Addendum to Biological Technical Report – Lagoon and Marine Survey and Essential Fish Habitat Assessment

Los Peñasquitos Lagoon Restoration Phase 1

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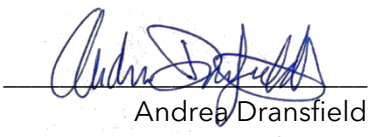

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Acronyms and Abbreviations

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
CNDDB	California Natural Diversity Database
CSP	California State Parks
CWA	Clean Water Act
DO	dissolved oxygen
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FESA	Federal Endangered Species Act
FMP	Fishery Management Plan
GIS	geographic information system
HAPC	Habitat Area of Particular Concern
MAMP	monitoring and adaptive management plan
MHPA	Multi-Habitat Planning Area
MHWL	mean high water line
MM	Mitigation Measure
MMPA	Marine Mammal Protection Act
MSCP	Multiple Species Conservation Program
MS4	Municipal Separate Storm Sewer Systems
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PFMC	Pacific Fishery Management Council
RWQCB	Regional Water Quality Control Board
SWPPP	stormwater pollution prevention plan
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
TPSNR	Torrey Pines State Natural Reserve
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WEAP	Worker Environmental Awareness Program
WMA	Watershed Management Area
WQIP	Water Quality Improvement Plan

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Executive Summary

The Los Peñasquitos Lagoon Restoration Phase 1 Project (Project) is located within the upper portion of Los Peñasquitos Lagoon (Lagoon) and the upstream riparian corridor within Sorrento Valley in the City of San Diego, San Diego County, California. The Lagoon is part of the Torrey Pines State Natural Reserve (TPSNR) located in coastal north county San Diego and is owned and managed by California State Parks (CSP). Phase 1 of the Lagoon Enhancement includes restoration of historic salt marsh, sediment reduction measures, and freshwater management. While the majority of the Project occurs in a terrestrial landscape, modeling and construction design completed for the Project indicates that dredging of a tidal channel downstream of the restoration area is required and a portion of the excavated sediments from the Project may be utilized as beach nourishment. These two elements have the potential to affect the marine environment. This addendum to the Biological Technical Report analyses the potential impacts to existing marine biological resources that may result from the removal of the sediment sill in the tidal channel and use of export sediment material as beach nourishment.

Methods documented in this report include a review of relevant literature, a snorkel/kayak field survey of the tidal channel, an inshore marine scientific SCUBA dive survey, and an essential fish habitat assessment. For the tidal channel survey, the entirety of the portion of the tidal channel to be dredged was surveyed to determine the presence/absence of eelgrass, collect water quality measurements, and document observed species. For the inshore SCUBA dive survey, scientific divers conducted eelgrass, *Caulerpa*, and rocky reef/kelp forest surveys; characterized marine flora and fauna; and photographed and took video footage of marine biota and habitats.

Results of the tidal channel survey indicated the presence of small patches of eelgrass in the northwest section of the study area, with 0.00025 vegetated acres mapped. No special-status species were observed. Results of the inshore marine scientific dive survey indicated a sandy-bottom habitat with some limited areas of cobbles and boulders with minimal surface growth and few wildlife species. Surfgrass (*Phyllospadix* sp.) was observed infrequently. No eelgrass or *Caulerpa* was observed. The Project area is designated as Essential Fish Habitat in the Pacific Coast Groundfish and Coastal Pelagic Species Fishery Management Plan; however, no important fishing areas overlap with the Project area. The lagoon contains the seagrass Habitat Area of Particular Concern type, specifically eelgrass beds. Torrey Pines State Beach may function as grunion (*Leuresthes tenuis*) spawning habitat. Six federally listed or protected species are known to occur in the vicinity of the tidal channel and/or the inshore marine environment of Torrey Pines Beach: eelgrass (*Zostera marina*), green sea turtle (*Chelonia mydas*), gray whale (*Eschrichtius robustus*), common bottlenose dolphin (*Tursiops truncatus*), Pacific harbor seal (*Phoca vitulina*), and California sea lion (*Zalophus californianus*).

Significant direct impacts of the Project include the removal of 0.00025 acres of eelgrass within the tidal channel dredging area and potential impacts to grunion spawning during the placement of sediment for beach nourishment. Tidal channel dredging will have temporary direct impacts but is expected to recover ecological functions and species within approximately one year and may show improved conditions for marine species, including eelgrass due to the expected increased salinity from increased tidal exchange. The beach nourishment activity will have temporary direct and indirect impacts but because only suitable sediment will be placed, effects are expected to generally match background conditions.

Recommended avoidance, minimization, and mitigation measures may be incorporated as project design features or mitigation measures based on the appropriate CEQA determination. These measures are provided in this report and include BIO-1, Eelgrass Mitigation and Monitoring Plan; BIO-2, Worker Environmental Awareness Program; BIO-3, Biological Monitoring; BIO-4, Work Limit Delineation and Water Quality Best Management Practices; and BIO-5, Grunion Spawning Season.

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1 Introduction

This addendum to the Biological Technical Report documents the methods and results of surveys and analysis to assess the existing conditions related to marine biological resources within Los Peñasquitos Lagoon and Torrey Pines State Beach. The report also provides analyses and conclusions regarding potential impacts to existing marine biological resources that may result from implementation of the Los Peñasquitos Lagoon Restoration Phase 1 Project (Project). This report provides information to support determinations related to regulatory requirements of the City of San Diego, California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), San Diego Regional Water Quality Control Board (RWQCB), National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the U.S. Army Corps of Engineers (USACE).

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2 Project Description

2.1 Project Setting

The Project is located within the upper portion of Los Peñasquitos Lagoon (Lagoon) and the upstream riparian corridor within Sorrento Valley in the City of San Diego, San Diego County, California (Figure 1). The Lagoon is part of the Torrey Pines State Natural Reserve (TPSNR) located in coastal north county San Diego and is owned and managed by California State Parks (CSP). The Lagoon is a 565-acre coastal estuary that receives drainage from an approximately 59,212-acre watershed comprising three primary sub-drainages: Carmel Valley, Los Peñasquitos Canyon, and Carroll Canyon.

The Lagoon and its associated uplands provide important habitat for five listed bird species and 35 sensitive and rare plant species. The Lagoon also serves as an important refuge for migratory birds using the Pacific Flyway and is the closest coastal estuary to the La Jolla State Marine Conservation Area and San Diego-Scripps State Marine Conservation Area. The Lagoon is almost entirely within the City of San Diego's Multi Habitat Planning Area (MHPA). The MHPA is a regional preserve area designated by a Habitat Conservation Plan called the Multiple Species Conservation Program (MSCP).

Primary regional access to the Project area is provided by Interstate 5, which extends north to south and is located east of the Project area. Sub-regional access is provided via Roselle Street and Flintkote Avenue. Access to the Lagoon is limited to protect rare species and habitats in accordance with the Lagoon's status as a State Natural Preserve. Passive recreation along the Lagoon boundaries is permitted. Current public access is available along trails, as well as roadways that border the Lagoon including Highway 101, Carmel Valley Road, Sorrento Valley Road, Roselle/Flintkote Road, and the Marsh Trail.

The Project area is characterized topographically by steeply sloping bluffs on the west, south, and north boundaries and a narrow, gently sloped floodplain. The bluffs reach up to 450 feet NAVD while the floodplain ranges in elevation from 8 to 26 feet NAVD. While the majority of Project activities are located in the riparian and marsh floodplain associated with Carroll Canyon Creek and Los Peñasquitos Creek, the Project also includes activities within a tidal channel that connects this floodplain with the Pacific Ocean and along the beach shoreline. The Project footprint spans several parcels owned by multiple landowners including the City, California Coastal Conservancy, CSP, and private property owners. The restoration elements of the Project (including tidal channel deepening and beach nourishment) are within the Lagoon that is part of the TPSNR and is owned and managed by CSP. The sediment management components and riparian habitat enhancements are located within the parcels owned by the City, California Coastal Conservancy, private property owners, and CSP that are outside of the TPSNR.

2.2 Project Purpose

The elements of the Project have been developed to address impairment of Lagoon function, loss of native habitats, and degraded ecosystem services caused by urbanization that include beneficial uses identified in the San Diego Basin Plan. The Project aims to address impairments by removing coarse-grained sediment, limiting the lateral extent of freshwater inundation within the marsh plain during dry-season and small storm events, and restoring both tidal and non-tidal saline habitats. Without the implementation of the Project, these existing conditions will result in further impairment of the Lagoon and compliance targets and timelines of the Los Peñasquitos Watershed

Management Area Sediment Total Maximum Daily Load (Sediment TMDL) will not be met. The Sediment TMDL is enforced through the Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4) draining the watersheds within the San Diego Region (MS4 Permit). Existing conditions and Project elements that may affect the marine environmental are summarized in Section 2.3.

2.3 Project Components with Potential Effects on the Marine Environment

Phase 1 will be implemented in three construction sub-phases (1A, 1B, and 1C) followed by long-term operations and maintenance; both construction and long-term operations will generate sediment export which may, as appropriate, be utilized for beach nourishment at Torrey Pines State Beach. Project construction is primarily within terrestrial, non-tidal areas with the exception of a portion of sub-phase 1B that would consist of removal of an existing sediment sill within a tidal channel. Each construction sub-phase is estimated to be completed in 5-6 months from September 1 to January 31. Maintenance of proposed floodplain enhancements is expected to generate additional material that may be suitable for beach nourishment. That maintenance is expected to occur during a similar period (fall and early winter, prior to the storm season) but may also include post-storm maintenance during the winter or in early spring.

2.3.1 Sub-Phase 1B: Removal of the Sediment Sill in Tidal Channel

Based on the results of the bathymetry survey of the tidal channel from the pinch point to the Lagoon inlet, there is a sediment sill in the channel downstream of the pinch point that limits tidal exchange into the planned salt marsh restoration (Figure 2). Hydrodynamic modeling (utilizing a 2020 Environmental Fluid Dynamics Code [EFDC] model) of the current conditions demonstrated that this sediment sill limits high-tide flows into the planned restoration area and traps freshwater in the upper channel, significantly reducing tidewater salinity levels in the planned restoration area (Anchor QEA 2021). The salinity levels at the pinch point are substantially lower than the tidewater reaching tidal channels observed in other portions of the Lagoon. Reduced tidewater salinity would negatively impact the establishment and sustainability of the proposed sub-phase 1C salt marsh restoration. Based on these results, sub-phase 1B channel conveyance will include dredging the tidal channel from the pinch point to the lagoon inlet to an elevation of −3 feet NGVD29 (requiring dredge removal of approximately 18,700 cubic yards of material within an approximately 4-acre area).

Dredging is expected to be conducted by a floating barge with subaqueous dredging equipment that would remove underwater sediment and place it on the barge where it can be transferred to trucks and placed on site for temporary stockpiling or be transported directly to the beach or other disposal location utilizing construction access roads planned within the Project, City streets, and State Parks parking lot. Temporary stockpiles would be located in areas where they will have minimal interference with restoration activities and minimal disturbance to high-functioning native habitat. These stockpile areas will be utilized during the approximately 2-year construction period for sub-phases 1b and 1c, and then will be restored with native habitat. This tidal channel dredging is expected to be a one-time need.

2.3.2 Off-Site Sediment Placement Sites

Based on the geotechnical analysis of sediment samples within the Phase 1 area (not including the tidal channel sill), excavated materials are potentially suitable material for beach nourishment either through placement on the beach (i.e., above mean lower low water elevation) or in the nearshore (i.e., below mean lower low water elevation) (see draft Sampling and Analysis Plan [Burns & McDonnell 2023] for more details). The term "beach nourishment" is used in this report to refer to both beach and nearshore placement. Materials excavated from the Phase 1 Project (including the tidal channel sill) and meeting the criteria for geotechnical and chemical properties per the permit requirements will be beneficially used for beach nourishment at Torrey Pines State Beach. Materials containing a higher percentage of coarse material will likely be placed on the beach whereas finer materials will likely be placed in the nearshore.

The frequency of beach nourishment activities is anticipated to correspond to the frequency of floodplain enhancements maintenance. The frequency of sediment removal from the Floodplain Enhancements and Dunhill Ditch will depend on the number and intensity of the storm events during the wet season. It is estimated that removal of sediment from the Floodplain Enhancements and Dunhill Ditch will be needed at least annually prior to the storm season and at least once following a larger storm event. The frequency and duration of these activities will depend on the number and intensity of annual storm events and associated sediment deposition, but is estimated to be at least twice annually: prior to the storm season and at least once following a larger storm event (for more details, see Permit Level Operations and Maintenance Plan [Burns & McDonnell 2022]).

To determine a marine study area for the beach nourishment fill activities, a sediment plume area was identified and digitized in GIS based on review of visible, post-storm event sediment plumes on Google Earth aerials from 2003 to 2020. The identified sediment plume area is approximately 120 acres, extending approximately 0.25 miles offshore and across approximately 0.75 miles of shoreline. The expected increase in turbidity from beach nourishment activities was estimated by SANDAG (2011) to extend only up to 115 feet offshore. Monitoring following prior beach sand placement in the region documents plumes typically ranging from 100 to 328 feet long and 66 to 164 feet wide, with one occasion where the plume was 984 feet long by 656 feet wide but was short-lived (SANDAG 2011). Based on these measurements, the sediment plume area used for this study represents a conservative estimate of the potential marine areas that may be subject to some effect from beach nourishment fill.

Although the thresholds for soil material that will be considered suitable for beach nourishment have not been determined due to ongoing current permit process and review by regulatory agencies, it can be assumed that thresholds will be similar to those proposed by SANDAG's Regional Beach Sand Project II (SANDAG 2011). As determined for the similar SANDAG project, particle settling, mixing, and dilution processes occurring in the naturally energetic surf zone area would rapidly reduce the plumes to background conditions once the placement operations are completed. Further, given the similarities in grain size between suitable export materials and existing beach sediments and the general absence of chemical contaminants in the export sediments, the sand placement operations would not result in significant changes or degradation of sediment quality at the receiver beach. Consequently, the potential for significant toxicity to marine organisms or exposure of marine organisms to bioaccumulative materials would be negligible (SANDAG 2011).

2.3.3 Project Design Features and Standard Construction Procedures

The following project design features and standard construction procedures are identified in Section 3.4.4 of the Final Program Environmental Impact Report for the Los Peñasquitos Lagoon Enhancement Plan and will be implemented for both project components evaluated in this study (California Department of Parks and Recreation 2021). Additional features and procedures will be implemented but pertain to terrestrial biological resources (e.g., nesting bird protection) or other project components (e.g., vegetation clearing and planting), which are not the subject of this report and are therefore not included in Table 1.

Table 1. Project Design Features (PDF) and Standard Construction Procedures (SCP) Applicable to Project Components in Marine Environment[1]

PDF/SCP #	Description
PDF #5	Simultaneous use of the trails by construction equipment and recreationalists would not be allowed and affected trail segments would be closed to public use when construction would occur. Signs would be placed at the trailheads to notify trail users of these closures.
PDF #6	Restrict public access at sand placement sites during active construction as necessary.
PDF #7	Maintain alternative access to beaches adjacent to placement sites and portions of beach access trails not under active construction.
PDF #8	Prior to opening areas of beach with placed materials, spread the materials and check for potential hazards (e.g., foreign objects in the sand). Removal and relocation or disposal of hazards would be coordinated with Los Peñasquitos Lagoon Foundation (LPLF) and State Parks.
PDF #9	Maintain horizontal and vertical access on either side of the active sand placement area if public safety is not compromised.
PDF #10	Temporarily relocate mobile lifeguard towers, if necessary.
PDF #11	Unless directed otherwise, sand would be placed along the waterline on Torrey Pines State Beach between Lifeguard Tower 4 and Lifeguard Tower 3. Sand placed on the upper beach or on top of exposed rip rap would avoid blocking line-of-sight at lifeguard towers. Sight lines from the viewing platforms of the lifeguard towers would be maintained. Beach disposal planning and implementation would be coordinated with LPLF and State Parks. Beach profile monitoring and grain-size analysis may be required based on the scale of disposal efforts to assess potential impacts to the lagoon inlet, beach and nearshore habitats and processes. Monitoring for western snowy plover within and adjacent to the beach disposal site(s) would be required with the appropriate avoidance measures put in place should this species be observed.
PDF #12	Prior to initiating construction, identify sensitive “no construction zones” and fence or flag those areas. Limit construction equipment and vehicles to within these limits of disturbance.
PDF #13	Contractors shall maintain equipment and vehicle engines in good condition and properly tuned per manufacturers’ specifications.
PDF #14	Native or sensitive habitats outside and adjacent to the construction limits would be designated as Environmentally Sensitive Areas (ESAs) on project maps. ESAs would be temporarily fenced during construction with orange plastic snow fence or orange silt fencing along staging areas and access routes, and with stakes and flagging in areas of flowing water and active construction zones. No personnel, equipment, or debris would be allowed within the

Table 1. Project Design Features (PDF) and Standard Construction Procedures (SCP) Applicable to Project Components in Marine Environment[1]

PDF/SCP #	Description
	ESAs. Fencing and flagging would be installed in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment. Access routes/staging areas adjacent to identified sensitive bird species habitat may require special fencing or barriers (e.g., stacked straw bales) pursuant to recommendations and requirements set forth by State Parks in consultation with Wildlife Agencies. Access routes used for vector management would require approval by LPLF and State Parks and meet conditions set by a Right of Entry Permit and the Lagoon's status as a State Natural Preserve.
PDF #15	Site staging areas and access roads at existing access points and areas that do not contain native habitat.
PDF #16	Restrict vegetation clearing and grubbing, and material placement, to the extent possible, to outside the special-status bird breeding season (February 15–September 15). Work conducted during the breeding season would be designed to avoid or minimize disturbances to breeding birds. Such measures could include maintaining effective buffers to active nests and would require the on-site presence of a qualified biologist before and during clearing and grubbing activities and other manipulations of habitat. Work conducted outside of breeding season may require monitoring and avoidance measures for special-status birds; this would be determined by State Parks in consultation with Wildlife Agencies (U.S. Fish and Wildlife Service and California Department of Fish and Wildlife). Proposed clearing and grubbing along with monitoring and avoidance measures would be reviewed and approved by State Parks in consultation with Wildlife Agencies prior to the commencement of clearing and grubbing, or habitat manipulation within TPSNR.
PDF #17	Have a qualified biological monitor on site prior to and during construction to coordinate with contractors to minimize impacts to habitat and wildlife; frequency may vary depending upon activity but could be daily during breeding season or every other week at other time periods. Monitor vegetation clearing activities and flush wildlife prior to clearing, as appropriate, and in compliance with the ESA where applicable.
PDF #22	Equipment would be cleaned prior to transport to the project site to prevent potential non-native plant species and other foreign matter, such as sediment and debris, from entering the site.
PDF #23	The following measures would be implemented as necessary to reduce fugitive dust emissions associated with off-road equipment and heavy-duty vehicles: exposed surfaces (e.g., unpaved access roads) shall be watered; sweepers and water trucks shall be used to control dust and debris at public street access points; dirt storage piles shall be stabilized by chemical binders, tarps, fencing, or other suppression measures; sufficient perimeter erosion control shall be provided to prevent washout of silty material onto public roads; haul trucks shall be covered or at least 12 inches of freeboard shall be maintained to reduce blow-off during hauling; and a 15-mph speed limit on unpaved surfaces shall be enforced.
PDF #25	Construction and maintenance activities that require mechanized equipment would be at least 500 feet from active special-status avian nests. Biological surveys would be conducted within the project footprint, which includes staging and access routes, and at least 500 feet outside the project footprint to determine the location of sensitive avian species. If these buffers between construction activity and conditions cannot be met, the project would work with State Parks and consult the Wildlife Agencies to determine the best approach to

Table 1. Project Design Features (PDF) and Standard Construction Procedures (SCP) Applicable to Project Components in Marine Environment[1]

PDF/SCP #	Description
	avoid/minimize/offset impacts to nesting or roosting birds. Such approaches may include considering the distance to the project limits and local topography, monitoring to evaluate whether the birds are disturbed by construction, flushing wildlife out of the active work area, and relocating nests.
PDF #26	A qualified biologist would be on site during project construction and during maintenance activities that require mechanized equipment. The biological monitor must be familiar with wetland, coastal sage scrub, and dune biology, ecology, associated native species, and the conservation measures identified for the project. The biological monitor would be available during pre-construction and construction phases to conduct biological surveys, address protection of sensitive biological resources, monitor ongoing work, and maintain communications with construction personnel to facilitate the appropriate and lawful management of issues relating to biological resources. The qualified biologist would have the ability to temporarily halt construction and maintenance activities, if necessary, to avoid unanticipated impacts to special status species and noncompliance with conservation measures. The avian biological monitor or qualified biologist would coordinate with LPLF or State Parks to determine appropriate measures to protect special status-species with regards to the operation of vehicles and heavy equipment.
PDF #27	All participants and contractors for the project would receive educational training concerning special-status species within the project area and sign an agreement to comply with the conservation measures or conditions. The program would be conducted during all project phases and would cover the potential presence of listed species; the requirements and boundaries of the project; the importance of complying with avoidance, minimization, and compensation measures; and problem reporting and resolution methods.
PDF #28	To avoid adverse impacts to special-status bird species, on-site vehicle operators shall drive no more than 15 miles per hour within the project footprint in areas identified as occupied habitat. The avian biological monitor or qualified biologist have the authority to further reduce the speed limit temporarily, if necessary, to avoid adverse impacts to special-status bird species. The avian biological monitor or qualified biologist would coordinate with LPLF or State Parks to determine appropriate measures to protect special-status species with regards to the operation of vehicles and heavy equipment.
PDF #30	Equipment maintenance, staging, and dispensing of fuel, oil, coolant, or other such activities would be restricted to staging areas. A Spill Prevention, Control, and Countermeasure Plan would be prepared for hazardous spill containment.
PDF #31	All construction equipment used for the project would be equipped with properly operating and maintained mufflers and engines on dredging equipment would be housed to the greatest extent possible.
PDF #32	If nighttime construction is necessary, lighting used at night for project construction would be selectively placed and directed at the immediate work area and away from adjacent sensitive habitats. Light glare shields would be used to reduce the extent of illumination into sensitive habitats.
PDF #33	The Applicants would prepare and implement a Stormwater Pollution Prevention Plan, Stormwater Management Plan, Hydromodification Management Plan, and Low Impact Development Best Management Practices, as appropriate, to confirm that the limits of disturbance would be maintained within the identified project footprint.

Table 1. Project Design Features (PDF) and Standard Construction Procedures (SCP) Applicable to Project Components in Marine Environment[1]

PDF/SCP #	Description
PDF #34	Erosion and sediment control devices used for the project, including fiber rolls and bonded fiber matrix, would be made from biodegradable materials such as jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.
PDF #35	The project site would be kept as clear of debris as possible. Food-related trash items would be enclosed in sealed containers and regularly removed from the site to avoid attracting scavengers/predators of sensitive birds. Spoils and materials disposal would be disposed of properly.
PDF #36	Project personnel will be prohibited from bringing domestic pets to construction sites to avoid disturbance and depredation of wildlife by domestic pets in adjacent habitats.
SCP #1	Implement a public information program to assist Park users and the surrounding community in understanding the purpose of the project and disseminate pertinent project information, including a project website with current construction schedule.
SCP #3	Have Resident Engineer or designee on site during construction to confirm compliance with permit conditions and construction specifications.
SCP #5	Restrict access to active construction areas and staging yards to maintain public safety (e.g., portions of trails).
SCP #6	During off working hours, secure heavy equipment and vehicles in staging areas or areas with restricted access.
SCP #7	Conduct equipment fueling and maintenance at designated staging and fueling stations away from publicly accessible areas.
SCP #8	Prepare project Storm Water Pollution Prevention Plan (SWPPP) and implement best management practices (BMPs) and monitoring requirements identified in SWPPP (e.g., dust control measures).
SCP #11	Provide emergency communication equipment for site personnel.
SCP #12	Ensure the construction contractors minimize idling times by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage would be provided for construction workers at access points.
SCP #13	Site staging areas and access roads at existing access points and previously disturbed areas.
SCP #14	Prepare work zone Traffic Control Plans for projects that would disrupt traffic flow on local roadways prior to construction. The work zone Traffic Control Plans shall be prepared by the contractor in accordance with the California Manual of Uniform Traffic Control Devices, Caltrans Standard Plans (2010), and current standards and best practices of the reviewing and approving agencies.
SCP #15	Coordinate with applicable agencies regarding construction and maintenance schedules and worksite Traffic Control Plans including, but not limited to, local fire and police departments.
SCP #16	Maintain one lane of circulation on public roadways and access to neighboring commercial establishments during project construction.
SCP #17	Ensure temporary speed limit reduction for the traffic detour approaches and exits conforms to safe highway design speeds.
SCP #18	Have a flag person present to coordinate north-south traffic during those limited times that only a single lane is open.

Note:

[1] All information is taken from the Final Program Environmental Impact Report for the Los Peñasquitos Lagoon Enhancement Plan (California Department of Parks and Recreation 2021).

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3 Regulatory Setting

This section provides a brief regulatory overview for marine biological resources addressed in this report. Regulations that apply to terrestrial biological resources are discussed in the Biological Resources Technical Report for this Project (Dudek and Blackhawk Environmental 2023). Some resources, such as coastal wetlands, are both marine and terrestrial biological resources; these resources are generally addressed in the Biological Resources Technical Report, which includes a jurisdictional delineation of waters and wetlands. Therefore, regulations such as the Clean Water Act and Rivers and Harbors Act are not discussed here.

3.1 Federal Laws and Regulations

3.1.1 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 2021). Management measures developed by the PFMC are recommended to the Secretary of Commerce through National Marine Fisheries Service (NMFS). Management measures are implemented by the NMFS west coast regional offices and enforced by the NOAA Office of Law Enforcement, the 11th and 13th Coast Guard Districts, and local enforcement agencies (PFMC 2021).

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 2022). 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 Los Peñasquitos Lagoon (NOAA Fisheries 2022a). EFH in the Project area is described in Section 4.3.4, 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 area; 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. This designation requires federal agencies to consult with NOAA Fisheries on ways to avoid or minimize the adverse effects of their actions on eelgrass. The California Eelgrass Mitigation Policy and Implementing Guidelines (CEMP) provides federal agencies consulting with NOAA Fisheries with comprehensive and consistent information to ensure their actions result in “no net loss” of eelgrass habitat function (NMFS 2014a). The CEMP provides information on how to avoid or lessen impacts to eelgrass and for considering different options for mitigation. This flexibility provides an opportunity to protect and restore eelgrass, a key foundation to a healthy marine habitat, and to preserve the basic ecosystem functions along the California coast.

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.

3.1.2 Marine Mammal Protection Act (1972)

The Marine Mammal Protection Act of 1972 (MMPA), as amended, establishes a federal responsibility for the protection and conservation of marine mammal species by prohibiting the "take" of any marine mammal. The MMPA defines "take" as the act of hunting, killing, capture, and/or harassment of any marine mammal, or the attempt at such. The MMPA also imposes a moratorium on the import, export, or sale of any marine mammals, parts, or products within the United States. U.S. Fish and Wildlife Service (USFWS) and NOAA Fisheries are jointly responsible for implementation of the MMPA; USFWS is responsible for the protection of sea otters and NOAA Fisheries is responsible for protecting pinnipeds (seals and sea lions) and cetaceans (whales and dolphins).

Under Section 101(a)(5)(D) of the MMPA, an incidental harassment permit may be issued for activities other than commercial fishing that may impact small numbers of marine mammals. An incidental harassment permit covers activities that extend for periods of not more than 1 year and that will have a negligible impact on the impacted species. Amendments to the MMPA in 1994 statutorily defined two levels of harassment. Level A harassment is defined as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal in the wild. Level B harassment is defined as harassment having potential to disturb marine mammals by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

3.2 Regional and Local Plans

3.2.1 City of San Diego Land Development Code – Coastal Bluffs and Beaches Guidelines

The San Diego Municipal Code, Land Development Code, Coastal Bluffs and Beaches Guidelines assist in the interpretation and implementation of the development regulations for coastal beaches contained in Chapter 14, Article 3, Division 1, Environmentally Sensitive Lands Regulations. (City of San Diego 2000). Beach nourishment is a form of development that will be within 100 feet of a beach, as defined by the regulation, and therefore will be subject to the Environmentally Sensitive Lands regulations, unless found to be exempt. Coastal beach is defined as the land between the edge of the sea and the first line of terrestrial vegetation or development or the toe of an adjacent sensitive coastal bluff, whichever is most seaward. Within coastal beaches, development is limited to public facilities and shoreline protective works.

4 Methods

4.1 Literature Review

The description of existing biological resources within and immediately surrounding the Los Peñasquitos Lagoon is based on the review of background documents. 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 lagoon and Torrey Pines State Beach. 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 area:

- CDFW California Natural Diversity Database (CNDDB) 9-quad query (CDFW 2022a)
- USFWS Species Occurrence and Critical Habitat Data (USFWS 2022a)
- USFWS Information for Planning and Consultation (USFWS 2022b)
- Pacific Coast Groundfish Fishery Management Plan (PFMC 2022)
- Coastal Pelagic Species Fishery Management Plan (PFMC 2021)
- California Spiny Lobster Fisheries Management Plan (CDFW 2016)
- CDFW Special Animals List (CDFW 2022b)
- NOAA Find a Species Website and Marine Mammal Stock Assessment Reports (NOAA Fisheries 2020a)
- NOAA California Species List Tools (NOAA Fisheries 2022b)
- Marine Mammal Commission (MMC 2007)
- Marine Mammal Haulouts and Rookeries (CDFG 2009)
- USFWS Recovery Plans, USFWS 5-Year Reviews, and/or Federal Register entries. Additional resources are reported within the species account information.

Based on Dudek's habitat suitability analysis, six species have a moderate to high potential to occur in or adjacent to the Project area: eelgrass (*Zostera marina)*, green sea turtle (*Chelonia mydas*), gray whale (*Eschrichtius robustus*), common bottlenose dolphin (*Tursiops truncatus*), Pacific harbor seal (*Phoca vitulina*), and California sea lion (*Zalophus californianus*). Species not expected to occur or a low potential to occur are included in Appendix D.

4.2 Survey Areas

The survey boundaries for the Project are depicted on Figure 3, Biological Surveys. The Los Peñasquitos tidal channel survey commenced near the lagoon entrance and followed the southern section of the channel almost to the pinch point and trestle. The inshore marine dive surveys covered the area expected to be potentially affected by the sediment plume from the beach nourishment, from the lagoon entrance to the south overlook and comprising approximately 120 acres.

4.3 Field Surveys

4.3.1 Tidal Channel Survey

Dudek deployed a kayaking dive team on July 15, 2022, to conduct biological surveys within Los Peñasquitos Lagoon. The tidal channel survey focused on determining the presence/absence of eelgrass (*Zostera marina*) and the documentation of benthic invertebrates, algae, and fish species. Approximately 6,250 linear feet of tidal channel was surveyed. The access point to the channel for the kayak survey was located directly northeast of the railroad bridge crossing near the intersection of Carmel Valley Road and Via Aprilia. Surveyors mapped eelgrass beds using a Trimble R2, characterized marine flora and fauna (American Fisheries Society 2013; Humann and DeLoach 2008; Southern California Association of Marine Invertebrate Taxonomists 2018), took water quality measurements, and photographed marine biota and habitats.

4.3.2 Inshore Marine Scientific Dive Surveys

Dudek deployed a scientific dive team to conduct inshore marine surveys along Torrey Pines State beach. On August 23 and 24, 2022, Dudek scientific divers performed SCUBA surveys in the Pacific Ocean, specifically along the inshore marine waters potentially affected by beach nourishment activities of approximately 0.25 miles wide (west of shore) and 0.75 miles long (primarily south of lagoon inlet), comprising 120 acres (Table 2). Prior to the surveys, a dive plan and a dive safety plan were compiled. All dives were under 41 feet mean lower low water for a maximum of 60 minutes. All dives followed the dive plan. Any potentially hazardous conditions including low visibility, tidal changes, wind waves, or boating were discussed during the pre-dive briefing. The survey team included qualified scientific divers, and surface support (i.e., biologist on kayak). The dive team accessed Torrey Pines State Beach and staged dive gear from the north and south Torrey Pines Beach Parking Lots. Scientific divers conducted eelgrass, *Caulerpa*, and rocky reef/kelp forest surveys and mapped any of these observed habitats, determined the biological characteristics of observed eelgrass beds, characterized marine flora and fauna, and photographed and took video footage of marine biota and habitats. Divers generally followed east–west transects and surface support directed divers to transect start locations. Divers noted compass direction and descended. Divers used compass headings, depth based on NOAA charts, and the dive plan to conduct transect surveys. Along the transects, divers recorded species observed and took photographs and videos using GoPro cameras. At the end of each transect, observations were recorded including using point intercept categories for substrate and relief overall. Surface support kept the Divers Log, collected water quality information, and used Collector on a mobile device to guide divers to transects and map habitats. A Trimble R2 unit was also used for sub-meter mapping accuracy.

Table 2. Survey Date and Type Conducted, Personnel, and Atmospheric Conditions

Date	Hours	Survey Type	Marine Biologists[a]	Atmospheric Conditions	Water Conditions
07/15/2022	0900–1500	Tidal Channel Survey	AD	Clear; 60°F–70°F, 20%-95% cloud cover, 1-5 mph winds	70°F-72°F, 8.1-8.2 pH, 1.51-9.22 Nephelometric Turbidity Units, Dissolved oxygen 7.6-7.8 milligrams/liter

Table 2. Survey Date and Type Conducted, Personnel, and Atmospheric Conditions

Date	Hours	Survey Type	Marine Biologists[a]	Atmospheric Conditions	Water Conditions
08/23/2022	0830–1600	Inshore Marine Surveys	JD, AD, HM, VG	Clear; 60°F–79°F, 1–5 mph winds	59°F-74°F, 8.1 pH, 1-70 Nephelometric Turbidity Units, Dissolved oxygen 8 milligrams/liter
08/24/2022	0700–1300	Inshore Marine Surveys	JD, AD, HM, VG	Clear; 68°F–97°F, 0–9 mph winds	69°F-73°F

Notes: Marine Biologists: AD = Andrea Dransfield; JD = John Davis IV; HM = Heather Moine, VG = Valerie Goodwin.

4.3.3 Eelgrass Surveys

Eelgrass baseline surveys were conducted within the Project area in accordance with the CEMP (NMFS 2014a). Eelgrass surveys were conducted using visual (scientific dive) 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, percpent 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 above, 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.

4.3.4 Essential Fish Habitat Assessment

To comply with the Magnuson-Stevens Act (16 USC 1801 et seq.), and in accordance with NMFS regulations, the Project area 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 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 area, the Pacific Coast Groundfish FMP and the Coastal Pelagic Species FMP would be applicable for Torrey Pines State Beach (NOAA 2022b). Torrey Pines State Reserve is defined as a HAPC as it is an estuary, per Amendment 19 of the Pacific Coast Groundfish Fishery Management Plan.

5 Results

This section highlights the results of the tidal channel and inshore marine dive surveys, as well as the results of the EFH and special-status species analysis. Photographs from the tidal channel and inshore marine surveys are provided in Appendix A, Photographic Documentation.

5.1 Tidal Channel Survey

The entirety of the portion of the tidal channel to be dredged was surveyed to determine the presence/absence of eelgrass, collect water quality measurements, and document observed species. Table 3 summarizes the results of the eelgrass survey at the Project area (see also Figure 4, Eelgrass Survey Results).

Table 3. Eelgrass Survey – Area and Percentage of Eelgrass Beds

Survey Area (acres)	Eelgrass Beds (acres)	Eelgrass 5-Meter Buffer (acres)	Total Eelgrass Area (acres)	Percent Eelgrass Area[a] in Project Area
5.8	0.00025	0.086	0.08625	1.5

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

Eelgrass was only found in the northwest section of the study area, with 0.00025 vegetated acres mapped. Of these 0.00025 vegetative acres, all were mapped as either 1% to 25% or 26% to 50% eelgrass cover (Table 4). Depths of eelgrass locations ranged from approximately 2-feet to 5-feet below the water surface within the tidal channel surveyed. In total, 0.00025 vegetated acres were mapped and an additional 0.086 unvegetated acres (i.e., within the 5-meter buffer) were mapped in the Project area. Table 4 provides a summary of turion density (counts) and percent cover of eelgrass for each individual polygon.

Table 4. Eelgrass Survey – Percent Cover and Turion Results

Eelgrass Polygon	Turion Density (+/- Standard Deviation)	Cover Class	Turion Count
EG1	42%	26% to 50%	250
EG2	15%	1% to 25%	46
EG3	25%	1% to 25%	25
EG4	45%	26% to 50%	45
Total Average	**32% (+/- 14%)**	—	**91**

During the eelgrass survey in the Project area, all flora and fauna were recorded (Table 5). As shown in Table 5, all species encountered except Pacific oyster (*Crassostrea gigas*) were native, and none were considered a managed species. Water quality sampling results are summarized in Table 6 and sampling locations are noted in Figure 4.

Table 5. Species observed in Los Peñasquitos Lagoon

Scientific Name	Common Name	FMP/Status	Native, Non-Native, or Invasive
Algae and Seagrasses			
Plocamium cartilagineum	Red algae	—	Native
Ulva lactuca	Sea lettuce	—	Native
Phyllospadix scouleri	Surf grass	—	Native
Zostera marina	Eelgrass	EFH, HAPC	Native
Invertebrates			
Mytilus trossulus	Bay mussel	—	Native
Uca rapax	Mudflat fiddler crab	—	Native
Crassostrea gigas	Pacific oyster	—	Non-native
Protothaca staminea	Common littleneck clam	—	Native
Cerithidea californica	California horn snail	—	Native
Hemigrapsus nudas	Purple shore crab	—	—
Pachygrapsus crassipes	Striped shore crab	—	Native
Fish			
Mugil cephalus	Mullet	—	Native
Atherinops affinis	Bay topsmelt	—	Native
Pleuronectiformes (order)	Flatfish	—	Native

Notes: EFH = Essential Fish Habitat; HAPC = Habitat Area of Particular Concern; FMP = fishery management plan; PCGF = Pacific Coast Groundfish Fishery Management Plan (PFMC 2022); CPS = Coastal Pelagic Species Fishery Management Plan (PFMC 2021); — = non-listed.

Table 6. Summary of Water Quality Sampling Results by Constituent

Water Quality Constituent	Sampling Location		
	WQ1	WQ2	WQ3
Temperature (°F)	70.7	72.1	72.3
Dissolved Oxygen (DO)	7.78	7.67	7.58
Conductivity (µS/cm)	47234	47988	48046
Total Dissolved Solids (TDS) (mg/L)	32914	32920	32867
pH	8.16	8.19	8.08
Oxidation Reduction Potential (ORP) (mV)	102.8	54.2	118.1
Nephelometric Turbidity Units (NTU)	9.22	2.04	1.51

In addition to Dudek's survey, Crooks et al. (2020) present long-term data for Los Peñasquitos Lagoon include a fish and invertebrate sampling station within the Project tidal channel. Those studies indicate a relatively large number of invasive Asian shrimp (*Palaemon macrodactylus*) and swamp shrimp (*Procambarus clarkii*). Bierzychudek (2022) further confirms that upper portion of tidal channels within Los Peñasquitos Lagoon show the highest predominance of invasive freshwater organisms include western mosquito fish (*Gambusia affinis*) and African clawed frog (*Xenopus laevis*). The most upstream sampling point within the Project tidal channel showed the fewest species and lowest species diversity based on minnow trapping completed throughout the Lagoon. These

studies indicate the potential benefit that increasing salinity levels within the Project tidal channel could have to native species diversity and abundance.

5.2 Inshore Marine Scientific Dive Surveys

Scientific divers conducted eelgrass and rocky reef/kelp forest surveys, characterized marine flora and fauna, and photographed and took video footage of marine biota and habitats. During surveys, the majority of substrate was sand ranging from 99% to 100% of the substrate observed on transect. Few cobbles with minimal surface growth were observed within minor depressions (approximately 1 foot of relief) at depths of 19 to 20 feet within the sand on the ocean floor. Notably, a cluster of boulders was recorded within the southwest corner of the survey area. Boulders covered a sandy area approximately 20 feet by 20 feet and boulder sizes varied from 15 cm to approximately 0.5 meter with minimal surface growth and few wildlife species. Surfgrass (*Phyllospadix* sp.) was observed infrequently in small (less than 1 square foot) patches. No eelgrass (*Zostera* sp.) or *Caulerpa* sp. individuals were observed.

Throughout the survey area the general pattern of substrate and observations was similar from inshore to offshore in a sort of north–south parallel trend following natural contours (Figure 5). From inshore to offshore the observations were as follows:

- 0 to 16 foot depth: sand
- 16 to 19 foot depth: sand with accumulation of small shells (less than 1 inch in size)
- 19 to 20 foot depth: sand with occasional minor depressions (approximately 1 foot relief) with few cobbles
- 20 to 21 foot depth: sand
- 21 to 25 foot depth: sand dollar bed
- 25 foot depth to maximum survey depths of 28 to 41 foot depth: sand

During the survey in the Project area, all flora and fauna were recorded (Table 7). As shown in Table 7, all species encountered were native and only one species, the California skate (*Beringraja inornata*), is considered a managed species. Water quality sampling results are summarized in Table 8 and sampling locations are noted in Figure 5.

Table 7. Species Observed During the Marine Inshore Surveys

Scientific Name	Common Name	FMP/Status	Native, Non-Native, or Invasive
Algae and Seagrasses			
Plocamium cartilagineum	Red algae	—	Native
Ulva lactuca	Sea lettuce	—	Native
Phyllospadix scouleri	Surf grass	HAPC	Native
Invertebrates			
Apostichopus parvimensis	Warty sea cucumber	—	Native
Astropecten armatus	Armored sea star	—	Native
Dendraster excentricus	Sand dollar	—	Native
Ptilosarcus gurneyi	Sea pen	—	Native

Table 7. Species Observed During the Marine Inshore Surveys

Scientific Name	Common Name	FMP/Status	Native, Non-Native, or Invasive
Tivela stultorum	Pismo clam	—	Native
Tagelus subteres	Jackknife clam	—	Native
Pagurus samuelis	Hermit crab	—	Native
Emerita analoga	Sand crab	—	Native
Salpa sp.	Salp	—	Native
Neotrypaea californiensis	Bay ghost shrimp	—	Native
Callianax biplicata	Purple dwarf olive snail	—	Native
Donax gouldii	Bean clam	—	Native
Fish			
Pleuronichthys guttulata	Diamond turbot	—	Native
Syngnathus californiensis	Pipe fish	—	Native
Beringraja inornata	California skate	PCGF, EC	Native
Urobatis helleri	California stingray	—	Native

Notes: FMP = fishery management plan; PCGF = Pacific Coast Groundfish Fishery Management Plan (PFMC 2022); CPS = Coastal Pelagic Species Fishery Management Plan (PFMC 2021); EC = Ecosystem Component Species; — = non-listed.

Table 8. Average Water Quality Sampling Results by Constituent

Water Quality Constituent	Sampling Location	
	WQ4	WQ5
Depth Below Surface (ft)	5	15
Temperature (°F)	73.7	73.7
Dissolved Oxygen (DO) (mg/L)	8.21	8.46
Conductivity (µS/cm)	48642	48158
Total Dissolved Solids (TDS) (mg/L)	32762	32835
pH	8.09	8.1
Oxidation Reduction Potential (ORP) (mV)	112.1	104.3
Nephelometric Turbidity Units (NTU)	7927	1.01

5.3 Essential Fish Habitat

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, including Los Peñasquitos Lagoon. No important fishing areas overlap with the Project area. While the inshore marine dive surveys were absent of kelp, rocky reef, and eelgrass habitats, the soft-bottom substrate of Los Peñasquitos Lagoon contains the seagrass HAPC type—specifically, eelgrass beds—discussed in the Pacific Coast Groundfish FMP. In total, the tidal channel of the lagoon that was surveyed supports approximately 0.087 acres of eelgrass habitat, including 0.00025 acres of vegetated habitat and 0.086 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.

Moreover, Torrey Pines State Beach may function as grunion (*Leuresthes tenuis*) spawning habitat. The California grunion is a member of the New World silversides family, *Atheriniopsidae*, along with jacksmelt and topsmelt, and are part of a recreational fishery (CDFW 2022c). Their range extends from Point Conception, California, to Point Abreojos, Baja California. They inhabit nearshore waters from the surf to a depth of 60 feet. Spawning occurs from March through August. Eggs are deposited during the highest tides of the month and incubate in the sand during the lower tides. Grunion hatch approximately 10 days later, during the next high tide series, when they are inundated with sea water and agitated by rising surf (CDFW 2022c). Grunion are a vulnerable species and are subject to loss of spawning habitat caused by beach erosion, harbor construction, and pollution. Recent data have shown that the abundance of grunion has declined over the past decade (CDFW 2022c). Due to concerns over the health and long-term sustainability of this endemic and culturally iconic species and fishery, regulatory changes established a bag and possession limit of 30 grunion for recreational fishers and closed the month of June to take of grunion, shortening the open season by one month, from July 1 through March 31, for recreational fishing (CFGC 2022).

5.4 Special Status Species

California species identified in the literature review (see Chapter 4, Methods) as listed by USFWS, NMFS, or CDFW as protected, rare, sensitive, threatened, or endangered and that have a moderate to high potential to occur in the Project area are summarized in Table 9 and focused on marine species. Results of the USFWS IPaC query are provided in Appendix B. Based on the literature review, a habitat suitability analysis was performed for the species with potential to occur in the Project area. Some species documented in the vicinity were omitted because of the absence of suitable habitat on site. Species covered in the Project's Biological Technical Report (i.e., non-marine species) are not included herein, with the except of western snowy plover *(Charadrius alexandrines nivosus)* as this species is only expected on beach areas and therefore is not addressed in the Biological Technical Report and is included here (Dudek and Blackhawk Environmental Inc. 2023). Special-status species directly observed included eelgrass (EFH/HAPC; see Section 5.1). The CNDDB search resulted in multiple plant and wildlife species within 5 miles of the Project (Figure 6, California Natural Diversity Database Plant and Wildlife Occurrences within 5 Miles of Project Site) with no marine species noted. Six federally listed or protected species are known to occur in the vicinity of the tidal channel and/or Torrey Pines Beach marine surveys plume: eelgrass, green sea turtle, gray whale, common bottlenose dolphin, Pacific harbor seal, and California sea lion. Eelgrass is discussed in Section 5.3; the other species are discussed in detail in this section. Appendix D contains a marine-focused PTO table with species not expected to occur.

Table 9. Marine Special-Status Species Observed or with a Moderate to High Potential to Occur 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 in the tidal channel.
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 along the coast and in local estuaries such as the nearby Agua Hedionda Lagoon.
Birds				
Charadrius alexandrines nivosus	Western snowy plover	FT/SSC	Sandy beaches, river gravel bars, sandy flats, salt pans, and dry salt ponds.	High. Known to sporadically use the sandy beach adjacent to the inlet and along Torrey Pines State Beach.
Marine Mammals				
Eschrichtius robustus	Gray whale	MMPA	Occurs in coastal waters along the west coast of North America from Mexico to Alaska and in eastern Siberia. Usually feeds along the Bering, Chukchi, and Beaufort seas during the summer, and winters along breeding and calving areas off the coast of Baja California. During their northward migration from Baja to Alaska, cow-calf pairs stay particularly close to shore to avoid predation by orcas. Bottom feeder that consumes benthic amphipods in sandy bottom habitat.	Moderate. Known to migrate and/or forage along the coast within the plume area surveyed. Not expected in the lagoon.
Tursiops truncatus	Common bottlenose dolphin	MMPA	Worldwide ranging from 45°N to 45°S latitude; found in temperate and tropical waters. Coastal populations migrate into bays, estuaries, and river mouths. Offshore populations inhabit pelagic waters along the continental shelf.	High. Known to migrate and/or forage along the coast within the plume area surveyed. Not expected in the lagoon.

Table 9. Marine Special-Status Species Observed or with a Moderate to High Potential to Occur in the Project Site

Scientific Name	Common Name	Status Federal/State	Primary Habitat Associations	Potential to Occur
Phoca vitulina	Pacific harbor seal	MMPA	Generally non-migratory. On the U.S. west coast this species is found in coastal and estuarine waters from Canada to Baja California, Mexico. Found in temperate coastal habitats and uses rocks, reefs, beaches, and drifting glacial ice for hauling out and pupping sites.	Moderate. Known to forage along the coast within the plume area surveyed. Not expected in the lagoon.
Zalophus californianus	California sea lion	MMPA	Eastern North Pacific Ocean from central Mexico to Canada; shallow coastal and estuarine waters; prefers sandy beaches for haul out sites but will also haul out on marina docks, jetties, and buoys.	Moderate. Known to forage along the coast within the plume area surveyed. Not expected in the lagoon.

Notes: CNDDB = California Natural Diversity Database; USFWS = U.S. Fish and Wildlife Service
Status Key:
Federal:
FDL = federally delisted
FE = federal endangered
FT = federal threatened
EFH = essential fish habitat
HAPC = Habitat Area of Particular Concern
MMPA = Marine Mammal Protection Act
State:
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.

5.4.1 Green Sea Turtle

The green sea turtle (*Chelonia mydas*) is a federally listed threatened species, and also is protected by the MMPA. The Eastern Pacific DPS ranges from Baja California to southern Alaska. However, the green sea turtle is more common from San Diego southward. This species forages in the open ocean when migrating as well as shallow waters of lagoons, bays, estuaries, mangroves, eelgrass, and seaweed beds. They are herbivorous and feed primarily on seagrasses and algae. Green sea turtles are generally found in shallow waters except when migrating. It is a regular visitor in the waters off the southwest coast of the United States. Residents occur in the San Gabriel River, Long Beach (NOAA Fisheries and USFWS 1998). The closest known nesting occurrences are in Mexico (NOAA

Fisheries and USFWS 1998). This species requires open beaches with a sloping platform and minimal disturbance for nesting. Green sea turtles have strong nesting site fidelity and often make long distance migrations between feeding grounds and nesting beaches. This species may travel through the Project area year-round. However, there may be a reduced potential during nesting season (mid-April through September). Adults migrate every 2 to 5 years from their coastal foraging areas to their nesting beaches. This species may migrate and/or forage, but are not expected to nest, in the Project area.

5.4.2 Gray Whale

Gray whales (*Eschrichtius robustus*) of the Eastern North Pacific Stock were delisted from the ESA in 1994 (59 FR 31094-31095) but are protected by the MMPA. This species occurs in coastal waters along the west coast of North America from Mexico to Alaska, and in eastern Siberia. Gray whales usually feed along the Bering, Chukchi, and Beaufort seas during the summer, and winter along breeding and calving areas off the coast of Baja California. Calves are born from January to February (NOAA Fisheries 2022b). During their northward migration from Baja to Alaska, cow-calf pairs stay particularly close to shore to avoid predation by orcas (*Orcinus orca*). Gray whales are bottom feeders that consume benthic amphipods (and other epibenthic fauna such as mysids, amphipods, polychaete tubeworms). Since this species is a bottom feeder, gray whales are restricted to shallow continental shelf waters (Jefferson et al. 2008). Gray whale migration routes overlap with the Project area and encompass the entire shoreline (Calambokidis et al. 2015; NOAA Fisheries 2012, 2022c). In San Diego, the northern migration occurs mid-February through May, and therefore gray whales would have a greater chance of occurrence in the Project area during this migration since they are typically closer to shore.

5.4.3 Common Bottlenose Dolphin

Common bottlenose dolphin (*Tursiops truncates*) is protected by the MMPA. Bottlenose dolphins have a worldwide distribution ranging from 45°N to 45°S latitude and are found in temperate and tropical waters. Coastal populations often migrate into bays, estuaries, and river mouths. Oceanographic events appear to influence their distribution. North–south movements of bottlenose dolphins have been observed during ocean temperature changes, with higher temperatures associated with northward migrations. Offshore populations inhabit pelagic waters along the continental shelf. The common bottlenose dolphin, as its name suggests, is a common coastal species and a generalist feeder (i.e., squid, fish and crustaceans) (Jefferson et al. 2008). Common bottlenose dolphins are comprised of two sub-populations: coastal bottlenose dolphins and offshore bottlenose dolphins. Coastal bottlenose dolphins are known to regularly occur within 1 kilometer of shore (Carretta et al. 1998). In Southern California, they are found within 500 meters of the shoreline 99% of the time and within 250 meters 90% of the time (NOAA Fisheries 2017). On the other hand, offshore bottlenose dolphins inhabit areas at distances greater than a few kilometers from the mainland (NOAA Fisheries 2016). They may travel alone or in groups and commonly work together to herd prey. Habitat-based density models show high predicted density for this species in the Project area (Becker et al. 2016). In San Diego, this species is present year-round.

5.4.4 Pacific Harbor Seal

The Pacific harbor seal (*Phoca vitulina*) is protected by the MMPA. It is widespread in coastal areas of the Northern Hemisphere, in temperate and polar habitats. It is generally non-migratory and inhabits areas from the coast to the continental slope (Jefferson et al. 2008). On the west coast of the United States, this species is found in coastal and estuarine waters from Canada to Baja California, Mexico. Harbor seals inhabit temperate coastal habitats and

use rocks, reefs, beaches, and drifting glacial ice for hauling out and pupping sites (NOAA Fisheries 2022b). Diving averages less than 35 meters and they are generalist feeders (a variety of fish, cephalopods and crustaceans) (Jefferson et al. 2008). On land, harbor seals are very wary and shy, and will stampede into the water when disturbed. In the water, they are curious yet cautious and will peer at people/boats. Harbor seals have known haulouts and rookeries at La Jolla, San Diego. In San Diego, this species is present year-round.

5.4.5 California Sea Lion

California sea lion (*Zalophus californianus*) is protected by the MMPA. It inhabits the eastern North Pacific Ocean from central Mexico to Canada. This species is present along the west coast from the Tres Marias Islands off Puerto Vallarta, throughout the Gulf of California and the Baja peninsula, north to Alaska. Males (adults, subadults, and juveniles) undertake a northward migration to Central California and Washington after the breeding season in southern rookeries. They are generalist opportunistic feeders (squid and fishes in areas of upwelling) and use the continental shelf and slope, but have also been observed in deeper oceanic waters (Jefferson et al. 2008). California sea lions prefer shallow coastal and estuarine waters and sandy beaches for haul out sites but will also haul out on marina docks, jetties, and buoys (NOAA Fisheries 2022b). On land, they are wary of humans, but in the water, they are curious and bold and will approach boats looking for fish. They will take fish from commercial fishing gear, sport fishing lines, and fish passage facilities at dams and rivers. They are less wary of people because they associate people with an easy meal. They may also be curious about construction activities. California sea lions are subject to several threats: entanglement in fishing gear (gillnets, longline), pollution, ship strikes, and human-caused injuries. This species has known haulouts and rookeries at Point La Jolla and Boomer Beach, San Diego. In San Diego, this species is present year-round.

5.4.6 Western Snowy Plover

Western snowy plover is a ground-nesting bird that occurs along the Pacific Coast from Washington to Baja California. It is known to sporadically utilize sandy beaches at the Los Peñasquitos Lagoon inlet and along Torrey Pines State Beach. Monthly monitoring efforts at the State Beach have failed to identify the consistent presence of this species for over a decade, most likely due to the lack of suitable habitat, heavy use by the public, and predation.

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6 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 6.1, there are two types of possible impacts to biological resources: direct impacts and indirect impacts. The analysis of both direct and indirect impacts (Section 6.2) is based on the survey results that detail the existing conditions and the potential for biological resources in the lagoon tidal channel and within the potential plume area off Torrey Pines State Beach (Chapter 5, Survey Results), review of relevant literature (Chapter 4, Methods), and the regulatory framework governing biological resources (Chapter 3, Regulatory Setting). Cumulative impacts are not analyzed here but are included as Chapter 7.3.6 of the Final Program Environmental Impact Report for the Los Peñasquitos Lagoon Enhancement Plan (California Department of Parks and Recreation 2021).

6.1 Definition of Impacts

Direct Impacts

"Direct impacts" as defined by the City's Biology Guidelines (2018) are physical changes in the environment which are caused by and immediately related to the project. In the context of this Project and marine resources, 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. These direct impacts may be permanent or temporary.

The Project does not include any direct permanent impacts (e.g., placement of structures) in the marine environment. Tidal channel dredging is proposed as a one-time, small-scale activity and although beach nourishment may be repeated, no permanent structures are proposed and beach sand placement is an activity that by design (e.g., sediment suitability testing and location within the surf zone) has only temporary effects. The footprint of tidal dredging and beach sand placement are the areas of direct temporary impacts to the marine environment associated with the Project. Areas temporarily disturbed by Project activities would be naturally 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.

Studies of post-dredging recolonization by marine organisms have mostly been done in areas of more intensive navigational or mineral extraction dredging programs. The proposed tidal channel dredging, by comparison, is small scale both in terms of area (approximately 4 acres) and elevation changes (which are 3 feet or less). Wilbur and Clark (2007) identified 13 of 14 channel dredging sites worldwide and documented recovery times of one year or less. Recovery is defined in these studies "as a return of benthic resource to a baseline (pre-impact) condition, a reference (neighboring unimpacted) condition and/or both" as determined by substrate sampling for macroinvertebrates. The relative rapid recovery identified in channels is supported by less-stable habitats that are present in channels prior to disturbance (i.e., channels are already adapted to periodic disturbance from storm events or tidal fluctuations that naturally disrupt benthic communities). Recolonization is also supported by infauna from adjacent areas of undisturbed sediment, which will be present within and adjacent to the proposed Project tidal channel dredge area (i.e., existing portions of the channel where depths are greater than −3 feet NAVD will remain undisturbed). De La Cruz et al. (USGS 2020) provides an assessment of the effect of dredging on macroinvertebrate prey availability for benthic foraging fishes in San Francisco Bay, primarily in marinas with some freshwater influence. Again, the dredging projects studied by De La Cruz et al. are much larger in scale and is

repeated compared with the limited, one-time dredging proposed for this Project and the diversity of fish assemblages present in San Francisco Bay is much greater than the Lagoon (USGS 2020). However, they did find macroinvertebrate taxa was significantly greater in undredged areas compared with dredged areas. Total mean available prey biomass in dredged sites range from 35% to 51% less than in undredged sites. However, these effects diminish over time. Overall recovery was estimated to be 1 to 3 years. They also found that annual variability in freshwater influx (such as from large storm season) can cause large shifts in benthic macroinvertebrate sub-assemblages, particularly in shallow shoal areas, that may equal or exceed shifts caused by dredging. A separate study found that some eelgrass beds can benefit from channel maintenance dredging and projects that increase tidal flushing and associated beneficial water quality parameters (Schlosser and Eichar 2012). Based on this literature review, the conditions in the Project tidal channel, and proposed Project activities, one-time dredging of the tidal channel is expected to only have temporary impacts, is expected to recover within approximately one year, and will likely have improved function and diversity as a result of the Project.

Indirect Impacts

"Indirect impacts" as defined by the City's Biology Guidelines (2018) are reasonably foreseeable physical changes in the environment which are not immediately related to the project, but which are caused indirectly by the project. 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 area but outside the construction disturbance zone. Indirect impacts discussed in this chapter are related to noise and water quality impacts during Project implementation. Over the long-term, beach nourishment is not expected to have any indirect impacts. Tidal channel dredging, by design, is expected to have long-term indirect effects including increased salinity from tidal exchange. The indirect effects are considered in combination with direct temporary effects in the assessment of species and ecosystem functional recovery.

6.2 Impact Analysis

6.2.1 Impacts to Sensitive Habitats

This section addresses impacts to sensitive vegetation communities and habitats that occur within the Project area. 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.

6.2.1.1 Eelgrass Habitat

As noted in Section 5.1, Tidal Channel Survey, the tidal channel to be dredged supports a very small amount of eelgrass: a total of 0.087 acres of eelgrass habitat (0.00025 acres of vegetated habitat and 0.086 acres of unvegetated habitat). The proposed Project would result in direct impacts to eelgrass habitat (removal of eelgrass through dredging). Mitigation for eelgrass habitat is outlined in the CEMP (NMFS 2014a). Impacts occurring to eelgrass habitat within the Project area are recommended to be mitigated through BIO-1 (see Section 6.3, Recommended Mitigation Measures).

Direct Impacts – Tidal Channel

As shown on Figure 7, Impacts, the Project would permanently remove four small eelgrass beds (EG1-EG4). For this restoration Project, the amount of eelgrass that would be directly impacted is 0.087 acres (total vegetated and unvegetated areas). 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. As per the CEMP (NMFS 2014a) for Southern California (Mexico border to Pt. Conception):

> For mitigation activities that occur concurrent to the action resulting in damage to existing eelgrass habitat, a starting ratio of 1.38 to 1 (transplant area to vegetated cover impact area) should be recommended to counter the regional failure risk. That is, for each square meter of vegetated eelgrass cover adversely impacted, 1.38 square meters of new habitat with suitable conditions to support eelgrass should be planted with a comparable bottom coverage and eelgrass density as impacted habitat.

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. 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 10 provides a summary of the calculation of eelgrass mitigation for this Project. As shown in Table 10, approximately 0.1 acres should be planted at the start to ensure a final mitigation success ratio of 1.2 (mitigation) to 1 (impacts). Prior to Project implementation, an Eelgrass Mitigation and Monitoring Plan (Mitigation Plan) should be prepared in consultation with the NOAA NMFS and the CDFW (MM BIO-1).

Table 10. Starting and Final Mitigation Ratios and Acres for Impacts to Eelgrass Habitat

Eelgrass Habitat	Impact Area (Acres)	Mitigation Ratio (Starting)	Mitigation Area to Plant (Starting)	Mitigation Ratio (Final)	Mitigation Area (Final) (Acres)
Vegetated cover	0.00025	1.38 to 1	0.000345	1.2 to 1	0.0003
Unvegetated cover (i.e., 5-meter buffer)	0.086	1.2 to 1	0.1032	1.2 to 1	0.1032
Total	**0.08625**	—	**0.1035**	—	**0.1035**

Indirect Impacts – Tidal Channel

Since the tidal channel dredging will directly affect the entire tidal channel and suitable eelgrass habitat outside of the proposed dredging area is limited to areas in adjacent, upstream tidal channels (located northeast of the Project), short-term indirect impacts from dredging have limited potential to indirectly impact eelgrass (i.e., turbidity and other indirect impacts are unlikely to extend upstream). In addition, with implementation of typical stormwater pollution prevention measures (Project Design Feature #33 and Standard Construction Procedure #8) adverse water quality impacts, including turbidity, are expected to be avoided and minimized resulting in less than significant indirect impacts to eelgrass adjacent to the impact area.

Long-term, dredging of the tidal channel is expected to have indirect impacts including the increase of salinity levels further upstream than in the current condition. The removal of the tidal channel sill will result in generally more suitable depths for the establishment of eelgrass (i.e., removal of shallow depths, less than 3 feet). No other substantial long-term indirect effects (e.g., changes in tidal velocities, scour depth, etc.) are expected. Therefore, long-term indirect effects are expected to generally be beneficial and may result in eelgrass recovery that exceeds pre-Project conditions.

6.2.2 Impacts to Fish and Marine Invertebrates

Magnuson-Stevens Act managed species were not observed on site during the surveys. Any impacts potentially occurring to fish and invertebrates within the Project area are recommended to be reduced through implementation of BIO-2 through BIO 5 (see Section 6.3).

Direct Impacts – Tidal Channel

With the tidal channel dredging, no direct impacts are expected for fish species and mobile invertebrates inhabiting the water column (e.g., crabs), as they are highly mobile. However, benthic invertebrate species may not be as mobile and dredging activities could result in mortality. Benthic invertebrates in dredged areas are expected to recolonize the area within approximately one year after dredging (Wilbur and Clark 2007). Given the species assemblages noted on site, including non-native and freshwater-adapted species, overall impacts to species may be beneficial towards native and saline-adapted species and therefore are not considered to be significant.

Indirect Impacts – Tidal Channel

Construction noise would increase ambient noise levels at and surrounding the Project area. However, the tidal channel is not expected to support managed fish species and therefore construction noise would be unlikely to create significant impacts to any managed fish. The largely non-native fish and non-native invertebrate species population may be disrupted by increased ambient noise levels during construction, but as these are not sensitive species, these impacts are considered less than significant. Further, tidal dredging is a one-time event expected to be conducting during daytime hours for approximately six to eight weeks and therefore would only have temporary indirect noise impacts in a limited portion of the lagoon.

Short-term water quality impacts (e.g., turbidity) may temporarily have minor effects on fish and invertebrate species in or adjacent to the Project area; 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. Furthermore, as describe above those fish and invertebrate species in the area are not expected to include any managed fisheries and are primarily non-native

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

Direct Impacts – Beach Nourishment

Fish are anticipated to temporarily relocate during periods when turbidity increases following placement of sediment on the beach, but invertebrates located on the beach may be covered by the sediment placement. This may result in the mortality of some benthic invertebrates; however, many will be able to burrow/move in the sediment. In addition, grunion utilize California beaches as spawning sites from March through August and any beach nourishment during this time frame could negatively impact spawning success by smothering eggs or result in the temporary loss of spawning habitat due to disturbance. Therefore, any beach nourishment activities will occur outside of grunion spawning season or following surveys to confirm absence of spawning grunion during a highest tide event during the full or new moon (BIO-5).

Indirect Impacts – Beach Nourishment

Construction noise would increase ambient noise levels at and surrounding the area where sediment is placed on the beach using heavy equipment. These noise impacts could adversely affect invertebrate species burrowed on the beach and fish that are in nearshore waters. These noise impacts are considered less than significant because they are temporary and would generally affect common invertebrate and fish species inhabiting the area (see separate analysis of effects on special-status and protected species below).

Short-term water quality impacts (e.g., turbidity) may temporarily (typically less than 72 hours) have minor effects on fish and invertebrate species in or adjacent to the Project area; however, these impacts would likely not affect the success of populations due to the ability of the juvenile and adult fish and mobile invertebrate species 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. Less mobile species (such as benthic invertebrates) may be more severely affected by short-term water quality impacts; however, these impacts would occur in an area that is frequently subject to disturbance from wave action and storm events and the species that inhabit this zone are generally adapted to such levels of disturbance. Therefore, indirect impacts to fish and invertebrate species would be less than significant.

6.2.3 Impacts to Special-Status and Protected Species

Special-status and protected marine wildlife species that have potential to occur in the Project area are discussed in Section 5.4. These species include the eelgrass (addressed above), California skate, green sea turtle, gray whale, common bottlenose dolphin, Pacific harbor seal, California sea lion, and western snowy plover. Any impacts potentially occurring to special-status wildlife species or managed wildlife species within the Project area are expected to be reduced through implementation of recommended measures BIO-2 through BIO-5 (see Section 6.3).

Direct Impacts – Tidal Channel

With the tidal channel dredging, no direct impacts are expected for special-status marine wildlife species that have potential to occur in the Project area, as they are highly mobile and none are expected in the lagoon (particularly in the channel to be dredged).

Direct Impacts – Beach Nourishment

In regard to the direct impacts of beach nourishment, these are limited to the existing beach/shoreline which is actively utilized as a public beach and has limited potential to support special-status/managed/protected species lifecycle (e.g., turtle nesting). Therefore, direct impacts to special-status/protected marine species are not considered to be significant.

Indirect Impacts – Tidal Channel

No special-status/managed/protected marine species are expected in the lagoon tidal channel and indirect impacts associated with dredging (e.g., noise, turbidity) are not expected to extend into the open ocean environment. Therefore indirect impacts from tidal channel deepening activities would be less than significant.

Indirect Impacts – Beach Nourishment

Construction noise would increase ambient noise levels at and surrounding the beach nourishment Project area. Construction noise from equipment placing sediment on the beach would be unlikely to create significant impacts to any special-status/managed/protected species potentially occurring in the vicinity because noise threshold levels would not begin to approach NOAA's temporary threshold shifts.

Short-term water quality impacts (e.g., turbidity) may temporarily (typically less than 72 hours) have minor effects on special-status/protected species in or adjacent to the Project area; however, these impacts would likely not affect these species because of their ability to relocate to adjacent areas with similar habitat for foraging, travel, and migration. While a large potential sediment plume area was studied for this Project, such sediment plumes are a normal occurrence following significant rain events and tidal/swell action during winter storms. As such, species in this area are well-adapted to these conditions. Temporary relocation of these highly mobile species would not result in biologically significant impacts with regard to critical life stages. There are no birthing lagoons, rookeries for pupping, or nesting sites in the Project area or vicinity, including the area of potential sediment plume/settling. Marine wildlife species would be predominantly migrating/travelling through the area. Therefore, indirect impacts to special-status/protected marine species would be less than significant.

6.2.3.1 Fisheries

As per the Pacific Coast Groundfish FMP, the restoration Project is not likely to affect the EFH or function/values of fish species identified as Pacific Coast Groundfish. Elasmobranchs, ratfish, and flatfish are likely present in the potential plume area based on habitat preference of soft bottom habitats. California skate was observed during the inshore survey and is an Ecosystem Component Species. The functions/values that may affect for groundfish (elasmobranchs, ratfish, and flatfish) is foraging, as well as the potential for spawning for two species. However, due to the vast amount of available sandy bottom habitat, the relatively short-term nature of the beach nourishment activities associated with the Project, and the mobility of these species, the Project would have a negligible effect on pacific coast groundfish. The Project may affect but is not likely to adversely affect pacific coast groundfish.

As per the Coastal Pelagic Species FMP, the point-of-concern process Council's primary tool for exercising resource stewardship responsibilities (PFMC 2021). The process is intended to foster continuous and vigilant review of Pacific Coast coastal pelagic species stocks and fisheries. A "point-of-concern" occurs when one or more of the following is found or expected:

1. Catch is projected to exceed the current harvest guidelines, annual catch limits, annual catch targets, or the harvest quota.
2. Any adverse or significant change in the biological characteristics of a species (age composition, size composition, age at maturity, or recruitment) is discovered.
3. An overfishing condition appears to be imminent or likely within two years.
4. Any adverse or significant change in ecological factors such as the availability of coastal pelagic species forage for dependent species or in the status of a dependent species is discovered.
5. Developments in a foreign fishery occur that affect the likelihood of overfishing of coastal pelagic species.
6. An error in data or a stock assessment is detected that significantly changes estimates of impacts due to current management.
7. Control rule (harvest policy) parameters or approaches require modification.
8. Projected catches for a Monitored species are expected to exceed the acceptable biological catch or the annual catch limit using either a species-specific control rule or the default control rule. This could require moving a Monitored species to the Actively managed classification.

None of the listed points of concern can be found or expected with the implementation of the Project as this Project is not harvesting species and there are no biologically significant impacts to forage. This temporary Project may affect but is not likely to adversely affect coastal pelagic species.

6.3 Recommended Measures

BIO-1 Eelgrass Mitigation and Monitoring Plan. "Prior to Project implementation, California State Parks (CSP) 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 approximately 0.087 acres of eelgrass habitat in the tidal channel. Mitigation for impacts shall be implemented as mutually agreed upon by the City of San Diego, NMFS, CDFW, and CSP. Preference in the Mitigation Plan shall be given to in-kind replacement of the eelgrass habitat. 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 lagoon 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.

BIO-2 Worker Environmental Awareness Program. Prior to commencement of activities within the Project area, 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 area. 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 WEAP training shall be provided to all construction personnel. Attendees shall be documented on a WEAP training sign-in sheet.

BIO-3 Biological Monitoring. Any proposed Project activities occurring in marine habitats, including dredging of the tidal channel and beach nourishment activities, shall be supervised by a qualified marine biologist (monitoring biologist). The monitoring biologist shall ensure that impacts to plants and wildlife are minimized to the greatest extent feasible during implementation of the Project. If any special-status wildlife species, including western snowy plover, 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 City of San Diego, 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.

BIO-4 Work Limit Delineation, and Water Quality Best Management Practices. Prior to commencement of the proposed Project activities within marine habitat, limits of work and staging areas will be established and clearly delineated. Construction contractors shall use best management practice (BMP) water quality controls to ensure compliance with the water quality standards. Measures could include use of a silt curtain during dredging and/or material placement, a floating boom to be maintained around the proposed Project area, and daily inspection of construction equipment for leaks or malfunction. 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 area. BMPs and compliance with stormwater pollution prevention plan requirements will be implemented.

BIO-5 Grunion Monitoring and Avoidance Plan. If sand placement activities are necessary below the high tide line during the grunion spawning season (March 1 through August 31 of any year), sand placement sites and a 100-foot buffer shall be surveyed for spawning grunion during high tide of a full or new moon for three nights beginning with the nearest grunion run prior to commencement of sand placement activities. Monitoring shall be conducted by a qualified biologist and California Department of Fish and Wildlife (CDFW) published dates for grunion runs should be utilized. Sand placement shall not occur within the four days of a full or new moon event (see CDFW grunion run calendar). Grunion monitoring shall be conducted by a qualified biologist for 30 minutes prior to, and two hours following, the predicted start of each daily spawning event. Sufficient qualified biologists shall be employed to ensure that the entire proposed sand placement site is monitored during the predicted grunion run. Monitoring is not necessary in areas where there is no sand, such as areas supporting 100% cobble or bluff backed beaches with no sand exposed during high tide.

The magnitude and extent of a spawning event shall be defined in 300-foot segments of beach using the Walker Scale. Every individual fish (males and females) shall be counted each night (three nights total) with the greatest numbers being utilized to determine the Walker Scale value (e.g., 0, 1, 2, 3, 4, or 5) of each 300-foot segment within the proposed work area. Sand placement activities shall be modified according to the following plan:

A. If a grunion run consisting of 0-100 individual fish per 300-foot segment (Walker Scale 0 or 1) is reported within two weeks prior to, or during, sand placement work, the Contractor does not need to take any avoidance action for grunion eggs. No mature grunion may be buried or harmed as a result of sand placement.

B. Within two weeks prior to proposed work, if a grunion run consisting of 100 or more individual fish per 300-foot segment (Walker Scale 2, 3, 4, or 5) is reported, the Contractor shall avoid work on the respective beach segment(s) and truck route and additionally, shall avoid a 100-foot buffer on either side of the segment(s) and route, for a minimum of two weeks, to ensure that no grunion eggs are buried or disturbed. These areas shall be memorialized through multiple GPS coordinates and marked with irrigation flags for a minimum of two weeks or when the next scheduled grunion run will be monitored. The Contractor shall adapt the sand placement schedule to avoid operations on such beach segments and their associated buffers. No mature grunion may be harmed as a result of sand placement.

C. If sand placement has already commenced, and a grunion run consisting of 100 to 500 individual fish, in one or more 300-foot segment (Walker Scale 2) in the work area is reported, the Contractor shall avoid impacts to grunion eggs to the greatest extent feasible and then shall minimize impacts to grunion eggs through such measures as alteration of the truck route, sand discharge points, sand spreading areas, and sand placement locations.

D. If sand placement has already commenced, and a grunion run consisting of 500 or more individual fish per segment (Walker Scale 3, 4, or 5) is reported, the Contractor shall avoid work on the respective beach segment(s) and truck route and additionally, shall avoid a 100-foot buffer on either side of the segment(s) and route, for a minimum of two weeks, to ensure that no grunion eggs are buried or disturbed. These areas shall be memorialized through multiple GPS coordinates, and marked with irrigation flags for a minimum of two weeks when the next scheduled grunion run will be monitored. The Contractor shall adapt the sand placement schedule to avoid operations on such beach segments and their associated buffers. No mature grunion may be harmed as a result of sand placement.

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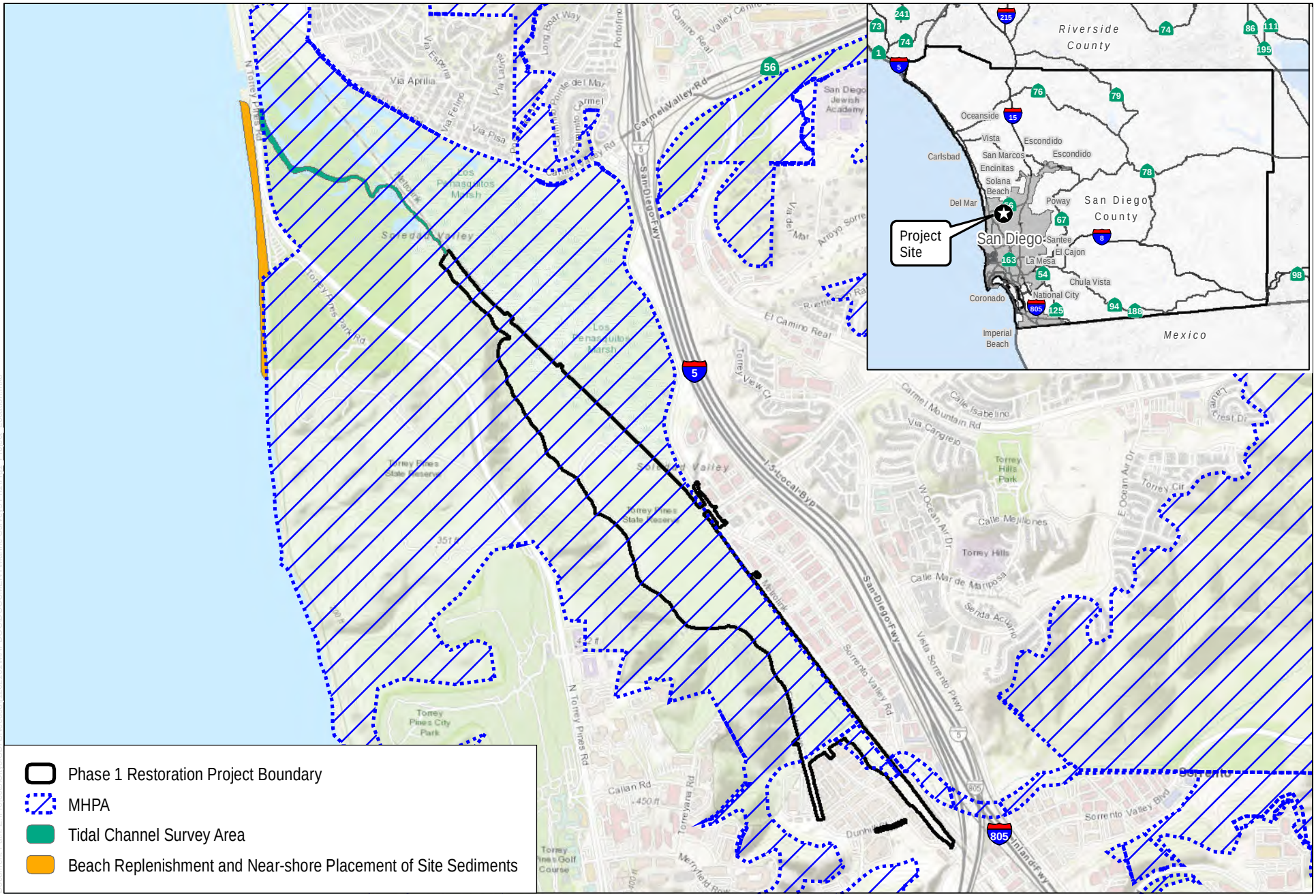

SOURCE: ESRI

DUDEK

0 750 1,500 Feet

FIGURE 1

Project Location

Los Peñasquitos Lagoon Restoration - Phase 1

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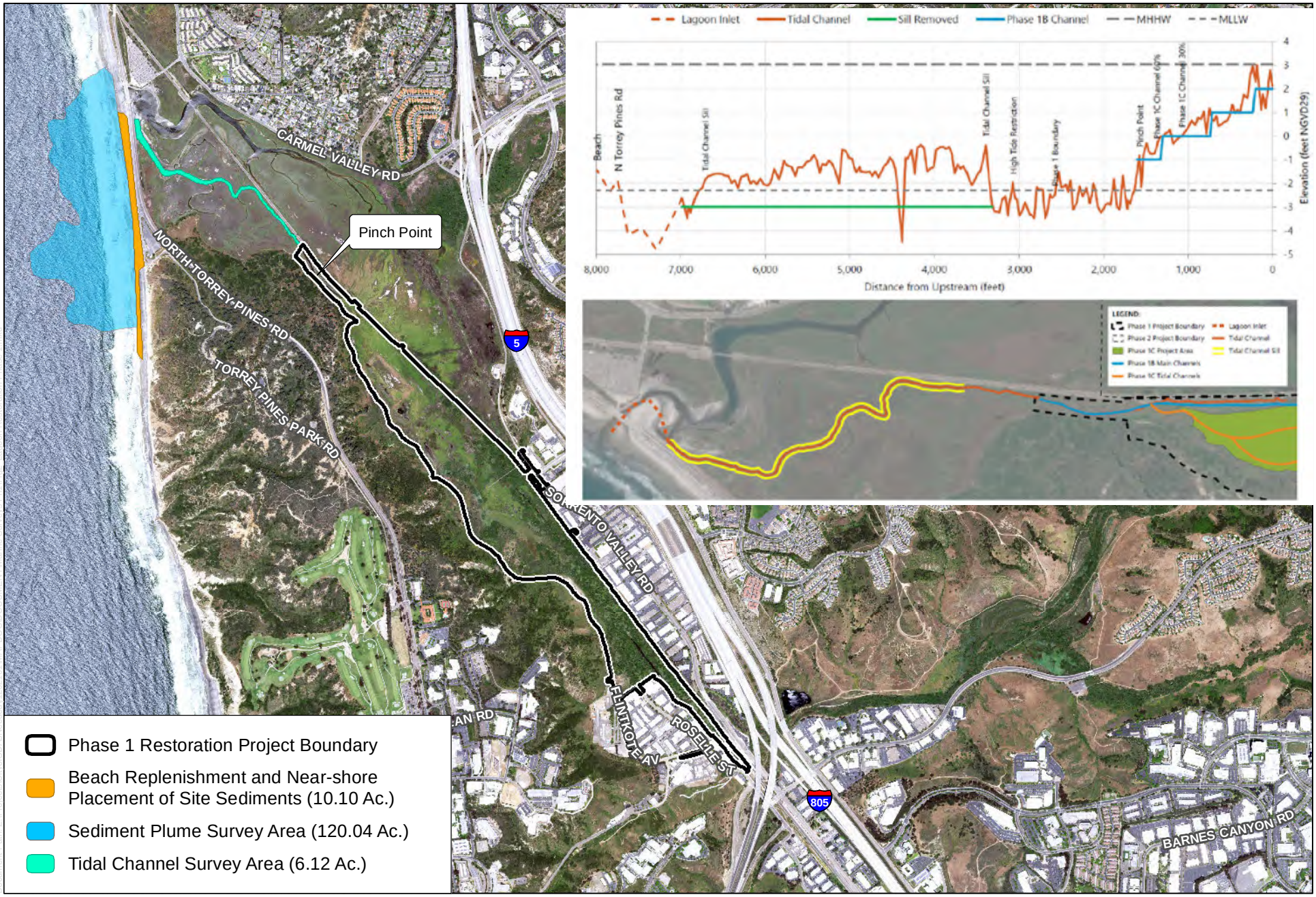

SOURCE: NAIP IMAGERY 2020

DUDEK

0 750 1,500 Feet

FIGURE 2

Lagoon Restoration - Phase 1

Los Peñasquitos Lagoon Restoration - Phase 1

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SOURCE: NAIP IMAGERY 2020

DUDEK

0 750 1,500 Feet

FIGURE 3
Survey Area
Los Peñasquitos Lagoon Restoration - Phase 1

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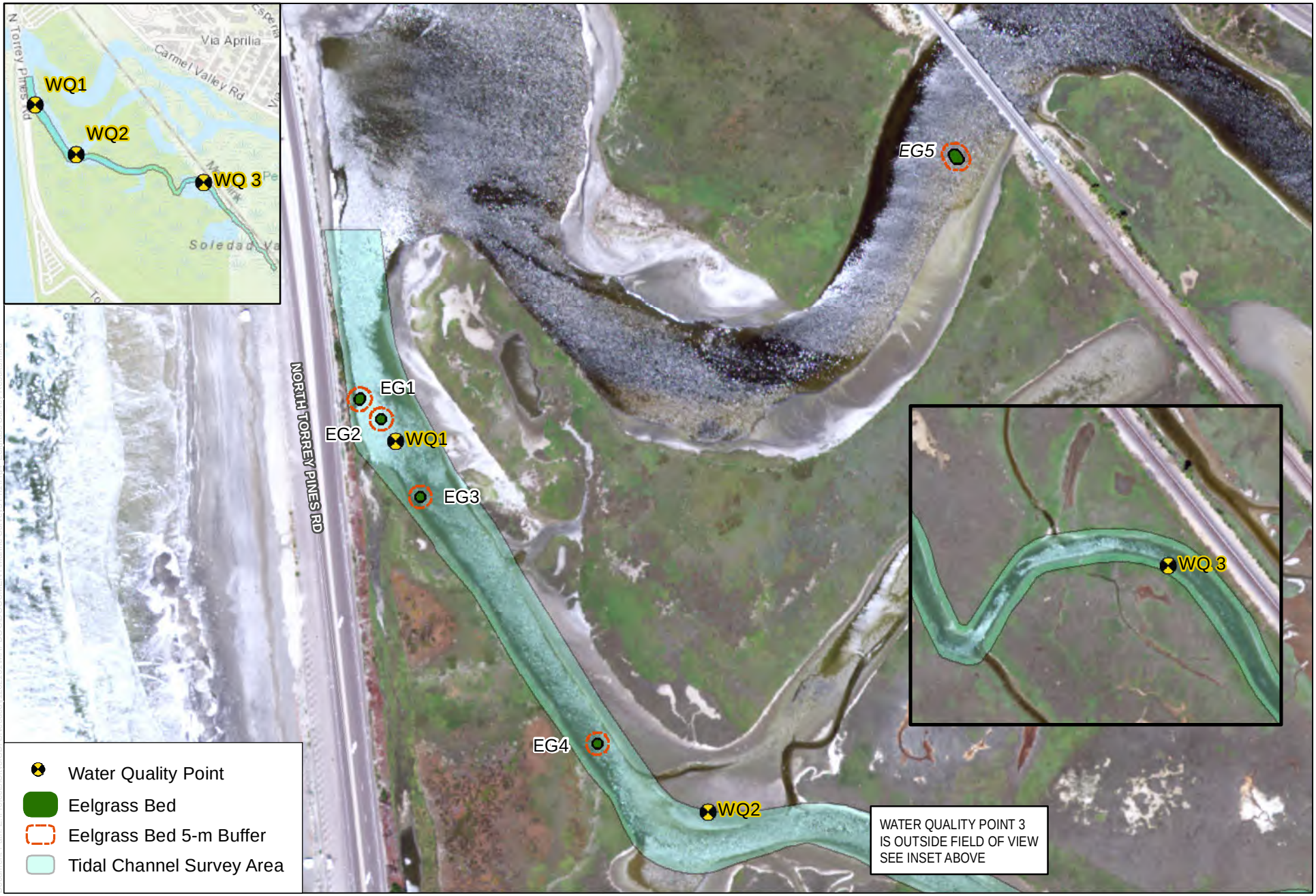

SOURCE: NAIP IMAGERY 2020

DUDEK

0 100 200 Feet

FIGURE 4

Eelgrass Survey Results

Los Peñasquitos Lagoon Restoration - Phase 1

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SOURCE: NAIP IMAGERY 2020

DUDEK

0 500 1,000 Feet

FIGURE 5

Inshore Marine Surveys Results

Los Peñasquitos Lagoon Restoration - Phase 1

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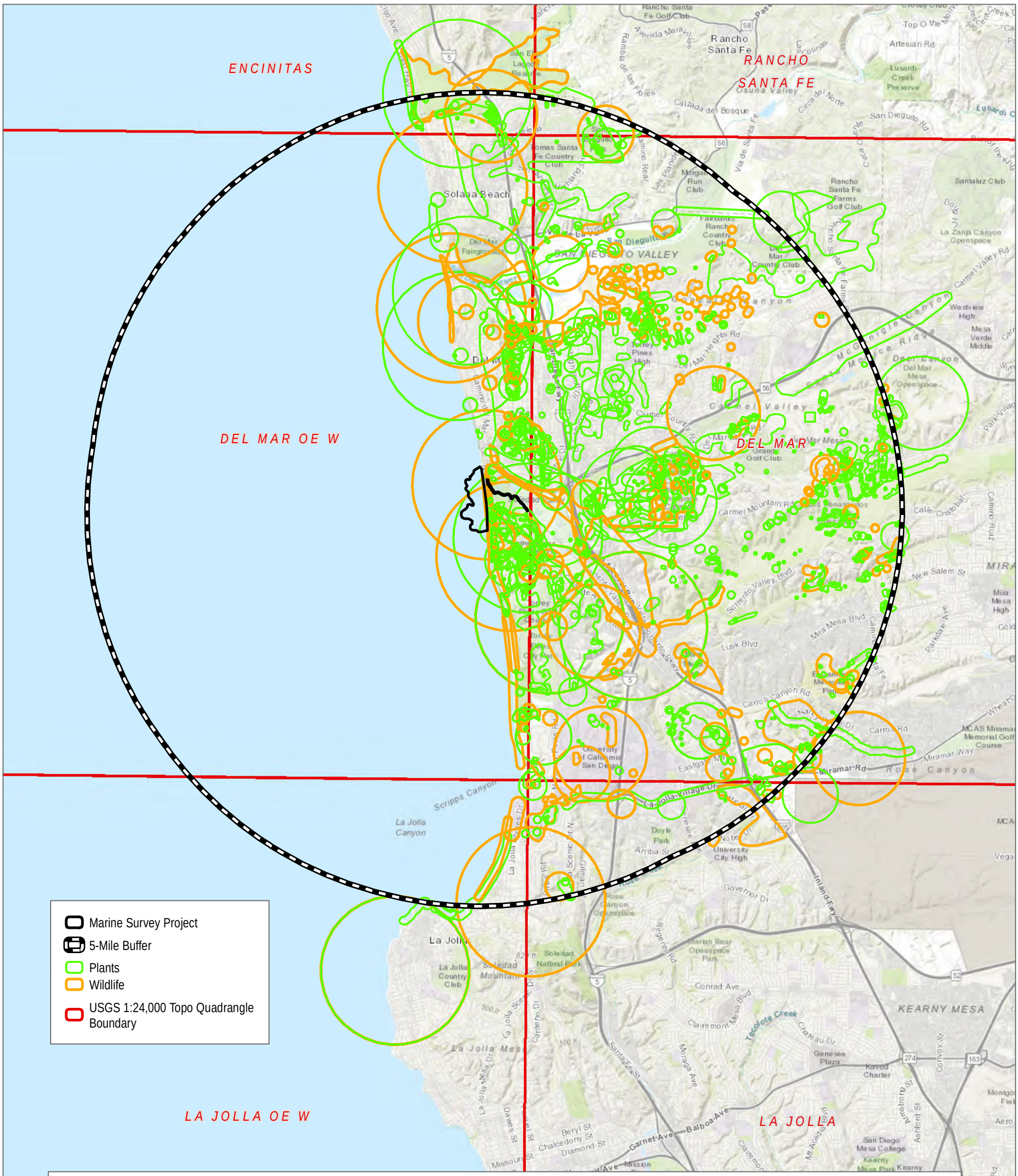

Plant Observations within 5-Miles

- Brand's star phacelia
- California Orcutt grass
- California adolphia
- Campbell's liverwort
- Coulter's goldfields
- Coulter's saltbush
- Del Mar Mesa sand aster
- Del Mar manzanita
- Encinitas baccharis
- Lakeside ceanothus
- Nuttall's acmispon
- Nuttall's scrub oak
- Orcutt's brodiaea
- Orcutt's pincushion
- Orcutt's spineflower
- Palmer's goldenbush
- Palmer's grapplinghook
- Robinson's pepper-grass
- San Diego ambrosia
- San Diego barrel cactus
- San Diego button-celery
- San Diego goldenstar
- San Diego marsh-elder
- San Diego mesa mint
- San Diego sagewort
- San Diego sand aster
- San Diego thorn-mint
- Shaw's agave
- Torrey pine
- aphanisma
- beach goldenaster
- bottle liverwort
- chaparral ragwort
- cliff spurge
- coast woolly-heads
- coastal dunes milk-vetch
- decumbent goldenbush
- estuary seablite
- golden-spined cereus
- long-spined spineflower
- salt spring checkerbloom
- sand-loving wallflower
- sea dahlia
- short-leaved dudleya
- short-lobed broomrape
- snake cholla
- south coast saltscale
- southern tarplant
- spreading navarretia
- sticky dudleya
- summer holly
- variegated dudleya
- wart-stemmed ceanothus
- willowy monardella
- woven-spored lichen

Wildlife Observations within 5-Miles

- American badger
- Belding's savannah sparrow
- Bell's sage sparrow
- California black rail
- California glossy snake
- California least tern
- California mellitid bee
- Coronado skink
- Crotch bumble bee
- Pacific pocket mouse
- San Diego black-tailed jackrabbit
- San Diego desert woodrat
- San Diego fairy shrimp
- San Diego ringneck snake
- Southern California legless lizard
- Yuma myotis
- burrowing owl
- coast horned lizard
- coastal California gnatcatcher
- coastal whiptail
- globose dune beetle
- hoary bat
- least Bell's vireo
- light-footed Ridgway's rail
- mesa shoulderband
- mimic tryonia (=California brackishwater snail)
- monarch - California overwintering population
- northwestern San Diego pocket mouse
- obscure bumble bee
- orange-throated whiptail
- pocketed free-tailed bat
- sandy beach tiger beetle
- senile tiger beetle
- southern California rufous-crowned sparrow
- spotted bat
- western beach tiger beetle
- western mastiff bat
- western red bat
- western snowy plover
- western spadefoot

SOURCE: ESRI, CNDDB

DUDEK

0 3,500 7,000 Feet

FIGURE 6

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

Los Peñasquitos Lagoon Restoration - Phase 1

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SOURCE: NAIP IMAGERY 2020

DUDEK

0 100 200 Feet

FIGURE 7
Impacts
Los Peñasquitos Lagoon Restoration - Phase 1

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Appendix A
Photographic Documentation

Photo 1. Tidal Channel Survey. At the start of the survey area near the mouth of the lagoon. Facing east.

Photo 2. Tidal Channel Survey. View at the midpoint of the survey area, showing thick banks of pickleweed and a narrowing channel. Facing east.

Photo 3. Tidal Channel Survey. Survey endpoint with overgrowth of vegetation covering the channel. Facing east.

Photo 4. Tidal Channel Survey. Small eelgrass (*Zostera marina*) beds were found at the start of the survey, near the mouth of the lagoon.

Photo 5. Tidal Channel Survey. Abundant Pacific oysters (*Crassostrea gigas*) in the channel adjacent to N. Torrey Pines Rd, as well as purple shore crabs (*Hemigrapsus nudas*) were observed.

Photo 6. Tidal Channel Survey. Many Mexican fiddler crabs (*Leptuca crenulata*) inhabit the banks of the channel.

Photo 7. Inshore Marine Surveys. View of the beach nourishment area and marine survey area. Facing southwest.

Photo 8. Inshore Marine Surveys. View of the northern limit of the marine survey area and the mouth of the lagoon.

Photo 9. Inshore Marine Surveys. View of the sandy bottom habitat that was found throughout the survey area, with scientific diver in the background.

Photo 10. Inshore Marine Surveys. Pismo clams (*Tivela stultorum*) were observed.

Photo 11. Inshore Marine Surveys. Armored sea stars (*Astropecten armatus*) were observed.

Photo 12. Inshore Marine Surveys. A few kelp pipe fish (*Syngnathus californiensis*) were observed, always hiding in surfgrass (genus *Phyllospadix*).

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Appendix B
IPaC

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.

Location

San Diego County, California

Local office

Carlsbad Fish And Wildlife Office

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

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

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.

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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. IPaC only shows species that are regulated by USFWS (see FAQ).

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
Pacific Pocket Mouse *Perognathus longimembris pacificus* Wherever found 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* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher *Polioptila californica californica* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8178	Threatened
Hawaiian Petrel *Pterodroma sandwichensis* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6746	Endangered
Least Bell's Vireo *Vireo bellii pusillus* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered

Light-footed Clapper Rail Rallus longirostris levipes — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6035

Short-tailed Albatross Phoebastria (=Diomedea) albatrus — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/433

Southwestern Willow Flycatcher Empidonax traillii extimus — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6749

Western Snowy Plover Charadrius nivosus nivosus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/8035

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp Streptocephalus woottoni Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8148	Endangered

San Diego Fairy Shrimp Branchinecta sandiegonensis Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/6945

Flowering Plants

NAME	STATUS

California Orcutt Grass Orcuttia californica — Endangered

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/4923

Coastal Dunes Milk-vetch Astragalus tener var. titi — Endangered

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/7675

Del Mar Manzanita Arctostaphylos glandulosa ssp. crassifolia — Endangered

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/7673

Encinitas Baccharis Baccharis vanessae — Threatened

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/3343

Nevin's Barberry Berberis nevinii — Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/8025

Orcutt's Spineflower Chorizanthe orcuttiana — Endangered

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/7573

San Diego Ambrosia Ambrosia pumila Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/8287

San Diego Button-celery Eryngium aristulatum var. parishii Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5937

San Diego Mesa-mint Pogogyne abramsii Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5971

San Diego Thornmint Acanthomintha ilicifolia Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/351

Spreading Navarretia Navarretia fossalis Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/1334

Thread-leaved Brodiaea Brodiaea filifolia Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6087

Willowy Monardella Monardella viminea Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/250

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 https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.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.

NAME	BREEDING SEASON
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus 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	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi 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/8	Breeds Apr 1 to Aug 15
Black Oystercatcher Haematopus bachmani This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black Swift Cypseloides niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Black Turnstone Arenaria melanocephala This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

Black-vented Shearwater Puffinus opisthomelas — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Brown Pelican Pelecanus occidentalis — Breeds Jan 15 to Sep 30

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.

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Loon gavia immer — Breeds Apr 15 to Oct 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/4464

Common Murre Uria aalge — Breeds Apr 15 to Aug 15

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.

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

Gull-billed Tern Gelochelidon nilotica — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9501

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

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

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 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/9410

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Pink-footed Shearwater Puffinus creatopus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Pomarine Jaeger Stercorarius pomarinus — Breeds elsewhere

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.

Red Phalarope Phalaropus fulicarius — Breeds elsewhere

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.

Red-breasted Merganser Mergus serrator — Breeds elsewhere

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.

Red-necked Phalarope Phalaropus lobatus — Breeds elsewhere

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.

Red-throated Loon Gavia stellata — Breeds elsewhere

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.

Ring-billed Gull Larus delawarensis — Breeds elsewhere

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.

Royal Tern Thalasseus maximus — Breeds Apr 15 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.

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

Surf Scoter Melanitta perspicillata — Breeds elsewhere

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.

Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Western Grebe aechmophorus occidentalis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
White-winged Scoter Melanitta fusca 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.	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10

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.

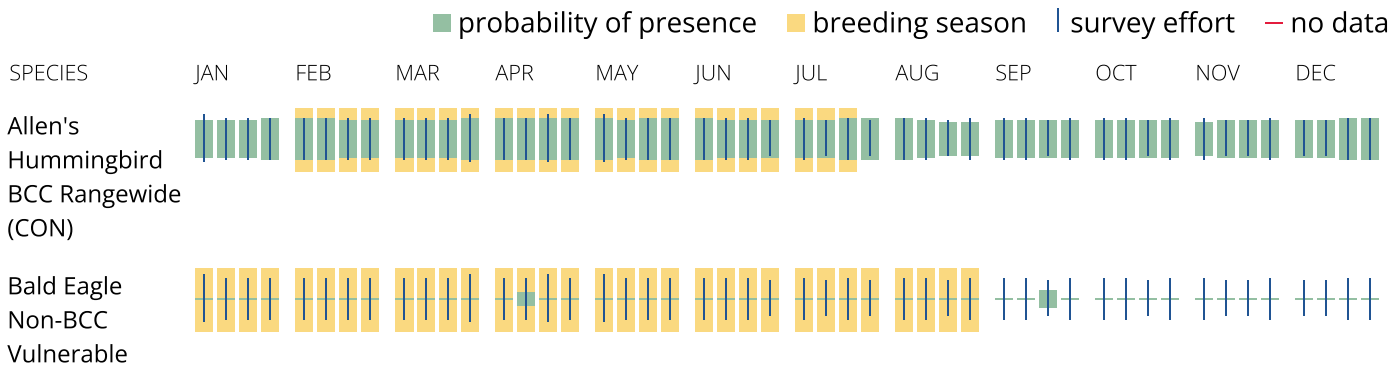
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

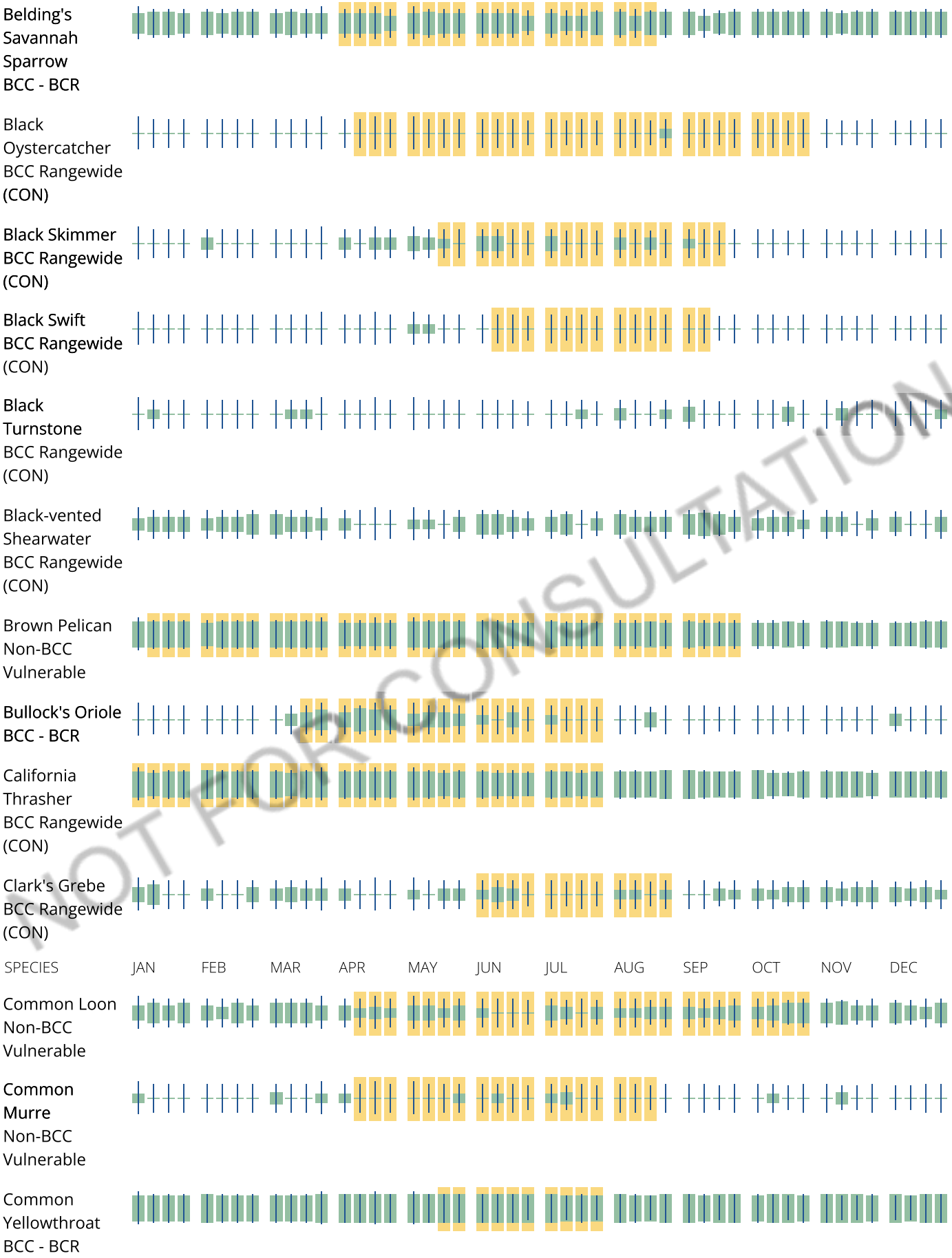
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

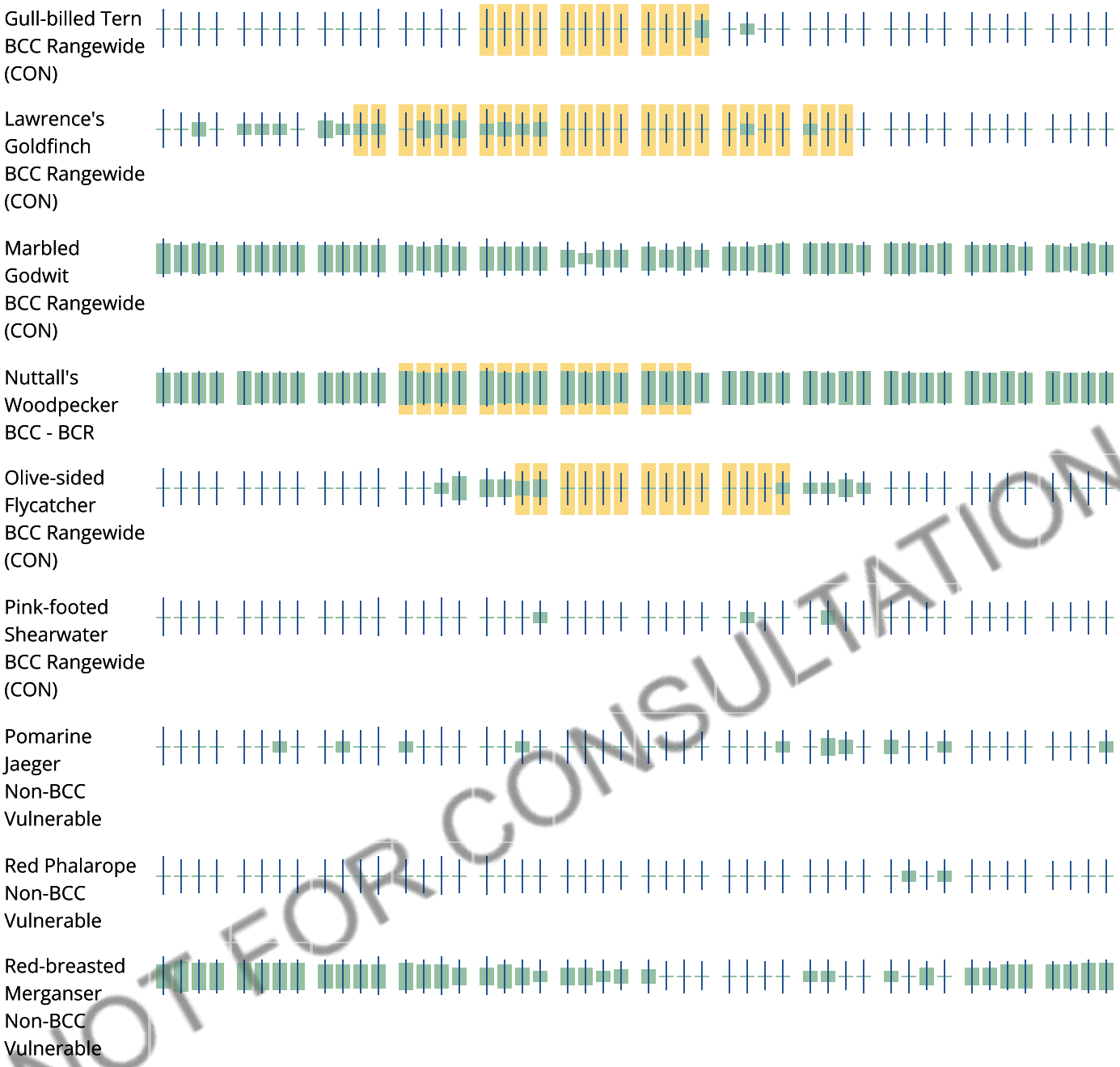
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

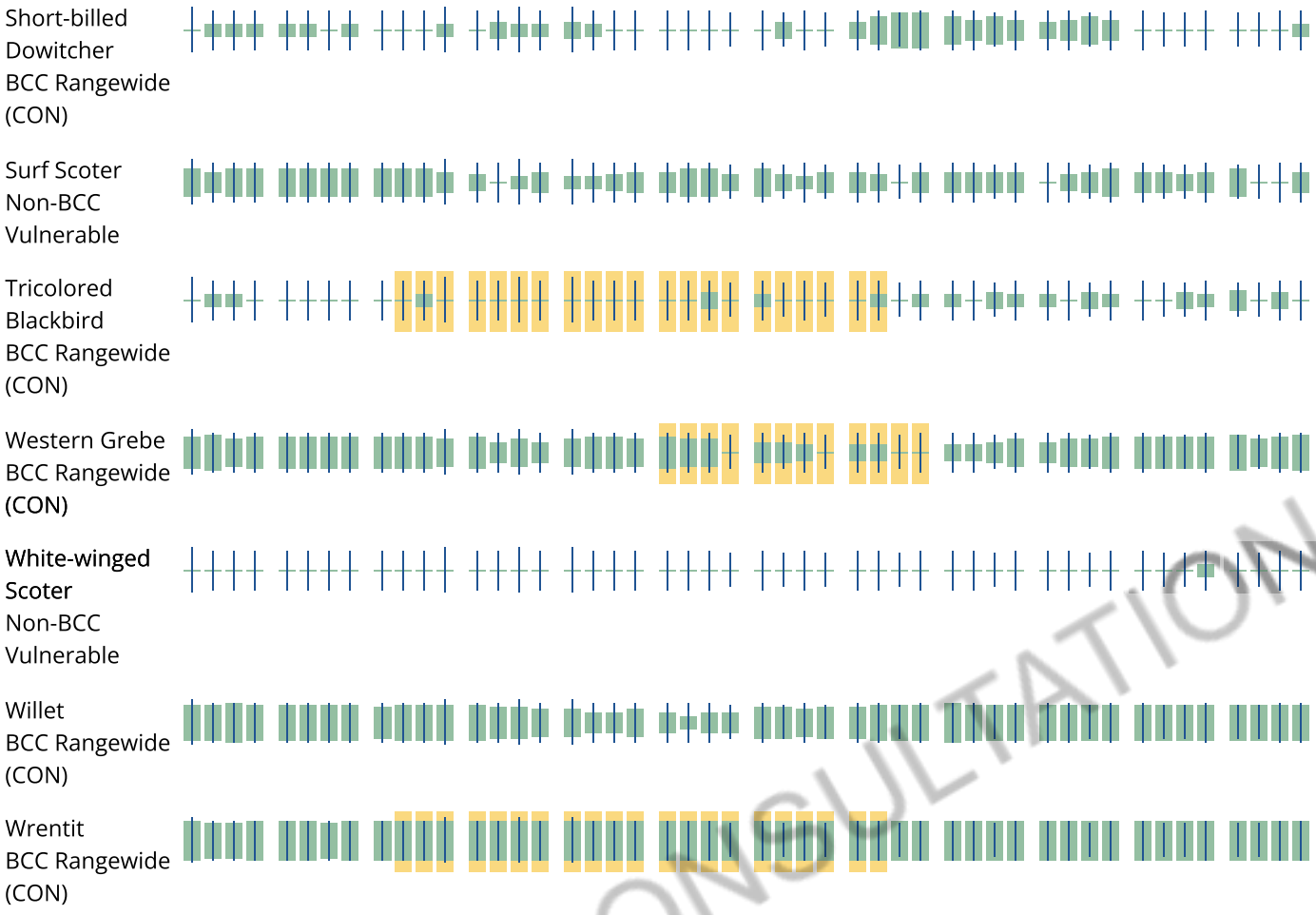
No Data (–)
A week is marked as having no data if there were no survey events for that week.

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.









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 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 list of migratory birds that potentially occur 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 Rapid Avian Information Locator (RAIL) 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 or migrating in my 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 query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. 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. 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.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

There are no known coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

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 (NWI)

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

- Marine
- Estuarine

FRESHWATER EMERGENT WETLAND

- Palustrine

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

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

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.

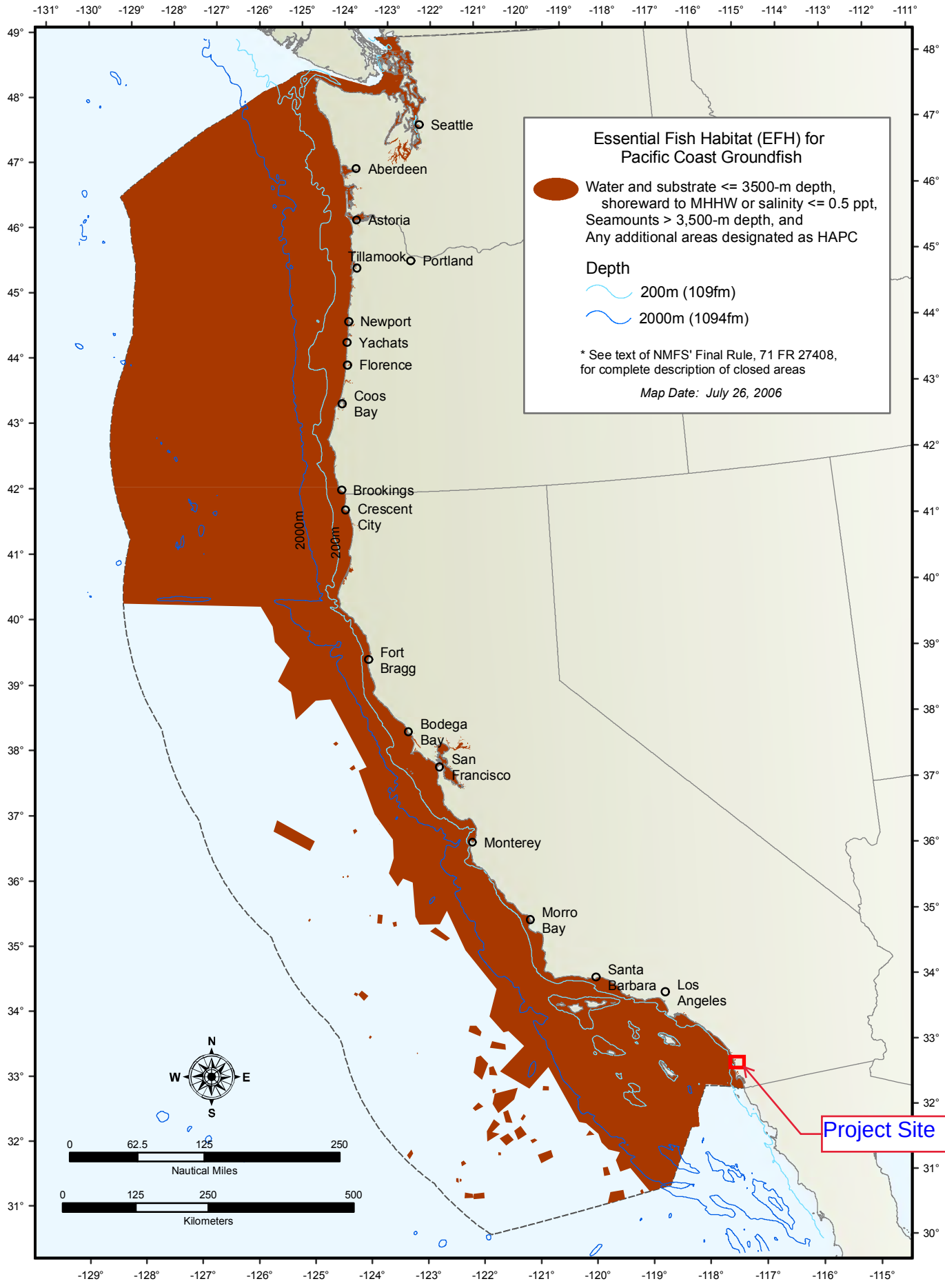
Data exclusions

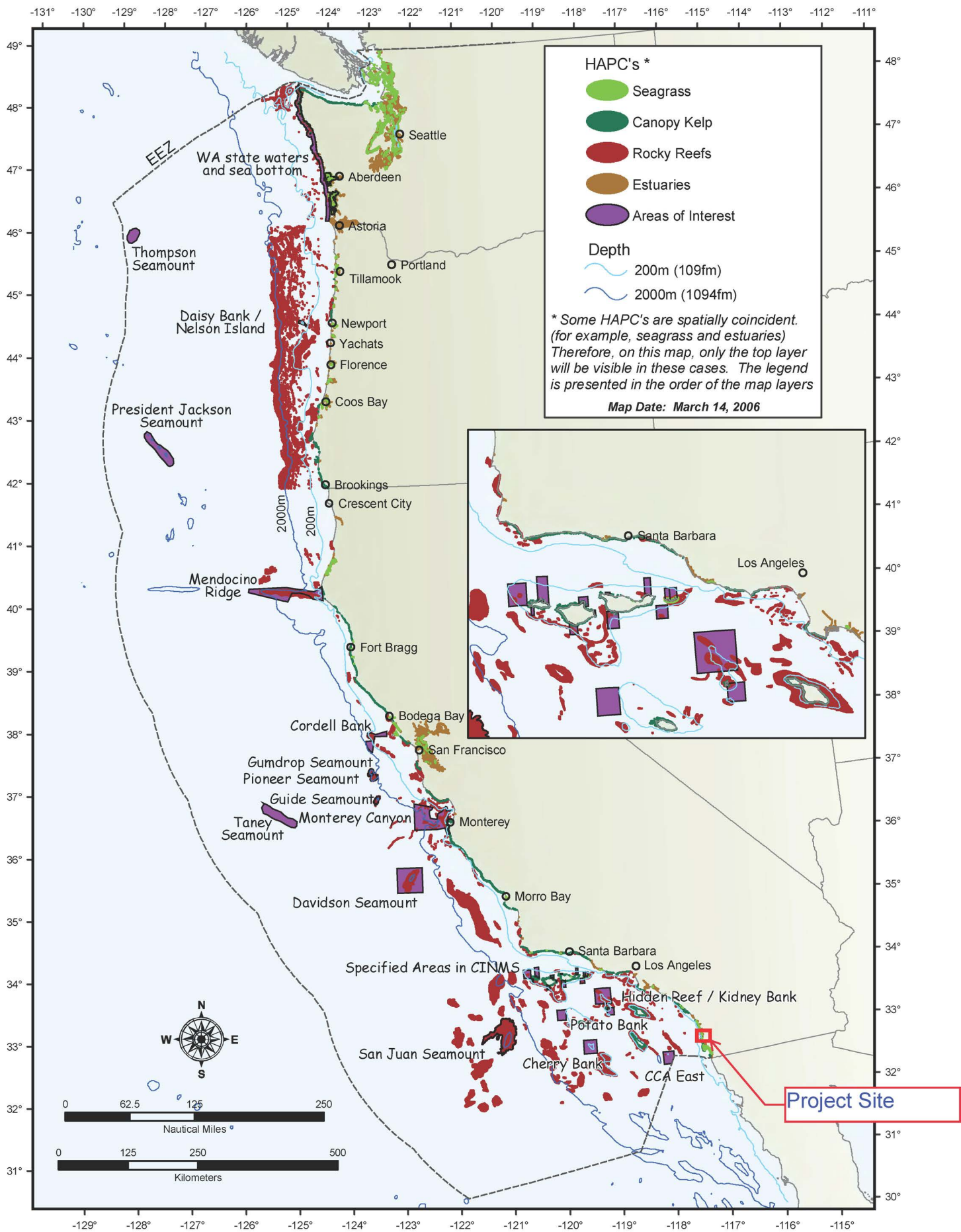
Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and 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.

Appendix C
EFH & HAPC Maps


Essential Fish Habitat (EFH) for
Pacific Coast Groundfish
Water and substrate <= 3500-m depth,
shoreward to MHHW or salinity <= 0.5 ppt,
Seamounts > 3,500-m depth, and
Any additional areas designated as HAPC
Depth
200m (109fm)
2000m (1094fm)
* See text of NMFS' Final Rule, 71 FR 27408,
for complete description of closed areas
Map Date: July 26, 2006
Seattle
Aberdeen
Astoria
Tillamook
Portland
Newport
Yachats
Florence
Coos
Bay
Brookings
Crescent
City
2000m
200m
Fort
Bragg
Bodega
Bay
San
Francisco
Monterey
Morro
Bay
Santa
Barbara
Los
Angeles
Project Site
N
W
E
S
0
62.5
125
250
Nautical Miles
0
125
250
500
Kilometers


HAPC's *
Seagrass
Canopy Kelp
Rocky Reefs
Estuaries
Areas of Interest
Depth
200m (109fm)
2000m (1094fm)
* Some HAPC's are spatially coincident. (for example, seagrass and estuaries) Therefore, on this map, only the top layer will be visible in these cases. The legend is presented in the order of the map layers
Map Date: March 14, 2006
EEZ
WA state waters and sea bottom
Thompson Seamount
Daisy Bank / Nelson Island
President Jackson Seamount
Mendocino Ridge
Gumdrop Seamount
Pioneer Seamount
Guide Seamount
Taney Seamount
Monterey Canyon
Cordell Bank
Davidson Seamount
Specified Areas in CINMS
San Juan Seamount
Hidden Reef / Kidney Bank
Potato Bank
Cherry Bank
CCA East
Project Site
Seattle
Aberdeen
Astoria
Portland
Tillamook
Newport
Yachats
Florence
Coos Bay
Brookings
Crescent City
Fort Bragg
Bodega Bay
San Francisco
Monterey
Morro Bay
Santa Barbara
Los Angeles
2000m
200m
N
W
E
S
0 62.5 125 250
Nautical Miles
0 125 250 500
Kilometers

Appendix D
Potential to Occur Table

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

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
Invertebrates				
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.
Haliotis kamtschatkana	Pinto abalone	NOAA Species of Concern	Ranges from Sitka, Alaska to Point Conception. This species is usually found in the tidal zone up to 30 feet but can be at depths of up to 330 feet. Pinto Abalone are associated with kelp beds in exposed areas.	Not expected to occur. Suitable habitat not present. Very low population numbers.
Tryonia imitator	Mimic tryonia	None/None	Inhabits coastal lagoons, estuaries, and saltmarshes, from Sonoma County south to San Diego County	Not expected: not known to 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 the area. There is very little data on green sturgeon habitat use from Monterey south to the Mexican border.

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

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
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: There are no historic tidewater goby records for this locality.
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 stock. They are found at moderate depths of up to 3,000 feet (910 meters).	Not expected: The highly migratory stock range includes southern California waters. The highly migratory stock spawns in the winter in California.
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.

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

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
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 Fall, Late-fall run ESU)	NMFS SSC/None	Chinook salmon ranges from Alaska to California. This ESU spawns in the Sacramento River and San Joaquin River. Chinook salmon require deeper and larger freshwater streams than other salmonids; open ocean for anadromous form.	Not expected: The project site is outside of species range.
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.

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

Scientific Name	Common Name	Status Federal/ State	Primary Habitat Associations	Potential to Occur
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, endemic to northeastern Pacific Ocean.	Not expected: The project site is outside of this species' known range.

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)

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