MBC observed a salinity range of 33.2 to 34.8 psu (April–June) (MBC 2007b) and 33.1 to 33.4 (February–March) (MBC 2009) in Alamitos Bay. In California embayments and nearshore waters, the salinity is generally between 33 and 34 psu (MBC 2009). Eelgrass requires a salinity of 10 psu or greater.

4.2.3 Seawater Specific Gravity

Seawater specific gravity is an indirect measure of seawater density. Saltwater is denser than pure water because it has a higher content of dissolved salts and minerals. Different species of aquatic life thrive in freshwater and saltwater, with most species being very sensitive to the level of salinity, so even small changes in the saltwater density can affect the organisms within the aquatic ecosystem. Seawater specific gravity is a measure of seawater density at a given temperature and is calculated from electrical conductivity and temperature readings. The electrical conductivity of water is its ability to conduct a current of electricity. Seawater contains dissolved ionic salts. These free ions within the water conduct electricity, so the more dissolved salts in the water the higher the conductivity. A water sample with a high conductivity will also be denser because of the high concentration of dissolved salts.

4.2.4 Conductivity

Conductivity is a measure of water's ability to pass electrical flow. This ability is directly related to the concentration of ions in the water. These ions originate from dissolved salts and inorganic materials such as alkalis, chlorides, sulfides, and carbonate compounds (Miller et al. 1988). The more ions are present, the higher the conductivity of water. Seawater

has very high conductivity. Change in conductivity is an early indicator of change in a water system. Most bodies of water maintain a fairly constant conductivity that can be used as a baseline of comparison for future measurements. Significant change, whether it is due to natural flooding, evaporation, or human-caused pollution can be very detrimental to water quality. The range in conductivity observed in the Haynes Intake Channel (Table 7) generally reflects typical values for seawater, which range from 46 to 72 mS/cm.

4.2.5 Hydrogen Ion Concentration

Hydrogen ion concentration is expressed as pH, which is a figure between 0 and 14, defining how acidic or basic (alkaline) a body of water is along a logarithmic scale. Typical pH levels vary due to environmental influences, particularly alkalinity. The alkalinity of water varies due to the presence of dissolved salts and carbonates, as well as the mineral composition of the surrounding soil. In general, the higher the alkalinity, the higher the pH; the lower the alkalinity, the lower the pH.

The recommended pH range for most fish is between 6.0 and 9.0. Seawater has an average pH around 8.2, although this can range from 7.5 to 8.5. For saltwater fish, the pH of water should generally remain between 7.5 and 8.5 (Wurts and Durborow 1992). There was a relatively wide range of pH values observed in the channel (Table 7). Fish can survive a gradual shift in pH (within ranges of tolerance), but a rapid shift can result in adverse effects to fish. Photosynthesis, respiration, and decomposition all contribute to pH fluctuations due to their influence on carbon dioxide levels. The extremity of these changes depends on the alkalinity of the water, but there are often noticeable diurnal variations (Radke 2006). This influence is more measurable in bodies of water with high rates of respiration and decomposition, which may be case in the Haynes Intake Channel with its abundant algae.

4.2.6 Dissolved Oxygen

DO is the amount of gaseous oxygen (O_2) dissolved in the water, the amount of oxygen available to living aquatic organisms. Oxygen enters the water by direct absorption from the atmosphere, by rapid movement, or as a waste product of plant photosynthesis. The concentration of DO in surface water is affected by temperature and has both a seasonal and a daily cycle. Cold water can hold more DO than warm water. DO in surface water is used by all forms of aquatic life. Photosynthesis is the primary process affecting the DO/temperature relation; water clarity and strength and duration of sunlight, in turn, affect the rate of photosynthesis. Given the measured levels of DO in the Haynes Intake Channel, the channel is able to support fish populations and is generally within guidelines of the threshold for biological concerns. DO concentrations are lowest in the morning due to low photosynthesis during the night hours, but a steady increase in DO concentration occurs throughout the day as photosynthetic production increases.

4.2.7 Total Dissolved Solids

TDS is a measure of the dissolved combined content of all inorganic and organic substances contained in a liquid in molecular, ionized, or micro-granular (colloidal sol) suspended form. Most suspended solids are made up of inorganic materials, although bacteria and algae can also contribute to the total solids concentration (EPA 2012a). TDS can include

a wide variety of material, such as silt, decaying plant and animal matter, industrial wastes, and sewage (EPA 2012b). High concentrations of suspended solids can adversely affect aquatic life. Organic particles from decomposing materials (algae, plants, and animals) can also contribute to suspended solids when the decomposition process allows small organic particles to break away and enter the water column (Murphy 2007). TDS can play a significant factor in water clarity, which reduces the amount of light in the water column and thereby affect photosynthesis, which could be a concern with regard to eelgrass in the Haynes Intake Channel. The project site had a range of 43.28–44.71 TDS (Table 7) (n = 24; see Appendix E) across the Haynes Intake Channel, which is considered low. In areas of low flow, particles can settle on the channel floor instead of remaining in the water column.

4.3 Essential Fish Habitat Assessment

The Haynes Intake Channel consists of an earthen channel bottom and sloped banks that are covered with a grouted rock material to below the high water line. As discussed previously, the Haynes Intake Channel conveys surface water to Haynes from a bulkhead intake structure located in Alamitos Bay. Water passes through seven 8-foot-diameter closed conduits fitted with vertical trash bars. The closed conduits are approximately 1,150 feet long and transport water beneath the San Gabriel River and SR-1. The velocity through the intake conduits is 5.0 feet per second. The calculated average velocity of the Haynes Intake Channel is 3.2 feet per second (LADWP 2010). The Haynes OTC system is entirely seawater, conveying water directly from Alamitos Bay. However, as mentioned above, the water levels in the open channel are regulated primarily by the OTC condenser pumps, which control the velocity and flow of water; therefore, depending on pumping rates, water levels in the channel may be higher or lower than tide levels at any given time.

The entire coastal region of California is designated as EFH in the Pacific Coast Groundfish and Coastal Pelagic Species FMPs. This designation includes coastal waters and some tidally influenced inland water bodies in the area of Haynes. The Haynes Intake Channel itself is not specifically mapped by NOAA as EFH under any FMP (NOAA 2018). However, as discussed previously, the soft-bottom substrate of the Haynes Intake Channel north of 2nd Street contains the seagrass HAPC type—specifically, eelgrass beds—discussed in the Pacific Coast Groundfish FMP. In total, the Haynes Intake Channel supports approximately 2.19 acres of eelgrass habitat, including 0.70 acres of vegetated habitat and 1.49 acres of unvegetated habitat. Eelgrass is recognized by state and federal agencies as valuable and sensitive habitat and in addition to being designated a HAPC, it has been further designated as an EFH under the Magnuson-Stevens Fishery Conservation and Management Act. According to NMFS (2014b):

> Eelgrass provides a number of important ecosystem functions, including foraging areas and shelter to young fish and invertebrates, food for migratory waterfowl and sea turtles, and spawning surfaces for species such as the Pacific herring. By trapping sediment, stabilizing the substrate, and reducing the force of wave energy, eelgrass beds also reduce coastal erosion. In fact, eelgrass forms the base of a highly productive marine food web.

However, because it is an isolated feature, segregated from the ocean environment except through mechanical pumping equipment and other apparatus, the Haynes Intake Channel does not generally possess the characteristics of open-ocean

eelgrass habitat or provide the ecosystem functions important to EFH described above. Once entering the Haynes Intake Channel, individual organisms are generally hindered from reentering the ocean environment by the intake conduits that pass beneath the San Gabriel River and by the pumps and cooling apparatus at the generation unit condensers. Because of this lack of connectivity and the location of the channel removed from areas along the shore affected by wave action, the eelgrass habitat in the Haynes Intake Channel does not serve the purpose that defines it as a HAPC and EFH in an open-water setting, including as a spawning and nursery ground and to provide protection to shorelines from erosion. This fragmented nature of the eelgrass habitat in the Haynes Intake Channel is evidenced in the low abundance of fishery species and individuals (adult and larval) found over a span of many years (by MBC in 2009 and during surveys for the current project in 2019). Nonetheless, given the importance of eelgrass to the broader marine environment and its formal designations under the Magnuson-Stevens Act, the eelgrass habitat within the Haynes Intake Channel is recognized as both EFH and a HAPC.

As shown in Table 8, few of the species covered by the applicable FMPs (Pacific Coast Groundfish FMP and Coastal Pelagic Species FMP) are likely to occur in or near the project site, based on habitat suitability, species observations, and previous data. The 2007 Section 316(b) study at Haynes (EPRI 2007) was designed to examine losses resulting both from impingement of juvenile and adult fish and shellfishes on traveling screens at the intake during normal operations, and from entrainment of larval fishes and shellfishes into the cooling water intake system. The results indicated that gobies (order Gobiiformes) and silversides (order Atheriniformes) accounted for 93% of the larval densities at the Haynes intake structure. Other impinged taxa covered under the Coastal Pelagic Species FMP included northern anchovy (*Engraulis mordax*), market squid (*Doryteuthis opalescens*), Pacific sardine (*Sardinops sagax*), Pacific chub mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*). Many of the taxa entrained and/or impinged are not targeted by commercial or recreational fishing that would compound any effects of the operation of the cooling water systems on the populations. For these taxa, as well as for taxa that are also targeted by sport and/or commercial fishing, such as anchovies, Pacific sardine, and market squid, the magnitude of impacts was relatively low. Only one FMP-managed species, topsmelt, was directly observed during the field surveys of the Haynes Intake Channel.

Table 8 Pacific Coast Groundfish Species in the Los Angeles Area

Common Name	Species Name	Fish Species Present in Los Angeles Area?	Commercial Landings in Pounds	General Habitat Preference	Potential to Occur in Channel?
Elasmobranchs					
Big skate	*Raja binoculata*	Yes	0	Soft bottom habitats[a,b]	Yes
California skate	*Raja inornata*	Yes	2,572	Soft bottom habitats[a,b]	Yes
Leopard shark	*Triakis semifasciata*	Yes	2,673	Soft bottom habitats[a,b]	Yes
Longnose skate	*Raja rhina*	Yes	0	Soft bottom habitats[a,b]	Yes

Table 8 Pacific Coast Groundfish Species in the Los Angeles Area

Common Name	Species Name	Fish Species Present in Los Angeles Area?	Commercial Landings in Pounds	General Habitat Preference	Potential to Occur in Channel?
Spiny dogfish	*Squalus suckleyi*	Yes	1,579	Soft bottom habitats[a,b]	Yes
Grenadiers					
Pacific rattail	*Coryphaenoides acrolepis*	Yes	0	Soft bottom habitats	No
Morids					
Finescale codling	*Antimora microlepis*	Yes	0	Unknown	No
Ratfish					
Spotted ratfish	*Hydrolagus colliei*	Yes	0	Soft and hard substrate[c]	Yes
Roundfish					
Cabezon	*Scorpaenichthys marmoratus*	Yes	270	Hard substrate and kelp[b,c,d]	No
Kelp greenling	*Hexagrammos decagrammus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Lingcod	*Ophiodon elongatus*	Yes	1,086	Hard substrate and kelp[b,c,d]	No
Pacific cod	*Gadus macrocephalus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Pacific whiting (hake)	*Merluccius productus*	Yes	0	Open water and hard substrate[b,c]	No
Sablefish	*Anoplopoma fimbria*	Yes	53,961	Hard substrate and kelp[b,c,d]	No
Rockfish					
Aurora rockfish	*Sebastes aurora*	Yes	1,317	Hard substrate and kelp[b,c,d]	No
Bank rockfish	*S. rufus*	Yes	48	Hard substrate and kelp[b,c,d]	No
Black rockfish	*S. melanops*	Yes	0	Hard substrate and kelp[b,c,d]	No
Black-and-yellow rockfish	*S. chrysomelas*	Yes	0	Hard substrate and kelp[b,c,d]	No
Blackgill rockfish	*S. melanostomus*	Yes	9,461	Hard substrate and kelp[b,c,d]	No
Blue rockfish	*S. mystinus*	Yes	18	Hard substrate and kelp[b,c,d]	No
Bocaccio	*S. paucispinis*	Yes	6,808	Hard substrate and kelp[b,c,d]	No
Bronzespotted rockfish	*S. gilli*	Yes	0	Hard substrate and kelp[b,c,d]	No
Brown rockfish	*S. auriculatus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Calico rockfish	*S. dallii*	Yes	0	Hard substrate and kelp[b,c,d]	No

Table 8 Pacific Coast Groundfish Species in the Los Angeles Area

Common Name	Species Name	Fish Species Present in Los Angeles Area?	Commercial Landings in Pounds	General Habitat Preference	Potential to Occur in Channel?
Canary rockfish	*S. pinniger*	Yes	0	Hard substrate and kelp[b,c,d]	No
Chilipepper	*S. goodei*	Yes	112	Hard substrate and kelp[b,c,d]	No
China rockfish	*S. nebulosus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Copper rockfish	*S. caurinus*	Yes	23	Hard substrate and kelp[b,c,d]	No
Cowcod	*S. levis*	Yes	0	Hard substrate and kelp[b,c,d]	No
Darkblotched rockfish	*S. crameri*	Yes	0	Hard substrate and kelp[b,c,d]	No
Dusky rockfish	*S. ciliatus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Flag rockfish	*S. rubrivinctus*	Yes	154	Hard substrate and kelp[b,c,d]	No
Gopher rockfish	*S. carnatus*	Yes	140	Hard substrate and kelp[b,c,d]	No
Grass rockfish	*S. rastrelliger*	Yes	8	Hard substrate and kelp[b,c,d]	No
Greenblotched rockfish	*S. rosenblatti*	Yes	801	Hard substrate and kelp[b,c,d]	No
Greenspotted rockfish	*S. chlorostictus*	Yes	526	Hard substrate and kelp[b,c,d]	No
Greenstriped rockfish	*S. elongatus*	Yes	548	Hard substrate and kelp[b,c,d]	No
Harlequin rockfish	*S. variegatus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Honeycomb rockfish	*S. umbrosus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Kelp rockfish	*S. atrovirens*	Yes	0	Hard substrate and kelp[b,c,d]	No
Mexican rockfish	*S. macdonaldi*	Yes	690	Hard substrate and kelp[b,c,d]	No
Olive rockfish	*S. serranoides*	Yes	0	Hard substrate and kelp[b,c,d]	No
Pink rockfish	*S. eos*	Yes	0	Hard substrate and kelp[b,c,d]	No
Pacific ocean perch	*S. alutus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Quillback rockfish	*S. maliger*	Yes	0	Hard substrate and kelp[b,c,d]	No
Redbanded rockfish	*S. babcocki*	Yes	0	Hard substrate and kelp[b,c,d]	No
Redstripe rockfish	*S. proriger*	Yes	0	Hard substrate and kelp[b,c,d]	No

Table 8 Pacific Coast Groundfish Species in the Los Angeles Area

Common Name	Species Name	Fish Species Present in Los Angeles Area?	Commercial Landings in Pounds	General Habitat Preference	Potential to Occur in Channel?
Rosethorn rockfish	*S. helvomaculatus*	Yes	28	Hard substrate and kelp[b,c,d]	No
Rosy rockfish	*S. rosaceus*	Yes	190	Hard substrate and kelp[b,c,d]	No
Rougheye rockfish	*S. aleutianus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Sharpchin rockfish	*S. zacentrus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Shortbelly rockfish	*S. jordani*	Yes	0	Hard substrate and kelp[b,c,d]	No
Shortraker rockfish	*S. borealis*	Yes	0	Hard substrate and kelp[b,c,d]	No
Silvergray rockfish	*S. brevispinis*	Yes	0	Hard substrate and kelp[b,c,d]	No
Speckled rockfish	*S. ovalis*	Yes	18	Hard substrate and kelp[b,c,d]	No
Splitnose rockfish	*S. diploproa*	Yes	0	Hard substrate and kelp[b,c,d]	No
Squarespot rockfish	*S. hopkinsi*	Yes	32	Hard substrate and kelp[b,c,d]	No
Starry rockfish	*S. constellatus*	Yes	2,763	Hard substrate and kelp[b,c,d]	No
Stripetail rockfish	*S. saxicola*	Yes	0	Hard substrate and kelp[b,c,d]	No
Tiger rockfish	*S. nigrocinctus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Treefish	*S. serriceps*	Yes	1	Hard substrate and kelp[b,c,d]	No
Vermilion rockfish	*S. miniatus*	Yes	16,902	Hard substrate and kelp[b,c,d]	Yes
Widow rockfish	*S. entomelas*	Yes	162	Hard substrate and kelp[b,c,d]	No
Yelloweye rockfish	*S. ruberrimus*	Yes	0	Hard substrate and kelp[b,c,d]	No
Yellowmouth rockfish	*S. reedi*	Yes	0	Hard substrate and kelp[b,c,d]	No
Yellowtail rockfish	*S. flavidus*	Yes	84	Hard substrate and kelp[b,c,d]	No
Scorpionfish					
California scorpionfish	*Scorpaena guttata*	Yes	2,882	Hard substrate and kelp[b,c,d]	Yes

Table 8 Pacific Coast Groundfish Species in the Los Angeles Area

Common Name	Species Name	Fish Species Present in Los Angeles Area?	Commercial Landings in Pounds	General Habitat Preference	Potential to Occur in Channel?
Thornyhead					
Longspine thornyhead	*Sebastolobus altivelis*	Yes	2,968	Hard substrate and kelp[b,c,d]	No
Shortspine thornyhead	*Sebastolobus alascanus*	Yes	14,455	Hard substrate and kelp[b,c,d]	No
Flatfish					
Arrowtooth flounder (turbot)	*Atheresthes stomias*	Yes	0	Soft bottom habitats[a,b]	No
Butter sole	*Isopsetta isolepis*	Yes	0	Soft bottom habitats[a,b]	Yes
Curlfin sole	*Pleuronichthys decurrens*	Yes	70	Soft bottom habitats[a,b]	Yes
Dover sole	*Microstomus pacificus*	Yes	206	Soft bottom habitats[a,b]	Yes
English sole	*Parophrys vetulus*	Yes	530	Soft bottom habitats[a,b]	Yes
Flathead sole	*Hippoglossoides elassodon*	Yes	0	Soft bottom habitats[a,b]	No
Pacific sanddab	*Citharichthys sordidus*	Yes	5,441	Soft bottom habitats[a,b]	Yes
Petrale sole	*Eopsetta jordani*	Yes	316	Soft bottom habitats[a,b]	Yes
Rex sole	*Glyptocephalus zachirus*	Yes	57	Soft bottom habitats[a,b]	Yes
Rock sole	*Lepidopsetta bilineata*	Yes	38	Soft bottom habitats[a,b]	Yes
Sand sole	*Psettichthys melanostictus*	Yes	0	Soft bottom habitats[a,b]	Yes
Starry flounder	*Platichthys stellatus*	Yes	0	Soft bottom habitats[a,b]	No
California halibut[e]	*Paralichthys californicus*	Yes	48,396	Soft bottom habitats[a,b]	Yes

Notes: Except for California halibut, all species listed in this table are Magnuson-Stevens Act species.

[a] Seagrass.
[b] Area of interest/marine protected area.
[c] Rocky reefs.
[d] Kelp canopy/forest.
[e] Non Magnuson-Stevens Act species; managed by CDFW.

The Los Angeles area plays a substantial role in California's commercial fishing industry. Market squid remains California's largest and most lucrative commercial fishery, valued at over $73 million in 2013–2014. In 2019, nearly

6,000 tons of squid, representing 5% of the state's total catch limit (118,000 tons), was unloaded in the Los Angeles area, making it one of the largest squid landings on the west coast (Table 9).

Table 9 Coastal Pelagic Species in the Los Angeles Area

Common Name	Scientific Name	Commercial Landing in Pounds[a]	General Habitat
Northern anchovy	*Engraulis mordax*	45,028	Open water
Pacific sardine	*Sardinops sagax*	1,666,317	Open water
Pacific mackerel	*Scomber japonicus*	7,937,410	Open shallow water
Jack mackerel	*Trachurus symmetricus*	18,136	Open shallow water
Market squid	*Doryteuthis opalescens*	11,980,598	Open water

Note:
[a] CDFW Landing Data for 2019 for the Los Angeles area.

4.4 Aquatic Resources Jurisdictional Delineation

The determination of aquatic resource jurisdiction within the project site was supported by information obtained from the U.S. Geological Survey topographic map, the U.S. Department of Agriculture soil survey, the USFWS National Wetlands Inventory, and a field assessment. The project site contains 2,150 linear feet of jurisdictional aquatic resources, which include approximately 7.64 acres of USACE-jurisdictional non-wetland waters of the United States and RWQCB/CCC-jurisdictional non-wetland waters of the state (unvegetated). Given the lack of potential wetlands or other aquatic resource features outside the limits of the Haynes Intake Channel, the limits of waters of the state (regulated by the RWQCB and CCC) are coincident with those for waters of the United States (regulated by USACE). Similarly, because the Haynes Intake Channel is a wholly marine channel with no riverine influence, despite its proximity to the San Gabriel River, no potential CDFW-regulated lake, streambeds, or riparian habitats were identified on the project site. Methods and results are discussed in greater detail in the Aquatic Resources Jurisdictional Delineation Report: Haynes Generating Station Intake Channel, Long Beach, California (LADWP 2020).

4.5 Birds and Other Terrestrial Wildlife

Fourteen native bird species were observed within the project site and vicinity during the field survey. Of the 14 bird species observed, one is considered special status in California: great blue heron. Only nesting colonies of this species are considered "sensitive" by the California Department of Forestry and Fire Protection (CAL FIRE) during timber operations (CDFW 2019b). Suitable habitat for great blue heron within the project site consists solely of foraging habitat; no suitable nesting habitat is present, as no suitable large trees occur on or adjacent to the project site. See additional discussion in Section 4.7. A list of wildlife species observed within the survey area is presented in Appendix D.

Due to the industrial nature of the project site, consisting primarily of concrete, asphalt, generation units and ancillary facilities, and the Haynes Intake Channel, and the lack of terrestrial vegetation, any birds occurring on or adjacent to the project site were in the water, along the unvegetated banks of the Haynes Intake Channel, or flying over the channel.

Additionally, the Haynes Intake Channel banks are steep-sided and paved to below the high water line, providing no habitat for wading bird species. Therefore, birds occurring in the area were highly visible and readily observed. Additional information on potentially occurring special-status birds is included in Section 4.7 and Table 10.

4.6 Terrestrial Plants

Outside the marine habitats in the Haynes Intake Channel, the survey area is entirely developed and supports no soils suitable for terrestrial plants; therefore, no such species occur. A list of plant/algae species observed within the project site is presented in Appendix C.

4.7 Special-Status Species

Species identified in the literature review (see Chapter 3, Methods) as listed by USFWS, NMFS, or CDFW as protected, rare, sensitive, threatened, or endangered and that have potential to occur on the project site are summarized in Table 10. All special-status species that are known within a 5-mile radius of the project site but that are not expected to be found on site are presented in Appendix F, Special-Status Species Not Expected to Occur on Site. Results of the USFWS IPaC query are provided in Appendix G. Based on the literature review, a habitat suitability analysis was performed for the species with potential to occur on the project site. Some species documented in the vicinity were omitted because of the absence of suitable habitat on site. Special-status species directly observed included eelgrass (EFH/HAPC; see Section 3.3.1) and great blue heron (a CAL FIRE sensitive species). However, great blue heron is considered a special-status species only when it occurs as a nesting colony during timber operations. This species typically nests in the tops of large snags or live trees near water, usually in highly visible colonies that are present year after year. The only trees on the project site are 20 to 25 feet maximum in height, located west of the Haynes Intake Channel and just north of East 2nd Street. These trees are too small to be considered suitable for nesting by great blue herons, and no large platform nests such as those built by great blue heron were observed. The species may also nest in remote utility structures such as transmission towers. However, due to the industrial setting of the project site and the high level of human activity, establishment of a nesting colony on the site is not expected and was not observed. As a result, the project site provides only foraging habitat, which would not be considered a special-status resource.

The CNDDB search resulted in two occurrences for a special-status amphibian species, western spadefoot (*Spea hammondii*), within 5 miles of the project site (Figure 7, California Natural Diversity Database Plant and Wildlife Occurrences within 5 Miles of Project Site). However, the project site and vicinity do not support suitable habitat (ephemeral pools, soils suitable for burrowing, or any natural terrestrial land covers). The CNDDB search results also include three occurrences of Blainville's horned lizard (*Phrynosoma blainvillii*) within 5 miles of the project site. However, the project site does not support terrestrial natural communities of any kind and therefore could not support Blainville's horned lizard. Similarly, although burrowing owl is known to occur in isolated locations in coastal Orange County, including at two locations identified in the CNDDB query and within approximately 2.0 miles of the project site, the project site supports no suitable habitat for any part of the life cycle of burrowing owl: no burrows or soils suitable for burrows for the species to nest or roost occur on the project site, and the site supports no terrestrial prey base (invertebrates or small terrestrial vertebrates) or foraging habitat. Black skimmer, although it has been known to nest in

the project site vicinity (including the nearby Seal Beach National Wildlife Refuge), has a low potential to forage in the unproductive waters of the Haynes Intake Channel. However, the project site and immediate vicinity support no sandy beaches, sandbars, salt flats, or other areas of open, bare ground suitable for nesting or day roosting by this species.

One special-status bird species that has a high potential to occur within the project site is the American peregrine falcon (*Falco peregrinus anatum*), a bird of prey that hunts avian prey species. Although no nesting habitat occurs within the project site, this species may use the vicinity for foraging. A nesting pair of American peregrine falcons was previously detected during spring 2017 at Haynes. The nest was approximately 120 feet from the project site and 130 feet aboveground on the upper level of Unit 5 (northwest corner) and was seen during a general inspection of the cooling towers (Dudek 2017). Unit 5 is currently under demolition.

Two additional federally and/or state-listed wildlife species are known to occur in the vicinity and have been reported in the Haynes Intake Channel: California least tern (*Sternula antillarum browni*) and green sea turtle. These two species are discussed in detail in this section.

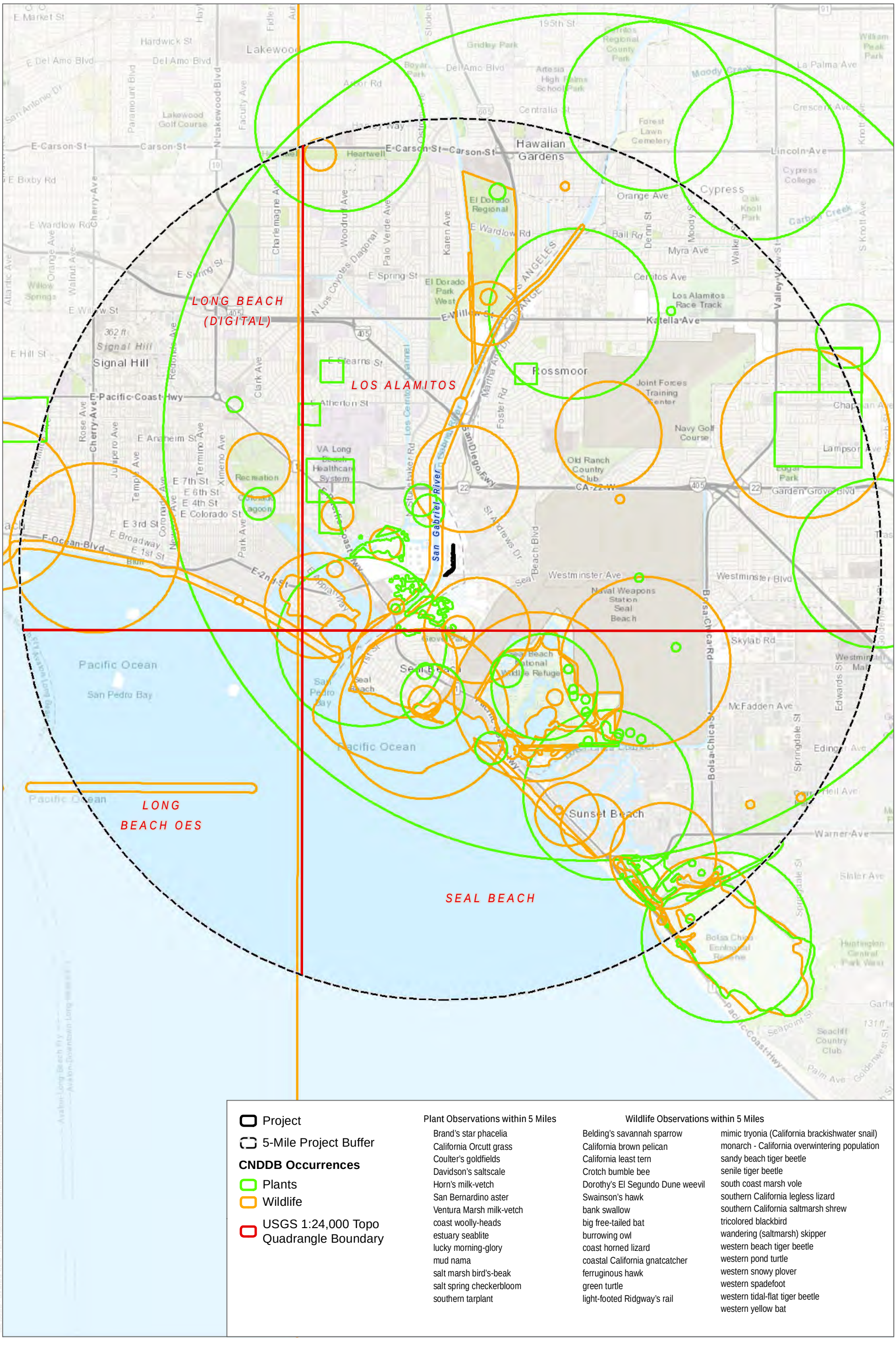
Table 10 Special-Status Species Observed or Potentially Occurring in the Project Site

Scientific Name	Common Name	Status Federal/State	Primary Habitat Associations	Potential to Occur
			Plants	
Zostera marina	Eelgrass	EFH, HAPC/ None	Shallow, soft bottom, marine environments.	Present. Eelgrass beds were identified and mapped during field survey.
			Reptiles	
Chelonia mydas	Green sea turtle	FT/None	Shallow waters of lagoons, bays, estuaries, mangroves, eelgrass, and seaweed beds.	Low to moderate. Known to migrate and/or forage in San Gabriel River and Alamitos Bay, but the river is separated from Haynes by a large jetty and berm, access road, and bicycle path. The Haynes Intake Channel has no direct connection to the San Gabriel River. Connection to the ocean/Alamitos Bay is through a marine bulkhead intake structure fixed with vertical trash bars. Several green sea turtles rescued from the Haynes Intake Channel since 2008 were thought to have received human assistance to enter the channel.
			Birds	
Accipiter cooperii	Cooper's hawk	None/WL	Nests and forages in dense stands of live oak, riparian woodlands, or other woodland habitats, often near water.	Low. May forage near the project site, but not associated with beach habitats. Not expected to nest on the project site.
Ardea herodias	Great blue heron (nesting colony)	None/CAL FIRE	Nests in large trees or snags; forages in wetlands, water bodies, watercourses, and opportunistically in uplands, including pasture and croplands. Tends to nest year after year in the same locations, is highly visible when nesting, and builds large platform nests that are highly visible year-round.	Present. Foraging habitat present within the project site. However, only nesting colonies are special status. Not expected to nest on the project site; several trees that occur west of the Haynes Intake Channel are too small (20–25 feet tall) for nesting and contained no large platform nests suitable for this species.
Charadrius alexandrinus nivosus	Western snowy plover (nesting)	FT, BCC/SSC	On coasts, nests on sandy marine and estuarine shores; in the interior, nests on sandy, barren, or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds.	Low. Not expected to forage or nest in the project site due to lack of suitable habitat. CNDDB shows several extirpated occurrences within 2.5 miles of the project site, but the nearest extant breeding locations are slightly more than 5.0 miles southeast, at Bolsa Chica Ecological Reserve, where the nearest USFWS-designated critical habitat is also located. Limited suitable foraging and nesting areas occur in the region.
Falco peregrinus anatum	American peregrine falcon (nesting)	FDL, BCC/SDL, FP	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, and croplands, especially where waterfowl are present.	High. May forage in the project site, but not expected to nest on the project site due to lack of suitable habitat. This species has previously been detected adjacent to the project site (Dudek 2017). No CNDDB occurrences within 10 miles of the project site.
Hydroprogne caspia	Caspian tern (nesting colony)	BCC/None	Undisturbed islands, levees, and shores for nesting; a variety of aquatic and nearshore marine habitats for feeding.	Low. Not expected to nest or forage within the project site. No CNDDB occurrences in the project region. The site is outside the species' nesting range.
Larus californicus	California gull (nesting colony)	None/WL	Islands in alkali or freshwater lakes and salt ponds for nesting; marine and aquatic habitats, landfills, fields, and pastures for foraging. Common year-round but does not breed in the region.	Low. May forage or roost in the project site. No CNDDB occurrences in the project region. Not expected to nest on the project site, because the site is outside the species' nesting range.
Nycticorax nycticorax	Black-crowned night-heron (nesting colony)	None/SSC	Marshes, ponds, reservoirs, estuaries; nests in dense-foliaged trees and dense fresh or brackish emergent wetlands.	Low. May forage in the project site. Not expected to nest on the project site.
Pandion haliaetus	Osprey (nesting)	None/WL	Large waters (lakes, reservoirs, rivers) supporting fish; usually near forest habitats, but widely observed along the coast.	Low. May forage within the project site. Not expected to nest on the project site.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None/SE	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in *Salicornia* on and about margins of tidal flats.	Low. The nearest nesting sites are approximately 0.6 miles west, at Los Cerritos Wetlands, and approximately 1.2 miles southeast, at Seal Beach National Wildlife Refuge. Likely to forage in salt marsh outside the project site, but not in the project site, where no natural upland habitats occur. Not expected to nest on the project site.

Table 10 Special-Status Species Observed or Potentially Occurring in the Project Site

Scientific Name	Common Name	Status Federal/State	Primary Habitat Associations	Potential to Occur
Pelecanus occidentalis californicus	California brown pelican (nesting colonies and communal roosts)	None/FP	In California, nests on dry, rocky offshore islands. Forages in coastal marine environments and roosts in nearshore waters and on inaccessible rocks, as well as sandy beaches, wharfs, and jetties.	Low. Likely to forage offshore near project site, but not in project site. Not expected to nest or to roost communally on the project site.
Phalacrocorax auritus	Double-crested cormorant (nesting colony)	None/WL	Nests in riparian trees near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines; winter habitat includes lakes, rivers, and coastal areas.	Low. May forage within the project site. Not expected to nest on the project site.
Riparia riparia	Bank swallow (nesting)	None/ST	Nests in lowland country with soft banks or bluffs; open country and water during migration.	Low. Despite a historical occurrence approximately 3.2 miles west of the project site, this species is apparently extirpated as a breeder in Southern California (CDFG 1992). It occurs rarely in the region in migration, but it is not expected to nest on the project site.
Sternula antillarum browni	California least tern	FE/SE, FP	Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats.	Moderate potential to forage. May forage in the project site, but more suitable habitat is off site. Has been known to roost on booms within the Haynes Intake Channel south of 2nd Street, outside the project site. CNDDB includes an extirpated nesting location 0.6 miles southwest of the site and another 1.2 miles west of the site, and a historic occurrence (1904) from Seal Beach, with no specified location (CDFW 2020). The nearest extant occurrence is from 1.8 miles southeast of the site at Seal Beach National Wildlife Refuge, where 80 pairs were recorded as recently as 2016. However, the species is not expected to nest on the project site, due to the absence of habitat.

Notes: CNDDB = California Natural Diversity Database; USFWS = U.S. Fish and Wildlife Service.
Status Key:
Federal:
BCC = USFWS bird of conservation concern
FDL = federally delisted
FE = federal endangered
FT = federal threatened
EFH = essential fish habitat
HAPC = Habitat Area of Particular Concern
State:
CAL FIRE = California Department of Forestry and Fire Protection sensitive species
SSC = California species of special concern
FP = fully protected
SDL = state delisted
SE = state endangered
ST = state threatened
WL = California watch list
Potential to Occur Key:
Present – Has been observed during the part of the species' life cycle noted.
High – Not confirmed, but likely occurs periodically, if not more frequently.
Moderate – Likelihood that the species occurs or does not occur is relatively equal.
Low – Probably does not occur, but occurrence cannot be discounted.
Not expected – Habitat, range, or other factors preclude occurrence for the part of the species life cycle noted.



SOURCE: Bing Maps, CNDDB

FIGURE 7

California Natural Diversity Database Plant and Wildlife Occurrences within 5 Miles of Project Site

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California least tern, which is federally and state listed as endangered, as well as fully protected in California, has been known to roost on booms within the Haynes Intake Channel south of East 2nd Street, outside the proposed project site. However, the Haynes Intake Channel provides poor foraging habitat for this species. California least terns nest colonially on sparsely vegetated sand and dried mudflats along the coast (Thompson et al. 2020; USFWS 2006). They feed on small fish in nearshore waters, estuaries, and lagoons, where they fly relatively low over the water and dive on prey at the surface. A study of prey items captured by terns at 10 colonies in California showed the northern anchovy and several species of silversides were the dominant prey species (Atwood and Kelly 1984). For colonies where terns feed mostly in estuaries, lagoons, and bays, silversides such as topsmelt and jacksmelt (*Atherinopsis californiensis*) were dominant prey species. Terns with greater access to nearshore waters relied heavily on northern anchovies. California least terns feed commonly on several other species of mostly small, slender-bodied fish. Because of the feeding habits of California least tern, only species occurring very near the surface are important prey items. Although topsmelt were detected within the water column at the Haynes Intake Channel during fish surveys, most fish found in the channel, such as arrow goby (*Clevelandia ios*), were in the benthic habitat at the soft channel bottom, well below areas accessible to California least terns. Also, topsmelt are considerably less abundant in the Haynes Intake Channel compared to other stations sampled in Alamitos Bay and the San Gabriel River (MBC 2009). In general, the Haynes Intake Channel was not found to be productive for fish overall, and likely is not an important feeding location for California least terns. In addition, the loss of the northern part of the Haynes Intake Channel represents a small fraction of the available habitats in the area, most of which are of higher quality. A sampling location in the San Gabriel River, approximately 4,368 linear feet (0.83 miles) downstream and adjacent to Haynes, provides natural, better-quality habitat for fish and bird species compared to the Haynes Intake Channel. In addition, California least terns nesting at the nearest known colony, at the Seal Beach National Wildlife Refuge, have better access not only to resources in nearshore waters but also to prey in the estuary at the Seal Beach National Wildlife Refuge itself. These areas and the San Gabriel River will continue to function as fish nursery grounds and bird foraging habitat in the future. No nesting habitat occurs on or near the Haynes Intake Channel, so California least tern is not expected to nest on the project site.

Green sea turtles have a habitat preference for the warmer waters in the San Gabriel River (which are warmed by the OTC system discharges from Haynes). Although green sea turtles are present in the San Gabriel River, they are unlikely to access the Haynes Intake Channel given that the intake for the channel is from Alamitos Bay and has metal bar racks that prevent access to the channel by immature and adult green sea turtles and larger fish. Only fish and invertebrate species in larval stages (i.e., ichthyoplankton, or zooplankton) or smaller fish (e.g., topsmelt, blennies, and gobies) can easily pass through the 6-inch openings between the bars, which has given rise to the occurrence of fish and invertebrate species in the Haynes Intake Channel in low abundance. However, a few occurrences of green sea turtles with fishhooks and monofilament fishing line have been reported within the Haynes Intake Channel near SR-1. Two healthy immature turtles (32.5 and 26 kilograms [71 and 57 pounds]) were found in the Haynes Intake Channel in 2017. Both had shells more than 25 inches in width and length and could not have passed between the metal bars of the intake structure in Alamitos Bay. Therefore, the method by which the two turtles entered the Haynes Intake Channel is unconfirmed, and it is assumed that human intervention was involved. Upon discovery of the turtles, LADWP alerted NMFS, the Long Beach Aquarium of the Pacific, and MBC to rescue the turtles per regulatory requirements. The two turtle stranding reports are provided as Appendix H, Green Sea Turtle Strandings at Haynes,

to this report. In 2008, MBC had reported an occurrence of a green sea turtle in the Haynes Intake Channel; the turtle was captured and removed from the channel. Following this incident, LADWP inspected the Haynes Intake Channel's bar racks and intake screens, and all were in good working condition, effectively restricting access to the channel for green sea turtles; therefore, the occurrence of this turtle is highly unusual and suspect. Dudek's biologist-divers surveyed the Haynes Intake Channel in 2019 for more than 17.5 hours and observed no sea turtles. MBC (2009) did not observe any green sea turtles in the channel during focused surveys. In 2018, Dudek contacted Dan Lawson of NMFS to receive additional recent sea turtle stranding data for Long Beach Harbor and waterways. Mr. Lawson provided data regarding two recent turtle strandings in 2016 that were outside the area. Mr. Lawson also verified that two turtles were found in the Haynes Intake Channel in 2017. Based on all the above information, green sea turtles are highly unlikely to be able to access the Haynes Intake Channel through the 6-inch vertical gaps in the metal bar racks, and this species is not expected to occur in the channel without human intervention.

5 IMPACT ANALYSIS AND RECOMMENDATIONS

This chapter analyzes potential impacts to biological resources and provides recommendations that, when implemented, would avoid or reduce impacts to a less than significant level. As described in Section 5.1, there are two types of possible impacts to biological resources: direct impacts and indirect impacts. The analysis of both direct and indirect impacts (Section 5.2) is based on the survey results that detail the existing conditions and the potential for biological resources in the Haynes Intake Channel (Chapter 4, Survey Results), review of relevant literature (Chapter 3, Methods), and the regulatory framework governing biological resources (Chapter 2, Regulatory Setting).

5.1 Definition of Impacts

Direct Impacts

"Direct impacts" refer to impacts that result in direct removal of habitat or other biological resources and direct impacts to species occupying the habitat disturbed or removed. "Direct permanent impacts" refer to the absolute and permanent physical loss of a biological resource (habitat removal, loss of species) due to project construction activities, such as clearing and grading for the establishment of permanent platforms or other uses, or filling wetland, aquatic, or marine habitats. Direct permanent loss of habitats can be quantified in terms of acreage removed. "Direct temporary impacts" refer to a temporary loss of habitats or vegetation due to project activities. The main criteria for direct temporary impacts are that impacts would occur for a short period of time and would be reversible. Areas temporarily disturbed by project activities would either be naturally or manually restored to the condition that existed prior to disturbance following completion of work such that full (i.e., pre-project) biological function can be restored. All direct habitat impacts from the proposed project are expected to be permanent.

Indirect Impacts

"Indirect impacts" refer to reasonably foreseeable effects caused by project implementation on remaining or adjacent biological resources outside the direct construction disturbance zone. Indirect impacts may occur during project implementation (i.e., short-term project-related indirect impacts) or later in time as a result of the development (i.e., long-term, or operational, indirect impacts). Indirect impacts may affect areas within the defined project site but outside the construction disturbance zone. Indirect impacts discussed in this chapter are related to noise and water quality impacts during project implementation.

5.2 Impact Analysis

5.2.1 Impacts to Sensitive Habitats

This section addresses impacts to sensitive vegetation communities and habitats that occur within the project site. The site supports one marine community that meets this definition: eelgrass habitat. This community also is considered a

HAPC, and as such is EFH under the Pacific Coast Groundfish FMP. Impacts to EFH are analyzed as applicable to this FMP, as well as to the Coastal Pelagic Species FMP and the California Spiny Lobster FMP (CDFW 2016), as explained in detail in this section.

5.2.1.1 Eelgrass Habitat

As noted in Section 4.1.1, Eelgrass, the project site supports a total of 2.19 acres of eelgrass habitat (0.70 acres vegetated and 1.49 acres unvegetated). Eelgrass habitat is managed under the CEMP (NMFS 2014a). The proposed project would result in both direct and indirect impacts to eelgrass habitat.

Direct Impacts

As shown on Figure 8, Impacts, the project would permanently remove approximately 2.19 acres of eelgrass habitat for Phases I and II, which includes 0.70 acres of vegetated and 1.49 acres of unvegetated habitat (i.e., mapped within the 5-meter [16-foot] buffer of vegetated habitat). Impacts to eelgrass beds are considered significant and would require mitigation (Mitigation Measure [MM] BIO-1; see Section 5.3.2, Mitigation Measures, for full text of this measure).

As described in the CEMP (NMFS 2014a), when impacts to eelgrass would occur, an Eelgrass and Marine Habitat Mitigation and Monitoring Plan (Mitigation Plan) to achieve no net loss in eelgrass function should be developed. The CEMP provides options for mitigation, including (1) comprehensive management plans, (2) in-kind mitigation, (3) mitigation banks and in-lieu-fee programs, and (4) out-of-kind mitigation. Currently, the project site is not located within an adopted comprehensive management plan area for eelgrass, and due to the presence of a potential mitigation site in the Haynes Intake Channel south of 2nd Street, an option for mitigation would be to provide in-kind mitigation within the potential mitigation site that would consist of the creation, restoration, or enhancement of eelgrass habitat. To establish the quality and quantity of potential eelgrass mitigation area in the proposed mitigation site south of the 2nd Street bridge, the site was surveyed similarly to the project site within Haynes north of the 2nd Street bridge. This included dive, water quality, bathymetric, and side scan sonar surveys of the Haynes Intake Channel from 2nd Street to the southern end of the open channel where the intake conduits from Alamitos Bay daylight. The results of these surveys in relation to eelgrass are discussed below. The locations of existing eelgrass beds (and thereby the location of areas for potential eelgrass habitat restoration) are shown on Figure 9A, Potential Mitigation Site (Northern Portion) Eelgrass, and Figure 9B, Potential Mitigation Site (Southern Portion) Eelgrass. In general, the southern portion of the Haynes Intake Channel (i.e., south of 2nd Street) is similar to the project site (i.e., north of 2nd Street) in hydrologic system, location, depth, sediment type, distance from ocean connection, and water quality and currents.

SOURCE: ESRI World Imagery, MBC (Sonar and Bathymetry)

LA DWP Los Angeles Department of Water & Power

0 65 130 Feet

FIGURE 8

Impacts

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As noted in the CEMP, throughout California, mitigation of eelgrass habitat should be based on replacement at a 1.2 (mitigation) to 1 (impact) ratio. However, given variable degrees of success across the regions and the potential for delays and mitigation failure, a mitigation calculator is used to identify a recommended starting mitigation ratio based on the regional history of success of eelgrass mitigation. The calculated starting mitigation ratios described in the CEMP use the Five-Step Wetland Mitigation Ratio Calculator (King and Price 2004). In Southern California, a starting ratio of 1.38 (transplant area) to 1 (vegetated cover impact area) is used for mitigation activities that occur concurrent to the action resulting in damage to existing eelgrass habitat. Specifically, for each square meter (10.76 square feet) of vegetated eelgrass cover adversely impacted, 1.38 square meters (14.85 square feet) of new habitat with suitable conditions to support eelgrass should be planted with a comparable bottom coverage and eelgrass density to the impacted habitat. This higher ratio is used to counter regional risk failure. It is to be applied to the area of impact to vegetated eelgrass cover only. Unvegetated habitat uses a starting mitigation ratio of 1.2 (mitigation) to 1 (unvegetated habitat). Ultimately, eelgrass mitigation is considered successful if it meets eelgrass habitat coverage over an area that is 1.2 times the impact area with comparable eelgrass density and habitat. Table 11 provides a summary of the calculation of eelgrass mitigation for this project.

Table 11 Starting and Final Mitigation Ratios and Acres for Impacts to Eelgrass Habitat

Eelgrass Habitat	Impact Area (Acres)[a]	Mitigation Ratio (Starting)	Mitigation Area to Plant (Starting)	Mitigation Ratio (Final)	Mitigation Area (Final) (Acres)
Vegetated cover	0.70	1.38 to 1	0.97	1.2 to 1	0.84
Unvegetated cover (i.e., 5-meter buffer)	1.49	1.2 to 1	1.79	1.2 to 1	1.79
Total	2.19	—	2.76	—	2.63

Note:

[a] Acres associated with the September, October, and December 2019 surveys.

However, the eelgrass beds within the project site are smaller and less dense than, and not as prolific as, the eelgrass beds located south of the 2nd Street bridge, in the potential mitigation site (Figures 9A and 9B). Although some fish and invertebrates have made their way into the Haynes Intake Channel through the 6-inch gaps in the bar racks, the channel does not support local populations of managed fish or invertebrates other than topsmelt. All other managed fish and invertebrate species observed, including game fish, such as California halibut (*Paralichthys californicus*) and California spiny lobster (*Panulirus interruptus*), were represented by one to a few individuals, which does not constitute a viable breeding population. Overall, the loss of habitat in the northern portion of the Haynes Intake Channel represents a small fraction of available tidally influenced aquatic habitat in the surrounding area. The nearby Alamitos Bay, Colorado Lagoon, lower San Gabriel River, and AES Alamitos Generating Station intake channel all provide more productive aquatic habitat than the Haynes Intake Channel, with Alamitos Bay providing particularly high-quality aquatic habitat. A sampling location in the San Gabriel River, approximately 4,368 linear feet (0.83 miles) away from the project site, provides better-quality habitat for fish and bird species. Alamitos Bay, and to a lesser extent the lower San Gabriel River, will continue to function as fish nursery grounds and bird foraging habitat.

Nevertheless, in-kind mitigation is recommended for mitigating impacts to approximately 2.19 acres of eelgrass habitat (i.e., 0.70 acres of vegetated habitat and 1.49 acres of unvegetated habitat) within the project site. As shown in Table 11, approximately 2.76 acres should be planted at the start, with a final goal of approximately 2.63 acres of eelgrass habitat, to ensure a final mitigation success ratio of 1.2 (mitigation) to 1 (impacts).

Side scan sonar surveys, ground-truthed by dive surveys, revealed the presence of eelgrass in the potential mitigation site south of East 2nd Street (Figures 9A and 9B). A total of 10.07 acres of eelgrass habitat was mapped within the potential mitigation site, including 5.44 vegetated acres and 4.63 unvegetated acres. Within the potential mitigation site, eelgrass was generally evenly distributed, with 0.22 vegetated acres mapped as 26% to 50% cover; 2.91 vegetated acres mapped as 51% to 75% cover; and 2.30 vegetated acres mapped as 76% to 100% cover. Within the potential mitigation site, there was 54% (i.e., 5.44 acres/10.07 acres) vegetated bottom cover within eelgrass habitat.

SOURCE: ESRI World Imagery, MBC (Sonar and Bathymetry)

LA DWP Los Angeles Department of Water & Power

0 80 160 Feet

FIGURE **9**A

Potential Mitigation Site (Northern Portion) Eelgrass

Haynes Generating Station Intake Channel Infill Project Marine Biological Resources Report

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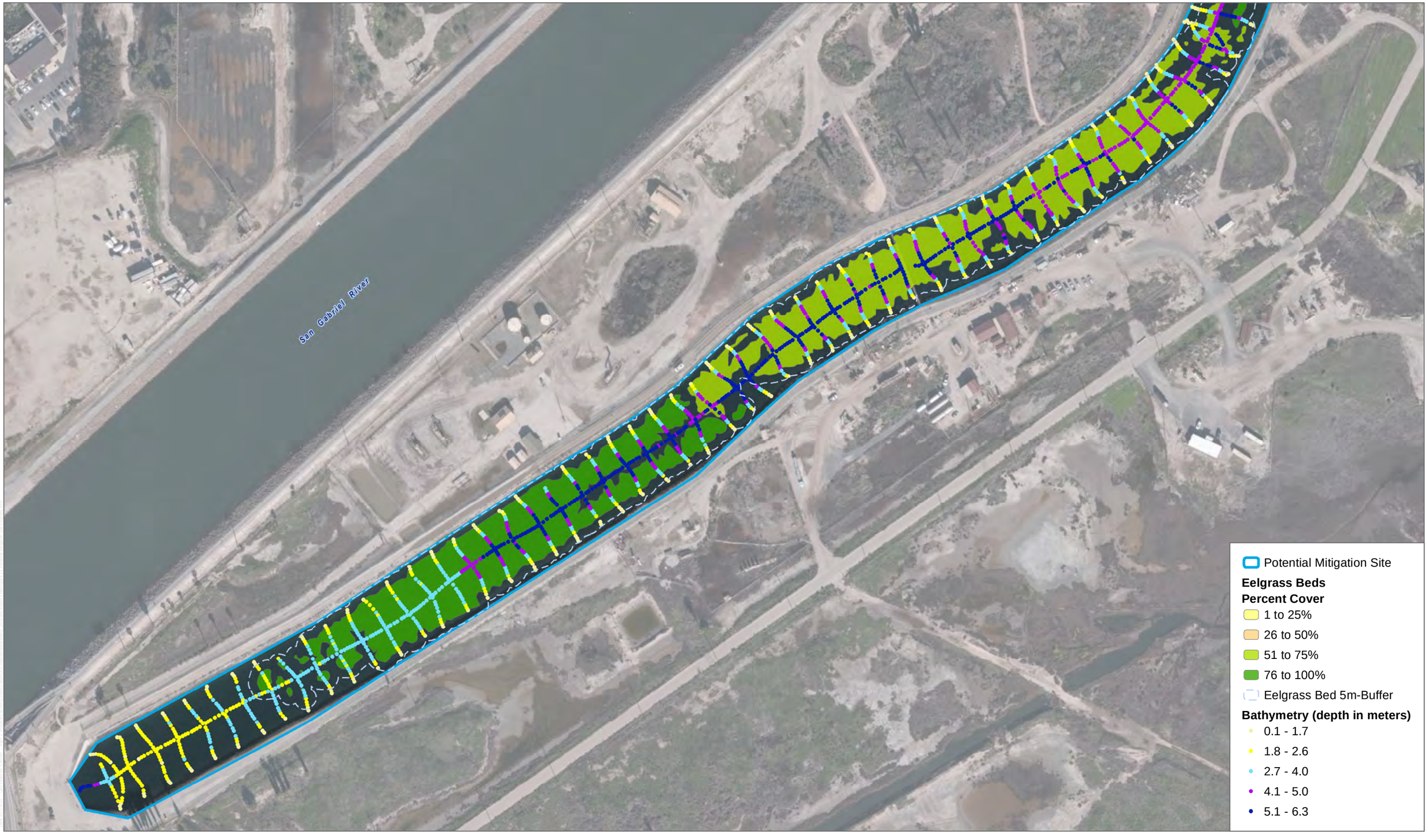

SOURCE: ESRI World Imagery, MBC (Sonar and Bathymetry)

LA DWP Los Angeles Department of Water & Power

0 80 160 Feet

FIGURE **9**B

Potential Mitigation Site (Southern Portion) Eelgrass

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Table 12 provides a summary of turion density (counts) for the potential mitigation site. Eelgrass turion density for the 12 transects where eelgrass was located within the potential mitigation site was 22 ± 16 (n = 12 transects; total 113 replicates). The lowest turion density was observed in the transects south of East 2nd Street (i.e., transects 18 through 20). The highest turion densities were reported in the majority of the remaining area. Appendix I provides a summary of additional eelgrass survey results for the potential mitigation site.

Table 12 2019 Transect Survey – Eelgrass Results within the Potential Mitigation Site

Transect	Percent Cover Eelgrass	Cover Class	Number of 1-Meter Quadrat Samples (Replicates, n)	Turion Count (Median)	Turion Count (Mean per Square Meter)	Turion Density (Standard Deviation)
Eelgrass Absent						
17	0%	0%	8	0	0	0
Average	*0%*	—	—	*0*	*0*	*0*
Eelgrass Present						
16	55%	51% to 75%	11	7	12	10
18	27%	26% to 50%	8	0	5	10
19	45%	26% to 50%	12	6	7	6
20	32%	26% to 50%	9	0	1	3
21	79%	76% to 100%	15	25	30	21
22	41%	26% to 50%	8	53	36	35
23	51%	51% to 75%	9	36	33	38
24	57%	51% to 75%	14	16	16	12
27	73%	51% to 75%	18	15	28	23
28	31%	26% to 50%	9	20	26	31
Average	*49%*	—	—	*18*	*19*	*13*[a]
Total Average	45%	—	—	16	18	13[b]

Notes:
[a] Standard deviation for transect samples (n = 10).
[b] Standard deviation for transect samples (n = 11).

Overall, this area could be used as an area for eelgrass mitigation, thereby fulfilling mitigation requirements immediately adjacent to Haynes. Although the potential mitigation site has steeper banks, an abundance of sea lettuce, some invasive Japanese wireweed, and patchy to dense eelgrass beds, this location has better water quality than the project site due to its distance from the intakes. Moreover, this area has not been dredged in more than 20 years. Therefore, MM-BIO-1 (see Section 5.3.1) is recommended to establish the appropriate compensatory mitigation in consultation with NMFS and CDFW.

Indirect Impacts

The project could result in indirect impacts to remaining eelgrass habitat adjacent to the project site, outside the direct impact area (i.e., south of East 2nd Street). Construction activities may result in a temporary increase in localized sedimentation. Sediments could become suspended in the available water column, which would increase turbidity. The water column is already consistently subjected to sedimentation and high levels of turbidity due to water movement through the Haynes Intake Channel, so a temporary increase in suspended sediments would likely cause minimal short-term indirect effects. Any introduced sedimentation would be exposed to adjacent open waters and would likely mix and settle with receiving waters and quickly dissipate. Therefore, Best Management Practice (BMP) BIO-1 and BMP-HYD-1 through BMP-HYD-4 (see Section 5.3.1, Best Management Practices, for full text of BMPs) will be implemented to reduce indirect impacts to eelgrass habitat outside the project site.

5.2.1.2 Essential Fish Habitat

EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of EFH, "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by managed fish (and invertebrate) species, and may include areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" refers to habitat required to support a sustainable fishery and a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle. The following components of EFH must be adequate for spawning, rearing, and migration: substrate composition; water quality; water quantity, depth, and velocity; channel gradient and stability; food, cover, and habitat complexity; space, access, and passage; and habitat connectivity. Only one federally managed species (topsmelt) and one state-managed species (California spiny lobster) were observed on site during the surveys. Only a single California spiny lobster was observed. Several FMPs apply to the project: the Pacific Coast Groundfish FMP, the Coastal Pelagic Species FMP, and the California Spiny Lobster FMP.

Direct Impacts

Direct impacts to a HAPC and to the Pacific Groundfish FMP are the same as impacts to eelgrass habitat, described above. As indicated above, the habitat within the constructed Haynes Intake Channel is of poor quality and is not prime EFH. The project would permanently remove approximately 2.19 acres of eelgrass habitat, which includes 0.70 acres of vegetated and 1.49 acres of unvegetated habitat (mapped within the 5-meter buffer). Although the habitat is not considered prime EFH, this impact would be considered significant absent mitigation.

Because of the presence of topsmelt in the project site, the Coastal Pelagic Species FMP applies. The California spiny lobster is managed under the California Spiny Lobster FMP (CDFW 2016). Recently, CDFW identified over 375 marine fisheries (including finfish, invertebrates, and algae) managed by the state (including those with joint federal management) and prioritized them for future FMPs. Kelp bass was identified as a high-priority species, managed only by the state, in need of management and conservation measures to comply with the policies of the Marine Life

Management Act. Kelp bass and California spiny lobster were observed in very low numbers (i.e., less than three individuals each) during 17.5 hours of scientific dive (i.e., visual) surveys in 2019. Additionally, MBC (2009) conducted more intensive fish and ichthyoplankton surveys and also found low numbers of these species.

The Haynes Intake Channel is not a productive channel for fish, including ichthyoplankton. Recent marine studies of the channel found that ichthyoplankton were substantially less abundant and were the least diverse in comparison to sampling stations in the nearby Alamitos Bay and San Gabriel River (MBC 2009). In addition, approximately 75% of the ichthyoplankton found within the Haynes Intake Channel were discovered to be primarily gobies and blennies, both of which are common, non-managed fisheries species. Additionally, trawl sampling of demersal (benthic) fish species in the Haynes Intake Channel also resulted in low diversity and abundance of fish species (a total of 17 individuals), composed primarily (i.e., greater than 50%) of round stingray, with diamond turbot and kelp bass the next most abundant. Shoreline fishes (sampled by beach seine) were underrepresented in the Haynes Intake Channel; topsmelt, arrow goby, and Pacific staghorn sculpin (*Leptocottus armatus*) were the only species collected, and they were considerably less abundant than at sampling stations in Alamitos Bay and the San Gabriel River (MBC 2009). Dudek's 2019 fish observation results are consistent with MBC's (2009) more intensive demersal and pelagic fish surveys, which used trawls and seines to capture fish at each sampling station. Due to the location, extent, and density of the eelgrass beds in the project site (i.e., the Haynes Intake Channel north of East 2nd Street), significant spread of sea lettuce, and low diversity of fish and invertebrate species, impacts to these species, including topsmelt, would be less than significant. Nonetheless, the proposed project would represent a direct impact to marine organisms that do reside in the Haynes Intake Channel because they would be trapped north of the cofferdam at the outset of project construction. Therefore, as part of project construction procedures, after the installation of the cofferdams but before other construction activities begin, marine wildlife (including managed fish and invertebrate species) would be collected via seining, netting, and/or other methods of capture and relocated south of the cofferdam.

Indirect Impacts

Indirect impacts to eelgrass habitat adjacent to the project site—specifically, impacts from water quality alterations—are discussed in Section 5.2.1.1. Short-term water quality impacts (e.g., turbidity) may temporarily have minor effects on resident fish and invertebrates (including Pacific spiny lobster); however, these impacts would likely not affect the success of fish or invertebrate populations due to the ability of the invertebrates and juvenile and adult fish to relocate to adjacent areas. Temporary relocation of these mobile species would not result in biologically significant impacts with regard to competition, predation, or spawning. Therefore, indirect impacts to managed fish and invertebrate species would be less than significant.

According to the Magnuson-Stevens Act, adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate, or loss of, or injury to, benthic organisms, prey species, and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of the EFH. Based on the current quality of the habitat, including species diversity and population, in the Haynes Intake Channel and the lack of connectivity between the channel and the open ocean, the direct and indirect impacts created by the project are not

anticipated to reduce the quality and/or quantity of the any of the subject EFH. However, because the proposed project would occur within EFH as defined by NOAA (i.e., eelgrass habitat), consultation with NMFS under the Magnuson-Stevens Act may be necessary and would be initiated by USACE during the permitting process for the proposed project.

5.2.2 Impacts to Fish and Marine Invertebrates

As noted in Section 5.2.1, Impacts to Sensitive Habitats, the abundance of all fishes occurring in the Haynes Intake Channel is low compared to the nearby Alamitos Bay and San Gabriel River. This is supported in other studies, most notably those by MBC (2009), whereby trawl and seine studies for fish and macroinvertebrates showed that the Haynes Intake Channel had the lowest ichthyoplankton and demersal and pelagic fish diversity of the three water bodies. The study describes how trawl sampling in the Haynes Intake Channel recorded the lowest total catch, with 17 fish caught, 10 of which were round stingrays. Of the remaining four species caught, only diamond turbot and kelp bass were represented by more than one individual. Abundance and diversity within the Haynes Intake Channel are also lower within the project site than south of the 2nd Street bridge.

Direct Impacts

As described in Section 5.2.1, the proposed project would represent a direct impact to marine organisms that reside in the Haynes Intake Channel because they would be trapped north of the cofferdam at the outset of project construction. Therefore, as part of project construction procedures, after the installation of the cofferdams but before other construction activities begin, marine wildlife (including managed fish and invertebrate species) would be collected via seining, netting, or other methods of capture and relocated south of the cofferdam.

Indirect Impacts

Construction noise would likely increase as a result of work in the project site. The water column is already subject to high levels of unnatural noise from consistent operation of Haynes. Additional construction noise, which would occur only in the project site portions of the channel north of the cofferdam after marine wildlife had been collected and relocated, would be unlikely to create significant impacts to any species potentially occurring adjacent to the project site.

Short-term water quality impacts (e.g., turbidity) may temporarily have minor effects on resident invertebrates and fish; however, these impacts would likely not affect the success of fish and invertebrate populations due to the ability of the invertebrates and the juvenile and adult fish to relocate to adjacent areas. Temporary relocation of these mobile species would not result in biologically significant impacts with regard to competition, predation, or spawning.

5.2.3 Impacts to Marine and Other Birds

Direct and Indirect Impacts

As noted in Section 4.5, Birds and Other Terrestrial Wildlife, several species of common birds were observed during surveys in 2019. These were a mixture of birds occurring in marine and aquatic habitats, terrestrial species that are

tolerant of development and human presence, and several species merely flying over the project site. A greater variety of common marine and terrestrial birds likely occur south of the project site (i.e., south of East 2nd Street). Common native birds and their nests and young are protected under the Migratory Bird Treaty Act and provisions of the CFGC, as described in Chapter 2. Project activities are not expected to directly affect adult birds or fledglings, which are highly mobile and can fly away from construction disturbance. However, construction activities may affect nests, eggs, and nestlings. While this is unlikely because of the lack of appropriate nesting sites within or adjacent to the proposed project site, direct impacts to nests on the ground could lead to take under the Migratory Bird Treaty Act and the CFGC. In addition, noise and human presence from project activities could cause adult birds to abandon their nests, resulting in nest failure. MM-BIO-2 and MM-BIO-3 are recommended (see Section 5.3.2) to mitigate impacts to birds.

5.2.4 Impacts to Jurisdictional Waters and Benthic Soft-Bottom Habitat

The project would result in filling a portion of the Haynes Intake Channel with earthen material. This would result in the direct loss of 7.64 acres of USACE-jurisdictional non-wetland waters of the United States and RWQCB/CCC-jurisdictional non-wetland waters of the state as well as a like amount of benthic soft-bottom habitat.

Impacts to jurisdictional waters would require review and approval by USACE, RWQCB, CCC, and CDFW. The following agency permits would need to be obtained for the project in compliance with state and federal regulations for all project impacts to jurisdictional waters:

- Rivers and Harbors Act Section 10 or CWA Section 404 permit issued by USACE
- CWA Section 401 Water Quality Certification issued by RWQCB
- Coastal Development Permit issued by CCC

Direct Impacts

Direct impacts from loss of 7.64 acres of jurisdictional waters and soft-bottom habitat resulting from the proposed project would require mitigation as part of the regulatory permitting process. Therefore, MM-BIO-6 (see Section 5.3.2) is recommended to establish the appropriate compensatory mitigation in consultation with USACE, RWQCB, CCC, and CDFW.

Indirect Impacts

Absent implementation of any BMPs or project design features to limit project impacts, the project could have an indirect impact on jurisdictional waters outside the project site within the Haynes Intake Channel from water quality changes and sedimentation. However, implementation of BMP-HYD-1 through BMP-HYD-4 (see Section 5.3.1) would address concerns regarding turbidity and siltation affecting jurisdictional waters outside the project area.

5.2.5 Impacts to Special-Status and Protected Wildlife Species

Special-status wildlife species that have potential to occur in the project site are discussed in Section 4.7. These species include the green sea turtle, California least tern, and American peregrine falcon. In addition, topsmelt, a managed fish species, occurs in the Haynes Intake Channel. Any impacts potentially occurring to special-status wildlife species or managed wildlife species within the project site would be mitigated through BMP-HYD-1 through BMP-HYD-4 and MM-BIO-2 through MM-BIO-5 (see Section 5.3, Best Management Practices and Mitigation Measures).

5.2.5.1 Managed Fish and Invertebrate Species

Magnuson-Stevens Act managed species, including topsmelt (a silverside species), California spiny lobster, and kelp bass, were observed on site during the survey. Impacts to topsmelt are guided by two FMPs (PFMC 2016, 2018). California spiny lobster is managed under a separate FMP (CDFW 2016). Kelp bass, managed only by the state, is identified as a high-priority species in need of management and conservation measures to comply with the policies of the Marine Life Management Act. Impacts to these species are similar to those described for marine fish and invertebrates generally in Section 5.2.2, Impacts to Fish and Marine Invertebrates, and are also addressed in Section 5.2.1 as impacts to EFH.

Direct Impacts

The Haynes Intake Channel is not a productive channel for fish, including ichthyoplankton. This applies to topsmelt, which was among the more abundant species in the channel during surveys in 2009 but was less abundant there compared to the nearby San Gabriel River, which was also surveyed (MBC 2009). Dudek's 2019 fish observation results are consistent with MBC's more intensive demersal and pelagic fish surveys (MBC 2009). Nonetheless, the proposed project would represent a direct impact to marine organisms that do reside in the Haynes Intake Channel because they would be trapped by the cofferdam at the outset of project construction. Therefore, as part of project construction procedures, after the installation of the cofferdams but before other construction activities begin, marine wildlife (including managed fish and invertebrate species) would be collected via seining, netting, or other methods of capture and relocated south of the cofferdam.

Indirect Impacts

Construction noise would increase ambient noise levels at and surrounding the project site, although the water column is already subject to high levels of unnatural noise from consistent operation of Haynes. Additional construction noise, which would occur only in the portions of the Haynes Intake Channel on the project side of the cofferdam after marine wildlife have been collected and relocated, would be unlikely to create significant impacts to any managed fish and invertebrate species potentially occurring in the vicinity of the project site.

Short-term water quality impacts (e.g., turbidity) may temporarily have minor effects on managed fish and invertebrate species adjacent to the project site; however, these impacts would likely not affect the success of populations due to the ability of the juvenile and adult fish to relocate to adjacent areas. Therefore, indirect impacts

to managed fish and invertebrate species would be less than significant. Temporary relocation of these mobile species would not result in biologically significant impacts with regard to competition, predation, or spawning. Therefore, indirect impacts to managed fish and invertebrate species would be less than significant.

5.2.5.2 Green Sea Turtle

Direct and Indirect Impacts

Although green sea turtles are known to occur in the San Gabriel River, metal bar racks prevent access to the constructed, maintained Haynes Intake Channel by turtles, as explained in Section 4.7. Only smaller fish and invertebrate species in larval stages (i.e., ichthyoplankton or other zooplankton) are able to pass through the vertical 6-inch gaps between the bars, which has given rise to the fish and invertebrate species in the channel. A few occurrences of green sea turtles have been reported within the Haynes Intake Channel near SR-1; however, the method by which they entered the channel is unconfirmed, and it is assumed that human intervention was involved. LADWP has inspected the Haynes Intake Channel's bar racks and intake screens, and all are in good working condition, effectively restricting turtle access to the channel. During Dudek's 17.5 hours of dive surveys in the channel in 2019 and MBCs focused surveys of the project site in 2009, no sea turtles were detected in the channel (see Section 4.7 for more detail). The Haynes Intake Channel is not occupied by green sea turtles; however, as a precautionary measure, pre-construction training (MM-BIO-4) and biological monitoring (MM-BIO-5) during dewatering activities are recommended to reduce any potential impacts to green sea turtles, in the unlikely event that any gain access to the channel.

5.2.5.3 California Least Tern

California least tern has been observed roosting on booms in the Haynes Intake Channel outside the project site, south of East 2nd Street. However, this species is considered to have only a moderate potential to occasionally occur on the project site, while foraging only. As noted in Section 4.7, no nesting habitat occurs on the project site. In addition, habitat within the Haynes Intake Channel north of East 2nd Street, and in the Haynes Intake Channel generally, is poor foraging habitat because of the low numbers and diversity of fish prey supported by the channel. Although the Haynes Intake Channel does support topsmelt, this species occurs in the channel in low numbers compared to more natural habitats nearby, including the San Gabriel River, Alamitos Bay, and the Seal Beach National Wildlife Refuge. This species and other prey species for least tern occur in greater numbers both in these locations and in nearshore waters. Finally, although California least terns that are nesting at the nearest known nesting colony at the Seal Beach National Wildlife Refuge (more than a mile from the project site) can easily range as far as the project site seeking fish prey, the more suitable habitats in the Seal Beach National Wildlife Refuge itself and in nearshore waters are closer to the nesting colony than the project site.

Direct Impacts

Because California least tern likely uses the Haynes Intake Channel for foraging only on occasion, if at all, and because of the vast amount of foraging habitat in more natural habitats nearby (San Gabriel River, Alamitos Bay, Pacific Ocean,

and Seal Beach National Wildlife Refuge), the project site is not considered an important foraging area. Impacts from the loss of 7.64 acres of marine waters supporting poor quality habitat would not be considered a significant impact to this species.

Indirect Impacts

Only adult and fully fledged juvenile terns have the potential to occur in the Haynes Intake Channel. If California least terns occur in the project site at the time of construction, no indirect impacts would occur to nesting terns because they are not expected to nest in the area. In addition, California least tern adults and juveniles would be able to avoid indirect impacts from construction noise.

5.2.5.4 American Peregrine Falcon

Direct and Indirect Impacts

As described in Section 4.7, American peregrine falcon has no potential to nest on the project site but may occur on site occasionally. However, given the low abundance of suitable avian prey in the Haynes Intake Channel and the surrounding developed area, this species is most likely to occur here only in passing, rather than for foraging. Therefore, the project would not result in direct impacts to habitat or to individual American peregrine falcons. The species has been known to nest near the project site. Therefore, indirect impacts from noise during construction could be potentially significant, because of the potential to disrupt nesting by this species. Implementation of MM-BIO-2 (see Section 5.3.2) would address this impact.

5.3 Best Management Practices and Mitigation Measures

5.3.1 Best Management Practices

BMP-BIO-1 **Work Limit Delineation and Best Management Practices.** Prior to commencement of the proposed project, limits of work and staging areas will be established and clearly delineated. All work and associated construction materials/equipment will be confined to these designated areas. No sediment, trash, discharge, or other materials will leave the work limits or associated staging areas and enter the surrounding terrestrial or sensitive marine environment outside the project site. Best management practices and compliance with stormwater pollution prevention plan requirements will be implemented.

BMP-HYD-1 **Construction Dewatering.** A dewatering plan will be prepared prior to beginning work and implemented during seawater and groundwater dewatering. The dewatering plan will be designed and implemented such that discharges will (1) meet water quality effluent limitations specified in the Regional Water Quality Control Board (RWQCB) Clean Water Act (CWA) Section 401 Water Quality Certification Order for the project (to be obtained) and/or the National Pollutant Discharge Elimination System (NPDES) dewatering permit (Order No. R4-2013-0095, General NPDES Permit

No. CAG994004), as appropriate, and (2) minimize sedimentation from the construction in the downstream channel waters. Examples of dewatering design may include the following:

- Where dewatering pumps are required, intakes will be screened with less-than-5-millimeter mesh screening to prevent aquatic organisms from entering the pump. In addition, a filtration/ settling system will be included to reduce downstream turbidity (i.e., filter fabric, turbidity curtain). The selection of an appropriate system will be based on the actual rate of discharge at time of construction and requirements identified in the In-Water Work or Diversions section of the project CWA Section 401 Water Quality Certification Order (to be obtained).
- Sediment controls will be provided to remove sediments generated during the dewatering activities.
- Discharges to waters shall conform to the water quality standards identified in the project CWA Section 401 Water Quality Certification Order (to be obtained).
- Pumped water will be discharged in conformance with all applicable laws and permit requirements.

BMP-HYD-2 **Construction General Permit**. A National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Water Quality Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002, hereinafter identified as the Construction General Permit (CGP), will be obtained by LADWP**.** This statewide CGP is applicable for projects greater than 1 acre. A Qualified Stormwater Developer (QSD) will develop the stormwater pollution prevention plan (SWPPP) and a Qualified Stormwater Practitioner (QSP) will implement the best management practices (BMPs), as delineated in the SWPPP. The Notice of Intent will be uploaded onto the state's Storm Water Multiple Applications and Report Tracking System (SMARTS) database. The CGP BMPs will minimize and/or reduce any pollutants that have the potential to discharge into the stormwater runoff from the construction site. Examples of BMPs may include straw wattles, catch basin inserts, and sandbags, as well as designated parking areas with BMPs to prevent the runoff of oil and grease, designated portable chemical toilet sites, and laydown areas.

BMP-HYD-3 **Erosion Control.** The Haynes Intake Channel infill sediments will be compacted at the surface to 95% relative compaction to prevent erosive scour and sedimentation of downstream drainages during high-intensity rainfall events. The compacted surface will be graded such that stormwater runoff will occur as uniform sheetflow that drains toward on-site drainage facilities, which in turn will flow toward off-site storm drains. In the event that erosive channeling inadvertently occurs during precipitation events, such areas of scour and channeling will be repaired to avoid additional scour and erosive downcutting.

BMP-HYD-4 **Flood Control.** The project will include drainage facilities designed such that off-site post-storm runoff rates will be less than or equal to existing conditions. In accordance with the Los Angeles County

Department of Public Works Hydrology Manual, the design will meet the Urban Flood level of protection, which is defined as runoff from a 25-year frequency storm falling on a saturated watershed.

5.3.2 Mitigation Measures

MM-BIO-1 **Eelgrass Mitigation and Monitoring Plan.** Prior to project implementation, the Los Angeles Department of Water and Power (LADWP) shall prepare an Eelgrass Mitigation and Monitoring Plan (Mitigation Plan) in consultation with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW) to describe the approach for compensatory mitigation for the loss of eelgrass habitat from the proposed project. Mitigation for impacts shall be implemented as mutually agreed upon by NMFS, CDFW, and LADWP. Preference in the Mitigation Plan shall be given to in-kind replacement of the eelgrass habitat, and further preference shall be given to such replacement within the southern section of the Haynes Intake Channel (south of the 2nd Street bridge). Such mitigation shall be implemented in accordance with the NMFS California Eelgrass Mitigation Policy (CEMP), including site selection; initial and long-term habitat area replacement ratios; methods for and timing of transplantation activities; and monitoring, performance, and reporting requirements. Should in-kind mitigation within the Haynes Intake Channel not be feasible, consideration shall be given to in-kind mitigation first in areas in close proximity to the channel, then in locations within the Southern California region. If in-kind mitigation is not feasible, mitigation banks or in-lieu fee conservation programs shall be given preference over out-of-kind mitigation.

MM-BIO-2 **Pre-Construction Surveys for Nesting Birds.** To avoid impacting breeding and nesting birds in accordance with the Migratory Bird Treaty Act, a breeding/nesting bird survey shall be conducted by a qualified biologist (monitoring biologist) no more than 72 hours prior to construction activities if they are to occur during the nesting season (January 15 through August 31). Bird nests that are detected within the project site shall be avoided by means of an established buffer zone until nesting is completed. A nesting survey is considered valid for 72 hours; should construction activities within the area be halted for any reason extending past this 72-hour window, a follow-up nesting bird survey shall be completed before work can commence again. The buffer zone shall be established around any identified active nests in coordination with the monitoring biologist and take into account existing baseline conditions (e.g., topography, buffering buildings, proximity to disturbances like roads, noise) and observed avian response to disturbance. The monitoring biologist may increase or decrease the original buffer depending on avian response.

Bird nest locations shall be mapped using GPS. If active nests are detected during a survey, the monitoring biologist shall monitor all nests with buffers at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the monitoring biologist shall immediately implement adaptive measures to reduce disturbance. These measures could include

increasing buffer distance, halting construction activities until fledging is confirmed, or placing visual screens or sound dampening structures between the nest and construction activity. If active nests are detected, the monitoring biologist shall monitor each nest until he/she determines that nestlings have fledged and dispersed or the nest is no longer active. Until such a determination is made, activities that might, in the opinion of the monitoring biologist, disturb nesting activities shall be prohibited within the buffer zone.

MM-BIO-3 **Monitoring and Adaptive Management Plan.** A monitoring and adaptive management plan (MAMP) shall be prepared and implemented prior to commencement of construction or restoration activities. The MAMP shall provide a framework for monitoring site conditions in response to implementation of the proposed project.

The MAMP shall include the following:

1. All mitigation measures and precautionary measures included in the Initial Study/Mitigated Negative Declaration
2. All monitoring and compliance requirements proposed and agreed to by LADWP
3. A list and map of locations of all sensitive biological resources to be impacted, avoided, and mitigated by project construction and operation
4. Detailed descriptions of all measures that will be implemented to avoid and/or minimize impacts to special-status species and reduce habitat disturbance
5. All locations, on a map of suitable scale, of areas requiring temporary protection and avoidance during project construction and demolition
6. The duration for each type of monitoring and a description of monitoring methodologies and frequencies
7. Performance standards to be used to help decide if/when proposed mitigation measures are not successful
8. All performance standards and remedial measures to be implemented if performance standards are not met
9. Protocols for dealing with wildlife that gain access to project features whereby their well-being could be at risk
10. A description of eelgrass mitigation and planting measures
11. Maps of all areas to be disturbed during project construction activities

12. A requirement to submit any sightings of special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database per California Department of Fish and Wildlife requirements

MM-BIO-4 **Worker Environmental Awareness Program.** Prior to commencement of activities within the project site, a qualified biologist shall prepare a Worker Environmental Awareness Program (WEAP) that provides a description of potentially occurring special-status species and methods for avoiding inadvertent impacts prior to commencement of activities within the project site. A qualified biologist is any biologist collecting or relocating marine wildlife, plants (i.e., eelgrass), or algae and must have a valid scientific collection permit from the California Department of Fish and Wildlife that covers these species. The qualified biologist should be listed under a biological opinion and/or written permission from the National Marine Fisheries Service to approach or handle or relocate sea turtles within the Haynes Intake Channel. The WEAP training shall be provided to all construction personnel. Attendees shall be documented on a WEAP training sign-in sheet.

MM-BIO-5 **Biological Monitoring.** Cofferdam installation, dewatering, and aquatic wildlife removal activities shall be supervised by a qualified biologist (monitoring biologist). The monitoring biologist shall ensure that impacts to wildlife are minimized to the greatest extent feasible during implementation of the project. If any special-status wildlife species are encountered during construction and cannot be avoided, the monitoring biologist shall have the authority to temporarily halt construction activities until a plan for avoidance has been identified in consultation with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW). Relocation of a federally or state-listed species shall not be allowed without first obtaining take authorization from USFWS, NMFS, and/or CDFW.

MM-BIO-6 **Benthic Soft-Bottom and Shallow Open Water Habitat Mitigation and Monitoring Plan.** Prior to project implementation, the Los Angeles Department of Water and Power (LADWP) shall prepare a Habitat Mitigation and Monitoring Plan (Mitigation Plan) in consultation with the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, the California Coastal Commission, and the California Department of Fish and Wildlife (collectively, the resource agencies). The Mitigation Plan shall describe the approach for compensatory mitigation for impacts to benthic soft-bottom habitat and shallow jurisdictional waters of the United States and state. Mitigation for impacts shall be implemented as mutually agreed upon by the resource agencies and LADWP and shall include habitat enhancement and/or creation through resource-agency-approved mitigation project(s), or purchase of credits at an approved in-lieu fee program or mitigation bank. If a mitigation project is deemed feasible and is mutually agreed upon by LADWP and the resource agencies, first preference would be given to the Los Cerritos Wetlands Complex as the location for the project.

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APPENDIX A

Water Quality Instrument Calibration

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
www.fieldenvironmental.com
301 Brushton Ave
Suite A
Pittsburgh, PA 15221
Toll Free (800) 393-4009
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AquaRead Calibration Certificate

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 7 @ 25C	J008-03	1/22/2021	7.32	7.00	(6.86 to 7.14)
			pH mV value	-25.0	(0 mV +/- 25mV)

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 4 @ 25C	H331-02	12/11/2020	3.95	4.01	(3.92 to 4.08)
			PH Slope (mV)	58.50	> 45 mV

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 10 @ 25C	H341-06	12/18/2019	9.77	10.00	(9.80 to 10.20)
			PH Slope (mV)	47.00	> 45 mV

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
Conductivity	J028-26	2/7/2021	1.425	1.410	(1.338 to 1.479)

Dissolved Oxygen

	Pre-Cal Reading	Post-Cal Reading	
100% Saturation	7.74	8.23	mg/L
			Acceptable Range
Gain		0.90	> 20 (0.8-1.5 ODO)

Check Standard	Temp °C	Relative Reading	Acceptable Range
ORP	26.0	229.0	(+/- 20mV)
	mV Offset	-18.8	

Turbidity	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
0 NTU	0.1	0.0	+/- 10%
1000 NTU	1030.0	1000.0	+/- 10%

Model	AquaRead AP2000D
Cable Length	3 Meter
Sonde SN	*103790220
Handheld SN	*101791727
Barcode	U91758X
Order #	407362

Calibrated By: Allan Miller

Date of Calibration: 9/6/2019 BS

*Solutions provided by LabChem (412-826-5230)

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.
All calibration solutions used are traceable to NIST. Additional documentation is available upon request.

Water Quality Specifications

Standard Parameters

Dissolved Oxygen	Range	0 – 500.0% / 0 – 50.00 mg/L
	Resolution	0.1% / 0.01mg/L
	Accuracy	0 - 200%: ± 1% of reading. 200% - 500%: ± 10%
Depth AP-2000/ AP-5000	Range	± 0 – 60.00 m (60m max displayed depth, max probe immersion 100m)
	Resolution	1cm
	Accuracy	± 0.5% FS
Depth AP-7000	Range	± 0 – 99.99 m
	Resolution	1cm
	Accuracy	± 0.2% FS
Conductivity (EC)	Range	0 – 200 mS/cm (0 - 200,000 µS/cm)
	Resolution	3 Auto-range scales: 0 – 9999 µS/cm, 10.00 – 99.99 mS/cm, 100.0 – 200.0mS/cm
	Accuracy	± 1% of reading
TDS*	Range	0 – 100,000 mg/L (ppm)
	Resolution	2 Auto-range scales: 0 – 9999mg/L, 10.00 – 100.00g/L
	Accuracy	± 1% of reading
Resistivity*	Range	5 Ω • cm – 1 MΩ • cm
	Resolution	2 Auto-range scales: 5 – 9999 Ω • cm, 10.0 – 1000.0 KΩ • cm
	Accuracy	± 1% of reading
Salinity*	Range	0 – 70 PSU / 0 – 70.00 ppt (g/Kg)
	Resolution	0.01 PSU / 0.01 ppt
	Accuracy	± 1% of reading
Seawater Specific Gravity*	Range	0 – 50 σt
	Resolution	0.1 σt
	Accuracy	± 1.0 σt
pH	Range	0 – 14 pH / ± 625mV
	Resolution	0.01 pH / ± 0.1mV
	Accuracy	± 0.1 pH / ± 5mV
ORP	Range	± 2000mV
	Resolution	0.1mV
	Accuracy	± 5mV
Temperature (non freezing)	Range	-5°C – +50°C (23°F – 122°F)
	Resolution	0.01°C / 0.1°F
	Accuracy	± 0.5 °C

* Readings calculated from EC and temperature electrode values

ISE

Ammonium	Range	0 – 9,000mg/L (ppm)
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 8,999.9 mg/L
	Accuracy	± 10% of reading or 2ppm (whichever is greater)
Ammonia†	Range	0 – 9,000mg/L (ppm)
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 8,999.9 mg/L
	Accuracy	± 10% of reading or 2ppm (whichever is greater)
Chloride	Range	0 – 20,000mg/L (ppm)
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 19,999.9 mg/L
	Accuracy	± 10% of reading or 2ppm (whichever is greater)
Fluoride	Range	0 – 1,000mg/L (ppm)
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 999.9 mg/L
	Accuracy	± 10% of reading or 2ppm (whichever is greater)
Nitrate	Range	0 – 30,000mg/L (ppm)
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 29,999.9 mg/L
	Accuracy	± 10% of reading or 2ppm (whichever is greater)
Calcium	Range	0 – 2,000mg/L (ppm)
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 1,999.9 mg/L
	Accuracy	± 10% of reading or 2ppm (whichever is greater)

† Ammonium electrode required. Readings calculated from ammonium, pH and temperature values.

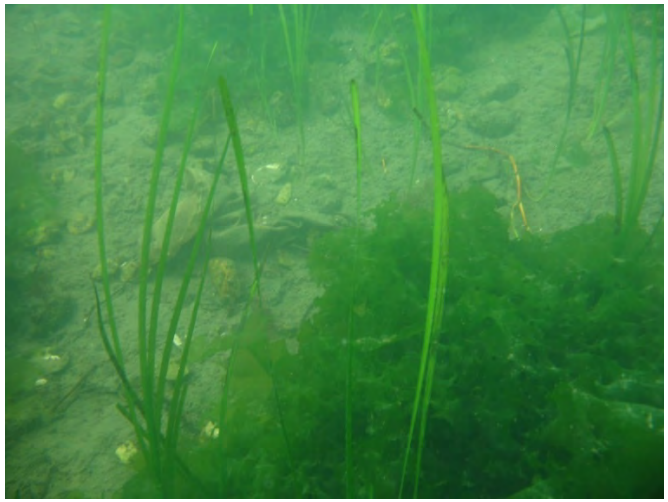
Optical

Turbidity	Range	0 – 3000 NTU
	Resolution	2 Auto-range scales: 0.0 - 99.9 NTU, 100 - 3000 NTU
	Accuracy	± 5% of auto-ranged scale
Chlorophyll	Range	0 – 500.0 µg/L (ppb)
	Resolution	2 Auto-range scales: 0.00 - 99.99 µg/L, 100.0 - 500.0 µg/L
	Repeatability	± 5% of reading
Phycocyanin (freshwater BGA)	Range	0 – 300,000 cells/mL
	Resolution	1 cell/mL
	Repeatability	± 10% of reading
Phycerythrin (marine BGA)	Range	200 cells/mL
	Resolution	1 cell/mL
	Repeatability	± 10% of reading
Rhodamine WT Dye	Range	0 – 500 µg/L (ppb)
	Resolution	2 Auto-range scales: 0.00 - 99.99 µg/L, 100.0 - 500.0 µg/L
	Accuracy	± 5% of reading
Fluorescein Dye	Range	0 – 500 µg/L (ppb)
	Resolution	2 Auto-range scales: 0.00 - 99.99 µg/L, 100.0 - 500.0 µg/L
	Accuracy	± 5% of reading
Refined Oil	Range	0 – 10,000 µg/L (ppb) (Napthalene)
	Resolution	0.1 µg/L
	Repeatability	± 10% of reading
CDOM / FDOM	Range	0 – 20,000 µg/L (ppb) (Quinine Sulphate)
	Resolution	2 Auto-range scales: 0.0 – 9,999.9 µg/L, 10,000 – 20,000 µg/L
	Repeatability	± 10% of reading

The accuracy figures quoted throughout this document represent the equipment's capability at the calibration points at 25°C. These figures do not take into account errors introduced by variations in the accuracy of calibration solutions and errors beyond the control of the manufacturer that may be introduced by environmental conditions in the field. Accuracy in the field is also dependent upon full calibration and minimal time between calibration and use.

APPENDIX B

Photographic Documentation

	
Photo 1. California aglaja (*Navanax inermis*) on eelgrass (*Zostera marina*).	Photo 2. Sea lettuce (*Ulva lactuca*) and eelgrass (*Zostera marina*).

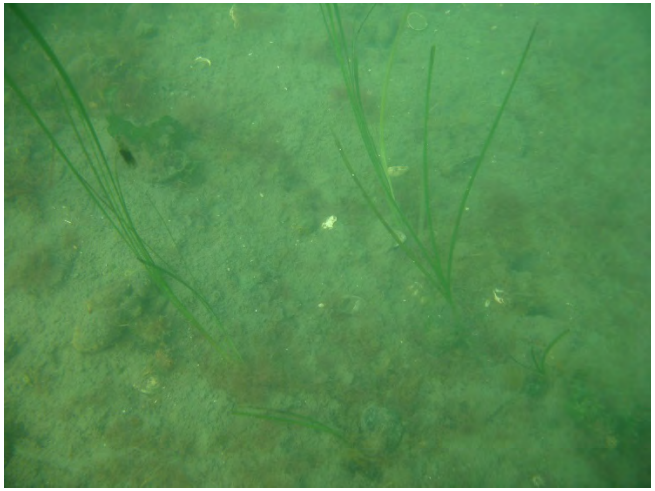



Photo 3. Patchy eelgrass habitat with sea lettuce (*Ulva lactuca*), red algae (*Plocamium cartilagineum*) and lightbulb tunicate (*Clavelina huntsmani*).	Photo 4. California aglaja (*Navanax inermis*) on sea lettuce (*Ulva lactuca*).

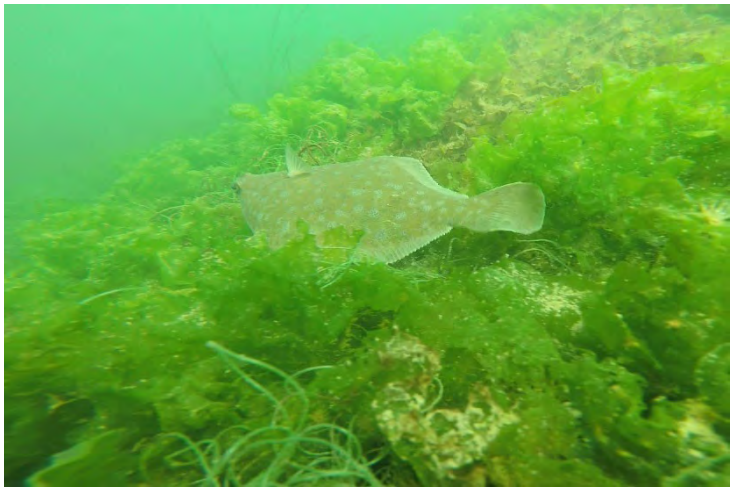


Photo 5. Diamond turbot (*Pleuronichthys guttulatus*) over sea lettuce.

Photo 6. Schooling zebraperch (*Hermosilla azurea).*

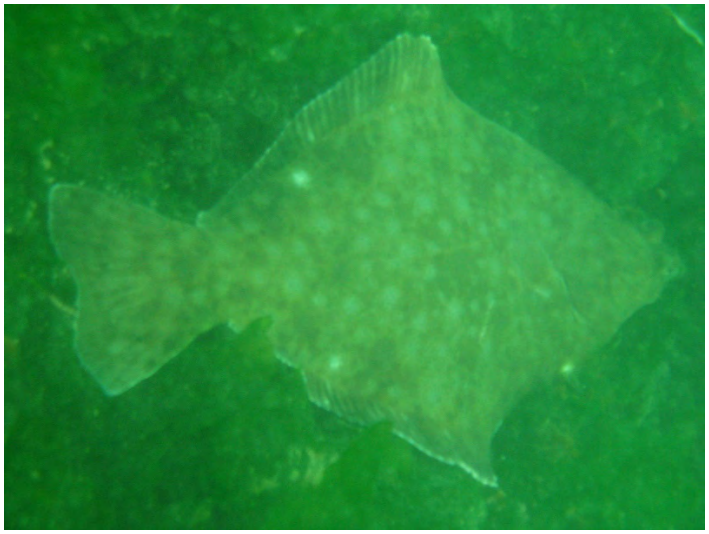


Photo 7. Full-body view of diamond turbot (*Pleuronichthys guttulatus*).

Photo 8. Zoomed in view of diamond turbot (*Pleuronichthys guttulatus*) in sea lettuce (*Ulva lactuca*).

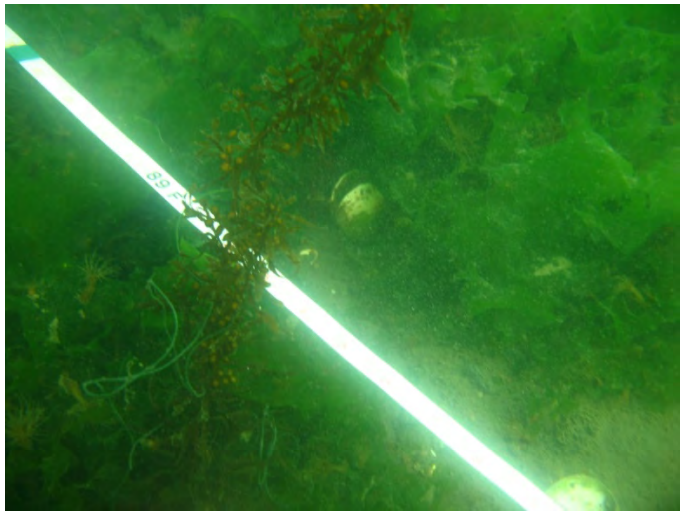


Photo 9. Japanese wireweed (*Sargassum muticum*) and ghost anemones (*Diadumene leucolena)* along the transect line.

Photo 10. Flatworm (*Pseudoceros luteus*) on the sandy bottom.

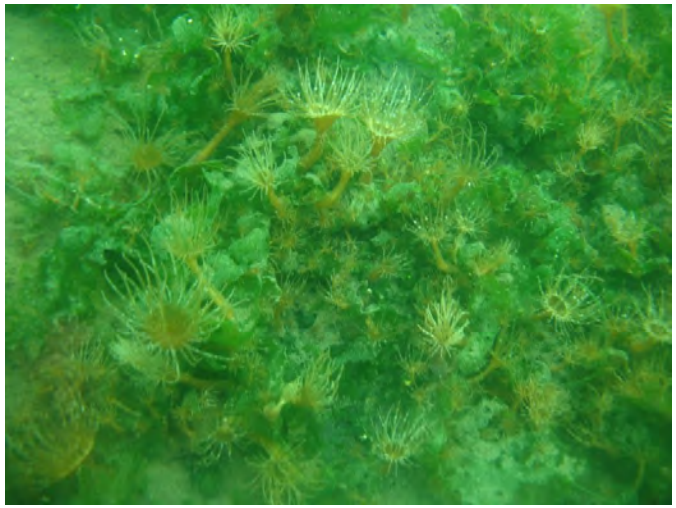


Photo 11. Ghost anemones (*Diadumene leucolena)* in sea lettuce (*Ulva lactuca*).

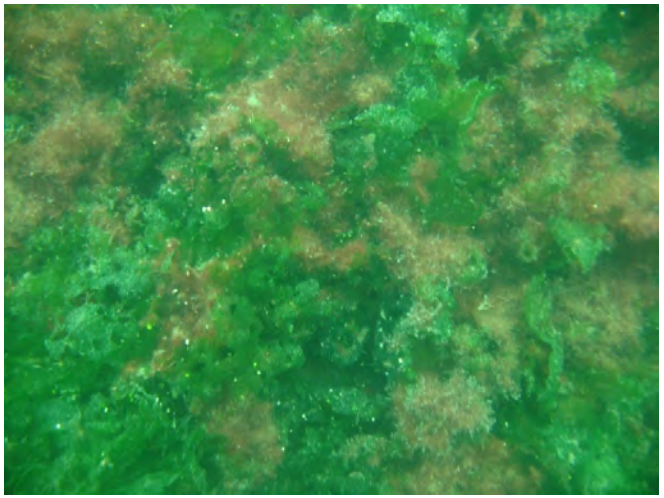


Photo 12. Red algae (*Plocamium cartilagineum*) in sea lettuce (*Ulva lactuca*).

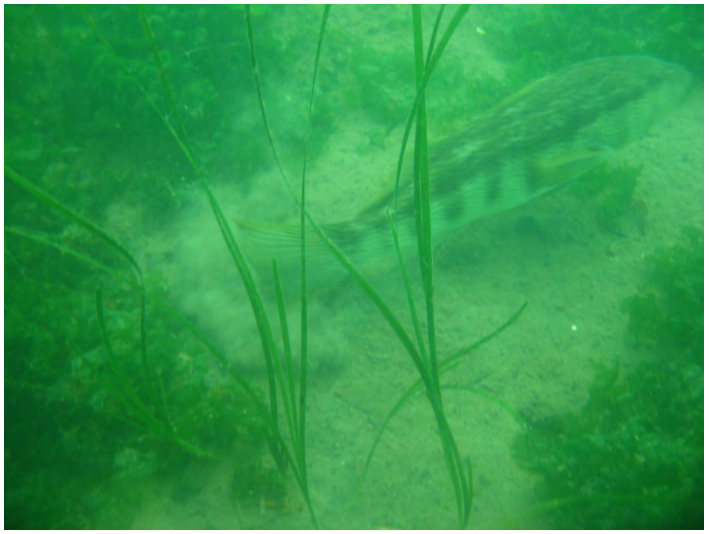


Photo 13. Kelp bass (*Paralabrax clathratus)* swimming in eelgrass (*Zostera marina)* and sea lettuce (*Ulva lactuca*).

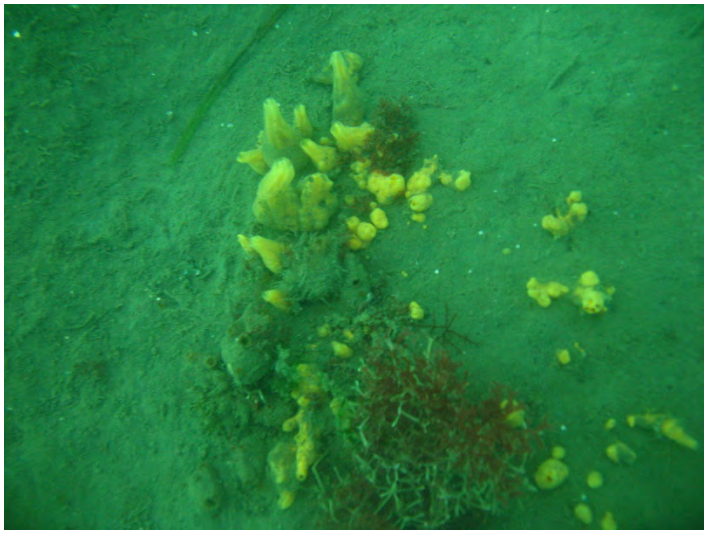


Photo 14. Light-bulb tunicates (*Clavelina huntsman).*

Photo 15. Large spiny lobster (*Panulirus interruptus*) in eelgrass (*Zostera marina)* and sea lettuce (*Ulva lactuca*).

Photo 16. A round stingray (*Urobatis halleri*) swims along the bottom, near sea lettuce (*Ulva lactuca*).

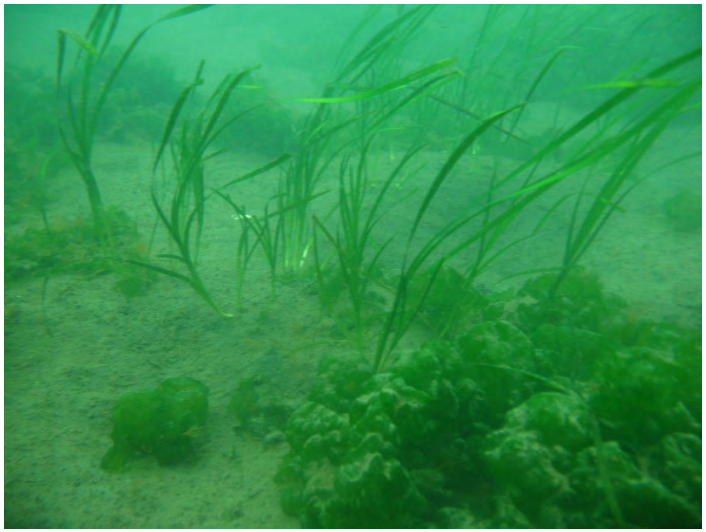


Photo 17. Eelgrass bed (*Zostera marina*) and sea lettuce (*Ulva lactuca*).

Photo 18. Bat star (*Patiria miniata*) on sea lettuce (*Ulva lactuca*).

Photo 19. Sea lettuce (*Ulva lactuca*), red algae (*Plocamium cartilagineum*), and bryozoans (*Lophophorata* spp.) hanging from surface buoys.

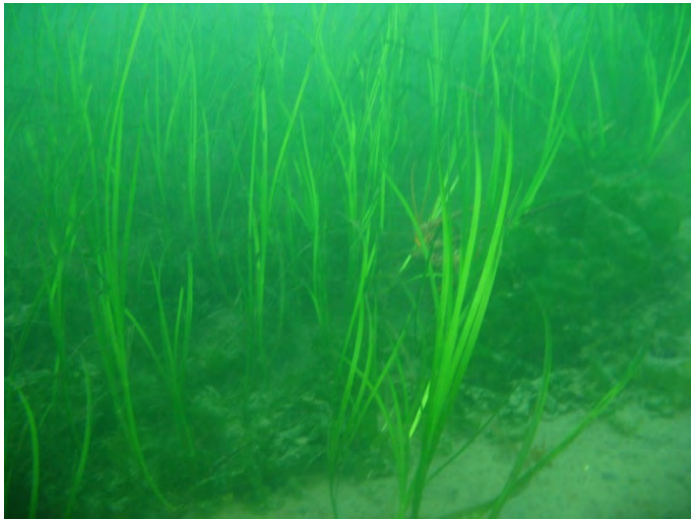


Photo 20. Eelgrass bed (*Zostera marina*) with spiny lobster (*Panulirus interruptus*).

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APPENDIX C

List of Plant Species Observed on Site

EUDICOTS

Vascular Species

ASTERACEAE—SUNFLOWER FAMILY

* *Pseudognaphalium luteoalbum*—Jersey cudweed

CHENOPODIACEAE—GOOSEFOOT FAMILY

Salicornia pacifica—pickleweed

* *Salsola tragus*—prickly Russian thistle

MONOCOTS

Vascular Species

ZOSTERACEAE—EEL-GRASS FAMILY

Zostera marina—eelgrass

ALGAE

Non-Vascular Species

DESMARESTIACEAE—BROWN ALGAE FAMILY

Desmarestia sp.—acid weed

PLOCAMIACEAE—RED ALGAE FAMILY

Plocamium cartilagineum—red algae

SARGASSACEAE—BROWN ALGAE FAMILY

* *Sargassum muticum*—Japanese wire weed

ULVACEAE—GREEN ALGAE FAMILY

Ulva lactuca—sea lettuce

* signifies introduced (non-native) species

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APPENDIX D

List of Wildlife Species Observed on Site

BIRD

Cormorants

PHALACROCORACIDAE—CORMORANTS

Phalacrocorax penicillatus—Brandt's cormorant

Finches

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus—house finch

Flycatchers

ARDEIDAE—HERONS, BITTERNS, AND ALLIES

Sayornis nigricans—black phoebe

Herons and Bitterns

ARDEIDAE—HERONS, BITTERNS, AND ALLIES

Ardea alba—great egret

Ardea herodias—great blue heron

Egretta thula—snowy egret

Jays, Magpies, and Crows

CORVIDAE—CROWS AND JAYS

Corvus brachyrhynchos—American crow

New World Vultures

CATHARTIDAE—NEW WORLD VULTURES

Cathartes aura—turkey vulture

Pigeons and Doves

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove

Swallows

HIRUNDINIDAE—SWALLOWS

Petrochelidon pyrrhonota—cliff swallow

Terns and Gulls

LARIDAE—GULLS, TERNS, AND SKIMMERS

Larus occidentalis—western gull

Waterfowl

ANATIDAE—DUCKS, GEESE, AND SWANS

Anas platyrhynchos—mallard

Branta canadensis—Canada goose

Woodpeckers

PICIDAE—WOODPECKERS AND ALLIES

Melanerpes formicivorus—acorn woodpecker

FISH

Bass

SERRANIDAE—GROUPERS AND BASSES

Paralabrax nebulifer—barred sand bass

Paralabrax clathratus—kelp bass

Paralabrax maculatofasciatus—spotted sand bass

Temperate Blennies

CLINIDAE—BLENNIES

Heterostichus rostratus—giant kelpfish

Flatfish

PLEURONECTIDAE—FLATFISH

Pleuronichthys coenosus—C-O sole

Pleuronichthys guttulata—diamond turbot

Pleuronectiformes spp.—flatfish

Perch

EMBIOTOCIDAE—SURFPERCHES

Embiotoca jacksoni—black perch

Ray

UROTRYGONIDAE—RAYS

Urobatis halleri—round stingray (California spotted ray)

Sea Chubs

KYPHOSIDAE—SEA CHUBS (PERCH-LIKE FISHES)

Girella nigricans—opaleye

Hermosilla azurea—zebraperch

Silversides

ATHERINOPSIDAE—SILVERSIDES

Atherinops affinis—topsmelt

INVERTEBRATE

Anemone

CERIANTHIDAE—TUBE-DWELLING ANEMONE

Pachycerianthus fimbriatus—tube-dwelling anemone

CORALLIMORPHIDAE—FALSE CORALS

Corynactis californica—club tipped anemone

DIADUMENIDAE—SEA ANEMONE

Diadumene leucolena—ghost anemone

Bryozoan

DIASTOPORIDAE—STAGHORN

Diaperoforma californica—southern staghorn bryozoan

LOPHOPHORATA—LOCOPHORATA

Lophophorata spp.—encrusting bryozoan

Clam

ANOMIIDAE —SALTWATER CLAM

Pododesmus macroschisma—rock oyster

PHOLADIDAE —PIDDOCK CLAM

Parapholas californica—California piddock

Crab

CANCRIDAE —CANCER CRABS

Cancridae spp.—cancer crab

Flatworm

PSEUDOCEROTIDAE—FLATWORM

Pseudoceros luteus—white flatworm

Lobster

PALINURIDAE—SPINY LOBSTER

Panulirus interruptus—California spiny lobster

Octopus

OCTOPODIDAE—OCTOPUS

Octopus bimaculoides—California two-spot octopus

Scallop

PECTINIADE—SCALLOP

Crassedoma giganteum—rock scallop

Sea Slug

APLYSIIDAE—SEA HARES

Aplysia californica—California sea hare

AGLAJIDAE—HEAD SHIELD SLUGS

Navanax inermis—California aglaja

DISCODORIDIDAE—DORID NUDIBRANCHS

Diaulula sandiegensis—San Diego dorid (ringed nudibranch)

Sea Snail

BUCCINIDAE—WHELKS

Kellteia kelletia—Kellet's whelk

BULLIDAE—SEA SNAIL

Bulla gouldiana—California bubble snail

CYPRAEIDAE—COWRIES

Neobernaya spadicea—chestnut cowrie

TEGULIDAE—TURBAN SNAILS

Megastaea undosa—wavy turban snail

Norrisia norrisii—norris snail

Sea Star

ASTERINIDAE—SEA STARS

Patiria miniata—bat star

Pisaster ochraceus—ochre star

ASTROPECTINIDAE—SEA STARS

Astropecten armatus—armored sand star

Tube Worm

SERPULIDAE—TUBE WORMS

Salmacina tribranchiata—fragile tube worm

Tunicate

CLAVELINIDAE—TUNICATES

Clavelina huntsmani—lightbulb tunicate

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APPENDIX E

Water Quality Sampling Results

Water quality sampling results in Table 1 are shown by sample location and constituent for the September 2019 survey efforts.

Table 1. September 2019 Water Quality Sampling Results by Sample Location

Project Site								
Water Quality Constituent	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
Temperature (°C)	22.1	22.4	27.83	23.4	24.9	23.7	23.55	23.88
pH	6.55	7.3	7.57	7.85	7.96	8.01	8.06	8.06
pH (mV)	164	147.2	210.7	191.2	242.3	199.3	202.8	168.2
Conductivity (ms/cm)	67.59	67.59	67.94	68.33	44.21	68.69	68.65	68.65
Turbidity (NTU)	0	0	0	0	0	0	0	0
Dissolved Oxygen (DO) (mg/L)	6.93	6.24	6.53	7.1	6.98	7.29	7.24	7.53
% DO	98	88.8	96	100.8	100.8	104.5	103.9	107.5
Total Dissolved Solids (TDS) (g/L)	43.52	43.91	43.28	44.41	44.33	44.63	44.7	44.59
Salinity (ppt)	33	33.6	32.8	33.8	33.5	34	33.8	33.9
Seawater Specific Gravity (σt)	45.4	46.06	43.93	46.68	46.46	46.94	46.9	46.95
Potential Mitigation Site								
Water Quality Constituent	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***
Temperature (°C)	24.33	23.8	23.8	23.7	24.2	24.1	24.75	24.75
pH	8.13	8.11	8.22	8.13	8.17	8.16	8.12	8.12
pH (mV)	220.4	154	95.1	99.9	196.6	188.7	171.3	171.3
Conductivity (ms/cm)	68.84	68.79	68.05	68.27	68.54	68.95	68.05	68.05
Turbidity (NTU)	0	0	0	0	0	0	0	0
Dissolved Oxygen (DO) (mg/L)	7.42	7.09	6.05	6	6.63	6.85	6.47	6.47
% DO	106.5	101.4	86.5	86.1	95.8	98.6	93.8	93.8
Total Dissolved Solids (TDS) (g/L)	44.56	44.71	44.47	44.39	44.56	44.57	44.3	44.3
Salinity (ppt)	33.5	33.9	33.8	33.7	33.8	33.7	33.4	33.4
Seawater Specific Gravity (σt)	46.49	46.98	46.68	46.59	46.91	46.8	46.98	46.98

Notes: A = surface water sample; B = mid-water sample; psu/ppt = practical salinity units/parts per thousand; pH = potential hydrogen; °C = degrees Celsius; mV = millivolt; mS/cm = millisiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per liter; % = percent; g/L = grams per liter; σt = unit for measuring seawater density at a given temperature.

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APPENDIX F

Special-Status Species Not Expected to Occur on Site

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
Plants				
Abronia villosa var. *aurita*	Chaparral sand-verbena	None/None/ 1B.1	Chaparral, Coastal scrub, Desert dunes; sandy/annual herb/(Jan)Mar–Sep/245–5,245.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Aphanisma blitoides	Aphanisma	None/None/ 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub; sandy or gravelly/annual herb/Feb–June/0–1,000.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Astragalus hornii var. *hornii*	Horn's milk-vetch	None/None/ 1B.1	Meadows and seeps, Playas; lake margins, alkaline/annual herb/May–Oct/195–2,785.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Astragalus pycnostachyus var. *lanosissimus*	Ventura marsh milk-vetch	FE/SE/1B.1	Coastal dunes, Coastal scrub, Marshes and swamps (edges, coastal salt or brackish)/perennial herb/(June)Aug–Oct/0–115.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Atriplex coulteri	Coulter's saltbush	None/None/ 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland; alkaline or clay/perennial herb/Mar–Oct/5–1,505.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Atriplex pacifica	South Coast saltscale	None/None/ 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas/annual herb/Mar–Oct/0–460.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Atriplex parishii	Parish's brittlescale	None/None/ 1B.1	Chenopod scrub, Playas, Vernal pools; alkaline/annual herb/June–Oct/80–6,230.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None/ 1B.2	Coastal bluff scrub, Coastal scrub; alkaline/annual herb/Apr–Oct/30–655.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Bergerocactus emoryi	Golden-spined cereus	None/None/ 2B.2	Closed-cone coniferous forest, Chaparral, Coastal scrub; sandy/perennial stem succulent/May–June/5–1,295.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Calystegia felix	Lucky morning-glory	None/None/ 1B.1	Meadows and seeps (sometimes alkaline), Riparian scrub (alluvial); Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline/annual rhizomatous herb/Mar–Sep/95–705.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Calystegia sepium ssp. *binghamiae*	Santa Barbara morning-glory	None/None/ 1A	Marshes and swamps (coastal)/perennial rhizomatous herb/Aug/15–15.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Camissoniopsis lewisii	Lewis' evening-primrose	None/None/ 3	Coastal bluff scrub, Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland; sandy or clay/annual herb/Mar–May(June)/0–985.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Centromadia parryi ssp. *australis*	Southern tarplant	None/None/ 1B.1	Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools/annual herb/May–Nov/0–1,570.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Chloropyron maritimum ssp. *maritimum*	Salt marsh bird's-beak	FE/SE/1B.2	Coastal dunes, Marshes and swamps (coastal salt)/annual herb (hemiparasitic)/May–Oct(Nov)/0–100.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FC/SE/1B.1	Coastal scrub (sandy), Valley and foothill grassland/annual herb/Apr–July/490–4,000.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Cistanthe maritima	Seaside cistanthe	None/None/ 4.2	Coastal bluff scrub, Coastal scrub, Valley and foothill grassland; sandy/annual herb/(Feb)Mar–June(Aug)/15–985	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Crossosoma californicum	Catalina crossosoma	None/None/ 1B.2	Chaparral, Coastal scrub; rocky/perennial deciduous shrub/Feb–May/0–1,640.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Dichondra occidentalis	Western dichondra	None/None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial rhizomatous herb/(Jan)Mar–July/160–1,640.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	None/None/ 1B.1	Coastal bluff scrub, Chaparral, Coastal scrub, Valley and foothill grassland; rocky, often clay or serpentinite/perennial herb/Apr–June/15–1,475.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Dudleya cymosa ssp. *ovatifolia*	Santa Monica dudleya	FT/None/1B. 1	Chaparral, Coastal scrub; volcanic or sedimentary, rocky/perennial herb/Mar–June/490–5,495.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Dudleya multicaulis	Many-stemmed dudleya	None/None/ 1B.2	Chaparral, Coastal scrub, Valley and foothill grassland; often clay/perennial herb/Apr–July/45–2,590.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Dudleya virens ssp. *insularis*	Island green dudleya	None/None/ 1B.2	Coastal bluff scrub, Coastal scrub; rocky/perennial herb/Apr–June/15–985.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
				soils for supporting growth of non-marine plants.
Euphorbia misera	Cliff spurge	None/None/ 2B.2	Coastal bluff scrub, Coastal scrub, Mojavean desert scrub; rocky/perennial shrub/Dec–Aug(Oct)/30–1,640.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Harpagonella palmeri	Palmer's grappling-hook	None/None/ 4.2	Chaparral, Coastal scrub, Valley and foothill grassland; Clay; open grassy areas within shrubland/annual herb/Mar–May/65–3,130.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	None/None/ 1A	Marshes and swamps (coastal salt and freshwater)/perennial rhizomatous herb/Aug–Oct/30–5,000.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Isocoma menziesii var. *decumbens*	Decumbent goldenbush	None/None/ 1B.2	Chaparral, Coastal scrub (sandy, often in disturbed areas)/perennial shrub/Apr–Nov/30–445.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Juncus acutus ssp. *leopoldii*	Southwestern spiny rush	None/None/ 4.2	Coastal dunes (mesic), Meadows and seeps (alkaline seeps), Marshes and swamps (coastal salt)/perennial rhizomatous herb/(Mar)May–June/5–2,950.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/ 1B.1	Marshes and swamps (coastal salt), Playas, Vernal pools/annual herb/Feb–June/0–4,000.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	None/None/ 4.3	Chaparral, Coastal scrub/annual herb/Jan–July/0–2,900.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
Lycium brevipes var. *hassei*	Santa Catalina Island desert-thorn	None/None/ 3.1	Coastal bluff scrub, Coastal scrub/perennial deciduous shrub/June(Aug)/210–985.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Lycium californicum	California box-thorn	None/None/ 4.2	Coastal bluff scrub, Coastal scrub/perennial shrub/(Dec)Mar,June,July,Aug/ 15–490.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Nama stenocarpa	Mud nama	None/None/ 2B.2	Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan–July/15–1,640.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Nemacaulis denudata var. *denudata*	Coast woolly-heads	None/None/ 1B.2	Coastal dunes/annual herb/Apr–Sep/0–330.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Orcuttia californica	California Orcutt grass	FE/SE/1B.1	Vernal pools/annual herb/Apr–Aug/45–2,165.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Pentachaeta lyonii	Lyon's pentachaeta	FE/SE/1B.1	Chaparral (openings), Coastal scrub, Valley and foothill grassland; rocky, clay/annual herb/(Feb)Mar–Aug/95–2,260.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Perideridia gairdneri ssp. *gairdneri*	Gairdner's yampah	None/None/ 4.2	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools; vernally mesic/perennial herb/June–Oct/0–2,000.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Phacelia stellaris	Brand's star phacelia	None/None/ 1B.1	Coastal dunes, Coastal scrub/annual herb/Mar–June/0–1,310.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
				soils for supporting growth of non-marine plants.
Sagittaria sanfordii	Sanford's arrowhead	None/None/ 1B.2	Marshes and swamps (assorted shallow freshwater)/perennial rhizomatous herb (emergent)/May–Oct(Nov)/0–2,130.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Senecio aphanactis	Chaparral ragwort	None/None/ 2B.2	Chaparral, Cismontane woodland, Coastal scrub; sometimes alkaline/annual herb/Jan–Apr(May)/45–2,620.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Sidalcea neomexicana	Salt spring checker-bloom	None/None/ 2B.2	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas; alkaline, mesic/perennial herb/Mar–June/45–5,015.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Suaeda esteroa	Estuary seablite	None/None/ 1B.2	Marshes and swamps (coastal salt)/perennial herb/(May)July–Oct(Jan)/0–15.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Suaeda taxifolia	Woolly seablite	None/None/ 4.2	Coastal bluff scrub, Coastal dunes, Marshes and swamps (margins of coastal salt)/perennial evergreen shrub/Jan–Dec/0–165.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Symphyotrichum defoliatum	San Bernardino aster	None/None/ 1B.2	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July–Nov(Dec)/5–6,690.	Not expected: Outside the marine habitats, the project site is entirely developed and supports no soils for supporting growth of non-marine plants.
Invertebrates				
Bombus crotchii	Crotch bumble bee	None/PSE	Open grassland and scrub communities supporting suitable floral resources.	Not expected: The project site outside the marine habitats is entirely

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
				development and supports no floral resources.
Cicindela gabbii	Western tidal-flat tiger beetle	None/None	Inhabits estuaries and mudflats along the coast of Southern California.	Not expected: No estuarine or mudflat habitat occurs on the project site.
Cicindela hirticollis gravida	Sandy beach tiger beetle	None/None	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico.	Not expected: No sandy beach or other suitable natural, non-marine habitats occur on the project site.
Cicindela latesignata latesignata	Western beach tiger beetle	None/None	Mudflats and beaches in coastal Southern California.	Not expected: No mudflats or beaches occur on the project site.
Cicindela senilis frosti	Senile tiger beetle	None/None	Inhabits marine shoreline, from Central California coast south to saltmarshes of San Diego; also found at Lake Elsinore.	Not expected: No saltmarshes or other suitable natural, non-marine habitats occur on the project site.
Cicindela trifasciata sigmoidea	Mudflat tiger beetle	None/None	Marshes along coast and edges of marshes and rivers.	Not expected: No saltmarshes or other suitable natural, non-marine habitats occur on the project site.
Danaus plexippus pop. 1	Monarch	None/None	Wind-protected tree groves with nectar sources and nearby water sources.	Not expected: No trees occur on the project site, and no suitable groves of trees supporting protection from wind and extremes of temperature occur nearby.
Haliotis corrugata	Pink abalone	NMFS SSC/None	This species requires sheltered waters with depths from 20 to 118 feet.	Not expected: Suitable habitat not present. Very low population numbers.
Haliotis cracherodii	Black abalone	FE/None	Rocky, low intertidal zone up to 19.6 feet (6 meters) deep.	Not expected: Suitable habitat not present. Very low population numbers.
Haliotis fulgens	Green abalone	NMFS SSC/None	This species is found in rock crevices in shallow water on exposed coast from the low intertidal to depths of 60 feet (18 m).	Not expected: Suitable habitat not present. Very low population numbers.
Haliotis sorenseni	White abalone	FE/None	This species inhabits rocky pinnacles and deep reefs	Not expected: Suitable habitat not present. Very low population numbers.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
Panoquina errans	Wandering skipper	None/None	Saltmarsh	Not expected: No saltmarsh habitat occurs on the project site.
Trigonoscuta dorothea dorothea	Dorothy's El Segundo Dune weevil	None/None	Coastal sand dunes in Los Angeles County	Not expected: No coastal sand dunes occur on the project site.
Tryonia imitator	Mimic tryonia	None/None	Inhabits coastal lagoons, estuaries, and saltmarshes, from Sonoma County south to San Diego County	Not expected: no lagoons, saltmarshes, or estuaries occur on the project site.
Fish				
Acipenser medirostris	Green Sturgeon (southern DPS)	FT, NMFS SSC/None	Ranges from Alaska to Mexico and spawns in the Rogue River, Klamath River Basin and the Sacramento River. Adults live in oceanic waters, bays, and estuaries, feeding on benthic invertebrates.	Not expected: Adults may migrate and/or forage in nearby bay. There is very little data on green sturgeon habitat use from Monterey south to the Mexican border.
Catostomus santaanae	Santa Ana Sucker	FT/None	Small, shallow, cool, clear streams less than 7 meters (23 feet) in width and a few centimeters to more than a meter (1.5 inches to more than 3 feet) in depth; substrates are generally coarse gravel, rubble, and boulder.	Not expected: Habitat is unsuitable for this species. This species inhabits freshwater streams only.
Gadus microcephalus	Pacific cod (Salish Sea Population)	NMFS SSC/None	This specific population inhabits Puget Sound, the Strait of Juan de Fuca and the Strait of Georgia. They feed on krill, shrimp, sand lance and crabs. They are often found over sandy bottoms.	Not expected: Although eelgrass may play a role in habitat selection.
Eucyclogobius newberryi	Tidewater goby	FE/SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River.	Not expected: Unsuitable habitat for tidewater goby, as they are a freshwater and brackish water species.
Merluccius productus	Pacific hake (Georgia Basin DPS)	NMFS SSC/None	The Georgia Basin DPS includes three stocks: the highly migratory stock that ranges from southern California to Queen Charlotte Sound, a central-south Puget Sound Stock and a Strait of Georgia	Not expected: The highly migratory stock range includes southern California waters. The highly migratory stock spawns in the winter in California.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
			stock. They are found at moderate depths of up to 3,000 feet (910 meters).	
Oncorhynchus keta	Chum salmon	FT/None	Inhabits the lowermost reaches of rivers and streams, open ocean for anadromous form. Historical distribution included as far south as Monterey, however presently major spawning populations are found only as far south as Tillamook Bay, Oregon.	Not expected: The project site is not within the species' known range.
Oncorhynchus kisutch	Coho salmon (Puget Sound/Strait of Georgia ESU)	NMFS SSC/None	Inhabits streams and freshwater tributaries with gravel substrates, open ocean for anadromous form. This species distribution is from central California to Alaska.	Not expected: The project site is not within the species' known range.
Oncorhynchus mykiss	Steelhead trout – Oregon Coast ESU	NMFS SSC/None	Ranges from Asia, through Alaska and south to Southern California. This is a coastal species.	Not expected: Oceanic range is unknown. However, spawning rivers only occur in rovers basins on the coast of Oregon from the Columbia River south to Cape Blanco.
Oncorhynchus mykiss irideus	Southern steelhead – Southern California DPS	NMFS SSC/None	This DPS includes watersheds from the Santa Maria River to the U.S./Mexican border, coast and inland habitats. Clean, clear, cool, well-oxygenated streams; needs relatively deep pools in migration and gravelly substrate to spawn, open ocean for anadromous form.	Not expected: Adults may migrate and/or forage in project vicinity.
Oncorhynchus nerka	Sockeye salmon (Snake River ESU and Ozette Lake ESU)	FE (Snake River), FT (Ozette Lake)/ None	In the U.S., these populations occur in Oregon and Washington, and critical habitat is designated for this species in Snake River and Ozette Lake. This species inhabits riverine, marine and lake environments (lakes are a requirement).	Not expected: The project site is outside of species range.
Oncorhynchus tshawytscha	Chinook salmon (Central Valley	NMFS SSC/None	Chinook salmon ranges from Alaska to California. This ESU spawns in the Sacramento River and San Joaquin River.	Not expected: The project site is outside of species range.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
	Fall, Late-fall run ESU)		Chinook salmon require deeper and larger freshwater streams than other salmonids; open ocean for anadromous form.	
Sebastes levis	Cowcod	NMFS SSC/None	The species ranges from central Oregon to central Baja California and Guadalupe Island, Mexico. Inhabits deep shelf and upper continental slope, inhabiting depths of 65 to 1,600 feet (20 to 500 meters) in rocky areas.	Not expected: Unsuitable habitat for cowcod, individuals may migrate through the area. Southern California has been recognized as the center of distribution of the species since the 1880s.
Sebastes paucispinus	Bocaccio (Southern DPS)	NMFS SSC/None	Ranges from Baja California to Alaska; most common between 160-820 feet in depth, but found up to 1,560 feet in depth. This species feeds on other fish species (mainly other rockfish).	Not expected: This species prefers deep waters.
Sebastes ruberrimus	Yelloweye rockfish	FT/None	Yelloweye rockfish range from northern Baja California to Alaska. This species is associated with rocky reefs, kelp canopies, and artificial structures like oil platforms. Adults prefer deeper waters and rocky bottoms. This species is commonly found in depths of 300 to 590 feet (91 to 180 meters).	Not expected: This species prefers deep waters, is more common from Central California northward.
Sphyrna lewini	Scalloped hammerhead shark	FT/None	In the east Pacific, scalloped hammerhead sharks range from southern California to Ecuador. Inhabits coastal warm temperate and tropical seas, ranging from intertidal to depths of up to 1000 meters.	Not expected: unsuitable habitat for hammerhead sharks.
Thaleichthys pacificus	Pacific eulachon (Southern DPS)	FT/None	Ranges from Northern California to Alaska and into the southeastern Bering Sea. Critical habitat is designated for the Southern DPS in northern California in Mad River, Redwood Creek and Klamath River. Anadromous fish,	Not expected: The project site is outside of this species' known range.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
			endemic to northeastern Pacific Ocean.	
Amphibians				
Spea hammondii	Western spadefoot	None/SSC	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture.	Not expected: The project site supports no vernal pools required by this species and no upland habitats suitable for burrows and aestivation.
Reptiles				
Actinemys pallida	southwestern pond turtle	None/SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Not expected: The project site supports no fresh water habitats or suitable uplands to support any phase of the life cycle of this species.
Anniella stebbinsi	Southern California legless lizard	None/SSC	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and moist sandy or loose, loamy soils	Not expected: No loose soils, sand, leaves, or debris necessary to support this species occur on the project site.
Phrynosoma blainvillii	Blainville's horned lizard	None/SSC	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats.	Not expected: No upland soils required for cover, natural upland vegetation, or potential prey resources (native ants) occur on the project site.
Birds				
Agelaius tricolor	Tricolored blackbird	None/WL	Nests in emergent vegetation and other dense ground cover, and forages in areas supporting abundant insect prey within a few kilometers of the colony.	Not expected: The project site does not support emergent or dense upland vegetation for nesting, or any potential for the abundant insect prey required for foraging.
Asio flammeus	Short-eared owl (nesting)	BCC/WL	Winters and forages in open, dry country, grasslands, open fields, agriculture	Not expected: The project site does not support large areas of open upland habitats required for nesting and foraging.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
Athene cunicularia	Burrowing owl (burrow sites & some wintering sites)	BCC/ST	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	Not expected: Although CNDDB includes two occurrences within 2.0 miles of the project site, the site supports no soils suitable for burrows and no natural upland habitats required for foraging.
Buteo regalis	Ferruginous hawk (wintering)	FT, BCC/SSC	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	Not expected: No habitat supporting necessary small mammal prey resources occurs on or adjacent to the project site.
Buteo swainsoni	Swainson's hawk (nesting)	None/SSC	Nests in open wetlands (marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, and other open habitats	Not expected: No trees for nesting, and no habitat supporting necessary small mammal prey resources, occur on or adjacent to the project site.
Circus hudsonius	Northern harrier	FT, BCC/SE	Nests in dense, wide riparian woodlands and forest with well-developed understories.	Not expected: The project site lacks the dense ground cover and open upland habitats this species requires for nesting and foraging.
Coccyzus americanus occidentalis	Western-yellow billed cuckoo	FT/SE	Riparian forest nester along the broad, lower flood bottoms of larger river systems.	Low: No riparian vegetation, or any vegetation suitable for migration, nesting, or foraging, occurs on the project site. Considered extirpated from the area.
Empidonax traillii extimus	Southwestern willow flycatcher	FE/SE	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration.	Not expected: No riparian vegetation, or any vegetation suitable for migration, nesting, or foraging, occurs on the project site.
Icteria virens	Yellow-breasted chat (nesting)	None/SSC	Nests and forages in dense, relatively wide riparian woodlands and thickets of	Not expected: The project site supports no riparian or upland vegetation, and

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
			willows, vine tangles, and dense brush.	therefore no habitat for this species.
Lanius ludovicianus	Loggerhead shrike (nesting)	BCC/SSC	Nests and forages in open habitats with scattered shrubs, trees, or other perches.	Not expected: The open marine waters and concrete banks on the project site do not support suitable prey resources or needed vegetation for nesting.
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	Not expected: No coastal scrub or any upland vegetation occurs on the project site.
Rallus obsoletus levipes	Light-footed Ridgway's rail	FE/SE, FP	Coastal wetlands, brackish areas, coastal saline emergent wetlands	Not expected: No saltmarsh habitat occurs on the project site.
Rynchops niger	Black skimmer (nesting)	BCC/SSC	Nests on barrier beaches, shell banks, spoil islands, and saltmarsh; forages over open water; roosts on sandy beaches and gravel bars.	Not expected to nest. No open habitats suitable for nesting and roosting occur on the project site; this species may occasionally forage within the Intake Channel, but abundant, more suitable marine and brackish open water habitats occur nearby.
Vireo pusillus bellii	Least Bell's vireo (nesting)	FE/SE	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season.	Not expected: No riparian vegetation, and no vegetation outside marine habitats, occurs on the project site.
Mammals				
Eumops perotis californicus	Western mastiff bat	None/SSC	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or	Not expected: No suitable roosting or foraging habitats occur on the project site.

Special-Status Species Not Expected to Occur within the Project Site

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
			nearly vertical, trees, and tunnels	
Lasiurus xanthinus	Western yellow bat	None/SSC	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Not expected: No suitable roosting or foraging habitats occur on the project site
Microtus californicus stephensi	South coast marsh vole	None/SSC	Tidal marshes	Not expected: No tidal marshes occur on the project site.
Nyctinomops macrotis	Big free-tailed bat	None/SSC	Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water	Not expected: No rocky areas, caves, or trees suitable for roosting occur on or adjacent to the project site.
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC	fine-grained sandy substrates in open coastal strand, coastal dunes, and river alluvium	Not expected: No natural upland habitats occur anywhere on the project site.
Sorex ornatus salicornicus	Southern California saltmarsh shrew	None/SSC	Saltmarsh, saltgrass, dense willow, bulrush	Not expected: No salt marsh or suitable wetland or upland habitats occur on the project site.

Source: Information compiled by Dudek (February 2020).
Status Key:
Federal:
BCC = USFWS bird of conservation concern
FDL = federally delisted
FE = federal endangered
FT = federal threatened
EFH = essential fish habitat
HAPC = Habitat Areas of Particular Concern
NMFS SSC = National Marine Fisheries Service Species of Special Concern
BCC = bird of conservation concern
State:
CDF = California Department of Forestry sensitive species
SSC = California species of special concern
FP = fully protected
SDL = state delisted
SE = state endangered
ST = state threatened
WL = California watch list
CRPR:
List 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 2B = Plants rare, threatened, or endangered in California, but more common elsewhere
List 3 = Insufficient information necessary for accurate ranking
List 4 = Plants of limited distribution (a watch list)

APPENDIX G

USFWS IPaC Query Results

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Los Angeles County, California

Local office

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

http://www.fws.gov/carlsbad/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

NOT FOR CONSULTATION

Pacific Pocket Mouse Perognathus longimembris pacificus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8080	Endangered

Birds

NAME	STATUS
California Least Tern Sterna antillarum browni No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher Polioptila californica californica There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8178	Threatened
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened

Flowering Plants

NAME	STATUS
Salt Marsh Bird's-beak Cordylanthus maritimus ssp. maritimus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6447	Endangered
Ventura Marsh Milk-vetch Astragalus pycnostachyus var. lanosissimus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1160	Endangered

NOT FOR CONSULTATION

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NOT FOR CONSULTATION

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES

THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird Selasphorus sasin — Breeds Feb 1 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9637

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black Oystercatcher Haematopus bachmani — Breeds Apr 15 to Oct 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9591

Black Skimmer Rynchops niger — Breeds May 20 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

Black Turnstone Arenaria melanocephala — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Burrowing Owl Athene cunicularia — Breeds Mar 15 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9737

Clark's Grebe Aechmophorus clarkii — Breeds Jan 1 to Dec 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Costa's Hummingbird Calypte costae — Breeds Jan 15 to Jun 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9470

NOT FOR CONSULTATION

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

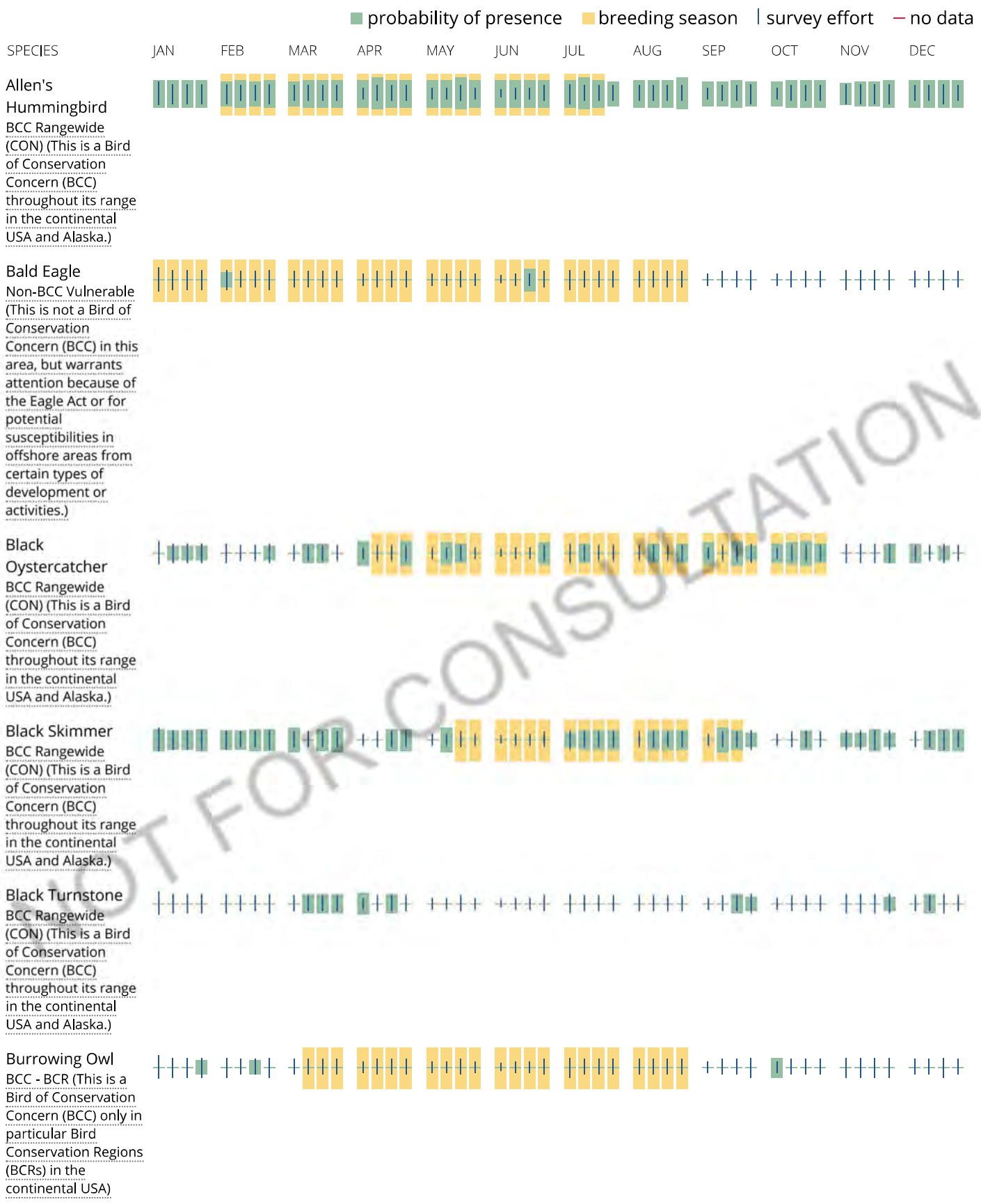
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

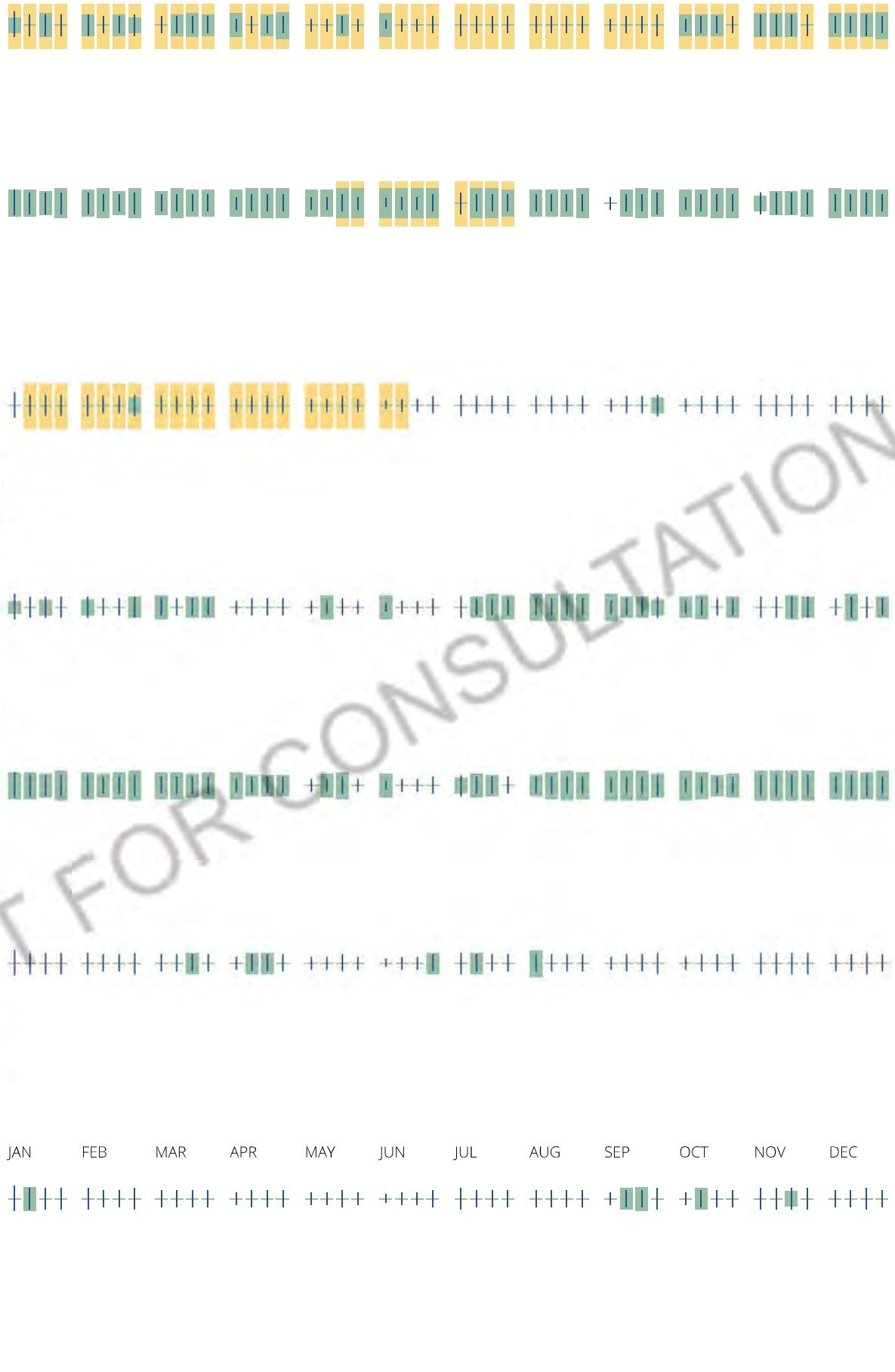
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

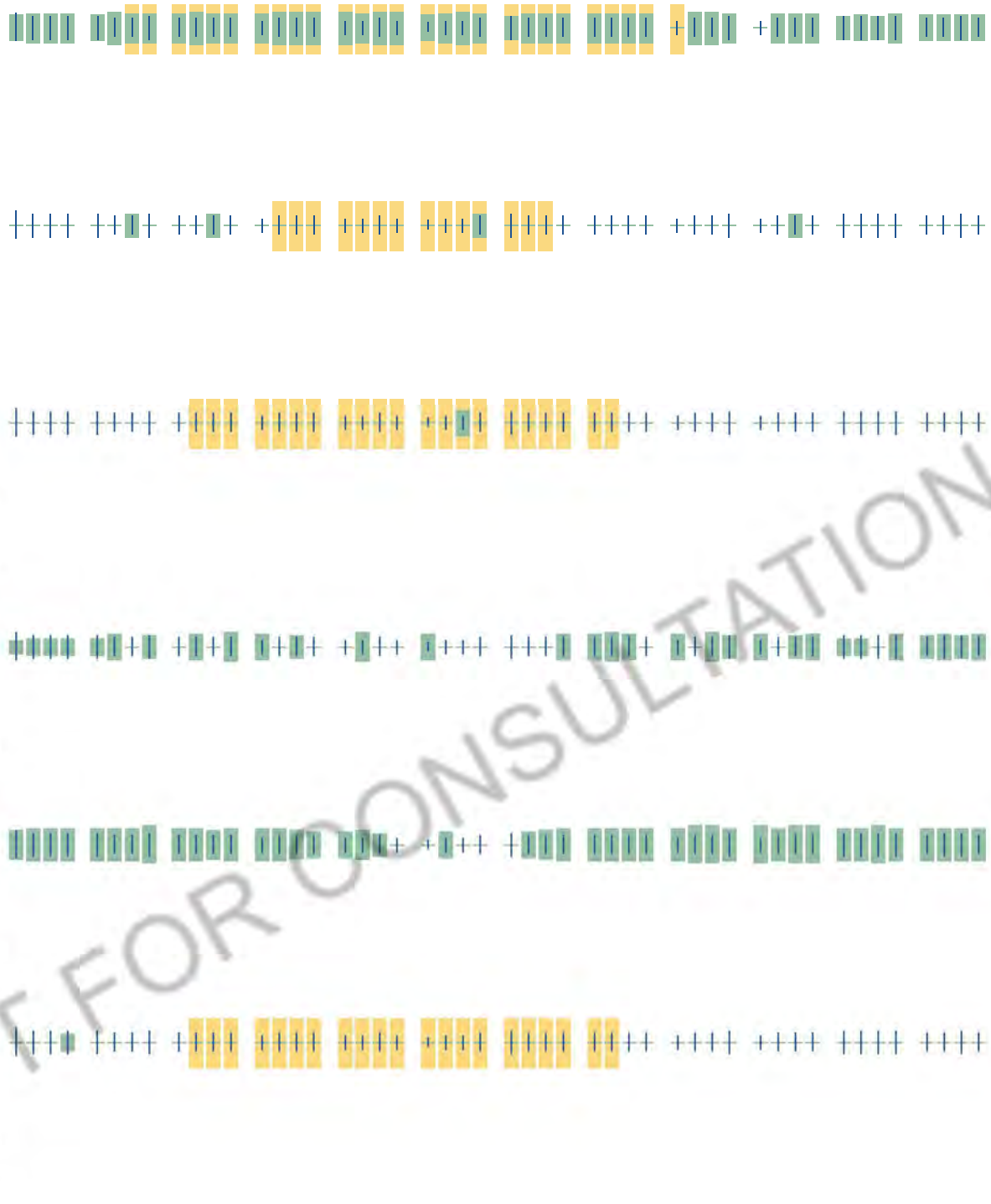
NOT FOR CONSULTATION



NOT FOR CONSULTATION



NOT FOR CONSULTATION



NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review.

NOT FOR CONSULTATION

Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE DEEPWATER

E1UBLx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

APPENDIX H

Green Sea Turtle Strandings at the Haynes Intake Channel

Revised 01/27/1

U.S. WEST COAST SEA TURTLE STRANDING REPORT

FIELD #_____ NMFS REGIONAL #_____ Other #_____

DATE INITIALLY OBSERVED: 09 (Month) 28 (Day) 2017 (Year)

DATE EXAMINED: 09 (Month) 29 (Day) 2017 (Year) **RESTRANDER?** ☐ 1245pm (caught)

INITALLY OBSERVED BY: LADWP HAYNES PERSONELL
Phone (213) 864 - 8587 Email Edward.Kim@LADWP.com
☒ Private citizen ☐ Beach official ☐ Stranding network member

EXAMINED BY: MBC Staff / Lance Adams
Phone (562) 951 - 1716 Email LADAMS@LBAOP.org
Affiliation MBC / Aquarium of the Pacific - MOLINA ANIMAL CARE CENTER

SPECIES: ☐ Unidentified
Green sea turtle
Common name
Chelonia mydas
Genus Species
Digital photos taken: ☒ Yes ☐ No
Verified by: MBC + Dan Lawson

LOCATION: *Check one option.* ☐ Beached ☒ Floating in water
City Long Beach County Los Angeles State CA
Locality details (be specific): Intake channel by PCH bridge adjacent to the San Gabriel River
Latitude 33.7513 °N Longitude 118.1055 °W *Record in decimal degrees.*
How determined (check one): ☐ GPS ☐ Map ☒ Internet/software mobile app

AGE: *(NMFS Use Only)*
☐ Hatchling ☐ Immature
☒ Adult ☐ Unknown

SEX: ☐ Male ☒ Female ☐ Unknown
Does tail extend beyond carapace?
☐ Yes ☒ No
How was sex determined?
☒ Tail length ☐ Penis ☐ Necropsy

MEASUREMENTS: ☒ Whole carcass ☐ Partial/ scavenged
Body weight ☒ Actual ☐ Estimate 32.5 kg
CARAPACE:
Curved Carapace Length (nuchal notch to tip) 70.0 cm
Curved Carapace Width (at widest point) 63.0 cm
Straight Carapace Length ☐ Calipers ☒ Tape 67.0 cm
Straight Carapace Width ☐ Calipers ☒ Tape 52.0 cm
TAIL:
End of plastron to tail tip (ventral side) 65.0 cm
Cloaca to tail tip (ventral side) 7.0 cm

CONDITION:
☒ 1 = Alive
☐ 2 = Fresh dead
☐ 3 = Moderate decomposition
☐ 4 = Advanced decomposition
☐ 5 = Dried mummified/ skeleton
☐ 6 = Unknown condition

BODY CONDITION:
☐ 1 = Poor ☒ 4 = Good
☐ 2 = Fair ☐ 5 = Excellent
☐ 3 = Average ☐ 6 = Unknown

TAGS: *Contact NMFS before disposing of any tagged animal!*
FLIPPER: Existing metal tags present? ☐ Yes ☒ No
Tag #_____ Left/ Right Front/ Rear
Tag #_____ Left/ Right Front/ Rear
Return address:_____
Evidence of old tag holes/ rips in flippers ☐ Yes ☐ No
If yes, draw on diagram on back of page.
PIT: Existing PIT tags present? ☐ Yes ☐ No
Scanner type: ☐ AVID ☐ Universal tag reader
PIT tag #_____
Location: Left/ Right Front/ Rear
PIT tag #_____
Location: Left/ Right Front/ Rear
APPLIED NEW TAGS (live turtle): ☐ Yes ☐ No
Tag #_____ Left/ Right Front/ Rear
Tag #_____ Left/ Right Front/ Rear
PIT tag #_____
Location: Left/ Right Front/ Rear
PIT tag #_____
Location: Left/ Right Front/ Rear

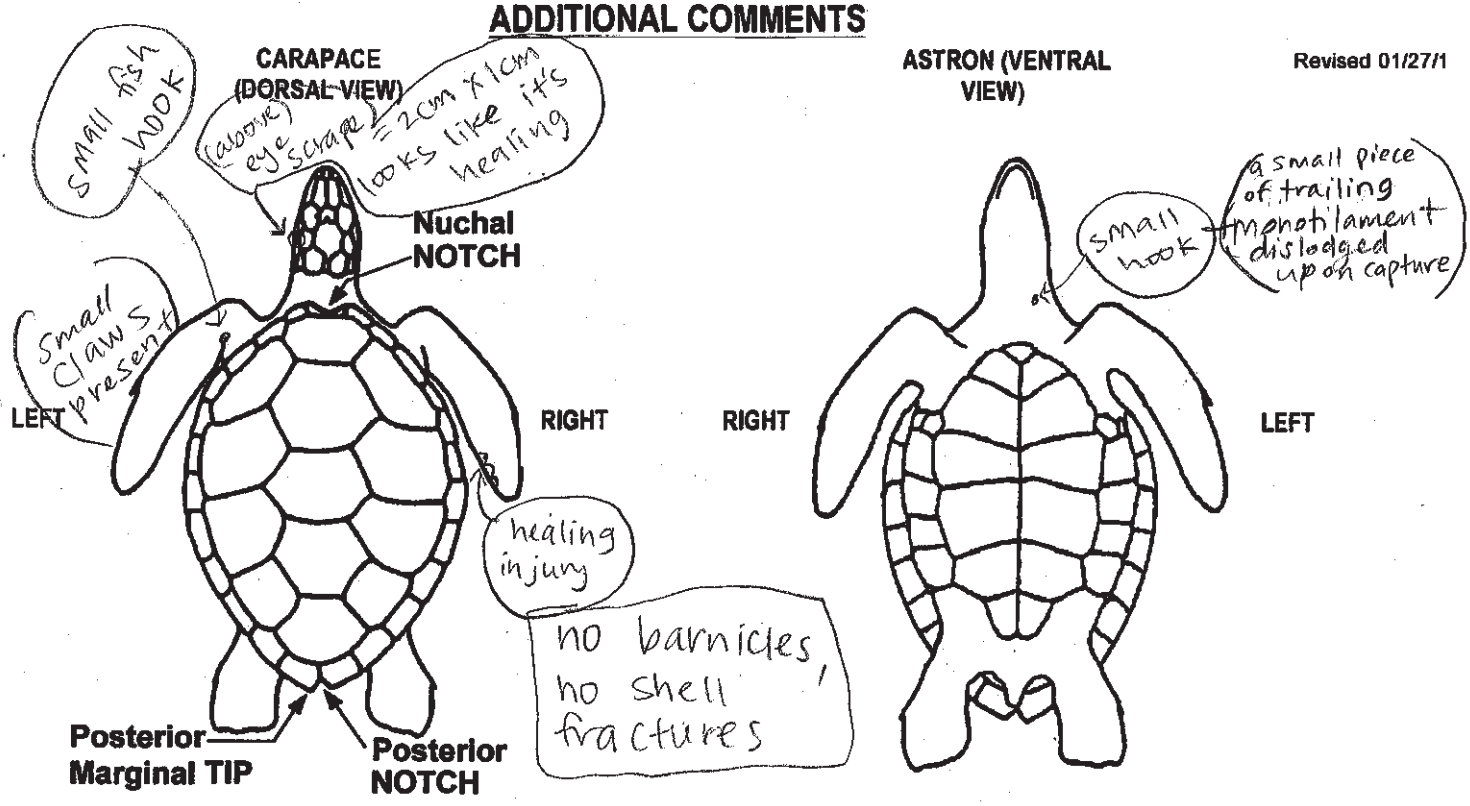
HUMAN INTERACTION: ☒ Yes ☐ No ☐ Cannot Be Determined
If yes, choose one or more. Describe and draw on diagram on back of page.
☐ 1 = Boat collision_____
☐ 2 = Shot_____
☒ 3 = Fishery interaction ☒ Hook ☒ Monofilament ☐ Braided line ☐ Netting
☐ 4 = Oiled_____
☒ 5 = Power plant entrainment; swimming in private water channel
☐ 6 = Other_____
How determined? ☒ External exam ☐ Internal exam ☐ Necropsy
Evidence collected? ☒ Yes ☐ No Describe 3 hooks (removed by vet.)
Storage location Molina Animal Care Center
Digital photos sent to NMFS coordinator? ☒ Yes ☐ No

OTHER FINDINGS: ☒ Yes ☐ No ☐ Cannot Be Determined
If yes, choose one or more. Describe and draw on diagram on back of page.
☐ 1 = Disease_____
☐ 2 = Trauma_____
☐ 3 = Cold stunning_____
☒ 4 = Other small scrape above/dorsal left eye; fish hook in left ventral area of neck another fish hook behind left flipper.
How determined? ☒ External exam ☐ Internal exam ☐ Necropsy

FINAL DISPOSITION: *Check all that apply.*
☐ 1 = Alive, released ☐ At site ☐ Relocated_____ If fishery interaction, disentangled prior to release? ☐ Yes ☐ No
☒ 2 = Alive, transferred to rehabilitation Date 9/29/2017 Facility Aquarium of the Pacific / Molina Animal Care Center
☐ 3 = Euthanized at site By_____ Carcass disposition_____
☐ 4 = Dead, left at site Marked? ☐ Yes ☐ No How?_____
☐ 5 = Dead, buried: ☐ On beach ☐ Off beach Where?_____
☐ 6 = Dead, salvaged: ☐ Whole carcass ☐ Part(s) ☐ Frozen for later exam *Please note all specimens collected and disposition on back.*
☐ 7 = Necropsied: ☐ Field ☐ Laboratory_____ Date_____ By_____
☐ 8 = Left floating, not recovered Why?_____
☐ 9 = Disposition unknown Explain:_____

ADDITIONAL COMMENTS

Revised 01/27/1



Please mark wounds/ abnormalities on diagrams above and describe them below. Be sure to measure all wounds/ lesions and document with digital photos. Note tar or oil, gear or debris entanglements, epibiota, masses, papillomas, emaciation, etc.

Please note if no wounds or abnormalities are found. Digital photos taken? ☒ Yes ☐ No

eyescrape (above left dorsal eye) 2cm x 1 cm – healing
injury healing on right dorsal flipper edge
small hook sticking out of left ventral neck area
small hook (smaller) sticking out of Left dorsal armpit area

Additional Attachments (e.g. Level A, Pathology): _____

SPECIMEN DISPOSITION: ***Check all that apply.*** ☐ Scientific collection ☐ Education ☐ Other_____

List all samples/ parts collected (note tissue and storage medium): Storage location SAMPLES TAKEN BY AOP/Molina Animal Care Center

NMFS Sample Requests:

Skin (All species):	☐ DMSO	☐ Saturated salt
Scleral ossicles (Leatherbacks only):	☐ Left eye	☐ Right eye
Front flipper (Green turtles only):	☐ Left flipper	☐ Right flipper

SHIP TO: Robin LeRoux
NMFS-SWFSC
8901 La Jolla Shores Drive
La Jolla, CA 92037
Robin.LeRoux@noaa.gov

Other Samples: _____

SWFSC Animal ID: _____ **Other ID:** _____

PLEASE MAIL ORIGINAL FORMS TO:

Justin Viezbicke, Stranding Coordinator, National Marine Fisheries Service- Southwest Regional Office
501 W. Ocean Blvd., Suite 4200, Long Beach, CA 90802-4213
Office: (562) 980-3230, Hotline Cell: (562) 506-4315, Fax: (562) 980-4027, Justin.Viezbicke@noaa.gov

Revised 05/4/2016

U.S. WEST COAST SEA TURTLE STRANDING REPORT

FIELD # _____ NMFS REGIONAL # _____ Other # CM1704 (in Photo's) TRACES ID CM17016

DATE INITIALLY OBSERVED: ___ ___ ___ ___ 20___ (Month / Day / Year)

DATE EXAMINED: 1 1 (Month) 2 2 (Day) 20 1 7 (Year) RESTRANDER? ☐

INITALLY OBSERVED BY: _____
Phone ( )___-___ Email _____
☐ Private citizen ☐ Beach official ☐ Stranding network member

EXAMINED BY: Aquarium of the Pacific / Dr. Lance Adams Jeli Barron
Phone (562) 951-1716 Email ladams@lbaop.org
Affiliation _____

SPECIES: ☐ Unidentified
Green Sea Turtle
Common name
Chelonia mydas
Genus Species
Digital photos taken: ☒ Yes ☐ No
Verified by: _____

LOCATION: *Check one option.* ☐ Beached ☐ Floating in water
City _____ County _____ State CA
Locality details (be specific): _____
Latitude ___.___ ° N Longitude ___.___ ° W *Record in decimal degrees.*
How determined (check one): ☐ GPS ☐ Map ☐ Internet/software _____

AGE: *(NMFS Use Only)*
☐ Hatchling ☒ Immature
☐ Adult ☐ Unknown

SEX: ☐ Male ☐ Female ☒ Unknown
Does tail extend beyond carapace?
☐ Yes ☒ No
How was sex determined?
☐ Tail length ☐ Penis ☐ Necropsy

MEASUREMENTS: ☐ Whole carcass ☐ Partial/ scavenged
Body weight ☒ Actual ☐ Estimate 26 kg
CARAPACE:
Curved Carapace Length (nuchal notch to tip) 104 cm
Curved Carapace Width (at widest point) 103.6 cm
Straight Carapace Length ☐ Calipers ☐ Tape _____ cm
Straight Carapace Width ☐ Calipers ☐ Tape _____ cm
TAIL:
End of plastron to tail tip (ventral side) 13.5 cm
Cloaca to tail tip (ventral side) 3.4 cm

CONDITION:
☒ 1 = Alive
☐ 2 = Fresh dead
☐ 3 = Moderate decomposition
☐ 4 = Advanced decomposition
☐ 5 = Dried mummified/ skeleton
☐ 6 = Unknown condition

BODY CONDITION:
☐ 1 = Poor ☒ 4 = Good
☐ 2 = Fair ☐ 5 = Excellent
☐ 3 = Average ☐ 6 = Unknown

TAGS: *Contact NMFS before disposing of any tagged animal!!*
FLIPPER: Existing metal tags present? ☐ Yes ☒ No
Tag # _____ Left/ Right Front/ Rear
Tag # _____ Left/ Right Front/ Rear
Return address: _____
Evidence of old tag holes/ rips in flippers ☐ Yes ☒ No
If yes, draw on diagram on back of page.
PIT: Existing PIT tags present? ☐ Yes ☒ No
Scanner type: ☐ AVID ☐ Universal tag reader
PIT tag # _____
Location: Left/ Right Front/ Rear
PIT tag # _____
Location: Left/ Right Front/ Rear
APPLIED NEW TAGS (live turtle): ☐ Yes ☐ No
Tag # _____ Left/ Right Front/ Rear
Tag # _____ Left/ Right Front/ Rear
PIT tag # _____
Location: Left/ Right Front/ Rear
PIT tag # _____
Location: Left/ Right Front/ Rear

HUMAN INTERACTION: ☐ Yes ☐ No ☐ Cannot Be Determined
If yes, choose one or more. Describe and draw on diagram on back of page.
☐ 1 = Boat collision _____
☐ 2 = Shot _____
☒ 3 = Fishery interaction ☒ Hook ☐ Monofilament ☐ Braided line ☐ Netting
☐ 4 = Oiled _____
☒ 5 = Power plant entrainment _____
☐ 6 = Other _____
How determined? ☐ External exam ☐ Internal exam ☐ Necropsy
Evidence collected? ☒ Yes ☐ No Describe Photos, hook pieces saved
Storage location _____
Digital photos sent to NMFS coordinator? ☐ Yes ☐ No

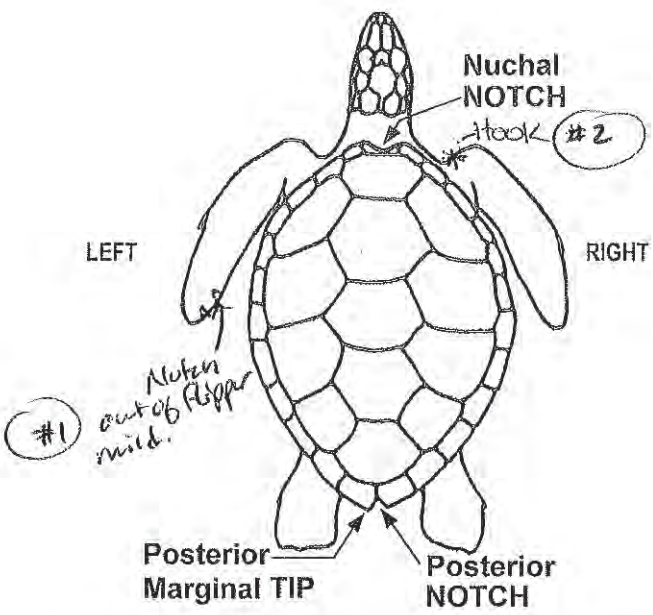
OTHER FINDINGS: ☐ Yes ☐ No ☐ Cannot Be Determined
If yes, choose one or more. Describe and draw on diagram on back of page.
☐ 1 = Disease _____
☐ 2 = Trauma _____
☐ 3 = Cold stunning _____
☐ 4 = Other _____
How determined? ☐ External exam ☐ Internal exam ☐ Necropsy

FINAL DISPOSITION: *Check all that apply.*
☐ 1 = Alive, released ☐ At site ☐ Relocated _____ If fishery interaction, disentangled prior to release? ☐ Yes ☐ No
☐ 2 = Alive, transferred to rehabilitation Date _____ Facility _____
☐ 3 = Euthanized at site By _____ Carcass disposition _____
☐ 4 = Dead, left at site Marked? ☐ Yes ☐ No How? _____
☐ 5 = Dead, buried: ☐ On beach ☐ Off beach Where? _____
☐ 6 = Dead, salvaged: ☐ Whole carcass ☐ Part(s) ☐ Frozen for later exam *Please note all specimens collected and disposition on back.*
☐ 7 = Necropsied: ☐ Field ☐ Laboratory _____ Date _____ By _____
☐ 8 = Left floating, not recovered Why? _____
☐ 9 = Disposition unknown Explain: _____

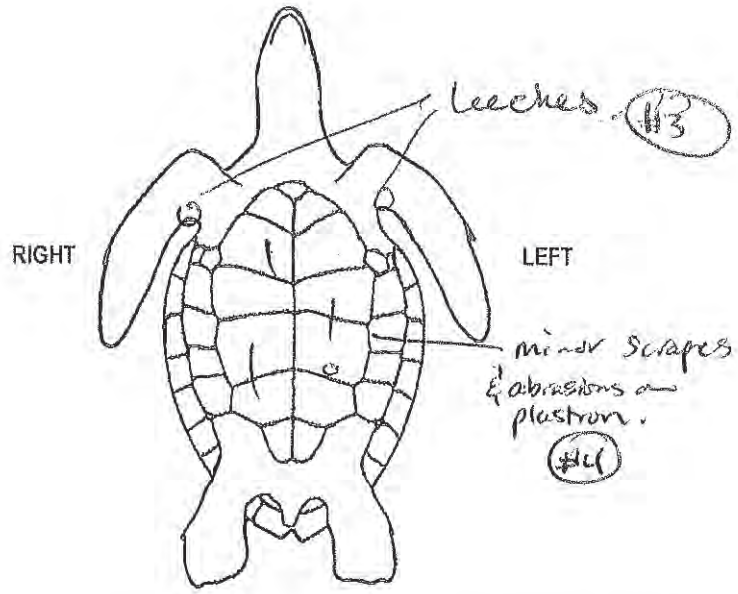
ADDITIONAL COMMENTS

Revised 05/4/2016

CARAPACE (DORSAL VIEW)



ASTRON (VENTRAL VIEW)



Please mark wounds/ abnormalities on diagrams above and describe them below. Be sure to measure all wounds/ lesions and document with digital photos. Note tar or oil, gear or debris entanglements, epibiota, masses, papillomas, emaciation, etc.

Please note if no wounds or abnormalities are found. Digital photos taken? ☒ Yes ☐ No

#1) 2 notches on trailing edge of flipper. One measured 0.5 x 0.5 cm the other 1 x 1.5 cm.
#2) Recreational fish hook, #10 or #2 size, no monofilament attached.
#3) patches of leeches 20-30 @ each site.
#4) very mild scrapes.

Additional Attachments (e.g. Level A, Pathology): _____

SPECIMEN DISPOSITION: ***Check all that apply.*** ☐ Scientific collection ☐ Education ☒ Other Released.

List all samples/ parts collected (note tissue and storage medium): Storage location _____

Blood - lithium

NMFS Sample Requests:

Skin (All species):	☐ DMSO	☑ Saturated salt
Scleral ossicles (Leatherbacks only):	☐ Left eye	☐ Right eye
Front flipper (All hard-shelled species):	☐ Left flipper	☐ Right flipper

SHIP TO: Erin LaCasella
NMFS-SWFSC
8901 La Jolla Shores Drive
La Jolla, CA 92037
858-546-5696
Erin.LaCasella@noaa.gov

Other Samples: _____

SWFSC Animal ID: _____ **Other ID:** _____

PLEASE MAIL ORIGINAL FORMS TO:

Justin Viezbicke, Stranding Coordinator, National Marine Fisheries Service- Southwest Regional Office
501 W. Ocean Blvd., Suite 4200, Long Beach, CA 90802-4213
Office: (562) 980-3230, Hotline Cell: (562) 506-4315, Fax: (562) 980-4027, Justin.Viezbicke@noaa.gov

APPENDIX I

Potential Mitigation Site Eelgrass Surveys

Eelgrass Beds within the Potential Mitigation Site

Eelgrass Bed (ID)	Eelgrass Habitat plus 5-Meter Buffer (square feet)	Percent Cover of Eelgrass	Turion Counts (average)	Depth of Bed (feet)
24	38,747.5	17	16	15–17
25	23,135.9*	43	26	16–18
26		37	29	20–23
Total*	**61,883.4 square feet / 1.42 acres**	**32% average cover**	—	—

* These eelgrass beds were surveyed in the field as separate beds. When mapping overall eelgrass habitat, unvegetated areas less than 5 meters are accounted for as eelgrass habitat. Therefore, the total mapped eelgrass habitat is combined for these beds due to proximity to one another.

** May not total due to rounding

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