3.3 Biological Resources

3.3.1 Study Area

For the purpose of this Section, the Study Area is larger than the Project Site and varies in spatial extent by Project component as described below.

For the Terrestrial Development component of the Project, the Study Area includes the Project Site and buffer of 0.25 miles (1,320 feet). The buffer around the Project Site is designed to account for any auditory and visual disturbance to wildlife, as well as other potential impacts such as possible sedimentation/turbidity from construction and increased dust.

For the Ocean Outfall discharge component of the Project, the Study Area includes the marine environment surrounding the ocean outfall, including the offshore area affected by effluent discharge from the RMT II outfall pipe and diffuser, approximately 1,640 feet away from the multiport diffusers at the outfall. The Study Area for evaluation of cumulative effects includes Humboldt Bay and the nearshore waters (within 3 miles from shore) of the north coast from the Humboldt Bay Harbor Entrance to Trinidad, California.

For the pipeline associated with the Humboldt Bay Water Intakes component of the Project, the Study Area included multiple parcels along the Samoa Peninsula consisting of approximately 199.5 acres of land (SHN 2020a, SHN 2020b). Potential impacts of the water intakes on aquatic species are assessed at the full scale of Humboldt Bay.

3.3.2 Environmental Setting

- The terrestrial component of the Project is a developed industrial area, characterized by hardscape and areas of historic grading/filling. Most of the site has limited habitat for sensitive species.
- The environmental setting for the ocean discharge component of the project is the Pacific Ocean within the zone of dilution as established in the Numeric Modeling Report (Appendix E).
- The environmental setting for the Humboldt Bay water intakes includes the adjacent areas of Humboldt Bay. On the Samoa Peninsula, construction and disturbance would be limited to the industrial RMT II and Red Tank docks where the water intakes would be upgraded, as well as the shoreline between and near the two docks where water piping would be installed.
- The environmental setting for the off-site compensatory restoration is the portion of Humboldt Bay shoreline adjacent to the Humboldt Bay Harbor, Recreation, and Conservation District's Kramer Dock property in Fields Landing, California.
- The Spartina removal element of the off-site compensatory restoration would include up to an acre of tidal salt marsh along the Humboldt Bay shoreline and adjacent area of Humboldt Bay. Within Humboldt Bay, there are 1,699 acres of mapped Spartina, which is most common in salt and brackish marshes. Spartina is a non-native invasive species that is detrimental to botanical biodiversity, displacing native vegetation, and altering ecosystem function and rates of sedimentation (H.T Harvey and GHD 2013). The location of up to one acre of Spartina removal in Humboldt Bay remains to be determined.

Terrestrial Setting

The setting for the Terrestrial Development and Humboldt Bay Water Intakes includes vacant and underutilized industrial lands on the Samoa Peninsula, as shown in Figure 2-2. The natural topography of the area has been altered by regular and extensive anthropogenic disturbance. The terrestrial Project Site does not include any streams, springs, or other water bodies. One-parameter willow series wetlands are present on the Project Site but outside the ground disturbance footprint. Wetlands inclusive of required hydrologic characteristics were not delineated within the Study Area for the Terrestrial Development, including the area east of Vance Avenue (Appendix C, GHD 2021b). Coastal and estuarine wetlands were delineated within the Study Area of the Humboldt Bay Water Intake element

(SHN 2020b). Environmentally Sensitive Habitat Areas as defined by the Coastal Act have been identified within the project site.

Humboldt Bay Setting

Humboldt Bay is located to the east of the Project Site and is also considered in this impact analysis for this section. The proposed water intakes (sea chests) are located in Humboldt Bay. Humboldt Bay includes dredged deep water shipping channels from the Bay Entrance extending to the Highway 255 bridge. The shoreline within the vicinity of the Project and Off-Site Compensatory Restoration is devoted to port-related marine uses, activities, and services (Harbor District 2007). There are at least 300 invertebrate species and 100 fish species documented in Humboldt Bay. The Entrance Bay experiences a rapid tidal turnover during tidal exchanges (Harbor District 2007).

Pacific Ocean Setting

The existing RMT II ocean outfall extends 1.55 miles offshore into the Pacific Ocean. The multiport diffuser has 72 ports on either side of the pipe (total of 144 ports), each port is 2.4-inch diameter at a spacing of 12 feet between ports. Currently, there are eight diffuser port pairs open (16 open ports). The closed diffuser ports are secured with toggle bolt blinds. The outfall pipe consists of four pipe sections. All pipe sections are connected with different joint configurations and flanges. Each joint includes zinc anodes wet welded to mixed flange materials to prevent electrolysis.

The near surface waters off the U.S. West Coast originate in large part from the eastward-flowing North Pacific Current (the northern limb of the North Pacific Gyre), which advects (transports) biota and debris towards the West Coast and serves as a source of the water properties of the California Current System (CCS). In contrast to the CCS of the upper water column, the California Undercurrent is a poleward-flowing subsurface oceanographic feature of the region. Overall biological productivity in the CCS in the locale of Humboldt Bay is generally attributed to seasonal upwelling of nutrient-rich deep waters to the continental shelf, as in other eastern boundary systems. The wind regime is characterized primarily by northwesterly winds from May to September and both southerly and northerly winds at other times of year.

In the vicinity of the diffuser, benthic and pelagic habitats support a wide variety of organisms, including commercially and recreationally important fish and invertebrates, and habitat for prey of marine species of concern. Planktonic invertebrates include larval stages of commercially important invertebrate species such as Dungeness Crab (*Metacarcinus magister*). Planktonic invertebrates are also important prey for many species of birds, mammals, and fish. The major planktonic invertebrate groups in the California Current ecosystem include copepods, euphausids, crab megalopae, amphipods, squid, and gelatinous zooplankton. The benthic infauna community includes polychaetes, amphipods, gastropods, bivalves, ophiuroids, and nemerteans, and the epibenthic community includes commercially and recreationally important Dungeness Crab, as well as *Crangon spp.,* and mysids, that also form an important prey base for fish, marine mammals, and seabirds. Inshore of the diffuser, nearshore fish that are caught in commercial and recreational beach fisheries include Night Smelt (*Spirinchus starksi*), Surf Smelt (*Hypomesus pretiosus*), and several species of surf perch including Redtail Surfperch (*Amphisticus rhodoterus*) and Shiner Perch (*Cymatogaster aggregata*) (Appendix D, GHD and H. T. Harvey 2021).

3.3.3 Regulatory Setting

Federal

Endangered Species Act

The ESA of 1973 (16 USC 1531 et seq.) establishes a national policy that all federal departments and agencies provide for the conservation of threatened and endangered species and their ecosystems. Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed or proposed species may be present in the project region, and whether the proposed project will result in a “take” of such species. The ESA prohibits “take” of a single threatened and endangered species except under

certain circumstances and only with authorization from the USFWS or the National Oceanic and Atmospheric Administration (NOAA) Fisheries through a permit under Section 7 (for federal entities or federal actions) or 10(a) (for non-federal entities) of the Act. “Take” under the ESA includes activities such as “harass, harm, pursue, hunt shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

Clean Water Act, Section 404

The Clean Water Act (CWA) (1977, as amended) establishes the basic structure for regulating discharges of pollutants into Waters of the U.S. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters, without a permit under its provisions. Proposed discharges of dredged or fill material into Waters of the U.S. requires USACE authorization under Section 404 of the CWA [33 U.S.C. 1344]. USACE regulations implementing Section 404 define “Waters of the U.S.” to include intrastate waters (such as, lakes, rivers, streams, wetlands, and natural ponds) that the use, degradation, or destruction of could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3; 40 CFR 230.3).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711) as amended established federal responsibilities for the protection of nearly all species of birds, their eggs, and nests. A migratory bird is defined as any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle. The MBTA prohibits the take, possession, buying, selling, purchasing, or bartering of any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Only exotic species such as Rock Pigeons (*Columba livia*), House Sparrows (*Passer domesticus*), and European Starlings (*Sturnus vulgaris*) are exempt from protection.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) provides the federal government with the authority to manage fisheries in the U.S. Exclusive Economic Zone (EEZ) (from state waters which end three nautical miles offshore, to a distance of 200 nautical miles). In addition, the Act mandates inter-agency cooperation in achieving protection, conservation, and enhancement of Essential Fish Habitat (EFH). The Act defines EFH as "Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The Project Site is located within area designated as EFH.

Sustainable Fisheries Act of 1996

The Sustainable Fisheries Act (SFA) (Public Law 104-107) serves as an amendment to the MSA to “authorize appropriations, to provide for sustainable fisheries, and for other purposes.” The SFA includes requirements for describing EFH in Fishery Management Plans (FMP) and also mandates the protection EFH. According to the SFA, “one of the greatest long-term threats to the viability of commercial and recreational fisheries is the continuing loss of marine, estuarine, and other aquatic habitats. Habitat considerations should receive increased attention for the conservation and management of fishery resources of the United States.” This act also mandates the delineation of EFH for all managed species.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) (16 U.S.C. 1362) of 1972 prohibits the “taking” of marine mammals and restricts the import, export, or sale of marine mammals. Take is defined as “the act of hunting, killing, capture, and/or harassment of any marine mammal; or, the attempt at such.” Harassment includes disruption of behavioral patterns. Implementation of the MMPA is divided between USFWS (sea otters, walruses, polar bears, manatees, and dugongs) and NOAA Fisheries (pinnipeds including seals and sea lions and cetaceans including dolphins and whales). Incidental Harassment Authorizations (IHA) or Letters of Authorization (LOA) may be issued for certain activities which can result in small amounts of take associated with another activity.

State

California Endangered Species Act

The California Endangered Species Act (CESA) includes provisions for the protection and management of species listed by the State of California as endangered, threatened, or designated as candidates for such listing (California Fish and Game Code [FGC] Sections 2050 through 2085). The CESA generally parallels the main provisions of the ESA and is administered by the CDFW, which maintains a list of state threatened and endangered species as well as candidate and Species of Special Concern (SSC). The act requires consultation "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (Section 2053).

Coastal Act

The California Coastal Act (California Public Resources Code sections 30000 et seq) was enacted by the State Legislature in 1976 to provide long-term protection of California's 1,100 mile coastline for the benefit of current and future generations. Coastal Act policies constitute the standards used by the California Coastal Commission (Commission) in its coastal development permit decisions and for the review of local coastal programs (LCPs) prepared by local governments and submitted to the Commission for approval. The Humboldt Bay Area Plan of the Humboldt County Local Coastal Program (Humboldt LCP) addresses development on the terrestrial portion of the Project, while the Coastal Act maintains regulatory authority for the effluent discharge and the water intake. The Coastal Act is also used by the Coastal Commission to review federal activities that affect the coastal zone. Among other things, the policies require:

- Protection and expansion of public access to the shoreline;
- Protection, enhancement and restoration of environmentally sensitive habitats;
- Protection of productive agricultural lands, commercial fisheries and archaeological resources;
- Protection of the scenic beauty of coastal landscapes and seascapes;
- Coastal dependent developments shall have priority over other development on or near the shoreline;
- Oceanfront land that is suitable for coastal dependent aquaculture shall be protected for that use, and proposals for aquaculture facilities located on those sites shall be given priority, except over other coastal dependent developments or uses; and
- Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division. However, where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.

Water Quality Control Plan for Ocean Waters off California (Ocean Plan)

The Ocean Plan, as amended in 2019, is one of five statewide water quality control plans established by the State Water Resources Control Board to preserve and enhance California's territorial ocean waters for the use and enjoyment of the public. This is achieved by controlling the discharge of waste into the ocean and seawater intake. Discharge of waste can include stormwater runoff, municipally treated sewage outflow, and other discharges by industry under regional and state board permits. These plans, which are the State Water Board's master water quality planning documents, designate beneficial uses, water quality goals, and include programs to achieve these objectives.

Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan)

The California Thermal Plan provides temperature standards for territorial seas off California. New discharges in coastal waters should be discharged away from the shoreline to achieve dispersion through the vertical water column,

and not exceed the natural temperature of receiving waters by more than 20 degrees Fahrenheit (°F). In addition, the discharge shall not result in increases in natural water temperature exceeding 4°F above ambient at the shoreline or beyond 1,000 feet from the discharge. The goal is to assure protection of beneficial uses.

State Species of Special Concern

CDFW maintains a list of species and habitats of special concern. These are broadly defined as species that are of concern to CDFW because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California. The criteria used to define special-status species are described by CDFW. Impacts to special-status plants, animals, and habitats may be considered significant under CEQA.

Native Plant Protection Act

CDFW administers the California Native Plant Protection Act (CNPPA) (Sections 1900–1913 of the FGC). These sections allow the California Fish and Game Commission to designate rare and endangered plant species and to notify landowners of the presence of such species. Section 1907 of the CFGC allows the Commission to regulate "taking, possession, propagation, transportation, exportation, importation, or sale of any endangered or rare native plants."

Sensitive Natural Communities

CDFW provides oversight of habitats (i.e., plant communities) listed as sensitive in the California Natural Diversity Database (CNDDB), based on global and state rarity rankings according to the list of statewide natural communities, Hierarchical List of Natural Communities. The natural communities are broken down to the alliance level for vegetation types affiliated with ecological sections in California. The list and alliances coincide with A Manual of California Vegetation (Sawyer et al. 2009). According to CDFW, vegetation classification of natural community hierarchy habitats are listed as "high priority for inventory" based on global or state rarity rankings. CDFW considers alliances and associations with a S1 to S3 rank to be Sensitive Natural Communities (CDFW 2021a).

California Fish and Game Code

CDFW enforces the CFGC, which provides protection for "fully protected birds" (Section 3511), "fully protected mammals" (Section 4700), "fully protected reptiles and amphibians" (Section 5050), and "fully protected fish" (Section 5515). With the exception of permitted scientific research, no take of any fully protected species is allowed.

Section 3503 of the CFGC prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their eggs or nests. These provisions, along with the federal MBTA, essentially serve to protect nesting native birds. Non-native species, including the European Starling, Rock Dove, and House Sparrow, are not afforded protection under the MBTA or CFGC.

Streams, lakes, and riparian vegetation as habitat for fish and other wildlife species, are subject to jurisdiction by the CDFW under Sections 1600-1616 of the CFGC. A Section 1602 Lake and Streambed Alteration Agreement is required if a project:

- Substantially obstructs or diverts the natural flow of a river, stream, or lake,
- Substantially changes or uses any material from the bed, channel, or bank of a river, stream, or lake
- Deposits or disposes of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) regulates construction stormwater discharges through SWRCB Order No. 2003-0017-DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges that Have Received State Water Quality Certification." The state's authority to regulate activities in wetlands and waters resides primarily with the SWRCB, which in turn has authorized the state's nine Regional Water Quality Control Boards

(RWQCB) to regulate such activities. Under Section 401 of the federal CWA, every applicant for a federal permit for any activity that may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

Local

Humboldt Bay Area Plan – Local Coastal Plan

3.14 Industrial – Coastal Marine Environment: Wastewater Discharge

Wastewater discharges shall be treated to protect present and future beneficial uses, and, where feasible, to restore past beneficial uses of the receiving waters. Highest priority shall be given to improving or eliminating discharges that adversely affect any of the following:

(1) Wetlands, estuaries, and other biologically sensitive sites.
(2) Areas important for water contact sports.
(3) Areas that produce shellfish for human consumption.
(4) Ocean areas subject to massive waste discharge.

Ocean chemistry and mixing processes, marine life conditions, other present or proposed outfalls in the vicinity, and relevant aspects of area-wide waste treatment management plans and programs, but not of convenience to the discharger, shall for the purposes of this section, be considered in determining the effects of such discharges. Toxic and hard-to-treat substances should be pretreated at the source if such substances would be incompatible with effective and economical treatment in municipal treatment plants.

3.14 Industrial – Coastal Marine Environment: New Discharges

Where otherwise permitted, new warmed or cooled water discharges into coastal wetlands or into areas of special biological importance, including marine reserves and kelp beds, shall not significantly alter the overall ecological balance of the receiving area.

3.30 Natural Resources Protection Policies and Standards – ESHA

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.
(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas and shall be compatible with the continuance of such habitat areas.

3.30 Natural Resources Protection Policies and Standards – Diking, Filling, or Dredging of Open Coastal Waters, Wetlands, and Estuaries

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:
    (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
    (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
    (3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland; provided, however, that in no

event shall the size of the wetland area used for such boating facility, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, be greater than 25 percent of the total wetland area to be restored.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities.

(5) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource-dependent activities.

3.30 Natural Resources Protection Policies and Standards – Coastal Streams, Riparian Vegetation and Marine Resources

Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Use of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

3.30 Natural Resources Protection Policies and Standards - Coastal Streams, Riparian Vegetation and Marine Resources Section

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of wastewater discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging wastewater reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

3.30 Natural Resources Protection Policies and Standards – Wetland Buffer –Section 6(d)

Outside an urban limit line, the setback shall be between 100 and 200 feet, depending upon the size and sensitivity of the wetland, drainage boundaries, vegetation, adjacent uses, and the potential impacts of the project on the wet habitat values. The precise width of the setback shall be sufficient to prevent significant effects to the wetland.

3.30 Natural Resources Protection Policies and Standards – Development within Wetland Buffer –Section 6(f)

All new development within the wetland buffer shall include the following mitigation measures:

(1) Not more than 25% of the lot surface shall be effectively impervious.

(2) The release rate of storm runoff to adjacent wetlands shall not exceed the natural rate of storm runoff for a 50-year storm of 10 minute duration.

(3) Stormwater outfalls, culverts, gutters, and the like shall be dissipated.

(4) Septic systems or alternative waste disposal systems must meet standards of the Humboldt-Del Norte Health Department and the Regional Water Quality Control Board.

(5) Areas disturbed during construction, grading, etc., within 100 feet of the mean high water line, shall be restored to original contours and sufficiently and promptly replanted with vegetation naturally occurring in the immediate area.

(6) Development and construction shall minimize cut and fill operations and erosion and sedimentation potentials through construction of temporary and permanent sediment basins, sediment basins, seeding or

planting bare soil, diversion of runoff away from graded areas and areas heavily used during construction, and, when feasible, avoidance of grading during the rainy season (November through April).

3.3.4 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Thresholds	Sources
Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Uncompensated loss of any plant or animal species or individuals listed as rare, threatened, or endangered by federal or state government, or loss or degradation of habitat that supports such species	CEQA Guidelines Appendix G, Checklist Item IV (a)
Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Uncompensated loss of more than an incidental and minor area of riparian habitat or other sensitive habitat type (excluding wetlands defined by Section 401 of the Clean Water Act) identified under federal, state or local policies	CEQA Guidelines Appendix G, Checklist Item IV (b) Humboldt Bay Area Plan Natural Resources Protection Policies and Standards for ESHA and Riparian Vegetation
Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filing, hydrological interruption, or other means?	Uncompensated loss or severe degradation of more than an incidental or minor area of wetlands as defined by USACE and SWRCB	CEQA Guidelines Appendix G, Checklist Item IV (c) Humboldt Bay Area Plan Natural Resources Protection Policies and Standards for Wetland Fill, Wetland Buffers, and Development with Wetland Buffers
Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Uncompensated loss or substantive modification of key habitat areas that provide for continuity of movement for resident or migratory wildlife, or as a loss or substantive degradation of key habitat components that would result in loss of use of important concentration areas for wildlife	CEQA Guidelines Appendix G, Checklist Item IV (d)
Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Uncompensated loss of important biological resources that is inconsistent with local ordinance or policies	CEQA Guidelines Appendix G, Checklist Item IV (e) Humboldt Bay Area Plan Biological Resource Policies
Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan	CEQA Guidelines Appendix G, Checklist Item IV (f)

3.3.5 Methodology

Impact analysis in this Section, which also considers potential impacts to Humboldt Bay, located proximal to the Project Site and in relation to the proposed intakes, and the Pacific Ocean, as it relates to the Project's effluent discharge, demolition, and construction activities, is based on the following technical documents:

- Terrestrial Biological Resources Report (Appendix C1, GHD 2021a)
- Bat Habitat Assessments (Appendix C2, WRA 2021a; Appendix C3, WRA 2021b; and Appendix C4, WRA 2021c)

- Avian Surveys (GHD 2021b)
- Marine Resources Biological Evaluation Report (Appendix D, GHD and H. T. Harvey 2021)
- Numeric Modeling Report (Appendix E, GHD 2021c)
- Special Status Plant Survey and Vegetation Community Mapping/ESHA/Wetland Baseline Evaluation Technical Memorandum (Appendix F, GHD 2021d)
- Construction Noise, Vibration, and Hydroacoustic Assessment (Appendix J, Illingworth & Rodkin 2021)
- Restoration and Monitoring Plan (RMP; Appendix K, GHD 2021e)
- Supplemental Soils and Anthropogenic Disturbance Investigation of Potential ESHA Technical Memorandum (Appendix L, GHD 2021f)

Impact analysis for compensatory off-site restoration involving Spartina removal relied on the existing Final Programmatic Environmental Impact Report for the Humboldt Bay Regional Spartina Eradication Plan (H.T. Harvey & Associates and GHD 2013), hereafter referred to as the 2013 Spartina PEIR.

3.3.6 Impacts and Mitigation Measures

Impact Analysis

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

Terrestrial Development

A database search of the CNDDB (CDFW 2021b), California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2021), USFWS Information for Planning and Conservation (IPaC) (USFWS 2021), and NOAA Fisheries West Coast Region California Species List Tools (NMFS 2021) was conducted by GHD on April 28, 2020, and updated on July 27, 2021 (Appendix C5). The search encompassed seven U.S. Geological Survey (USGS) quadrangles (quads) centered on the Project Site quad (Eureka) and the surrounding six quads (Tyee City, Arcata North, Arcata South, McWhinney Creek, Fields Landing, and Cannibal Island).

Sensitive and special status species known to occur or potentially occur within the Project Site or Terrestrial Development Study Area are identified in Table 3.3-1 below. Species which are likely to be impacted as a result of the Project and require specific mitigation measures to lessen these impacts are further summarized below. Those species which have been identified as having a less than significant impact, or no impact, with the exception of coastal willow thickets, are analyzed further in the associated technical studies (Appendix A-L). Listed and special status species documented as present on-site or with a moderate to high probability are included in Table 3.3-1 below. Pacific Marten (*Martes caurina*) which was recently listed as federally threatened has no potential to occur within or near any of the Project components given that no suitable habitat (e.g., forest) is present in the Project Site or any of the study areas. Thus, this species is not evaluated further.

Table 3.3-1 Sensitive and Special Status Species

Scientific Name	Common Name	Status	Potential to Occur	Potential Impact
Plants and Plant Communities				
**Gilia millefoliata*	Dark-eyed gilia	G2, S2	High Potential/Occurring	Less than significant with MM BIO-1
**Abronia latifolia-Ambrosia chamissonis Alliance*	Dune mat	G3, S3	High Potential/Occurring	Less than significant with MM BIO-6
**Salix hookeriana Alliance*	Coastal willow thickets	G4, S3	High Potential/Occurring	No impact
**Rubus ursinus Alliance*	Coastal brambles	G4, S3	High Potential/Occurring	Less than significant with MM BIO-6
Terrestrial Mammals				
**Erethizon dorsatum*	North American Porcupine	G5, S3	Moderate Potential	Less than significant with MM BIO-2
Bats				
Corynorhinus townsendii	Townsend's Big-eared Bat	G3G4, S2, CDFW_SSC Species of Special Concern | IUCN_LC-Least Concern | WBWG_H-High Priority	Moderate Potential	Less than significant with MM BIO-3
Antrozous pallidus	Pallid Bat	CDFW_SSC-Species of Special Concern	Moderate Potential	Less than significant with MM BIO-3
Amphibians				
**Rana aurora*	Northern Red-legged Frog	G4, S3, CDFW_SSC-Species of Special Concern	Moderate Potential	Less than significant with MM BIO-2
Birds				
Brachyramphus marmoratus	Marbled Murrelet	FT, SE, G3G4, CDF_S-Sensitive	High Potential	Less than significant
**Accipiter striatus*	Sharp-shinned Hawk	G5, S4, CDFW_WL-Watch List | IUCN_LC-Least Concern	Present	Less than significant with MM BIO-5
**Ardea alba*	Great Egret	G5, S4, IUCN_LC-Least Concern	Present	Less than significant with MM BIO-5
**Ardea herodias*	Great Blue Heron	G5, S4, IUCN_LC-Least Concern	Present	Less than significant with MM BIO-5
Branta bernicla nigricans	Black Brant	G5, S2, CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Moderate Potential	Less than significant
**Chaetura vauxi*	Vaux's Swift	G5, S2S3, CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Moderate Potential	Less than significant with MM BIO-5
**Circus hudsonius*	Northern Harrier	G5, S3, CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	High Potential	Less than significant with MM BIO-5
Egretta thula	Snowy Egret	G5, S4, IUCN_LC-Least Concern	Present	Less than significant
**Elanus leucurus*	White-tailed Kite	G5, S3S4, CDFW_FP-Fully Protected | IUCN_LC-Least Concern	Moderate Potential	Less than significant with MM BIO-5
**Falco peregrinus*	American Peregrine Falcon	FD, SD, G4T4, S3S4, CDFW_FP-Fully Protected | USFWS_BCC-Birds of Conservation Concern	Present	Less than significant with MM BIO-5

Scientific Name	Common Name	Status	Potential to Occur	Potential Impact
Haliaeetus leucocephalus	Bald Eagle	FD, SE, G5, S3, CDFW_FP-Fully Protected | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Moderate Potential	Less than significant
Hydroprogne caspia	Caspian Tern	G5, S4, IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Moderate Potential	Less than significant
Numenius americanus	Long-billed Curlew	G5, S2, CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Moderate Potential	Less than significant
**Nycticorax*	Black-crowned Night-heron	G5, S4, IUCN_LC-Least Concern	Present	Less than significant with MM BIO-5
**Pandion haliaetus*	Osprey	G5, S4, CDFW_WL-Watch List | IUCN_LC-Least Concern	Present	Less than significant with MM BIO-5
**Phalacrocorax auritus*	Double-crested Cormorant	G5, S4, CDFW_WL-Watch List | IUCN_LC-Least Concern	Moderate Potential	Less than significant with MM BIO-5
Pelecanus occidentalis californicus	California Brown Pelican	FD, SD, G4T3T4, S3, CDFW_FP-Fully Protected	Moderate Potential	Less than significant
**Poecile atricapillus*	Black-capped Chickadee	G5, S3, CDFW_WL-Watch List | IUCN_LC-Least Concern	Present	Less than significant with MM BIO-5
Riparia riparia	Bank Swallow	ST, G5, S2, IUCN_LC-Least Concern	Moderate Potential	Less than significant
Marine Mammals				
Eschrichtius robustus	Gray Whale	G4, N4, MMPA	High Potential	Less than significant
Eumetopias jubatus	Steller Sea Lion	G3, S2, MMPA	High Potential	Less than significant
Phoca vitulina richardii	Pacific Harbor Seal	G5T5Q, N5, MMPA	High Potential	Less than significant
Phocoena phocoena	Harbor Porpoise	G4G5, N4N5, MMPA	High Potential	Less than significant
Zalophus californianus	California Sea Lion	G4, N4, MMPA	High Potential	Less than significant
Fish				
Acipenser medirostris	Green Sturgeon, Southern Distinct Population segment (DPS)	FT, G3, S1S2, AFS_VU-Vulnerable | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened	High Potential	Less than significant
Acipenser medirostris	Green Sturgeon, Northern Distinct Population segment (DPS)	G3, SNR, AFS_VU-Vulnerable | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened | NMFS_SC-Species of Concern	High Potential	Less than significant
Acipenser transmontanus	White Sturgeon	CDFW_SSC-Species of Special Concern	Moderate Potential	Less than significant
Entosphenus tridentatus	Pacific Lamprey	G4, S4, AFS_VU-Vulnerable | BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Moderate Potential	Less than significant
Lampetra ayresii	Western River Lamprey	CDFW_SSC-Species of Special Concern	Moderate Potential	Less than significant
Oncorhynchus kisutch	Coho Salmon - southern Oregon / northern California Evolutionarily Significant Unit (ESU)	FT, ST, G4T2Q, S2, AFS_TH-Threatened	High Potential	Less than significant
Oncorhynchus clarkii clarkia	Coastal Cutthroat Trout	CDFW_SCC-Species of Special Concern	High Potential	Less than significant

Scientific Name	Common Name	Status	Potential to Occur	Potential Impact
Oncorhynchus mykiss irideus pop. 16	Steelhead - northern California DPS	FT, G5T2T3Q, S2S3, AFS_TH-Threatened	High Potential	Less than significant
Oncorhynchus mykiss	Steelhead – summer run	SE	High Potential	Less than significant
Oncorhynchus tshawytscha	Chinook Salmon - California Coastal ESU	FT, G5, S1, AFS_TH-Threatened	High Potential	Less than significant
Oncorhynchus tshawytscha	Klamath River Spring Chinook Salmon	SE	Moderate Potential	Less than significant
Spirinchus thaleichthys	Longfin Smelt	ST	High Potential	Less than Significant with MM BIO-6a

Footnotes:

*Requires mitigation and discussed further below in this Section.

Potential to Occur Descriptions:

No Potential. Habitat on and adjacent to the Project Site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime);

Low Potential. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the Project Site is unsuitable or of very poor quality. The species is not likely to be found in the Project Site;

Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the Project Site is unsuitable. The species has a moderate probability of being found in the Project Site;

High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the Project Site is highly suitable. The species has a high probability of being found in the Project Site.;

Present/Not Present. Detected or excluded (habitats only) during site visits.

Status:

FedList: Listing status under the federal Endangered Species Act (ESA) – E (endangered); T (threatened); C (candidate); P (proposed); UR (under review); D (delisted)

CalList: Listing status under the California state Endangered Species Act (CESA) - E (endangered); T (threatened); C (candidate)

GRank: Global Rank from NatureServe's Heritage Methodology (ranking according to degree of global imperilment - G1 = Critically Imperiled—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors; G2 = Imperiled—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors; G3 = Vulnerable—At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors; G4 = Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors; G5 = Secure—Common; widespread and abundant; Q = " Questionable taxonomy that may reduce conservation priority

SRank: State Rank from NatureServe's Heritage Methodology (ranking according to degree of imperilment in the state (California) - S1 = Critically Imperiled—Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state; S2 = Imperiled—Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state; S3 = Vulnerable—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state; S4 = Apparently Secure—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors; S5 = Secure—Common, widespread, and abundant in the state; SNR = State Not Ranked

BLM_S (Bureau of Land Management Sensitive); **CDF_S**: (California Department of Forestry and Fire Protection Sensitive); **CDFW_FP** (CDFW Fully Protected Animal); **CDFW_SSC** (CDFW Species of Special Concern); **IUCN_NT** (International Union for Conservation of Nature Near Threatened); **USFS_S** (U.S. Forest Service Sensitive)

Special Status Plant Species

Seasonally-appropriate surveys for special status plants at the Project Site occurred in April, May, and June 2020; detailed methods and results are available in Appendix F (GHD 2021d). One special status plant, dark-eyed gilia (*Gilia millefoliata*), was detected on the Project Site and has the potential to be impacted by the Project.

Dark-Eyed Gilia (Gilia millefoliata)

CNPS-Listed Rare Plant (1B.2), Present

Dark-eyed gilia is protected as a CNPS-listed 1B.2 rare plant. An estimated population of approximately 100,000 dark-eyed gilia plants occurs within the Study Area (same area as the Area of Potential Effects as shown in Appendix F). Dark-eyed gilia had a clustered distribution scattered from the area west of the clarifiers across the southern end of the property and extending south beyond the edge of the Study Area. The highest density of the rare plants occurred north of the fence along the disturbed access road and in a couple of small patches near the clarifiers. The on-site habitat value of established gilia is considered lower value habitat because it has been fragmented, invaded, and anthropogenically disturbed over the last 50 plus years (Appendix L, GHD 2021f). Approximately 0.87 acres of dark-eyed gilia and/or dark-eyed gilia habitat would be significantly impacted during construction and operation of the Project (Appendix F, GHD 2021d) out of 2.4 acres that exist within the Terrestrial Development Study Area. To reduce the impact to a less-than-significant level, Mitigation Measure BIO-1 would require compensatory mitigation for loss of dark-eyed gilia habitat at a ratio of no less than 3:1 (2.61-acre mitigation area: 0.87-acre permanent impact area). Compensatory mitigation would occur on properties managed by the Humboldt Bay Harbor District (HBHD), Friends of the Dunes (FOD), the U.S. Fish and Wildlife Service (USFWS), and the Manila Community Services District (MCSD), where natural dune ecosystems are established and where gilia would be better protected by restoring contiguous dune habitat with intact dune systems and long-term protection within natural resource conservation areas off-site.

Mitigation

Mitigation Measure BIO-1: Implementation of Compensatory Mitigation for Loss of Dark-eyed Gilia

Loss of dark-eyed gilia habitat shall be mitigated through compensatory mitigation at a ratio of no less than 3:1 (area). Prior to issuance of any construction related permits, a Restoration and Monitoring Plan (RMP) shall be submitted for review and approval by the Planning and Building Department after consultation with CDFW. The RMP shall be in substantial conformance with the RMP dated August 4, 2021, prepared by GHD. Both on-site and off-site methods, success criteria, monitoring requirements, and reporting requirements for mitigation shall be conducted as followed:

- Pre-construction (non-native removal) surveys for rare plants, including dark-eyed gilia, shall occur at both on-site and off-site mitigation areas identified in the RMP.
- Sensitive dark-eyed gilia habitats will be marked with flagging and signage prior to replanting designated on-site restoration areas to avoid disturbing the rare plant population.
- The location of the off-site mitigation shall be identified, and all proposed work shall be specific to that location(s).
- The established dark-eyed gilia population to be preserved on-site and translocation macroplots shall be searched for dark-eyed gilia during the blooming period. Macroplots measuring approximately 100 square meters (m2) are to be established at the time of translocation in the best available habitat and these will be marked by GPS in the field.
- Successful mitigation of impacts to dark-eyed gilia is defined by protecting the remaining rare plant habitat along the southern boundary and translocating the population from the project footprint to suitable restored off-site habitat.

- Annual success is defined by a total population estimate for dark-eyed gilia at restoration sites equivalent to the baseline population estimate within the project footprint, to be established by pre-project surveys in May 2022, as detailed in the RMP.
- Monitoring shall be implemented for a minimum 5-year period with annual reports provided to the Planning and Building Department. Each report shall identify the expected success criteria, whether the criteria has been satisfied, and remedial actions needed to achieve the success criteria. Monitoring, reporting and corrective actions shall continue until the success criteria has been achieved for two consecutive years starting in year 4. Year 1: After density-based population sampling to obtain baseline population estimates, dark-eyed gilia seeds will be collected from the Project footprint and broadcast at designated restoration macroplots. The remaining population outside of the footprint will be preserved. Year 2-5: Dark-eyed gilia shall be counted and/or systematically sampled at restoration sites. Establishment of total population numbers equal to or greater than the 90 percent confidence interval for the baseline population estimate shall indicate success. Annual monitoring will begin by navigating by GPS to the established macroplots. Transects spaced every 3m will be carefully walked to search for and count dark-eyed gilia plants where they are sparse. If plants become too numerous to reliably count, a systematic sampling scheme comparable to baseline monitoring may be implemented to obtain a good population estimate. The assessment of population health and adaptive management recommendations for additional reseeding shall be included in annual reports submitted to the Planning and Building Department for approval.

With the implementation of Mitigation Measure BIO-1, potential impacts to dark-eyed gilia would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Terrestrial Mammals

Potential impacts to special status terrestrial mammals were evaluated in the Project's Terrestrial Biological Resources Report (Appendix C1, GHD 2021a). There is one special status terrestrial mammal, the North American Porcupine, with the potential to be impacted by the Project.

North American Porcupine (Erethizon dorsatum)
California State Special Status Species (G5 S3), Moderate Potential

Both the Project Site and greater Terrestrial Development Study Area contain requisite foraging habitat for this species. Based on nearby records and available habitat, the species has a moderate potential to be present and forage within the Project Site and Terrestrial Development Study Area. Potential Project impacts to terrestrial mammals are expected to be limited to ground disturbance/excavation. While elevated levels of noise at the Project Site may disturb terrestrial mammals in the vicinity, no impacts are expected as the species are highly mobile and likely to leave the area once noisy construction activities commence. If present in the Project Site or Terrestrial Development Study Area during construction activities, the species may be injured or trapped in open excavation pits. In addition, the species may be impacted if rodenticides are used on-site. Thus, the potential for significant impacts to North America Porcupines could occur. Potential Project-related impacts to this species (if any) would be avoided through the implementation of Mitigation Measure BIO-2.

Mitigation

Mitigation Measure BIO-2: Protect Special Status Terrestrial Mammals

The construction plans will specify that steep-sided excavations capable of trapping mammals shall be ramped or covered if left overnight. No pets (i.e., dogs) shall be allowed on the Project Site during construction. Trash receptacles shall be covered and removed from site at least weekly. Trash shall be managed so that it is not a nuisance, fire hazard, or attract animals. No poisons (including

anticoagulant rodenticides) or other potentially injurious materials attractive to mammals shall be utilized or left unattended during construction or operation activities.

With the implementation of Mitigation Measure BIO-2, potential impacts to special status terrestrial mammals would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Bats

Potential impacts to special status bats were evaluated in a Bat Habitat Assessment conducted by bat expert Greg Tatarian of Wildlife Research Associates (Appendix C2, WRA 2021a) as well as two additional follow-up surveys conducted during 2021 (Appendix C3, WRA 2021b; Appendix C4, WRA 2021c). No indications of SSC bats were present, including Townsend's Big-eared Bat (*Corynorhinus townsendii*) and Pallid Bat (*Antrozous pallidus*); all evidence observed indicate *Myotis* species, most likely Yuma Myotis (*Myotis yumanensis*) or Little Brown Bat (*Myotis lucifugus*).

The Bat Habitat Assessment and follow-up surveys, including visual surveys of the exterior surfaces and perimeters of the structures and interior spaces of all structures safe to enter, showed that three of the 15 structures (Pump House [SUB BF2], SUB FL.2, and Filter/Softener Tank Building) contained evidence of past or present use by night-roosting bats. Some structures offer no suitable roosting habitat for bats due to excessive light and airflow or other factors. Some structures contain no evidence of past or present use by bats but have features that could potentially be used by bats if displaced from existing roost structures. Three structures (Pump House (SUB BF2), SUB FL.2, and Filter/Softener Tank Building) showed evidence of some historic activity. Maternity roost usage was not indicated by the July 2021 survey during which no day-roosting bats were observed (survey occurred "during a time when day-roosting bats in maternity roosts would be observed, with volant pups and adult females being present," Appendix C4; WRA 2021c). No overwintering bats were observed in any of the roost features that could be surveyed during the January 2021 survey. Large populations were not indicated, based on lack of substantial staining and fecal accumulations (Appendix C2; WRA 2021a).

Although the timing of the demolition of the three buildings with evidence of bat use (Pump House [SUB BF2], SUB FL.2, and Filter/Softener Tank Building) will be restricted to daylight hours and require specific scheduling, as described below, the majority of the buildings at the Project Site can be demolished without restriction related to bat habitation. In order to ensure potential significant impacts to special status bats do not occur, Mitigation Measure BIO-3 will be implemented. Mitigation Measure BIO-3 formally incorporates the recommendation of the Bat Habitat Assessment into the Project (Appendix C2; WRA 2021a).

Mitigation

Mitigation Measure BIO-3: Protect Special Status Bats

Buildings on-site will be demolished in the following two-phase sequence.

1. The following buildings will be removed as part of the first phase of demolition during daylight hours only (following naming in Appendix C2; WRA 2021a, Table 2, page 4-5). Phase 1 buildings listed below may be removed in any order.
    a. Machine Building
    b. Warehouse
    c. Existing Offices
    d. Brick Silos (all)
    e. Structure (concrete)
    f. Structure 2 (concrete)
    g. 3-Story Boiler Building

h. 2-Story Building Near Smokestack
i. Elevated Water Tanks
j. Smokestack
k. 12-Story Boiler Building and Attached Structure
l. Foundations & Structures, Footings

2. Following removal of the Phase 1 buildings listed above, Phase 2 buildings will be removed in any order and include the Pump House, Sub Fl. 2, and Filter/Softener Tank Building during daylight hours only.

Based on the findings of the bat investigations (Appendices C2-C4, WRA 2021a-c) and with the implementation of Mitigation Measures BIO-3, protection against potential project impacts to special status bats, and large bat colonies, would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Amphibian and Reptile Species

There is one special status amphibian, the Northern Red-legged Frog, with a moderate potential to be present in the Terrestrial Development Study Area and potentially impacted by this component of the Project. There is no suitable habitat present for special status reptiles (e.g., Western Pond Turtle [*Actinemys marmorata*]), thus, they are excluded from further consideration.

Northern Red-legged Frog (Rana aurora)
CDFW SSC, Moderate Potential

Northern Red-legged Frogs (NRLF) are relatively common in and near coastal portions of Humboldt County and historical records have documented the species nearby (within approximately 5 miles of the Project Site). The Project Site contains some habitat for this species. There is one anthropogenic rectangular concrete pool on-site where other frog species were observed. No NRLF tadpoles were observed during dip-netting sampling. This species has moderate potential to occur with the Project Site and Terrestrial Development Study Area. If present in the Project Site or Terrestrial Development Study Area during construction activities, the species may be injured or killed via crushing, entrapment, or burying (related to ground disturbance), resulting in a significant impact. Potential Project-related impacts to this species (if any) would be reduced to be less than significant through the implementation of Mitigation Measure BIO-4.

Mitigation

Mitigation Measure BIO-4: Protect Special Status Amphibians

- No more than one week prior to commencement of ground disturbance within 50 feet of),the anthropogenic rectangular concrete pool, a qualified biologist shall perform a pre-construction survey for NRLF, and shall relocate any individuals or egg masses that occur within the work-impact zone to nearby suitable habitat.
- If any NRLF are observed during the pre-construction survey, CDFW shall be consulted to determine the best way to avoid impacts to NRLF. Ground-disturbing activities should be conducted during the dry season (May 15-October 15) to minimize take of NRLF. If construction activities are conducted within the dry season (May 15-October 15), exclusion fencing shall be installed around the work area prior to October 15 to prevent NRLF from migrating into work areas. The fencing material and design shall be reviewed and approved by the Planning and Building Department in consultation with CDFW before installation.
- In the event a NRLF is encountered on-site during construction, all construction activities will cease until the animal has left the Project area on its own and is no longer in danger of harm. The

project construction manager or project biologist will report the sighting to CDFW within 24 hours. No one other than a CDFW-approved biologist is permitted to handle or capture NRLF, and NRLF will not be taken or harassed.

- An Environmental Awareness Training will be provided to the construction crew prior to commencement of construction activities. This “tailgate” training is intended to enable the construction crew to be able to identify NRLF and to safely relocate them outside of the Project Site.

With the implementation of Mitigation Measure BIO-4, potential impacts to special status amphibians would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status and Protected Birds

The Terrestrial Biological Resources Report (Appendix C1, GHD 2021a) evaluated potential impacts to special status birds (identified in Table 3.3-1) that could potentially be impacted by project construction and operations, and concluded Marbled Murrelet, Black Brant, Snowy Egret, Caspian Tern, Long-billed Curlew, Bald Eagle, California Brown Pelican, Bank Swallow, would not be significantly impacted by the Project, due to lack of habitat, lack of nesting requisites, and existing conditions of the Project Site, etc..

Avian surveys were completed by a GHD Wildlife Biologist periodically throughout the spring and summer of 2021 to document nesting activity and timing at the Project Site (GHD 2021b). Surveys were completed on the following dates in 2021: February 11, April 12, May 12, June 9, July 15, and August 5. Total number of avian species recorded in or flying over the Project Site during surveys ranged from 22 to 29. Most of these species were common, migratory species protected by the MBTA and FGC. Several special status species were observed: Black-capped Chickadee (*Poecile atricapillus*; CDFW Watch List species), Double-crested Cormorant (*Phalacrocorax auritusi*; CDFW Watch List species), Great Egret (*Ardea alba;* CDFW Special Animals List species), Great Blue Heron (*Ardea herodias*; CDFW Special Animals List species), Snowy Egret (*Egretta thula*; CDFW Special Animals List species), Osprey (*Pandion haliaetus*; CDFW Watch List species), and American Peregrine Falcon (*Falco peregrinus anatum*; CDFW Fully Protected Species). Evidence of nesting by numerous protected, native migratory species as well as invasive species (e.g., European Starling [*Sturnus vulgaris*], House Sparrows [*Passer domesticus*], and Eurasian Collared-Doves [*Streptopelia decaocto*]) was documented on-site as well as within 500 feet of the Project Site. Many avian species return to use previous nests in subsequent years (e.g., Ospreys) and there is a high likelihood that some of these nests will be occupied in the coming breeding season.

Based on the Construction Noise, Vibration, and Hydroacoustic Assessment conducted by Illingworth and Rodkin (2021; Appendix J), noise generated by demolition activities would attenuate below 140 dBA (the threshold to avoid hearing damage in birds; Dooling and Popper 2007) at 130 feet from the blast. Noise generated from the blast could be higher than 140 dBA in areas within 130 feet of the blast. With the implementation of Mitigation Measure BIO-5 requiring nesting bird surveys cover a search radius of 500 feet from the Project Site, impacts to, potential impacts to special status, migratory, and nesting birds would be less than significant.

Special status birds which were documented during 2021 avian surveys or have a moderate to high probability of occurring on-site are detailed below.

Sharp-shinned Hawk (Accipiter striatus)
CDFW Watch List, Present

Sharp-shinned Hawks are year-round residents across most densely forested areas of western and eastern North America. There are multiple recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site). This is a common species known to nest and forage in urban and rural areas. A Sharp-shinned Hawk carcass was observed in the 12-Story Boiler building during the 2020 reconnaissance-level field survey. If nesting at the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by

elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Great Egret (Ardea alba)
CDFW Special Animals List (S4), Present

Great Egrets are year-round residents in western California, with breeders concentrated in the Klamath and Warner basin in Siskiyou and Modoc Counties, along the coast in Humboldt County. There are numerous recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site) including evidence of nesting (e.g., rookeries such as Tuluwat Island). There is also a recent record from the Project Site. This species was observed foraging in the clarifier ponds on-site during several avian surveys conducted in 2021 (GHD 2021b). The lack of large nest trees at the Project Site or within the Terrestrial Development Study Area precludes the chance of breeding on-site. The Project Site contains marginal foraging habitat (man-made, concrete, large, flooded pool and clarifier pools) for this species. The Terrestrial Development Study Area contains requisite foraging habitat for this species along the Humboldt Bay shoreline. While unlikely, if nesting at the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Great Blue Heron (Ardea herodias)
CDFW Special Animals List (S4), Present

Great Blue Herons are year-round residents in the majority of coastal and central California. There are numerous recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site), including evidence of nesting. Rookeries are present on Woodley and Indian Islands in nearby Humboldt Bay. There is also a recent record from the Project Site. This species was observed foraging in the clarifier ponds on-site during several avian surveys conducted in 2021 (GHD 2021b). The lack of large nest trees at the Project Site or within the Terrestrial Development Study Area precludes the chance of breeding on-site. However, both the Project Site and greater Terrestrial Development Study Area contain requisite foraging habitat for this species. The Terrestrial Development Study Area contains requisite foraging habitat for this species along the Humboldt Bay shoreline. While unlikely, if nesting at the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Vaux's Swift (Chaetura vauxi)
CDFW SSC, Moderate Potential

Vaux's Swifts are summer residents in California, breeding on the coast from central California northward and in the Cascades and Sierra Nevada mountains. There are multiple recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site). The closest known record is from 2019 in the town of Samoa, within 1 mile of the Project Site. Nesting habitat may be present, as the species will occasionally nest in buildings/chimneys. The 270-foot smokestack is a smooth concrete structure with a concentric inner stack made of firebrick, with lining between the two concentric stacks at the base, tapering to none near the top opening, and a coating over the interior brick of the inner stack (WRA 2021a). Due to safety considerations, the ability to survey the smokestack for bird use was limited. Based on the lack of protected roost crevices or cavities observed and lack of bird droppings visible from the base opening up about 100 feet, the smokestack likely provides poor habitat suitability for the Vaux's Swift and other bird species. In addition, the species is a generalist when it comes to foraging habitat, and presence is possible. Vaux's Swift have a moderate potential to occur at the Project Site and within the Terrestrial Development Study Area. If present in the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is

expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Northern Harrier (Circus hudsonius)
CDFW SSC, Present

Northern Harriers are a widely distributed raptor species, with year-round residents on the California coast, northeastern portion of the state, and the Central Valley. There are multiple recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site) including evidence of nesting. The closest known record is from 1991 within the Project Site. This species was observed flying over the Project Site during several avian surveys conducted in 2021 (GHD 2021b). Both the Project Site and greater Terrestrial Development Study Area contain suitable nesting and foraging habitat for this species. If present in the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

White-tailed Kite (Elanus leucurus)
CDFW Fully Protected Species, Moderate Potential

White-tailed Kites are year-round residents in most of California west of the Sierras, including the majority of the coastal foothills, Central Valley, and some arid regions such as Kern and Inyo Counties. There are multiple recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site) including evidence of nesting. The closest known record is from 1991 within the Project Site. Both the Project Site and greater Terrestrial Development Study Area contain requisite nesting and foraging habitat. Based on nearby records and available habitat, the species has a moderate potential to be present, nest, and forage within the Project Site and Terrestrial Development Study Area. If present in the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

American Peregrine Falcon (Falco peregrinus anatum)
CDFW Fully Protected Species, Present

In western North America, resident populations of Peregrine Falcons are found along the coast of California and the majority of the interior of the state, excluding the Central Valley and arid regions in the southeast. In California, peregrines generally prefer open landscapes for foraging and cliffs or buildings for breeding. There are multiple recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site) including evidence of nesting; there is a known nesting pair at the Samoa Bridge, approximately 2.5 miles northeast of the Project Site. A pair of adult Peregrine Falcons was observed in the Project Site during several avian surveys conducted in 2021, however, no nesting was confirmed on-site (GHD 2021b). If present in the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Black-crowned Night-Heron (Nycticorax nycticorax)
CDFW Special Animals List (S4), Present

There are numerous recent records from the immediate Project vicinity (approximately 5-mile radius around Project Site) including evidence of historical nesting. The closest known record is from 2009 in the town of Samoa, within 1 mile of the Project Site. Rookeries are present on Tuluwat Island in the nearby Humboldt Bay and in Fairhaven south of the Project Site. The Project Site only contains marginal foraging habitat (man-made pool) for this species. The Terrestrial Development Study Area contains requisite foraging habitat for this species along the Humboldt Bay shoreline. This species was observed foraging in the mud flats of Humboldt Bay adjacent to the Project Site during several avian surveys conducted in 2021 (GHD 2021b). Construction will not occur on the shoreline of Humboldt Bay

or within in-water habitat of Humboldt Bay. Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Osprey (Pandion haliaetus)
CDFW Watch List Species, Present

Ospreys have a cosmopolitan distribution and their breeding range throughout North America is widespread. There are numerous Osprey nest sites within and adjacent to the Project Site. During the reconnaissance survey, several nests were observed occupied (other nests are assumed to be historical). A total of 10 Osprey nests were observed occupied in the vicinity of the Project, including one within the Project Site, during 2021 avian surveys (GHD 2021b). The species is considered to be present at the Project Site and within the Terrestrial Development Study Area.

The Harbor District is actively working with CDFW to relocate Osprey nests from the Project Site, to avoid potential impacts. As part of this effort, Osprey nesting at the Project Site is monitored, and actions have been taken to relocate known nests on the Project Site to other off-site locations. Some established nesting sites have already been relocated to constructed nesting platforms at more suitable locations. Additional effort is underway to relocate the remaining nesting locations to constructed nesting platforms outside of the Project Site. The locations of the new nesting platforms and procedures for nest relocation have been determined with CDFW. Within the terrestrial development footprint, the only remaining nest sites are located on the power poles next to the clarifiers. These remaining nest sites are scheduled to be removed or modified with Osprey deterrents prior to construction of the terrestrial development. Removal of the nests and/or installation of the Osprey deterrents is planned to occur outside the nesting season and in consultation with CDFW. Thus, there would be no remaining Osprey sites within the footprint of the terrestrial development and a significant impact would not result.

If additional Osprey nests are established within the terrestrial development footprint prior during construction activities, Osprey may be impacted by elevated levels of noise and anthropogenic disturbance. In addition to Mitigation Measure BIO-5, Mitigation Measure BIO-5a has also been incorporated to ensure any potential impacts to new Osprey nests that may be established at the Project Site would result in a less than significant impact.

Osprey are commonly found along the industrial waterfront at and near the Project Site and are habituated to existing operational industrial noise. Thus, any disturbance to Osprey from the operational noise of the Project, which will be similar to existing noise conditions, would be less than significant.

Mitigation

Mitigation Measure BIO-5a: Protection of Osprey

Any new Osprey nests established within the Project Site that require relocation will be removed (after nesting has occurred) and replaced at a 1:1 ratio in consultation with CDFW.

With the incorporation of Mitigation Measure BIO-5a, the potential impact to Osprey would be less than significant.

Double-crested Cormorant (Phalacrocorax auritus)
Nesting Colony - CDFW Watch List Species, Present

There are numerous recent records of Double-crested Cormorants from the immediate Project vicinity (approximately 5-mile radius around Project Site) including evidence of nesting (CDFW 2020a, eBird 2020). The closest known record is from 2009 in the town of Samoa, within 1 mile of the Project Site (eBird 2020). The Project Site does not contain suitable habitat for this species. The Terrestrial Development Study Area contains requisite foraging habitat within Humboldt Bay, but no nesting habitat is present. This species was observed flying over the Project Site during several avian surveys conducted in 2021, however, none were seen within the Project Site (GHD 2021b). Construction would not occur on the shoreline of Humboldt Bay or within in-water habitat of Humboldt Bay. Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Black-capped Chickadee (Poecile atricapillus),
CDFW Watch List Species, Present

Black-capped Chickadees are found year-round in the very northwest corner of California (Del Norte and Humboldt Counties). Black-capped Chickadees are found in mixed and single species flocks during the non-breeding season and can be seen defending territories during the breeding season. The species prefers fragmented wooded areas such as woodlots, parks, and riparian corridors, but also continuous deciduous and mixed forests. Chickadees are cavity nesters that particularly favor hardwoods. This species was observed in the willows along Vance Avenue immediately adjacent to the southwest of the Project Site adjacent to the Project Site during several avian surveys conducted in 2021 (GHD 2021b). Although the Project Site itself contains few trees that could serve as breeding habitat, the larger Terrestrial Development Study Area provides suitable breeding and foraging habitat, including in the willows along Vance Avenue. If present in the Project Site or Terrestrial Development Study Area during construction activities, the species may be impacted by elevated levels of noise and anthropogenic disturbance (no removal of potential nesting habitat is expected). Potential Project-related impacts to this species (if any) would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-5.

Mitigation

Mitigation Measure BIO-5: Protect Special Status, Migratory, and Nesting Birds

In order to mitigate potential impacts to special status migratory and nesting birds, one of the following measures shall be implemented:

1. If ground disturbance (i.e., ground densification and building demolition) or vegetation clearing is conducted outside the avian nesting season (March 15 – August 15) the applicant, contractor or responsible individual for the construction shall submit a construction timeline indicating dates of work to be implemented to the Planning and Building Department prior to construction or demolition permits and/or commencing of densification, ground disturbance, and/or vegetation clearing, . Any deviation from this approved timeline shall require prior approval from the Planning and Building Department. Or
2. If ground disturbance occurs during the nesting season, a qualified ornithologist shall conduct pre-construction surveys within the vicinity of the Project Site to check for nesting activity of native birds and to evaluate the site for presence of raptors and special status bird species in the buildings subject for demolition. The ornithologist shall conduct at minimum a one-day pre-construction survey within the 7-day period prior to vegetation removal, demolition, and ground-disturbing activities. If ground disturbance, demolition, or vegetation removal work lapses for seven days or longer during the breeding season, a qualified ornithologist shall conduct a supplemental avian pre-construction survey before Project work is reinitiated. The report from the ornithologist shall be submitted to the Planning and Building Department prior to issuance of a Notice to Proceed before commencing demolition or construction activity.

If active nests are detected within the construction footprint or up to 500 feet from construction activities, the ornithologist shall flag a buffer around each nest (assuming property access). A plan showing the buffer shall be submitted to the Planning and Building Department prior to commencement of construction activities. Construction activities shall avoid nest sites until the ornithologist determines that the young have fledged, or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 feet of the construction area, buffers will be implemented as needed (buffer size dependent on species). Buffer sizes for common species would be determined on a case-by-case basis in consultation with CDFW and, if applicable, with USFWS. Buffer sizes will take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds.

If active nests are detected during the survey, the qualified ornithologist shall monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified ornithologist, disturb nesting activities (e.g., excessive noise), shall be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified ornithologist shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed or nesting activity has ceased, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, separating trucks in queue to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors. Upon completion of the survey, a memo will be provided to the Planning and Building Department that will describe the methods and results of the survey and any related recommendations. All requirements and recommendations of the ornithologist shall be conditions of the Coastal Development Permit and shall be incorporated into the construction plans.

With the implementation of Mitigation Measure BIO-5, potential impacts to special status and protected birds would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Marine Mammals

No in-water work in Humboldt Bay is proposed as part of the Terrestrial Development component of the Project. Given no work in Humboldt Bay is proposed and standard BMPs to protect water quality would be implemented, no impacts to special status marine mammals as a result of impediments to water quality or aquatic habitat in nearby Humboldt Bay would result.

Biological noise was evaluated in the Hydroacoustic, Noise, and Vibration Assessment (Appendix J, Illingworth and Rodkin 2021). Impact analysis included evaluation of noise and vibration resulting from three potential soil densification construction methods, including rammed aggregate piles, vibro displacement columns, and vibro soil densification. Impact analysis also evaluated noise and vibrations that would result from installation of sheet piling using a vibratory pile driver and installed to a depth of approximately 30 feet (Appendix J, Illingworth and Rodkin 2020). Construction noise and vibration from the Project Site would not propagate to the Pacific Ocean; thus, marine noise-related impacts in the Pacific Ocean would not result (Appendix J, Illingworth and Rodkin 2021).

Under the Marine Mammal Protection Act, NMFS has defined levels of harassment for marine mammals. Level A harassment is defined as “[a]ny act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild” (50 CFR § 216.3). Level B harassment is defined as “Any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including but not limited to migration, breathing, nursing, breeding, feeding or sheltering” (50 CFR § 216.3).

Rammed Aggregate Piles, Vibro Displacement Columns, and Vibro Soil Densification Noise

Very small Level A injury zones for low, mid, and high frequency cetaceans would result from construction methods utilizing rammed aggregate piles, vibro displacement columns, and vibro soil densification as identified in the Illingworth and Rodkin’s report. The Level A injury zones would border the edge of the shoreline when construction occurs on the eastern portion of the Project Site nearest Humboldt Bay. The size of the Level A injury zones varies by type of cetacean, as detailed below. Noise thresholds applicable to marine mammals would be very small when construction occurs on the eastern portion of the Project Site nearest Humboldt Bay.

- Mid frequency cetaceans (e.g., dolphins, toothed whales, beaked whales, and bottlenose whales) would have the smallest potential Level A injury zone of less than 1 foot and thus would not be impacted.

- Low frequency cetaceans (e.g., Humpback Whales and Gray Whales) would have a potential Level A injury zone of approximately 11 feet.
- High frequency cetaceans (e.g., porpoises) would have the largest potential Level A injury zone of approximately 17 feet (Appendix I).

The Level A injury zone for phocid pinnipeds (e.g., true seals including Harbor Seals) would be approximately seven feet from the shoreline. There are no documented haul out zones for Harbor Seals near the Project Site (CDFW 2012); thus, impacts to Harbor Seals would not result, especially given the small 7-foot Level A injury zone so close to the shoreline of Humboldt Bay. There would be no Level A injury zone for otariid pinnipeds (e.g., sea lions and fur seals), avoiding the potential for impact.

Mudflats and intertidal habitats extend beyond 17 feet from the shoreline, limiting depths, even during high tide. Whales, dolphins, and other marine mammals would be unlikely to be present so close to shore (within approximately 17 feet) and thus unlikely to be detrimentally impacted by rammed aggregate piles, vibro displacement columns, and vibro compaction Level A injury zone noise. Any potential impact would be less than significant.

The Level B injury zone (See Image 3.3-1 below) for behavioral harassment resulting from construction methods utilizing rammed aggregate piles, vibro displacement columns, and vibro compaction could extend as far into Humboldt Bay as approximately 330 feet (100 meters) for all marine mammal species when soil densification construction methods are implemented on the eastern portion of the Project Site nearest Humboldt Bay (specifically, southeast corner of the Phase 2 Grow-Out Module as shown in Figure 2 of Appendix J, Illingworth & Rodkin 2021) for all three construction options. The 330-foot radius is also within the confines of the existing dock, and marine mammals would be unlikely to be present within this zone during construction for long periods. However, if present, soil densification construction occurring within the southeast corner of the Phase 2 Grow-Out Module could result in a potentially significant Level B injury (behavior harassment) impact to marine mammals. Mitigation Measure BIO-6 would be incorporated into the Project to reduce the potential impact to a less-than-significant level.

Image 3.3-1 Level B Marine Harassment Zone (Appendix J, Illingworth and Rodkin 2021)

Mitigation

Mitigation Measure BIO-6: Limits on Soil Densification Construction to Avoid Impacts to Marine Mammals

When soil densification construction occurs within the Phase 2 Grow-Out Module footprint as shown in Image 4-7 above (Appendix J, Illingworth and Rodkin 2021), soil densification shall only occur when the tidal surface water elevation is below the 330-foot (100 meter) radius where Level B injury could occur. Final construction plans shall show the tidal elevation that corresponds with the 330-foot radius shown in Figure 2 of the Project's Hydroacoustic, Noise, and Vibration Assessment (Appendix J, Illingworth and Rodkin 2021). In addition, final construction plans shall also show the explicit portion of the Phase 2 Grow-Out Module required to adhere to soil densification construction during low tide conditions.

With the implementation of Mitigation Measure BIO-6, soil densification construction would not occur when the 330-foot radius was tidally inundated, reducing the potential impact to marine mammals to a less-than-significant level.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Fish

Given no in-water work in Humboldt Bay is proposed and standard BMPs to protect water quality would be implemented, no impacts to special status fish as a result of impediments to water quality or aquatic habitat in nearby Humboldt Bay would result.

Potential noise impacts to special status fish were also evaluated in the Hydroacoustic, Noise, and Vibration Assessment (Appendix J, Illingworth & Rodkin 2021). Possible construction methods, including rammed aggregate piles, vibro displacement columns, and vibro soil densification would not result in any noise-related impacts to special status fish in Humboldt Bay or the Pacific Ocean (Appendix J, Illingworth & Rodkin 2021).

The applicant's preferred species is female Atlantic Salmon. This is subject to approval by the California Department of Fish and Wildlife (CDFW). As discussed in the Section 2.3.8 of the Project Description, the facility includes a series of physical barriers to eliminate risk of fish escape, including a membrane bioreactor with sub-micron filtration stage (ultra-filtration of particles ≥0.04 microns) before discharge of processed water (Aldrich 2021). All transport of fish within the facility occurs via a contained piping system to prevent fish escape. Each system is equipped with jump screens to prevent the fish from being able to jump out of the tanks and will also work to contain them in the case of sloshing during an earthquake. The floor drains are fitted with grates specifically designed to prevent fish passage. Secondary grates sized to prevent fish passage are installed in the drain collection wells. All water captured by floor drains is sent to the wastewater treatment plant for the same treatment as production water.

Given no in-water work in Humboldt Bay would occur, and the implementation of BMPs to protect water quality in Humboldt Bay, and the lack of construction-related noise impacts, and mechanisms to prevent fish from escaping into bay or coastal waters, any potential impact to special status fish in Humboldt Bay would be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Marine Critical Habitat

Given no in-water work in Humboldt Bay is proposed and Mitigation Measure HWQ-1 and Mitigation Measure GEO-2 would protect the water quality of Humboldt Bay during and following construction, no impacts to designated marine critical habitat for Green Sturgeon, as a result of impediments to water quality or aquatic habitat in nearby Humboldt Bay, would result.

Mitigation

Mitigation Measure HWQ-1: Implement Stormwater Pollution Prevention Plan (SWPPP)

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure HWQ: Implement Stormwater Pollution Prevention Plan (SWPPP).Mitigation Measure GEO-2: Construction Best Management Practices

Refer to Chapter 3.2 (Geology and Soils), Impact (b), for the full text of Mitigation Measure GEO-2: Construction Best Management Practices.

Level of Significance: Less than Significant with Mitigation Incorporated

Essential Fish Habitat

Given no in-water work in Humboldt Bay is proposed and Mitigation Measure HWQ-1 and Mitigation Measure GEO-2 would protect the water quality of Humboldt Bay, no impacts to EFH as a result of impediments to water quality or aquatic habitat in nearby Humboldt Bay would result.

Mitigation

Mitigation Measure HWQ-1: Implement Stormwater Pollution Prevention Plan (SWPPP)

Refer to Chapter 3.9 (Hydrology and Water Quality, Impact (a), for the full text of Mitigation Measure HWQ: Implement Stormwater Pollution Prevention Plan (SWPPP). Mitigation Measure GEO-2: Construction Best Management Practices

Refer to Chapter 3.2 (Geology and Soils), Impact (b), for the full text of Mitigation Measure GEO-2: Construction Best Management Practices.

Level of Significance: Less than Significant with Mitigation Incorporated

Ocean Discharge

Water Quality Related to Special Status Marine Life

The ocean off Humboldt Bay is highly energetic, due to seasonally strong upwelling conditions that drive coastal food web productivity in northern California by providing upwelling of deep, nutrient-rich ocean waters to shallower waters (Jacox et al. 2018, Swanson 2015). Fall conditions are generally calmer before transitioning into winter storm conditions that result in strong and large ocean swell conditions as well as freshwater and sediment inputs from local rivers. The water quality and sediment conditions at the location of the Ocean Discharge are influenced by these processes (Appendix E, GHD 2021c).

Prior to effluent reaching the Ocean Discharge, NAFC will use an advanced wastewater treatment plant to treat the discharge water, including a Moving Bed Biofilm Reactor (MBBR), a membrane bioreactor (MBR), and UV-C sterilization disinfection; therefore, the risk of disease exposure and potential spreading of disease from the facility to native fish populations is eliminated with these robust biosecurity and water treatment measures. Potential effects of treated effluent could include changes to receiving water quality, including temperature, salinity, nutrients (ammonia, reduced and oxidized inorganic nitrogen, orthophosphate), and sedimentation of organic particles on the seabed (Appendix E, GHD 2021c).

The Dilution Study (Appendix E, GHD 2021c) evaluated the toxicity mixing zone as the area in which water quality objectives for chronic or acute toxicity to marine organisms are likely to be exceeded in the marine waters due to the comingled discharge from the multiport diffuser. The toxicity mixing zone is expected to be limited in spatial extent in immediate proximity to the diffuser. The portion of the diffuser array (mixing zone) to be utilized by the Project would include 32 ports spaced 12 feet apart, totally 384 linear feet. As discussed in Chapter 3.9 (Hydrology) the Project will emit three constituents of concern, ammonia, salinity, and temperature. The concentration of ammonia (0.004 mg/l) is well below the 0.6 mg/l standard at the point of release from the diffuser. The Project is required to meet Ocean Plan Water Quality Objectives for salinity and temperature within ten percent of the mixing zone. Ten percent of 384 linear feet is approximately 38 feet. Ocean Plan Water Quality Objectives for salinity and temperature are both met within five feet of the diffuser, which is far less than the allowed threshold of 384 linear feet. Water Quality Objectives are met within five feet of the diffuser, which demonstrates that the potential impacts to marine habitat are less than significant.

In addition, the Dilution Study (Appendix E GHD 2021c) evaluated the zone of potential water quality degradation as the area in which water quality objectives for ambient marine water quality are likely to be exceeded. This latter zone is expected to be substantially larger than the toxicity mixing zone (Appendix E GHD 2021c). This zone is where elevated nutrients from the discharge may be detected. Nitrate and phosphates, depending on concentrations, can enrich receiving water and cause eutrophication (Dauda et al. 2019). The Dilution Study looked at both summer and large winter river inflow events and found that the risk of enhanced pelagic productivity from elevated nutrients in the surface and mid water column and the risk of benthic productivity from elevated nutrients in the near seabed waters is very low.

The diffuser ports discharge at a 45 degree vertical angle relative to the seabed; therefore, no seabed disturbance or increases in turbidity or suspended sediment are expected from the discharge. .

The permitted concentration of ammonia from the Samoa Waste Water Treatment Plant is 1,250 times higher than the Project's discharged ammonia concentration at 5 mg/L. The permitted concentration of ammonia from the DG Fairhaven Power Plant is 0.4 mg/L, or one hundred times the ammonia concentration from the Project. The net effect of the comingled effluent would be to reduce the Samoa Waste Water Treatment Plant and DG Fairhaven Power Plant ammonia concentrations, which are much higher than ammonia concentrations resulting from the Project, and therefore reduce the potential for toxicity impacts due to greater dilution in the outfall pipe. The dilutionary effect will serve to reduce any potential toxicity impacts over current conditions. Therefore, the Project will have a lower level of potential toxicity than what is currently being discharged from the fully permitted and compliant users of the ocean outfall. The comingled ammonia concentration would reduce to 0.03 mg/L, most of which is attributable to the Samoa Waste Water Treatment Plant. It is therefore unlikely that any of the marine resources of concern, which are for the most part all highly mobile, would be exposed to potentially toxic levels of effluent as a result of the Project, even within five feet of the diffuser.

According to the draft NPDES order (NCRWQCB 2021), the chronic toxicity in-stream waste concentration (IWC) for the Project is 0.87 percent effluent, and the Project shall conduct annual chronic toxicity tests on effluent samples at the discharge IWC in accordance with species and test methods in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms (EPA/600/R-95/136, 1995 as cited in the draft NPDES order). Under the required methods, chronic toxicity testing would occur in topsmelt, purple sea urchin, and giant kelp to verify the effluent would not be toxic to marine life. See Section 3.9, Hydrology and Water Quality, Cumulative Impacts, for a discussion of multiple discharger effluent mixing and co-mingling.

The modelled zone of potential water quality degradation (e.g., nutrient enrichment) is seasonally dependent (e.g., depends on salinity stratification and ambient marine water conditions) and significantly larger in area than the toxicity mixing zone (Appendix E, GHD 2021c). Statistical contours were modelled for the dilution target of 200 (which represents the spatial extent of the zone of potential water quality degradation that the dilution target of 200 is 'outside' of the contour for 1% of the time) at the surface (0-2 m), mid-water column (2-16 m) and near-seabed (>16 m) for the representative summer scenario (Appendix E, GHD 2021c). In addition, spatial contours of a dilution of 2,000 were modelled in the same manner as the dilution target of 200, to evaluate whether there is any material risk of the proposed facility's discharge on Humboldt Bay (Appendix E, GHD 2021c).

Because the comingled discharge (~27 psu) is less saline than the ambient seawater (~33.5 psu) and the ambient salinity stratification is weak during the representative summer scenario, the plume has a greater tendency to rise to the surface as it undergoes dilution than detraining in the middle of the water column. Further, the zone of potential water quality degradation (i.e., elevated nutrients) near the seabed is much smaller than the areal extent of the surface and mid-water column, so that the risk of enhanced benthic productivity is low. The risk of increase in domoic-acid producing diatoms is also very low, the production of domoic acid is associated with large-scale events (Lewitus et al. 2012), such as the marine heat wave that resulted in a sustained bloom of toxic diatoms (McCabe et al. 2016), that led to persistent domoic acid that delayed the Dungeness Crab fishery (Santora et al. 2020).

The zone of potential water quality degradation during the representative summer scenario in the surface waters (upper 2 m) for 99%, 95%, 90% and 80% of the time extends up to ~1 km, ~500 m, ~400 m and ~300 m from the diffuser, respectively (Appendix E, GHD 2021c). However, the 50th percentile contour only occurs in the immediate locale of the diffuser (Appendix E, GHD 2021c). The extent of the zone of potential water quality degradation in the mid-water column (2-16 m) is similar, but smaller in spatial extent. Because the currents are constantly transporting surface and mid-depth waters through this area, the duration that pelagic (in water) organisms experience elevated nutrients is limited (minutes). Hence, a 'negligible' material increase in pelagic ecosystem productivity under such conditions is predicted, and the risk of deleterious water quality impacts to the surface and mid-water column waters are 'very low' (Appendix E, GHD 2021c).

The zone of potential water quality degradation during the representative summer scenario in the lower portion of the water column (>16 m) for 99% and 95% of the time extends up to ~50 m and ~25 m from the diffuser, respectively (Appendix E, GHD 2021c). Dilution of the comingled discharge with the ambient marine waters in the lower water column was always greater than 200 for at least 90% of the time (i.e., no 10th percentile exceedance contour in the plot). The combination of the limited spatial extent and relatively brief duration that the proximal benthic habitat would experience elevated nutrients indicates a 'very low' risk of increased benthic ecosystem productivity (Appendix E, GHD 2021c).

In winter, due to strong salinity stratification, as the plume rises through the water column and entrains ambient seawater in the lower to mid-portions of the water column (~33 psu), the plume attains a salinity (through entrainment of ambient waters) that is greater than the surface waters (26-32 psu). At this point, the plume is no longer positively buoyant, no longer rises in the water column, and it detrains into the mid-water column before reaching the surface. Hence, dilution in the surface waters (0-2 m) is greater than 200 for at least 99% of the time (Appendix E, GHD 2021c). In contrast, the detrainment of the plume into the mid-water column (2-16 m) yields a zone of potential water quality degradation for 99%, 95%, 90% and 80% of the time that extends up to ~1 km, ~200 m, ~100 m and ~50 m from the diffuser, respectively (Appendix E, GHD 2021c). However, the 50th percentile contour only occurs in the immediate locale of the diffuser. The spatial extent of the zone of potential water quality degradation in the near-seabed waters (>16 m) yields a zone of potential water quality degradation for 99%, 95%, 90% and 80% of the time

that extends up to ~450 m, ~200 m, ~150 m and ~100 m from the diffuser, respectively (Appendix E, GHD 2021c). In winter, salinity stratification increases the spatial extent and duration that the proximal benthic habitat would experience elevated nutrients and thereby the potential for some increased benthic ecosystem productivity (Appendix E, GHD 2021c).

For both the summer and winter representative scenarios, the 1% contour for the simulated dilution of 2,000 does not enter Humboldt Bay. Therefore, the model predicts a negligible effect of the proposed facility's discharge (i.e., a dilution factor of 2,000) on Humboldt Bay (Appendix E, GHD 2021c).

The simulated zone of potential benthic impacts was affected by particle settling velocity, with three different particle settling velocities modelled for winter and summer seasons (Appendix E, GHD 2021c). The simulated zone of potential impacts for both summer and winter simulations ranged from 25 to 500 m depending on settling rate, but do not result in significant benthic impacts based on spatial area and organic loading, resulting in a low risk of impact to the benthic community in proximity to the diffuser (Appendix D, GHD and H. T. Harvey 2021).

Due to the modelled localized, limited spatial extent of the toxicity mixing zone (constituents of concern are low salinity and temperature), the very localized area of impact five feet from diffuser by 385 linear feet), zone of potential water quality degradation (nutrient enrichment), and the short temporal duration of exposure to highly mobile marine organisms of concern, it is unlikely for the effluent to have any direct adverse effects on marine resources of concern, including protected cetaceans and pinnipeds, Marbled Murrelet, salmonids, Longfin Smelt, Coastal Cutthroat Trout, White and Green Sturgeon (both southern and northern Green Sturgeon) or on designated critical habitat for Green Sturgeon, essential fish habitat, or non-special status commercial and recreational fisheries (Appendix D, GHD and H. T. Harvey 2021).

- Adult Green Sturgeon and White Sturgeon are highly mobile along the coast and bays, therefore, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term.
- Coho Salmon are highly mobile and broadly distributed in marine coastal habitats; therefore, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term.
- Chinook Salmon are also highly mobile in ocean and coastal environments, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term.
- Northern California Steelhead, which include both winter and summer runs, are the least likely to remain in coastal waters, so their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term.
- Pacific Lamprey and Western River Lamprey are assumed to be in the Ocean Discharge Study Area relative to the hosts they are dependent upon only briefly, if at all. Since their hosts are highly mobile, their exposure to diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term.
- Longfin Smelt use freshwater and brackish water estuarine habitats for spawning and larval rearing and occur as larger juveniles and adults foraging in Humboldt Bay and along the coast.
- Coastal Cutthroat Trout have variable life history strategies, they may move to bay and coastal habitats to forage as mobile adults or remain in freshwater streams.

Based upon these behavioral characteristics, any potential impact to special status fish would be less than significant., The high mobility of the special status fish species, and unlikely attraction to the discharge pipe. Potential impacts to fish habitat are discussed below. As impacts to special status fish resulting from this component of the Project area anticipated to be less than significant, no mitigation is necessary.

Similarly, it is unlikely for the effluent to have any direct or indirect adverse effects on marine biological resources such as Dungeness Crab, and other commercially and recreationally important fish species such as night smelt and other species of nearshore fish (Appendix D, GHD and H. T. Harvey 2021). There could be potential indirect effects to

benthic organisms with limited mobility and immobile benthic prey species of marine species of concern, (e.g., polychaetes) associated with sedimentation of organic matter, but the limited spatial extent of potential benthic impacts, and high mobility of marine resources of concern, make any potential indirect effects less than significant (Appendix D, GHD and H. T. Harvey 2021).

The substrate in the Ocean Discharge Study Area is dominated by fine and medium grained sands (Pequegnat et al. 1995) that does not support kelp and algal communities. Kelp and algal communities do occur on the subsurface rocks of the Humboldt Bay Entrance Channel Jetties according to the Environmental Assessment done by the U.S. Army Corps of Engineers for the FY20 and FY21 Repairs and Reconstruction of the Humboldt Bay Entrance Channel Jetties. The North Jetty is located approximately 4 miles south of the diffuser and includes red, green and brown algal communities. There appears to be patchy bull kelp along the jetties shown on Google Earth imagery. Further south, at False Cape, south of the Eel River mouth, approximately 21 miles south of the diffuser, sandy nearshore habitat transitions to rocky substrate that supports kelp habitat, and approximately 15 miles north of the diffuser, the sandy nearshore habitat also transitions to rocky substrate that supports kelp habitat. At least a 2,000 fold dilution is predicted at the nearest of these locations at the jetties, making risks to kelp communities from the facility's discharge negligible.

Potentially toxic *Pseudo-nitzschia* spp. are present in California coastal waters, and can produce Harmful Algal Blooms (HABs) resulting in toxic events over large spatial and temporal scales (Anderson et al 2008, Trainer et al. 2020). HABs produce domoic acid, that can have economic and human health effects associated with consumption of various species and types of seafood (Lewitus et al. 2012, Trainer et al. 2020). HAB "hotspots" typically initiate in highly retentive regions along the west coast, including the Juan de Fuca eddy, Heceta Bank, Monterey Bay, and Point Conception (Trainer et al. 2020). Surficial sediment is a seeding source of *Pseudo-nitzschia* spp. and domoic acid for initiating blooms during larger scale events, including large-scale upwelling conditions and the anomalously warm ocean conditions that occurred in 2015 (Trainer et al. 2020, McCabe et al. 2016). NAFC has adopted the best available wastewater technology to protect and preserve the quality of the marine water resource NAFC utilizes for its operation, growing cold water fin fish. Coastal waters in the Study Area have high energy wind and wave climate and low anthropogenic nitrogen fluxes. There is little evidence that anthropogenic nutrient loading is the primary promoter of *Pseudo-nitzschia* spp. blooms along the west coast of North America, but there is a close relationship between coastal upwelling events along the California coast and the appearance of phytoplankton blooms, specifically blooms of *Pseudo-nitzschia* spp. and the occurrence of domoic acid (Lewitus et al. 2012, Smith et al. 2018). Further, numerical modeling (Appendix E) demonstrates that elevated levels of nutrients are limited in spatial scale. The relatively energetic wave and wind climate induces substantive currents that limit the time scale (duration) in which elevated nutrients occur in the vicinity of the outfall. Hence, the risk of HAB blooms from the proposed Project's discharge is negligible due to the combination of these factors.

As detailed in Chapter 3.9 (Hydrology and Water Quality), Methods, the Project would be required to complete extensive water quality monitoring and comply with regulated effluent limitations under a National Pollution Discharge Elimination System (NPDES) order. Additionally, the NAFC would implement additional water quality monitoring, above and beyond the regulatory requirements.

Should the results of NPDES-related monitoring or additional monitoring completed by NAFC and described above under Methods demonstrate water quality results that are (1) directly attributable to the Project and (2) in conflict with the NPDES order for the Project, NAFC has the ability to immediately implement one or more of the following operational management actions to reduce the volume of pollutants in its treated effluent discharge, in addition to any regulatory action taken by the NCRWCB to obtain compliance with the terms and conditions of the NPDES order:

- Temporarily reduce the amount of feed to be fed to fish per hour as well as adjust feed composition long term such as reducing phosphorus content. The primary source of constituents in the discharge wastewater are directly proportional to the amount of feed fed to the fish on the farm. In the unlikely event that water quality standards are exceeded the composition of the feed can be adjusted and/or feed volumes temporarily reduced to quickly bring the facility into permit compliance.

- Reduce the volume of fish processed per day. NAFC can control the constituents in the wastewater from fish processing in the effluent being discharged from the facility by reducing processing rates and/or adjusting pretreatment methods upstream of the wastewater treatment facility.
- Repair and/or replace any damaged equipment or systems that are contributing to the water quality impairment. NAFC has redundant equipment for all key water treatment processes. If one of these components is contributing to reduced water treatment levels NAFC will immediately repair and/or replace any damaged equipment or systems that are contributing to the water quality impairment.
- Adjust the ratio or volume of freshwater and seawater inputs. Atlantic Salmon are biologically capable of living in a range of salinities once they have smolted. NAFC can adjust the ratio or volume of freshwater and seawater inputs if necessary.
- Track and adjust treatment methods across feed and biomass volumes as they build over phase one to ensure they are on track with performance metrics for Phase 2 wastewater treatment. NAFC will be building and operating the facility in phases. By tracking and adjusting operations and treatment methods across feed and biomass volumes during phase one the Project, NAFC can ensure they are on track with performance metrics for Phase 2. Wastewater treatment and operations will be optimized and can be adjusted to meet all required permits as the facility ramps up to full production over the course of approximately five years.

NPDES-required monitoring shall continue throughout these operational adjustments. Operational constraints shall continue until the water quality exceedance(s) attributable to the Project have been resolved to the satisfaction of the NCRWQCB. Implementation of these operational constraints would ensure potential impacts of the treated effluent discharge to marine water quality, special status fish and other special status marine life in the Pacific Ocean, and regulated marine habitats (e.g. EFH and Critical Habitat) would remain at a less than significant level.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Special Status Birds

Birds feeding on fish and invertebrates in the Ocean Discharge Study Area include Marbled Murrelet, Brown Pelican, and Double-Crested Cormorant. The effects of the discharge on Marbled Murrelet are described in Appendix D (GHD and H. T. Harvey 2021) and apply to the other birds as they rely on similar prey resources and also forage over large distances. Peak densities of Marbled Murrelets in northern California occur within 1 mi (1.6 km) of shore, and they are rare but consistently present beyond 2.5 mi (4 km) from shore. Marbled Murrelet typically feed on the coast within 15.5 mi (25 km) of their nesting habitat. Due to their foraging behavior, which is concentrated typically inshore of the diffuser effluent and within 15.5 mi (25 km) of their nesting habitat (e.g., Redwood State and National Park), Headwaters Forest Reserve), their exposure to the discharge effluent is likely to be short term. Indirect impacts associated with changes in prey resources are less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Special Status Marine Mammals

The Marine Resources Biological Evaluation (Appendix D, GHD and H. T. Harvey 2021) evaluated potential impacts to special status marine species (identified in Table 3.3-1) that could potentially be impacted by the ocean effluent discharge from the RMT II Ocean outfall. Evaluated species with moderate or high potential to be present with the Terrestrial Development Study Area include California Sea Lion (*Zalophus californianus)*, Stellar Sea Lion (*Eumetopias jubatus)*, Pacific Harbor Seal (*Phoca vitulina richardii)*, Gray Whale (*Eschrichtius robustus)*, and Harbor Porpoise (*Phocoena phocoena)*. Marine impacts related to the effluent discharge are analyzed for these species below, as documented in GHD and H.T. Harvey (2021).

California Sea Lion (Zalophus californianus)
MMPA Protected, High Potential

California Sea Lions are restricted to middle latitudes of the eastern North Pacific (ENP) Ocean. Protection under the 1972 MMPA has allowed the species to recover and the U.S. population was estimated at 257,606 individuals along the U.S. West Coast in 2014. California Sea Lions typically feed over the continental shelf within the 1,650-ft (500-m) isobath, with foraging diving depths on average within 165-ft (50-m) of the surface California Sea Lions do not breed along the Humboldt County coast; however, non-breeding or migrating individuals may occur in the Project Study Boundary (PSB), also known as the Study Area. Two seasonal peaks of California Sea Lions are observed in the PSB: one during the fall northward migration and one during spring (mid-April) as they return to breeding colonies in the south. Therefore, this species is likely to occur in the PSB, particularly in spring and fall. Because California Sea Lions are highly mobile along the coast, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Steller Sea Lion (Eumetopias jubatus)
MMPA Protected, High Potential

The Steller Sea Lion was federally listed as threatened in 1990 (55 FR 49204). In 1997, the eastern population (i.e., east of 144° W longitude) was listed as threatened, and the western population (i.e., west of 144° W longitude) was listed as endangered (62 FR 24345). Critical habitat was designated in 1993, and includes Sugarloaf Island, Cape Mendocino, Southeast Farallon Island, and Año Nuevo Island in California (58 FR 4526). Steller Sea Lions do not dive deeply, and they forage over the continental shelf at night, usually within 12 miles of the colony. Individuals rarely come ashore on the mainland, but haul out on islands and offshore rocks and even remain at sea during stormy weather. Steller Sea Lions breed along the Humboldt County coast and their presence in the marine and coastal portions of the PSB varies throughout the year. Two of the three largest breeding colonies in the region are on Sugarloaf Island off Cape Mendocino and on St. George Reef off Crescent City. Because Steller Sea Lions are highly mobile along the coast and their breeding colonies are far from the diffuser, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Pacific Harbor Seal (Phoca vitulina richardii)
MMPA Protected, High Potential

- Harbor Seals are widely distributed throughout the northern Atlantic and Pacific Oceans along coastal waters, river mouths, and bays. The Harbor Seals in the PSB represent the eastern North Pacific (ENP) Ocean subspecies, and aside from occasional dispersing individuals, are part of the California population. Harbor Seals breed along the Humboldt County coast and inhabit the area year-round. Humboldt Bay is the largest pupping and haul-out area in the PSB; other haul-out sites are located in Trinidad Bay and at the mouths of the Mad and Eel Rivers. Harbor Seal abundance in the PSB, and site fidelity to haul-out sites, peaks in summer during pupping and molting, and declines in winter when individuals disperse to seek areas of high prey abundance. Harbor Seals are highly mobile and forage along the coast and in Humboldt Bay, diving to depths of 1,640-ft (500-m), therefore, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Gray Whale (Eschrichtius robustus)
MMPA Protected, High Potential

- Gray whales were listed as endangered in 1970. The ENP population was delisted from endangered in 1994, but the western North Pacific (WNP) population is still listed as endangered. The entire ENP population of Gray Whales migrates past Humboldt County twice a year and the PSB includes migration Biologically Important Areas (BIAs); the PSB is within the Gray Whale feeding BIA. The southbound migration begins as early as October and

peaks in January, and the northern migration, generally gray whales with calves migrating close to shore, is from March to May. Some Gray Whales have been observed to remain throughout the summer between northern California and Vancouver Island instead of returning to Alaska. This “Pacific Coast Feeding Group” (PCFG) numbers about 200 whales, many of whom return to these areas between years. Humboldt County is within the southern end of the PCFG. In 1998 and 1999, 28 individuals of the PCFG were photo-identified; three individuals were sighted in both years. The highest number of sightings occurred at Patrick’s Point and at the mouth of the Klamath River from early June to mid-October. Gray Whales were the second-most numerically abundant cetacean species recorded from nearshore surveys (0.25–3.11 mi [.4–5 km] from shore) conducted from 1989 to 2009 from the Oregon/California border to Shelter Cove, California. Therefore, Gray Whales are likely to occur in the PSB, particularly during their northward migration. Due to the small spatial scale of the effluent plume and the highly migratory behavior of grey whales, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Harbor Porpoise (Phocoena phocoena)
MMPA Protected, High Potential

- Harbor Porpoises from Humboldt County are included in the northern California/southern Oregon population that extends from Point Arena to Lincoln City, Oregon. This species was the most common cetacean observed in low-elevation aerial surveys along the U.S. West Coast and was mostly observed inshore (up to 100 ft [32 m] depths). Harbor Porpoise feeds primarily on fish, from small-schooling to bottom-dwelling species in waters less than 650 ft (200 m) deep. They may also feed at night in outer continental shelf environments on vertically migrating fish and squid. Along the U.S. West Coast, Harbor Porpoises do not migrate seasonally, and they have been observed throughout the year within the PSB at the entrance to and within Humboldt Bay, usually as single individuals but sometimes in groups, with a maximum size of 12 animals. Abundance peaks between May and October, and porpoise are most plentiful in Humboldt Bay during the flooding tide. Therefore, this species occurs year-round in the PSB and is likely to be more common from late spring to early fall. Due to their highly mobile foraging behavior along the coast, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Special Status Fish

Marine impacts related to the ocean effluent discharge are analyzed for applicable species below, as documented in Appendix D (GHD and H. T. Harvey 2021). Construction noise and vibration from the Project Site would not propagate to the Pacific Ocean (Appendix J, Illingworth and Rodkin 2021); thus, marine noise-related impacts to special status marine species would not result.

The Marine Resources Biological Evaluation (Appendix D, GHD and H. T. Harvey 2021) evaluated potential impacts to special status fish species (identified in Table 3.3-1) that could potentially be impacted by the ocean effluent discharge from the RMT II outfall. Special status fish species with moderate or high likelihood to occur within the Ocean Discharge Study Area that were addressed in Appendix D (GHD and H. T. Harvey 2021), that include Southern DPS Green Sturgeon (*Acipenser medirostris)*, Southern Oregon/Northern California Coast Coho Salmon ESU (*Oncorhynchus kisutch*), California Coast Chinook Salmon ESU (*Oncorhynchus tshawytscha*), Northern California Steelhead DPS (*Oncorhynchus mykiss*), Eulachon (*Thaleichthys pacificus*), and Pacific Lamprey (*Entosphenus tridentatus*). These species are further evaluated below as documented in Appendix D (GHD and H. T. Harvey 2021).

Green Sturgeon (Southern DPS) (Acipenser medirostris)
Federally Threatened, State Species of Concern, High Potential

NMFS listed the southern DPS of North American Green Sturgeon (*Acipenser medirostris*) as threatened in 2006 (71 FR 17757). This DPS is defined as Green Sturgeon that originate from the Sacramento River basin and from coastal rivers south of the Eel River in California. The Green Sturgeon is a long-lived (up to 70 years), anadromous fish species that occurs along the Eastern Pacific Coast from the Bering Sea south to Ensenada, Mexico, although their consistently inhabited range is much smaller, primarily concentrating in the coastal waters of California, Washington, Oregon, and Vancouver Island. They are highly migratory while in the ocean, and spend most of their lives in coastal marine waters, coastal bays, and estuaries along the Pacific coast, including Humboldt Bay. This species is present in the marine PSB and designated critical habitat includes the PSB and offshore to the 328-ft (100-m) isobaths (74 FR 52300). Adult Green Sturgeon are highly mobile along the coast and bays, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely, and if it does occur will is likely to be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Southern Oregon/Northern California Coast Coho Salmon ESU (Oncorhynchus kisutch)
Federally Threatened, High Potential

Coho Salmon (*Oncorhynchus kisutch*) are a widespread Pacific salmon species that inhabit most major river basins in Northern California. Coho Salmon typically exhibit a 3-year life history, divided between 18 months in freshwater and 18 months in saltwater phases. In ocean waters, juvenile and adult Coho Salmon feed on pelagic fish and invertebrates, such as Pacific Herring (*Clupea pallasii*), Pacific Sardine (*Sardinops sagax*), Northern Anchovy (*Engraulis mordax*), Pacific Sandlance, squid, smelt, groundfish, and crab megalopae. Marine survival and growth of Coho Salmon are linked to food availability, environmental conditions, and stressors present in the nearshore environment. Adult Coho Salmon spawn and juveniles rear in tributaries to Humboldt Bay, and as juveniles they migrate to sea via Humboldt Bay for an average duration of 15–22 days in the bay. Because Coho Salmon are highly mobile in marine coastal habitats and migrate rapidly through Humboldt Bay, their exposure to the diffuser effluent would be short term, if at all. Please see Water Quality Related to Marine Life above. Any potential impact would be less than significant.

California Coast Chinook Salmon ESU (Oncorhynchus tshawytscha)
Federally Threatened, High Potential

- The California Coastal Evolutionarily Significant Unit (ESU), which includes all Chinook Salmon naturally reproduced in streams between Redwood Creek in Humboldt County, California, south to the Russian River, Sonoma County, was federally listed as threatened in 1999 (64 FR 50394). The California Coastal ESU includes 15 independent populations of fall-run and six independent populations of spring-run Chinook Salmon. Chinook Salmon from this ESU are known to spawn in the Eel and Mad rivers and in tributaries of Humboldt Bay. Therefore, they would likely occur in the PSB and Humboldt Bay as they migrate to freshwater tributaries as adults to spawn, and as juveniles on their seaward migration to the ocean. Their prey is predominately pelagic organisms; based on stomach samples collected from adult Chinook Salmon (≥56 cm in length) caught in coastal waters off Northern California, frequently encountered prey items included Euphausiids, Northern Anchovy, Squid (*Loligo opalescens*), Pacific Herring, Pacific Sandlance (*Ammodytes hexapterus)*, Surf Smelt (*Hypomesus pretiosus*), Night Smelt (*Spirinchus starksi*), and Dungeness Crab Megalopae (Hunt et al. 1999). Risks to the ESU include degradation of freshwater habitats from agricultural and forestry practices, water diversions, urbanization, mining, and severe recent flood events (exacerbated by land use practices). Many of these factors are particularly acute in the southern portion of the ESU. The Final Coastal Multispecies Recovery Plan does not recommend recovery actions in coastal habitats other than for fishing and collecting activities; most of the recovery actions address activities in watersheds and estuaries. Chinook Salmon are highly mobile, their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Northern California Steelhead DPS (Oncorhynchus mykiss irideus)
Federally Threatened, High Potential

- This DPS was federally listed as threatened in 2000 and includes all naturally spawned steelhead populations below natural and manmade impassable barriers in coastal rivers, from Redwood Creek in Humboldt County, California, south to, but not including, the Russian River (65 FR 36074). Northern California Steelhead are known to spawn and rear in tributaries of Humboldt Bay, and therefore migrate through Humboldt Bay on their seaward migration to the ocean as juveniles, and as adults on their migration to spawning tributaries. This DPS contains both winter and summer steelhead populations. After reaching the ocean in the spring, juvenile steelhead tend to move offshore quickly rather than use nearshore waters like other salmon. The current status of the populations within this DPS are uncertain. Threats include habitat degradation and loss from urban development, logging, roads, agriculture, mining and recreation, water withdrawals and diversions, and barriers to fish passage. The Final Coastal Multispecies Recovery Plan provides recovery actions that address activities in watersheds and estuaries only. Steelhead, of all of the salmonids, are the least likely to remain in coastal waters. Their exposure to the diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Pacific Lamprey (Entosphenus tridentatus)
State Species of Special Concern, Moderate Potential

- Pacific Lamprey spawn and rear in freshwater habitats including tributaries to Humboldt Bay, the Eel and Mad rivers. Pacific Lamprey in the marine environment are parasitic and dependent on their hosts including numerous fish species, however it is not known to what extent they change hosts, kill their hosts, or switch hosts. Because their hosts are likely to be highly mobile, particularly relative to the PSB, Pacific Lamprey are assumed to be in the PSB only briefly, if at all, and their exposure to diffuser effluent prior to dilution to background ocean levels is unlikely. Any unlikely exposure prior to dilution to background ocean levels will be short term. . Please see Water Quality Related to Marine Life, above. Any potential impact would be less than significant.

Additional sensitive species include Northern Green Sturgeon (*Acipenser medirostris),* White Sturgeon (*Acipenser transmontanus*), Longfin Smelt (*Spirinchus thaleichthys*), Klamath Spring Chinook Salmon (*Oncorhynchus tshawytscha*), Northern California Summer Steelhead (*Oncorhynchus mykiss*), Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*), and Western River Lamprey (*Lampetra ayresii*).

Marine Critical Habitat

Marine critical habitat was evaluated in the Marine Resources Biological Evaluation (Appendix D, GHD and H. T. Harvey 2021); results are summarized below.

In October 2009, the National Marine Fisheries Service (NMFS) designated all nearshore waters to a depth of 60 fathoms (360 feet or 110 meters) in the Pacific Ocean and including Humboldt Bay, as critical habitat for the Southern distinct population segment (DPS) of the Green Sturgeon (74 FR 52300). This critical habitat includes the Ocean Discharge Study Area. The primary constituent elements for Green Sturgeon in nearshore coastal marine areas and Humboldt Bay include:

Migratory corridor - A migratory pathway necessary for the safe and timely passage of Southern DPS fish within marine and between estuarine and marine habitats;

Water quality - Nearshore marine waters with adequate dissolved oxygen levels and acceptably low levels of contaminants (e.g., pesticides, organochlorines, elevated levels of heavy metals) that may disrupt the normal behavior, growth, and viability of subadult and adult Green Sturgeon; and

Food resources - Abundant prey items for subadults and adults, which may include benthic invertebrates and fishes.

Effects of the Project on primary constituent elements of Green Sturgeon critical habitat are not anticipated for the following reasons:

- The Project would use the existing RMT II ocean outfall and multiport diffuser, which would not affect the migratory corridor primary constituent element;
- Changes to water quality would be very limited in spatial extent and should not adversely affect the water quality primary constituent element; and
- Changes to benthic ecosystem productivity would be spatially limited to an area in very close proximity of the diffuser structure and should not adversely affect the food resources primary constituent element.

Any potential impact to critical habitat for Green Sturgeon would be less than significant. Therefore, no mitigation is necessary.

Essential Fish Habitat

Essential Fish Habitat (EFH) was evaluated for the Ocean Discharge Study Area in the Marine Resources Biological Evaluation (Appendix D, GHD and H. T. Harvey 2021); results are summarized below.

EFH identifies waters and substrates required by fish for spawning, breeding, feeding, and growth to maturity. EFH 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. For Pacific coast species, EFH is described under four fishery management plans (FMPs) covering Groundfish, Coastal Pelagic Species, Highly Migratory Species, and Pacific Coast Salmon (as detailed in the following sections). The Ocean Discharge Study Area supports EFH for all four FMPs and does not include any Habitat Areas of Particular Concern (HAPCs).

Pacific Coast Groundfish EFH

Pacific Coast Groundfish represent a large number of resident species along the U.S. West Coast. The northern California coast provides Groundfish habitat from the nearshore mean higher high water or the upstream extent of saltwater intrusion, to deep water areas (less than or equal to 3,500 meters) seaward to the boundary of the U.S. Exclusive Economic Zone (EEZ) (PFMC 2020). The PFMC further defined important habitat by species and life stage. Species likely to occur in the Ocean Discharge Study Area include flatfishes (e.g., Speckled Sanddab [*Citharichthys stigmaeus*], Pacific Sanddab [*C. sordidas*]), Rockfishes (e.g., Black Rockfish [*Sebastes melanops*], Blue Rockfish (*S. mystinus*)), Lingcod [*Ophiodon elongates*], Cabezon [*Scorpaenichthys marmoratus*], and Kelp Greenling [*Hexagrammos decagrammus*]. The Project would use the existing RMT II ocean outfall and multiport diffuser structure, and the effects of the discharge would not result in significant benthic impacts based on limited spatial area and organic loading, resulting in a low risk of adverse effects to the Groundfish EFH in proximity to the diffuser (see Section 6 of Appendix E, GHD 2021c). Any potential impact to Pacific Groundfish EFH would be less than significant. Therefore, no mitigation is necessary.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Highly Migratory Species EFH

Highly migratory species are pelagic fish species such as tunas, marlins, and sharks that occur worldwide and are highly mobile. They can be found in both the EEZ region out to 230 miles (370 kilometers) from shore and the high seas; they do not occur in Humboldt Bay. Pelagic fish off the northern California coast with EFH in the Ocean Discharge Study Area include the Common Thresher Shark (*Alopias vulpinus*) and Bigeye Thresher Shark (*Alopias superciliosus*). Reproduction of Common Thresher Shark occurs considerably farther south of the Ocean Discharge Study Area, pups are known to come into shallow waters and bays, and adults are generally found farther offshore in 1,197–1,798 feet (365–548 meters) depths. Similarly, adult Bigeye Thresher Shark are found in deeper waters off northern California, as are Albacore Tuna (*Thunnus alalunga*), Northern Bluefin Tuna (*Thunnus orientalis*), and Broadbill Swordfish (*Xiphias gladius*). Adult Albacore Tuna and juvenile Northern Bluefin Tuna generally occur beyond the 100-fathom (183 meter) isobaths, which makes them unlikely to occur within the Ocean Discharge Study Area. Likewise, juvenile and adult broadbill swordfish tend to be offshore of the 1,000-fathom (1,830-meter) isobath and are

therefore unlikely to be in the Ocean Discharge Study Area. Thus, any potential impact to EFH for highly migratory species would be less than significant and no mitigation is necessary.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Coastal Pelagic Species EFH

Coastal pelagic species live in the water column and are generally found anywhere from the surface to 3,281 feet (1,000 meters) deep. Coastal pelagic species that may occur in offshore waters along the northern California coast, and potentially in the Ocean Discharge Study Area, include six species/species groups that are actively managed: Northern Anchovy (*Engraulis mordax*), Pacific Sardine (*Sardinops sagax*), Pacific Mackerel (*Scomber japonicus*), Jack Mackerel (*Trachurus symmetricus*), California Market Squid (*Loligo opalescens*), and Krill. The EFH for these species is marine and estuarine waters along the coast of northern California and offshore to the EEZ boundary line. Pacific Mackerel, Jack Mackerel, and Northern Anchovy have been documented in or near the Ocean Discharge Study Area. The Project would use the existing RMT II ocean outfall and multiport diffuser structure, and the effects of the discharge do not result in significant impacts to coastal habitat based on limited spatial area and organic loading, resulting in a low risk of adverse effects to the Coastal Pelagic Species EFH in proximity to the diffuser (see Section 6 of Appendix E, GHD 2021c). Any potential impact to coastal pelagic species EFH would be less than significant. Thus, no mitigation is necessary.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Pacific Coast Salmon EFH

EFH for Chinook and Coho salmon includes rivers and coastal streams from central California to Alaska and oceanic waters along the United States and Canadian coasts and seaward to the north central Pacific Ocean and the high seas, including the Ocean Discharge and Humboldt Bay Intake study areas. The Project would use the existing RMT II ocean outfall and multiport diffuser structure, and the effects of the discharge do not result in significant impacts to pelagic habitat based on limited spatial area and organic loading, resulting in a low risk of adverse effects to the Pacific Coast Salmon EFH in proximity to the diffuser (see Section 6 of Appendix E, GHD 2021c). Any potential impact to Pacific Coast Salmon EFH would be less than significant. Thus, no mitigation is necessary.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Commercial and Recreational Fish Species

The Marine Resources Biological Evaluation (Appendix D, GHD and H. T. Harvey 2021) also evaluated potential impacts to non-special status commercial and recreation marine species that could potentially be present Ocean Discharge Study Area. Evaluated species with moderate or high potential to be present in the Ocean Discharge Study Area include Dungeness Crab, Starry Flounder, Pacific Sand Sole, Lingcod, Smelt, Surfperch, Sand Shark, Rock Crabs, Razor Clam, Gaper Clam, Cockles, Octopus, Sea stars, and Prawns/Shrimp. The Marine Resources Biological Evaluation concluded all evaluated non-special status marine species would have a very low risk of any potential impact resulting from the RMT II outfall discharge. These species are further evaluated below. Any potential impact would be less than significant.

Fish

Starry Flounder

Starry Flounder is a demersal species found in coastal marine and bay habitats, supporting both commercial and recreational fisheries off Humboldt. They range from Alaska to Southern California, and they prefer soft bottom habitats (Haugen and Thomas 2001). They are relatively common in Humboldt Bay (Barnhart et al. 1992), and have been found in low numbers in trawl surveys in the vicinity of the diffuser outfall (Pequegnat et al. 1995). They occur to depths of 900 feet, but are most common in shallower waters (Haugen and Thomas 2001). Starry Flounder are likely to occur in the PSB; however, they are reasonably motile (alongshore and on-offshore movements) so their exposure to diffuser effluent would likely be short term. There is a very low risk of adverse effects to the Starry Flounder in proximity to the diffuser.

Pacific Sand Sole

Pacific Sand Sole is a demersal species found on soft bottom shelf habitats out to depths of 325 m, but most common at depths less than 150 m (PFMC 2019). They have been captured in trawl surveys in the vicinity of the diffuser pipe (Peguegnat et al. 1995). Pacific Sand Sole are likely to occur in the PSB, adults are relatively motile, they may move into shallow nearshore waters in early winter to spawn, then move south and offshore in the summer to feed (PFMC 2019), and therefore their exposure to diffuser effluent would likely be short term. There is a very low risk of adverse effects to the Pacific Sand Sole in proximity to the diffuser.

Rockfish/Rockcod

Rockfish likely to occur in the PSB include Black Rockfish (*Sebastes melanops*), Blue Rockfish (*S. mystinus*), Bocaccio (*S. paucispinis*), China Rockfish (*S. nebulosus*), Copper Rockfish (*S. caurinus*), and Quillback Rockfish (*S. maliger*). Most of these species prefer hard rocky reef habitat, however, younger life stages (larvae) are pelagic and juveniles often settle on soft bottom habitat before moving to preferred reef habitats (Love et al. 2002). Although not considered migratory, Rockfish can have relatively extensive movements (Love et al. 2002). The diffuser pipe may act as an "artificial reef" that attracts Rockfish but is relatively small and may only support low numbers of Rockfish in comparison to a more extensive reef system. therefore, The effects of the discharge are limited spatially It is anticipated that there is only a very low risk of adverse effects to Rockfish.

Lingcod

Lingcod range from Baja California to Alaska, and occur in both hard and soft bottom habitats along the north coast of California. Lingcod are important to recreational and commercial fishers, and although not migratory are moderately motile (Adams and Starr 1991). Lingcod tend to prefer hard bottom rocky reef habitat, so the diffuser pipe may act as an "artificial reef" that attracts adults. Because it is a relatively small structure it may only support low numbers of Lingcod, in comparison to a more extensive reef system. The effects of the discharge are limited spatially. It is anticipated that there is only a very low risk of adverse effects to Lingcod.

Smelt

Night and Surf Smelt are important pelagic forage fish that support commercial and recreational fishing from the surf zone along the Humboldt County coast. Adult Night Smelt, and larval/juvenile Smelt species are locally abundant and dominate the fish catch numerically and in biomass from local trawl surveys conducted in the vicinity of the project site (Pequegnat et al. 1995). Night Smelt aggregate annually nearshore to spawn on coastal beaches in California as early as January and through September (Sweetnam et al. 2001, CDFW 2019a). The effects of the discharge from the diffuser pipe do not result in significant impacts to coastal habitat based on limited spatial area and organic loading. It is anticipated to result in a very low risk of adverse effects to the smelt in proximity to the diffuser.

Surfperch

There are several species of surfperch (Family Embiotocidae) off Humboldt County and in Humboldt Bay, but the Redtail Surfperch support commercial and recreational fisheries. As named, members of the Surfperch family are

typically found in coastal surf-zone habitats but also in Humboldt Bay, and they have been captured in trawl surveys in the vicinity of the diffuser pipe (Pequegnat et al. 1995, CDFW 2019b). Movements of Redtail Surfperch of up to 20 km have been observed (Succow 2017). Redtail surfperch tend to occur inshore of the PSB, and are reasonably mobile. Their exposure to effluent from the outfall would likely be short term. There is a very low risk of adverse effects to the Surfperch in proximity to the diffuser.

Sand Shark

Sand Shark (or Brown Smoothhound Shark), range from Oregon to Baja California and are most common in sandy or muddy bottom habitats of Humboldt Bay, and also in deeper water on the continental shelf. (CDFW 2019c). They occur in Humboldt Bay most of the year and appear to move offshore during the winter months, potentially to avoid the colder, low salinity water (CDFW 2019c). Because they are mobile and mostly within Humboldt Bay, their exposure to the discharge pipe effluent is likely to be short term. There is a very low risk of adverse effects to the Sand Shark in proximity to the diffuser.

Dungeness Crab

Dungeness Crab support a local commercial fishery that had the highest value of all fished species landed in Eureka, Trinidad, and Crescent City in 2019 (CDFW 2020). Dungeness Crab also support a local recreational fishery. Their distribution ranges from Alaska to Point Conception, California, and because of their wide range, commercial value, and high motility, California, Oregon, and Washington coordinate on interstate management issues through the Tri-State Dungeness Crab Committee, which is overseen by the Pacific States Marine Fisheries Commission (Juhasz and Kalvass 2013). Dungeness Crab are benthic crustaceans residing on sandy to sand-mud substrate of bays, estuaries and the open coast, and are most abundant at depths less than 300 feet (91 m) but can be found as deep as 750 feet (230 meters); juveniles tend to prefer eelgrass habitat in bays and estuaries (Juhasz and Kalvass 2013). Dungeness Crab are likely to be in the PSB, however, because they are highly motile, their exposure to diffuser effluent would likely be short term. There is a very low risk of adverse effects to the Dungeness Crab in proximity to the diffuser.

Rock Crabs

Three species of Rock Crab make up this complex that supports commercial and recreational fisheries: Red Rock Crab (*Cancer productus),* Yellow Rock Crab *(Metacarcinus anthonyi),* and Brown Rock Crab *(Romaleon antennarium)* (CDFW 2019d). All three species of Rock Crab inhabit the intertidal area out to depths greater than 325 feet, but Brown and Red Rock Crab prefer rocky or reef-type habitat, whereas Yellow Rock Crab habitat includes silty sand to mud substrates and sand-rock substrate of rocky reef (CDFW 2019d). Brown Rock Crab inhabit substrates of rocky shores subtidal reefs and coarse to silty sands and are more abundant at depths less than 180 feet (CDFW 2019d). Movements of Rock Crabs are limited, studies suggest movements are on the order of a few miles maximum (CDFW 2019d). The diffuser pipe may act as an "artificial reef" that attracts Rock Crabs, but it is relatively small in size and may only support low numbers of Rock Crabs in comparison to a more extensive reef system. The effects of the discharge are also spatially limited. It is anticipated that there is a very low risk of adverse effects to Rock Crabs.

Razor Clam

Razor Clam is a shallow water intertidal and shallow subtidal species supporting a popular recreational fishery in northern California but ranges from Alaska to Pismo Beach, CA (Moore 2001a). Although fished primarily along open coast sandy beaches during extreme low tides, juvenile Razor Clams have been captured in trawls taken in the vicinity of the outfall pipe (Pequegnat et al. 1995). Apparently incapable of voluntary horizontal movement, Razor Clams are capable of burrowing vertically extremely fast (Moore 2001a). Razor Clams in the PSB are likely to be exposed to the discharge due to their poor horizontal mobility; therefore, there could be potential effects to these relatively low mobility clams in the vicinity of the outfall. However, the spatial extent of the effluent plume, rapid diffusion, and limited spatial extent of organic matter sedimentation will make any effects to the population extremely limited. There is a low risk of adverse effects to the Razor Clams in proximity to the diffuser.

Gaper Clam

Gaper Clams support recreational fisheries in Humboldt Bay, their distribution is limited to bay and sheltered open coast habitats with fine sand or mud bottoms (Moore 2001b). Because it is unlikely that Gape Clams would be on the open coast in PSB, there is no risk of exposure to effluent from the outfall.

Cockles

Similar to Gaper Clams, Cockles inhabit intertidal and shallow subtidal sediments of protected shores, and they support recreational fisheries in Humboldt Bay. They are unlikely to occur along the open coast or the PSB; and therefore no risk of exposure from the effluent is expected.

Octopus

There is little information about Octopus in the region; however, Giant Pacific Octopus (*Enteroctopus dofleini)* and Red Octopus *(Octopus rubescens)* do occur in nearshore and offshore habitats in the region, including soft bottom habitats (Lauermann et al. 2017). Octopus are caught in both commercial and recreational fisheries, and are thought to be relatively sedentary in rocky reef habitat, although they have been observed on soft bottom habitats away from rocky reefs (Lauermann et al. 2017). The diffuser pipe may act as an "artificial reef" that attracts Octopus, but it is relatively small in size and may only support low numbers of Octopus in comparison to a more extensive reef system. The effects of the discharge are spatially limited. It is anticipated that there is a very low risk of adverse effects to Octopus.

Sea Stars

Sea Stars or Starfish, in particular two species Brown Mud Star (*Luidia foliolata*) and Short-Spined Star (*Pisaster brevispinus*), occur in the PSB, based on captures in trawl surveys conducted in the vicinity of the outfall (Pequegnat et al. 1995) and species-habitat relationships (Hemery et al. 2016). Sea Star Wasting Disease affected Sea Stars along the entire west coast, and was likely due to extremely high water temperatures (Miner et al. 2018). Sea Stars have low mobility once settled to the sea floor, and therefore those in the PSB may be affected by the effluent in the vicinity of the outfall. However, it is expected that the very limited spatial extent of benthic effects associated with the outfall discharge would have a very low risk of adverse effects to Sea Stars.

Prawns/Shrimp

Prawns/Shrimp off Humboldt include Spot Prawns (*Pandalus platyceros*) and Ocean Pink Shrimp (*Pandalus jordani*). These species range from Alaska to San Diego and captured in commercial and recreational fisheries off Humboldt (Pomeroy et al. 2011). These species are typically found in waters deeper than the PSB, usually in muddy substrates at 150-1,200 feet but are typically captured between 300-600 feet (CDFW 2019e). They are mobile but their dispersal is thought to occur during larval life stages (CDFW 2019e). Because the PSB is shallower than the main distribution of Prawns/Shrimp, effects of the project are unlikely to have adverse effects due to the limited spatial area of the discharge.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Humboldt Bay Water Intakes

Special Status Plant Species

Seasonally-appropriate surveys for special status plants occurred in April, May, and June 2020 (SHN 2020a). No special status plants were detected in the Humboldt Bay Water Intakes Study Area.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Compensatory Off-Site Restoration

Compensatory off-site restoration would occur along the tidal shoreline of Humboldt Bay in Fields Landing along the former Kramer Dock where salt marsh and other vegetation is not present (e.g., see Image 2-22 in Section 2.0 [Project Description]). Additionally, staging would occur in upland areas south of South Bay Depot Drive, also in Fields Landing, avoiding special status plants. Thus, impacts to special status plants as a result of pile removal would not occur.

Spartina removal would occur in up to one acre of salt marsh in Humboldt Bay or a tidal tributary thereto. Spartina removal could inadvertently include removal of special status salt marsh species, including but not limited to Humboldt Bay owl's clover, Point Reyes bird beak, lyngbye's sedge, and western sand spurrey. Potential impacts and mitigation measures related to special status plants were evaluated in the 2013 Spartina PEIR (H.T. Harvey & Associates and GHD 2013) under Impact and Mitigation Measure BIO-3. As compensatory off-site restoration does not propose to include chemical treatment of Spartina, impact analysis related to chemical treatment has been omitted from the 2013 PEIR impact analysis.

- Spartina PEIR Impact BIO-3: Direct and Indirect Effects to Special Status Plant Species from Mechanical Spartina Removal Methods - Impacts to special status plants from direct mechanical methods include accidental excavation, cutting, bruising, crushing, and mowing. Indirect effects could also occur when direct mechanical result in harm but not mortality to special status plants. Injured plants must spend energy repairing structures, instead of growing, setting seeds or spreading propagules. Without mitigation, direct and indirect effects on special status plants could be potentially significant. Even with implementation of mitigation measures, some individual special status plants may be impacted. However, given the overall net benefit for special status plant species of removing invasive Spartina, with implementation of the following mitigation measure, impacts are less than significant. Humboldt Bay wallflower and beach layia would not be affected by the proposed Project, because they do not occupy the same habitats as Spartina.

Mitigation

Mitigation Measure PEIR BIO-3: Minimize Impacts to Special Status Plant Species

On a site specific basis, a habitat analysis shall be done to determine if special status plant species have the potential to occur. If they could occur, then surveys may be done to establish that these species are absent, using protocols approved by CDFW. If such surveys are not conducted, then the species will be assumed present. If special status plant species are present, then Spartina control methods will be selected that avoid or minimize potential impacts. Staked locations of special status plant populations or special status plant habitat shall be recorded, and field crews on foot or in vehicles shall be instructed to avoid and protect special status plant populations or plant habitat. Impact to the endangered dune plants beach layia and Humboldt Bay wallflower will be avoided by selecting access routes that do not contain these plants. For Humboldt Bay owl's clover and Point Reyes bird's beak, avoidance is determined not to be necessary because temporary effects during Spartina control are mitigated by the explosive increase in population that has been demonstrated after Spartina control (Pickart 2012 as cited in H.T. Harvey and GHD 2013). For other annual special status plants such as Western sand spurrey, avoidance shall occur by using only treatment methods that are highly selective; for example heavy equipment will not be operated where these plants or their habitat occur. For perennial plants such as Lyngbye's sedge, a qualified botanist shall stake out locations of special status plants and provide training to control crews to ensure that they minimize impacts to these plants. If special status plant populations or habitat occur near the high tide line, wrack and large deposits of mown Spartina shall be removed during the growing season. To avoid trampling of special status plant species, in areas where frequent access will occur, paths shall be marked and used that avoid special status plant species to the maximum extent possible (H.T. Harvey & Associates and GHD 2013, page 64).

With the implementation of Mitigation Measure PEIR BIO-3, impacts to special status plants would be reduced to be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Terrestrial Mammals

Potential impacts to special status terrestrial mammals were evaluated in this document based on database scoping and a Biological and Habitat Assessment conducted by SHN (2020a). This assessment involved one site visit (June 4) in 2020 primarily focused on documenting presence of wildlife species. There is one special status terrestrial mammal, the North American Porcupine, with the potential to be impacted by this component of the Project.

Mitigation Measure BIO-2 (detailed earlier in document) would reduce the impact of the Project on special status terrestrial mammals to a less-than-significant level by requiring overnight covers for open-trenches, disallowing dogs on the Project Site, and disallowing unattended injurious materials during construction and operations.

Mitigation

Mitigation Measure BIO-2: Protect Special Status Terrestrial Mammals

Refer to Impact BIO-a under the Terrestrial Development Impact description for the full text of Mitigation Measure BIO-2: Protect Special-Status Terrestrial Mammals.

With the implementation of Mitigation Measure BIO-2, potential impacts to special status terrestrial mammals would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Compensatory Off-Site Restoration

Pile removal would occur in a tidal setting and thus does not include habitat for special status terrestrial mammals. No impact to special status terrestrial mammals would result from pile removal.

The potential impact to terrestrial mammals from Spartina removal was evaluated in the 2013 Spartina PEIR and found impacts related singularly to Spartina treatment with herbicides. Given the proposed Project does not include chemical treatment of Spartina, these impacts would be entirely avoided. Furthermore, habitat for terrestrial mammals is limited in the tidal salt marsh environments of Humboldt Bay. Any potential impact would thus be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Special Status Bats

Potential impacts to special status bats, as related to the Humboldt Bay water intake Project elements, were evaluated in this document based on database scoping and a Biological and Habitat Assessment conducted by SHN (2020a). There is one special status bat, the Long-eared Myotis (*Myotis evotis*), with a moderate potential be present in the Humboldt Bay Water Intakes Study Area and potentially impacted by this component of the Project. As no building demolition is required for this component of the Project, there will be no loss of special status bat habitat. No new sources of light will occur as a result of this component of the Project. Therefore, no impacts to special status bats are expected as a result of this Project component.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Compensatory Off-Site Restoration

The existing piles on Humboldt Bay do not provide habitat for bats. Special status bats would not be impacted by pile removal.

The 2013 Spartina PEIR does not include impact analysis related to special status bats. However, treatment of Spartina would not include removal of vegetation or constructed structures that could provide bat habitat. Night work to remove Spartina would not occur, limiting the potential disturbance to nearby bats. Any potential impact to special status bats would thus be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Special Status Amphibian and Reptile Species

Potential impacts to special status amphibians and reptiles were evaluated in this document based on database scoping and a Biological and Habitat Assessment conducted by SHN (2020a). There is one special status amphibian, the Northern Red-legged Frog (*Rana aurora;* NRLF; CDFW SSC), with a moderate potential to be present in the Humboldt Bay Water Intakes Study Area and potentially impacted by construction of this component of the Project. There is no suitable habitat present for special status reptiles (e.g., Western Pond Turtle [*Actinemys marmorata*]).

Mitigation Measure BIO-4 (detailed earlier in document) would reduce the impact of the Project on special status amphibians to less-than-significant levels by requiring a pre-construction survey for NRLF and implementing minimization measures if NRLF are observed.

Mitigation

Mitigation Measure BIO-4: Protect Special Status Amphibians

Refer to Impact BIO-a under the Terrestrial Development Impact description for the full text of Mitigation Measure BIO-4: Protect Special-Status Amphibians.

With the implementation of Mitigation Measure BIO-4, potential impacts to special status amphibians as related to the Humboldt Bay water intake Project elements would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Compensatory Off-Site Restoration

Pile removal does not include habitat for special status amphibians and reptiles. The 2013 Spartina PEIR does not include impact analysis related to special status amphibians and reptiles. To ensure impacts to special status amphibians did not occur as a result of compensatory off-site restoration, including staging areas, Mitigation Measure BIO-4 would be implemented. With the incorporation of Mitigation Measure BIO-4, any potential impact would be less than significant.

Mitigation

Mitigation Measure BIO-4: Protect Special Status Amphibians

Refer to Impact BIO-a under the Terrestrial Development Impact description for the full text of Mitigation Measure BIO-4: Protect Special-Status Amphibians.

With the implementation of Mitigation Measure BIO-4, potential impacts to special status amphibians would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status and Protected Birds

Potential impacts to special status birds were evaluated in this document based on database scoping and a Biological and Habitat Assessment conducted by SHN (2020a). Potential Project impacts to special status birds (including migratory birds) during construction and demolition may include visual disturbance, habitat destruction (no trees will be cleared; however, some species may nest on or inside buildings proposed for demolition on-site or be nesting in shrubs near the ground), and noise disturbance.

The site visit documented four special status wildlife species occurring within the Humboldt Bay Water Intakes Study Area: Black-crowned Night-heron (a rookery in northern portion of Humboldt Bay Water Intakes Study Area, outside of the limits of disturbance for this component of the Project, as well as individuals roosting in willows along Humboldt Bay), Osprey (three active and two inactive nests), California Brown Pelican (flying over the Humboldt Bay Water Intakes Study Area), and Double-crested Cormorant (observed on-site resting and drying on pilings within Humboldt Bay, flying over the Humboldt Bay Water Intakes Study Area, and inactive nests located on pilings within Humboldt Bay). Special-status bird species with moderate or high potential of occurring within the Humboldt Bay Water Intakes Study Area are listed below:

- Cooper's Hawk (*Accipiter cooperii*; CDFW Watch List Species): Moderate
- Great Egret (*Ardea alba*; CDFW Special Animals List [S4]): High and Observed
- Great Blue Heron (*Ardea herodias*), CDFW Special Animals List (S4), Present: High and Observed
- American Bittern (*Botaurus lentiginosus*; CDFW Special Animals List S3S4): Moderate
- Northern Harrier (*Circus hudsonius*; CDFW SSC): Moderate
- Snowy Egret (*Egretta thula*; CDFW Special Animals List species): Moderate
- Bald Eagle (*Haliaetus leucocephalus*; CESA Endangered, CDFW Fully Protected Species): Moderate
- Black-crowned Night-Heron (*Nycticorax nycticorax*), CDFW Special Animals List (S4): Present-Roosting
- Osprey (*Pandion haliaetus*; CDFW Watch List Species): Present-Nesting
- Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*; CDFW SSC): Moderate
- California Brown Pelican (*Pelecanus occidentalis californicus*; CDFW Fully Protected Species): Present-Flyover
- Double-crested Cormorant (*Phalacrocorax auratus*; Nesting Colony - CDFW Watch List Species): Present-Perched
- Black-capped Chickadee (*Poecile atricapillus*; CDFW Watch List species): High
- California clapper rail (*Rallus longirostris obsoletus*; ESA Endangered, CESA Endangered, CDFW Fully Protected Species): Moderate; Following taxonomic updates, this species is currently known as California Ridgway's Rail (*Rallus obsoletus*; Golden Gate Audubon 2014). In addition to SHN's determination, it is judged that it would be highly unlikely for this species to occur on-site given that the known species' range is confined to the San Francisco Bay Area. Therefore, this species is not evaluated further.

Operation of the seawater intake system from pumps will create an underwater noise source. The maximum underwater noise that could be produced is estimated to be 145 dB within a distance of 1 m from the pumps, a level that is below levels that could result in injury to Marbled Murrelet or other special status bird species (Appendix J, Illingworth and Rodkin 2021). A less than significant impact related to underwater noise would occur.

Construction and ground disturbance required for the water line is within proximity to existing Osprey nests. Construction within 500 feet of the osprey nests, as well as nests of other bird species, would occur outside the nesting bird season if feasible, as established in Mitigation Measure BIO-5. If construction within 500 feet the osprey nests or other nests were to occur outside the nesting bird season, a buffer and biological plan would be required with

the approval of the Planning and Building Department and in consultation with CDFW, also as established in Mitigation Measure BIO-5. Therefore, any potential impacts to Osprey or other nesting birds would remain less than significant with the incorporation of Mitigation Measure BIO-5.

Mitigation

Mitigation Measure BIO-5: Protect Special Status, Migratory, and Nesting Birds

Refer to Impact BIO-a under the Terrestrial Development Impact description for the full text of Mitigation Measure BIO-5: Protect Special-Status, Migratory, and Nesting Birds.

With the implementation of Mitigation Measure BIO-5, potential impacts to special status, migratory, and nesting birds would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Compensatory Off-Site Restoration

Removal of piles and Spartina have the potential to effect special status birds and other protected bird species. Pile removal could result in noise that could disturb birds during construction. The piles at the Kramer Dock are currently used by Western Gulls, Western Sandpipers, Willets, Double-crested Cormorants, Great Blue Herons, and other bird species for roosting purposes. Roosting sites are not currently limited on Humboldt Bay, and roost use and the quality of roosting habitat is highly variable. Roosting sites in and surrounding Humboldt Bay can be located near high quality foraging grounds, which have been increasing as conservation efforts in Humboldt Bay have continued to focus on restoring and enhancing tidal mudflat and salt marsh habitat. Specific to roosting habitat, Humboldt Bay has moderate human impacts and abundant intertidal foraging areas in close proximity to roosting habitats for shorebirds. The loss of any one roost may be of minimal consequence to roosting species (Conklin et al. 2008). Given the quality of roosting habitat is poor (creosote piles located along a former industrial site) and higher quality roosting habitat is abundant within the vicinity (e.g. Humboldt Bay National Wildlife Refuge approximately one mile to the south), any potential impact related to the loss of roosting habitat from pile removal would be less than significant. With the implementation of Mitigation Measure BIO-5, potential impacts to special status, migratory, and nesting birds resulting from construction-related disturbances associated with Spartina removal would be less than significant.

Potential impacts to special status birds specific to Spartina removal were evaluated in the 2013 Spartina PEIR, as follows:

- **Spartina PEIR Impact BIO-2: Effects on Special Status Birds -** Breeding special status birds may be temporarily affected by noise caused by Spartina control equipment and vehicles. Disturbance due to noise will depend on many factors such as proximity to the noise, the levels of ambient noise, the nature of ambient noise, and the ability of birds to habituate to new noise. Control methods that create a potentially significant high level of noise are brushcutters, and methods that require airboats (e.g., amphibious vehicles). Without mitigation, noise impacts to birds could be potentially significant. In addition, northern harriers and short-eared owls may nest in the uplands adjacent to Spartina control areas, and their nests, which are located on the ground, could be directly impacted by Spartina control workers and equipment crossing these areas to reach Spartina. However, with implementation of mitigation, impacts are less than significant (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 63).
- **Spartina PEIR Impact BIO-5: Temporary Loss of Habitat to Northern Harrier and Short-Eared Owl -** The northern harrier may experience temporary and limited loss of nesting and foraging habitat when Spartina infested areas are treated. Similarly, the short-eared owl may temporarily lose a limited amount of breeding habitat. Effects on these species will be short-term (up to two years but likely less). Based on the short-term nature of these impacts, effects are less than significant, and no mitigation is required (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 63).

Potential impacts to special status and other protected birds would be reduced to a less than significant level with the incorporation of Mitigation Measure BIO-5, Mitigation Measure Spartina PEIR BIO-2 and Mitigation Measure Spartina PEIR BIO-3.

Mitigation

Mitigation Measure BIO-5: Protect Special Status, Migratory, and Nesting Birds

Refer to Impact BIO-a under the Terrestrial Development Impact description for the full text of Mitigation Measure BIO-5: Protect Special-Status, Migratory, and Nesting Birds.

Mitigation Measure Spartina PEIR BIO-2: Minimize Noise Effects

Breeding special status birds could be present based on habitat and time of year. The breeding season is generally October through mid-August. On a project specific basis, a habitat analysis shall be done to determine if special status bird species have the potential to occur. If the habitat would support special status birds, and if eradication is planned to occur when these birds may be breeding, then surveys will be done to establish that these species are absent, using protocols approved by USFWS. If such surveys are not conducted, then the species will be assumed present. Response of birds to noise varies by species as well as site specific factors including ambient noise levels, topography and vegetation. A limit of 60 dB reaching breeding songbirds has recently been advocated for the by the California Department of Fish and Wildlife (see ICF Jones and Stokes 2009 as cited in H.T. Harvey and GHD 2013). For the purpose of this PEIR, if breeding birds are known or assumed present within close proximity to Spartina control activities than actions will be taken to ensure that ≤60 dB reaches the breeding area. Actions may include the use of sound measuring devices to determine the range of noise production and limit Spartina control methods accordingly (i.e., use quieter methods near breeding special-status birds) (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 63).

Mitigation Measure Spartina PEIR BIO-3: Avoid Northern Harrier and Short-Eared Owl Nests

The breeding season is March-August for northern harriers (Loughman and McLandress 1994 cited in H.T. Harvey and GHD 2013) and March-July for short-eared owls (Gill 1977 cited in H.T. Harvey and GHD 2013). If Spartina control activities are planned to occur during these periods (i.e., between March-August) then a qualified biologist will assess whether there is potential nesting habitat for northern harrier or short-eared owls. If there is potential habitat, it will be avoided, or a qualified biologist will survey the potential habitat immediately prior to Spartina control work and if nests are found then a minimum 300 ft buffer zone will be delineated. The buffer zone will be avoided by Spartina control workers and equipment (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 63).

With the implementation of Mitigation Measure BIO-5, Mitigation Measure Spartina PEIR BIO-2 and Mitigation Measure Spartina PEIR BIO-3, potential impacts to special status, migratory, and nesting birds would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Marine Mammals

Marine mammals that occur in Humboldt Bay include the California sea lion, harbor seal, and harbor porpoise, described in the Appendix D (GHD and H. T. Harvey 2021). Operation of the seawater intake system from pumps will create an underwater noise source. The maximum underwater noise that could be produced is estimated to be 145 dB within a distance of 1 m from the pumps, a level that may result in temporary threshold shifts for some species of marine mammals (Appendix J, Illingworth and Rodkin 2021), however, the pumps will be encased within other structures that will not allow marine mammals to come within a meter of the pumps. The estimated noise is below

levels that could result in injury to Marbled Murrelet and special status fish (Appendix J, Illingworth and Rodkin 2021). The estimated distance for 120 dB harassment levels of noise from the pumps may extent to 45 m from the intakes, but is likely to be masked by other noise sources including vessel traffic (Appendix J, Illingworth and Rodkin 2021). A less than significant impact will occur.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Compensatory Off-Site Restoration

Pile removal would occur, in part, in the Humboldt Bay marine environment via barge-based construction. Pile removals conducted via vibratory methods have been identified as not producing levels of sound capable of influencing the behavior of listed salmonids (NMFS 2017). This is also assumed to be the case for other listed fish species and marine mammals. Therefore. It is unlikely to impact marine species present within the vicinity of the Kramer Dock pile removal area. A less than significant impact would occur.

The 2013 Spartina PEIR evaluated the potential for marine mammals to be present and affected by Spartina removal (see Spartina PEIR Impact BIO-7, below). If present, marine mammals could be disturbed by Spartina removal.

- **Spartina PEIR Impact BIO-7: Potential Effects on Marine Mammals -** Marine mammals, particularly harbor seals (*Phoca vitulina*), are abundant in the Management Area and could potentially be affected by sound generated from Spartina control activities. The sound produced will be short term and generally low intensity (see Section 4.14 of the 2013 Spartina PEIR), but the impact could be significant. However, with implementation of the following mitigation measure the impact will be reduced to less than significant (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 67).
- Mitigation Measure Spartina PEIR BIO-6 would be incorporated into the Project and applied to Spartina removal to ensure machinery that generates high levels of noise are not operated within 200 feet of marine mammals, ensuring any potential impact would be reduced to a less than significant level.

Mitigation

Mitigation Measure Spartina PEIR BIO-6: Reduce Noise near Marine Mammals

If marine mammals are present within 200 feet of Spartina control operations, then methods which cause relatively high levels of noise (i.e., brushcutters, the Marsh Master, and airboats) shall not be used. Other construction methods which do not generate a relatively high level of noise can be used (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 67).

Incorporation of Mitigation Measure Spartina PEIR BIO-6 would reduce potential impacts to marine mammals related to implementation of off-site compensatory restoration to a less than significant level.

Level of Significance: Less than Significant with Mitigation Incorporated

Special Status Fish

The Project would install tee-style wedgewire intake screens over the intake openings capable of supplying bay water to industrial tenants while meeting design criteria to minimize fish entrainment and impingement (SHN 2021c). The design criteria assume the presence of anadromous salmonid fry and juvenile Longfin Smelt. However, salmonid fry would not occur at the site, as the fry life stage of this anadromous species is limited to riverine environment only. The screens would be mounted to flat plates that can be slid down into place over the intake openings, providing significantly greater screen surface area. The proposed intake screens also include an automated air burst self-cleaning system, which greatly increases the allowable approach velocity and, thus, the intake flow rates. The Humboldt Bay Intakes would pump a maximum daily intake volume of 12 million gallons/day, although the average daily intake volume may be less (Tenera Environmental 2021a). The intake screen design is proposed for both locations with the exception that the RMT II dock screen will be 36-inch diameter with a maximum intake flow rate of

5,500 gallons/minute (gpm) and the Red Tank dock screen will be 24-inch diameter with a maximum intake flow rate of 2,750 gpm.

General intake screen design criteria are outlined in the National Marine Fisheries Service (NMFS) document: *Fish Screening Criteria for Anadromous Salmonids* (NMFS 1997). Through consultation between the Harbor District and CDFW, it has been determined that intake screens must meet the design criteria assuming the presence of anadromous salmonid fry and juvenile Longfin Smelt. Applicable design criteria for fish screens from NMFS (1997) are summarized below.

- 316 stainless steel profile bar screen material; 1.00mm spacing between bars (screen size)
- 0.2-feet per second (fps) maximum approach velocity at maximum intake flow rate
- Compressed air automatic self-cleaning system
- Flow modifier to evenly distribute intake flow rates and velocities over the entire screen face

The head loss through the screen will be approximately 0.17 pounds per square inch (psi); with 0.44 feet of drawdown inside the sea chest. Therefore, the water level inside the intake structure will be a minimum of 0.44 feet lower than the tidal water level outside the structure. As material builds up on the screen, head loss will increase, and the water level inside the intake structure will decrease accordingly, until the air burst cleaning system clears the screen of obstructions. The setpoint for when the air burst cleaning system actuates will be manually adjusted to clean the screen when the head difference inside and outside the intake structure is a maximum of 0.1 feet per the design criteria listed above.

The design specifications meet the requirements established by the NMFS for screening water intakes to prevent impingement or entrainment of juvenile salmonids (NMFS 1997, as cited in Tenera Environmental 2021a). The specifications in the 1997 NMFS document are also consistent with updated criteria provided by NMFS for the design of anadromous salmonid passage facilities (NMFS 2011, as cited in Tenera Environmental 2021a). The slot size for the two screens is designed to be 1.00 mm with a minimum open area across the screen of 36%. The screens also have manifold systems inside the screen modules that equalizes pressure across the entire screen surface. These design features result in a low approach velocity of 0.2 fps (6 centimeters per sec), which is consistent with NMFS criteria. In addition, CDFW was consulted for design criteria to protect juvenile Longfin Smelt (SHN 2021c).

Larval Longfin Smelt have been routinely captured in Eureka Slough, but not typically in other more saline sloughs of Humboldt Bay (e.g., south bay or lower Mad River Slough) (Figure 3.3-5) (Chamberlain and Barnhart 1993, Brennan 2021, Tenera Environmental 2021b). Early stages of larval Longfin Smelt have limited tolerance of salinity levels above 10–12 psu, that on average are estimated to occur 0.014% of the time at the proposed intake locations (Tenera Environmental 2021b). During the periods of time that salinity values are within the tolerances of Longfin Smelt larvae, the probability of entrainment for those larvae would be dependent on the period of time that the larvae are susceptible to entrainment. Even using the worst case from the ETM modeling, the probability of entrainment would be less than 1.0% (Impact Assessment –Table 4-1). Combining the two estimates results in a value of 0.00014%, which indicates a very low potential for any impacts on Longfin Smelt larvae due to entrainment.

Adult Longfin Smelt spawn in freshwater or very low salinity habitats (Garwood 2017, Grimaldo et al. 2020). Longfin Smelt are 5-8 mm in length at hatching (Garwood 2017, Grimaldo et al. 2020). Larval longfin smelt less than 10-12 millimeters (mm) (0.5 in) in length are buoyant because they have not yet developed an air bladder; as a result, they mostly occupy the upper portion of the water column and are vulnerable to surface currents (Rosenfield 2010, USFWS 2016). “Larvae are distributed near the surface of the water column in fresh and brackish waters (Wang 1986); the center of larval distribution is closely associated with the position of the 2ppt isohaline (“X2”) regardless of outflow conditions (Dege and Brown 2004).”At a length of approximately 12 mm, Longfin Smelt larvae develop air bladders and swimming abilities that allow them to manipulate their vertical position in the water column to retain position near favorable prey (Bennett et al. 2002, as cited in Tenera Environmental 2021b). It is anticipated that live larval Longfin Smelt smaller than 12 mm would not be entrained by the intakes due to the salinity at the intake location, depth of the intakes as well as the distance from identified Longfin Smelt spawning habitat. Prior to swim bladder development, Longfin Smelt would not be entrained, as they would be present only in the upper water column whereas the water intake and potential entrainment would occur in the lower water column near the seafloor of Humboldt Bay. Following

swim bladder development, the swimming abilities and the increased size of the larvae at 12 mm may allow them to avoid entrainment at the intakes due to the small 1.00 mm openings and low approach velocities of the proposed screens. Larger juveniles and adults would not be impacted by the intakes, which would eliminate any impacts due to entrainment or impingement.

Note there are no protocol survey methods established for Longfin Smelt larval fish. However, in 2017, CDFW conducted ichthyoplankton surveys in Humboldt Bay, collecting 5,079 larval fish, dominated by Pacific Herring (>90%), which is consistent with other comprehensive ichthyoplankton surveys done in the past (Eldridge and Bryan 1972). Of the 5,079 larval fish captured by CDFW, 25 Longfin Smelt larvae were collected between 6.05 and 8.81 mm in length from January to March 2017, of which four were collected in the vicinity of the intakes, four near Bird Island, and 17 in Eureka Slough (Figure 3.3-5 (CDFW 2021)). The presence of recently or newly hatched larvae in the main channel likely reflects drift away from more suitable spawning and rearing habitats in Eureka Slough, where habitat of appropriate salinities that support growth and survival of larval Longfin Smelt occurs between December and March in tributary inputs to Humboldt Bay (Figure 3.3-5), but extremely rarely at the Humboldt Bay Intakes (0.014% of the time on average). It is unlikely that larval Longfin Smelt are able to survive the higher salinities that occur at the Humboldt Bay Intakes, as habitat where salinity is >15 psu is unlikely to support Longfin Smelt larvae (Grimaldo et al. 2017, Grimaldo et al. 2020). Entrainment of Longfin Smelt larvae is not expected to occur because smaller Longfin Smelt larvae occur in the upper water column while the intakes will be near the bay bottom, and Longfin Smell are not known to live in higher salinity water such is the location of the intakes. These factors cannot guarantee that no Longfin Smelt Larvae will be entrained. Therefore, an Incidental Take Permit (ITP) will be pursued, and mitigation will be provided in the unlikely event that Longfin Smelt Larvae are entrained. If entrained, impacts to Longfin Smelt, including larval Longfin Smelt, would be potentially significant.

In order to determine the potential take of Longfin Smelt and develop an appropriate mitigation package, Tenera Environmental was engaged and prepared *The Use of Piling Removal as Method for Mitigating Effects of Entrainment Losses to Longfin Smelt and Other Fishes Resulting from Operation of the Proposed Samoa Peninsula Intakes in Humboldt Bay*, Tenera December 13, 2021 (Tenera Environmental 2021c, Appendix N).This study finds that habitat restoration is the most common approach to mitigation used for Longfin Smelt. The study evaluates whether removal of creosote coated pilings are an effective mitigation to provide Longfin Smelt habitat. The removal of pilings does not directly recreate habitat for the life stage of the larvae, but improving habitat, will increase the number of Longfin Smelt resulting in an increased number of larvae. Effective mitigation for the small amount of larvae impact could be mitigated by compensating for the loss of less than one female. The entrainment of 295 Longfin Smelt larvae would represent the annual production of one female. It is estimated that up to 200 larvae could be taken through entrainment, which is slightly less than the production of a single female's production. Assuming that the area of the bottom affected by each piling represents an area of approximately one square meter (10.8 square feet), the removal of four pilings would provide restoration of four-square meters (43.1 square feet) of habitat, an estimate that likely exceeds the habitat required for spawning of a single female Longfin Smelt and would fully compensate for the annual take of 200 larval Longfin Smelt.

Mitigation Measure BIO-6a has been incorporated into the Project requiring the Harbor District mitigate for the potential loss of Longfin Smelt larvae and obtain and implement an Incidental Take Permit from CDFW under CESA. Additionally, the Harbor District will be required to obtain a Coastal Development Permit from the CCC.

Adults and juveniles of other special status species would be excluded from the intake system by the intake screen(s), as would larger organisms, such as marine mammals. The seawater intake system would also not substantially reduce the number or restrict the range of an endangered, rare or threatened species. The potential for the entrainment of Longfin Smelt larvae can be mitigated on a 1:1 basis to ensure there would be no loss in number of individual larvae; therefore, the impact is less than significant. Impacts to other special status species would be less than significant.

Mitigation

Mitigation Measure BIO-6a: Protection of Longfin Smelt

The Humboldt Harbor District shall mitigate for the potential loss of Longfin Smelt larvae by removal of pilings to achieve a 1:1 mitigation ratio of potential larvae taken. The mitigation for each 200 Longfin Smelt larvae is four pilings (43.1 square feet of habitat area). The Project mitigation is a minimum removal of four pilings. The pilings shall be removed prior to operation of Phase 1 of the facility. If after conducting appropriate surveys as part of the Incidental Take Permit (ITP), additional larvae may be taken than projected here, the mitigation ratio shall be utilized to compensate to the additional take of Longfin Smelt larvae.

Level of Significance: Less than Significant with Mitigation

Compensatory Off-Site Restoration

Compensatory off-site restoration would benefit special status fish by improving habitat quality and water quality in Humboldt Bay and an overall net benefit to special status fish is expected. Pile removals conducted via vibratory methods have been identified as not producing levels of sound capable of influencing the behavior of listed salmonids (NMFS 2017). Short-term increases in turbidity may result from pile removal and could be significant. Thus, Mitigation Measure HWQ-3 would be incorporated into the Project to ensure any potential impact to water quality would be less than significant.

As evaluated in the 2013 Spartina PEIR, water quality may be a stressor to aquatic species (special status fish) during construction and following the first substantial rain event after Spartina removal due to increased sediment in the water column. The potential mobilization of sediment would be temporary, is not expected to persist beyond the first substantial rain event following the completion of construction, and is not considered a long-term threat to aquatic species. This impact was evaluated in the 2013 Spartina PEIR as noted below. Impact analysis from the Spartina PEIR related to chemical treatment of Spartina has been omitted, as chemical treatment of Spartina is not proposed from inclusion in the compensatory off-site restoration.

- Spartina PEIR Impact BIO-1: Effects on Special Status Fish Species and their Critical Habitat and Essential Fish Habitat from Mechanical *Spartina* Removal Methods - Special status fish species described above may be present in channels adjacent to Spartina control efforts during any time of the year. If present, fish could be indirectly impacted by erosion caused by mechanical methods, resulting in increased turbidity. Increased turbidity could affect fish by interfering with gill function, reproduction or behavior (e.g., feeding or predator avoidance). Additionally, potential direct impacts could occur if fish are struck, injured, or killed by heavy equipment operating within a channel. Finally, the flooding control method could have direct impacts on fish by altering water quality and preventing fish movement. Without mitigation, impacts to special status fish could be potentially significant. However, with implementation of Mitigation Measure Spartina PEIR BIO-1, the impacts are reduced to less than significant. No impacts to critical habitat of special status fish species or the rearing functions of Essential Fish habitat are expected (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 62).
- Additionally, to ensure water quality is protected as a result of Spartina removal in order to avoid potential significant impacts to special status fish, the following Mitigation Measures would also be incorporated into the Project: Mitigation Measure Spartina PEIR WQ-3, Mitigation Measure Spartina PEIR WQ-6, Mitigation Measure Spartina PEIR WQ-7, and Mitigation Measure Spartina PEIR HHM-2.

Mitigation

Mitigation Measure HWQ-3: Protection of Water Quality During Pile Removal

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure HWQ-3: Protection of Water Quality During Pile Removal.

Mitigation Measure Spartina PEIR WQ-3: Minimize Fuel and Petroleum Spill Risks

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR WQ-3: Minimize Fuel and Petroleum Spill Risks.

Mitigation Measure Spartina PEIR WQ-6: Designate Ingress/Egress Routes

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR WQ-6: Designate Ingress/Egress Routes.

Mitigation Measures Spartina PEIR WQ-7: Removal of Wrack

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR WQ-7: Removal of Wrack.

Mitigation Measure Spartina PEIR HHM-2: Accidents Associated with Release of Chemicals and Motor Fuel

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR HHM-2: Accidents Associated with Release of Chemicals and Motor Fuel.

Mitigation Measure Spartina PEIR BIO-1: Minimize Effects of Mechanical Spartina Removal Methods to Special Status Fish Species

On a project specific basis, a habitat analysis shall be done to determine if special status fish species have the potential to occur. If they could occur, then surveys may be done to establish that these species are absent, using protocols approved by USFWS or NMFS. If such surveys are not conducted, then the species will be assumed present. If special status fish species are present, then Spartina control methods will be selected that minimize potential impacts. To minimize erosion effects, control methods that are most likely to cause erosion (i.e., grinding, tilling, disking and digging/excavating) will not occur within 15 ft of any aquatic habitat containing special status fish species, but this distance could be increased depending on site specific conditions, such as soil stability and bank slopes. Additionally, amphibious vehicles will not contact the channel substrate where special status fish species are present, and the vehicles will be operated in such a manner that they avoid causing erosion into the channels. Furthermore, no flooding will be conducted in areas where special status fish species are present. Treatments that do not involve ground disturbance, such as top mowing, crushing, and covering will be the only methods used in close proximity (e.g., within 15 ft) to special status fish species. This mitigation measure is intended to avoid take as defined by the ESA and California ESA (H.T. Harvey & Associates and GHD 2013, page 62).

With the incorporation of mitigation measure to protect water quality, potential impacts to special status fish related to off-site compensatory restoration would be reduced to a less than significant level.

Mitigation Measures: Less than Significant with Mitigation Incorporated

Level of Significance: Less than Significant with Mitigation Incorporated

Essential Fish Habitat

The Humboldt Bay Water Intake Study Area includes EFH for Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Coast Salmon, but does not include EFH for highly migratory species. The Humboldt Bay Water Intake Study Area is within designated estuary and seagrass HAPCs.

Within Humboldt Bay, Pacific Coast Groundfish likely to occur include Leopard Shark (*Triakis semifasciata*), English Sole (*Parophrys vetulus*), Pacific Sanddab (*Citharichthys sordidus*), Sand Sole (*Psettichthys melanostrictus*), and Starry Flounder (*Platichthys stellatus*). Juvenile Rockfish (e.g., Black Rockfish), Cabezon and Kelp Greenling are also known to occur in Humboldt Bay (Schlosser and Bloeser 2006). Juvenile Pacific salmonids, including Coho and

Chinook salmon, as well as their prey species (Northern Anchovy, Pacific Sardine, Pacific Herring) may also utilize the water column in Humboldt Bay.

Potential effects of the Humboldt Bay Water Intakes on special status fish species are described above. To address potential impacts to fish and invertebrate larvae from the two intakes, an empirical transport model (ETM) of potential effects on icthyoplankton due to entrainment at the proposed Humboldt Bay Water Intakes was conducted by Tenera Environmental (Tenera Environmental 2021a). The proposed intake design capacities are 5,500 gallons per minute (gpm) for the RMT II intake and 2,750 gpm for the RTD intake for a total capacity of 8,250 gpm (20.8 m^3 per minute) or 11.9 million gallons per day (mgd) (44,970 m^3 per day); however, a maximum daily intake volume of 12 mgd was used in the modeling, although the average daily intake volume may be less (the maximum intake volume is based on current user volumes and anticipated future use). The basis of the ETM is an estimate of the daily mortality resulting from entrainment (proportional entrainment [*PE*]) which is an estimate of the fractional loss to the source water population of larvae represented by entrainment (Steinbeck et al. 2007, as cited in Tenera Environmental 2021a). One of the advantages of the ETM is that it provides a relative measure of impacts that should be less prone to estimation error than an absolute measure based on an estimate of the number of larvae entrained per year. The absolute numbers of larvae entrained will change considerably within and between years because of numerous physical and biological factors that affect levels of larval production and survival. The ETM provides a relative measure of impact integrated over some time period (called proportional mortality [P_M] in the ETM terminology) that should vary much less over time than absolute levels of impact, such as an estimate of total entrained fishes. An estimate of P_M that is very low relative to other natural sources of mortality, or levels of natural variation, indicates that entrainment effects on that organism are not likely to be significant to the population.

The modified ETM approach used in this study required physical data on the intake and source water volumes and did not require detailed biological data on the fish and invertebrate larvae potentially impacted. It is important to note that only fishes with small planktonic larval stages would be subject to entrainment due to the screen size and low approach velocities. The selection of taxa for analysis in this report was based on the results from earlier studies on the fish communities in Humboldt Bay (e.g., Eldridge and Bryan 1972, Pinnix et al. 2005, Gleason et al. 2007, as cited in Tenera Environmental 2021a). Four taxa were selected for analysis: two of the four taxa, Pacific Herring (*Clupea pallasi*) and Northern Anchovy (*Engraulis mordax*), were included in the top ten most abundant taxa in a study of adult fishes in Humboldt Bay (Gleason et al. 2007, as cited in Tenera Environmental 2021a), and the other two taxa, Bay Goby (*Lepidgobius lepidus*) and Arrow/Cheekspot Goby complex (unidentified Gobiidae), were two of the four most abundant taxa of fish larvae collected by Eldridge and Bryan 1972. Pacific Herring was the second most abundant taxon of larval fish collected during the study. Several groups of fishes such as surfperches and some of the sharks and rays give birth to fishes that are fully developed and are large enough that they would not be subject to entrainment due to the small size of the slot openings planned for the intakes.

Estimates of P_M for each taxon of fish were calculated using three models. Model M1 treats Humboldt Bay as a closed water body and is, therefore, the most conservative model and results in the highest estimates of P_M. All of the models have increased estimates of P_M with increases in the estimated periods of exposure, except for the modified version of M1 which uses a fixed exposure period based on a simplified model of tidal exchange. For the other three models, the highest estimates were calculated for the 30-day exposure based on the estimate for turnover of the waters in Humboldt Bay due to tidal exchange.

Results of the ETM estimates of P_M representing the proportion (percentage) of the source water population of larvae at risk due to entrainment by the Humboldt Bay Water Intakes with a combined intake volume of 12 mgd using estimated larval durations for four taxa of larval fishes and an estimated maximum exposure of 30 days are shown in Table 3.2-2 (Tenera Environmental 2021a).

Table 3.3-2 ETM estimates of PM representing the proportion (percentage) of the source water population of larvae at risk due to entrainment by the two intakes

Models	Pacific Herring	Arrow Goby	Bay Goby	Northern Anchovy	Maximum Turnover
Durations (d)	*6.8*	*17.4*	*4.3*	*24.3*	*30*
M1 – Closed	0.00208 (0.208%)	0.00532 (0.532%)	0.00132 (0.132%)	0.00743 (0.743%)	0.00916 (0.916%)
M1 – Open *	0.00113 (0.113%)	0.00113 (0.113%)	0.00113 (0.113%)	0.00113 (0.113%)	0.00113 (0.113%)
M2 – Tidal Prism	0.00023 (0.023%)	0.00025 (0.025%)	0.00022 (0.022%)	0.00025 (0.025%)	0.00026 (0.026%)
M3 – Exchange Ratios	0.00075 (0.075%)	0.00096 (0.096%)	0.00062 (0.062%)	0.00101 (0.101%)	0.00104 (0.104%)

* calculated using an estimate of turnover of 4.16 days using the simple exchange model of Sheldon and Alber (2006), as cited in Tenera Environmental 2021a.

Tenera's model (Tenera Environmental 2021a) likely overestimates levels of larvae entrainment because:

1. The model assumes even distribution of larvae throughout Humboldt Bay. However, the intakes are located at a site with strong currents and high salinity near the entrance of the bay. It is expected that larvae of most fish species are more concentrated in parts of the bay where they are subject to less tidal action and currents. Additionally, larvae of some species (e.g., Longfin Smelt) are not associated with the high salinities found at the water intakes.
2. The model was developed based on a water intake screen slot (mesh) size of 1.75 mm, but based on comments received from the California Coastal Commission the proposed slot size has been reduced to 1.0 mm. The 1.0 mm slot size will further reduce the potential for larvae entrainment.

Overall, operation of the proposed seawater intake system would not cause populations of target species, including larval stages of Coastal Pelagic Species, to fall below self-sustaining levels or otherwise eliminate such species. Entrainment from the proposed project's intake would not result in a substantial decrease in marine populations that could be detected over natural variability. Impingement of organisms would be avoided with the low intake velocity and screen design proposed.

The volume of water moving through the main channel, where the Humboldt Bay Intakes are located, can be compared to the Humboldt Bay Intake volume to understand the relative volumes removed by the intakes (Tenera Environmental 2021a). The volume of water moving through the main channel is dependent on the tidal cycle, but for the purposes of this simple comparison, the volume of water exchanged between a mean high and mean low tide is approximately 279 million cubic feet per tide cycle (2,090 million gallons/tide cycle)[1]. Assuming the pumping rate at the intakes is 8,250 gpm, over a six hour tide cycle, the intakes would remove 2.97 million gallons, or approximately 0.14 percent of the volume moving through the main channel over a tidal cycle.

The proportion of water pumped at the intakes compared to that exchanged in the bay over a tidal cycle is low. Additionally, related impacts to larval species and the bay's bio-productivity are low as demonstrated by Tenera Environmental (2021a). Hence, the effects of the intakes on Essential Fish Habitat for Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Coast Salmonids is less than significant. Effects to eelgrass and estuary HAPC would also be less than significant, as no direct or indirect impacts to eelgrass would occur as a result of the water intakes.

[1] Computed per Table 3-1 in Tenera Environmental 2021a by differencing the Main Channel Volume at Mean High Water (MHW) from the Main Channel Volume at Mean Low Water (MLW).

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Compensatory Off-Site Restoration

Pile removal would improve Essential Fish Habitat by removing up to 1,007 toxic, creosote piles from aquatic habitat. The effects of Spartina removal were evaluated in the 2013 Spartina EIR and determined to be less than significant on Essential Fish Habitat (H.T. Harvey and GHD 2013). Any potential impact to Essential Fish Habitat would thus be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Commercial and Recreational Fish Species

The volume of water moving through the main channel, where the Humboldt Bay Intakes are located, can be compared to the Humboldt Bay Intake volume to understand the relative volumes removed by the intakes (Tenera Environmental 2021a). The volume of water moving through the main channel is dependent on the tidal cycle, but for the purposes of this simple comparison the volume of water exchanged between a mean high and mean low tide is approximately 279 million cubic feet per tide cycle (2,090 million gallons/tide cycle) (Tenera Environmental 2021a)[2]. The intakes would only remove 0.14 percent of the volume moving through the main channel over a 6 hour tidal cycle, an extremely small proportion of water compared to that exchanged in the bay over a tidal cycle. Effects of the intakes on commercial and recreational species would also be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Compensatory Off-Site Restoration

Compensatory off-site restoration would improve conditions for commercial and recreational fish species by removing up to 1,007 toxic, creosote piles and up to one acre of Spartina from aquatic habitat. Pile removal would occur at the Kramer Dock in Fields Landing, California, which is located in an industrial area not typically utilized for commercial or recreational fishing. Provisions for water quality protection, as established above under Special Status Fish, would also apply to water quality protection for commercial and recreational fish species. Any potential impact would be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Impact BIO-b: **Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (Less than Significant with Mitigation)**

Terrestrial Development

The Humboldt Bay Area Plan and the Coastal Act define Environmentally Sensitive Areas as: *"any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an*

[2] See Footnote 1 above.

ecosystem and which could be easily disturbed or degraded by human activities and developments (Coastal Act Section 30107.5), including: areas of special biological significance as identified by the State Water Resources Control Board; rare and endangered species habitat identified by the State Department of Fish and Game; all coastal wetlands and lagoons; all marine, wildlife and education and research reserves; nearshore reefs; tidepools; sea caves; islets and offshore rocks; kelp beds; indigenous dune plant habitats; and wilderness and primitive areas."

Riparian Habitat

The Project Site does not include a stream, tributary, or other waterway with riparian habitat. Riparian habitat is not present on the Project Site. Thus, no impact to riparian habitat would result from the Project and no mitigation is necessary.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Sensitive Natural Communities

Vegetation mapping and an assessment of Sensitive Natural Communities was conducted for the Project Site (Appendix F, GHD 2021d). A Supplemental Soils and Anthropogenic Disturbance Investigation of Potential ESHA Technical Memo was prepared by GHD (2021g) to evaluate abiotic conditions and historic disturbance on-site to help inform the County's determination of potential ESHA (Appendix L, GHD 2020f). The quality of dune habitats was quantitatively assessed, and absolute cover was estimated for all species and bare areas.

Environmentally Sensitive Habitat Areas (ESHA)

Mapped Sensitive Natural Communities included dune mat, higher quality dune mat, coastal brambles, and coastal willow thickets, summarized below (Appendix F, GHD 2021d). Of these, the high quality dune mat was considered ESHA. The Project Site north was originally coastal dune habitat. The area has been completely regraded and impacted by various levels of development ranging from disposal of spoils materials, installation of septic systems, installation of large tanks used to clarify freshwater and paving and buildings. The western perimeter of the site retains a remnant of a sand dune, but the dune has been substantially modified and has been significantly regraded. Vance Avenue follows the ridge of what was once a dune. The combination of the road installation and the grading resulted in the dune losing natural function of moving sand. There is a fence line paralleling the southern property line approximately 20 feet north of the property line. The fence sits on top of a graded berm. The area south of the berm and extending onto the adjoining property shows evidence of historic disposal of dredge spoils. The area north of the fence extending to the existing paved areas and locations of the clarifiers has been graded, and includes wood piles, a very large leach field and associated septic tanks, steam pipes, and other remnants of activity associated with the use of the site as a pulp mill.

Dune mat (Abronia latifolia-Ambrosia chamissonis Alliance) (G3 S3)

Both degraded dune mat and higher quality dune mat were mapped within the Project Site. A total of 6.72 acres of the Project Site was mapped as dune mat, and an additional 0.34 acres was mapped as higher quality dune mat (Appendix F, GHD 2021d).

Dune mat is a Sensitive Natural Community ranked by NatureServe as Vulnerable globally (G3) and within the State of California (S3). Much of the Area of Potential Effect (APE) contains dune mat species at diagnostic levels. Dune mat within the APE was primarily characterized by yellow sand verbena, seaside buckwheat, dune knotweed, beach strawberry, and sandmat. Rare dark-eyed gilia, which typically occurs in stabilized dunes, was also widespread in this community.

As discussed in Appendix F (GHD 2021d), quantitative analysis showed that dune mat to the north of the fence has intermediate levels of native cover compared to higher quality dune mat to the south and highly invaded areas dominated by bush lupine. The northern dune mat area also had high non-native cover similar to bush lupine scrub.

Dune mat areas south of the cyclone fence contained a dominance of native species, low overall cover of vascular plants, and low cover of non-native species. The area south of the cyclone fence contains a berm structure that is similar to natural dune topography, and areas of high-quality dune mat are characterized by mobile sand and a strong dominance of dune mat species (68% relative native cover and more natural dune processes with undulating topography and greater sand mobility, 27% absolute native cover). This area that consists of a berm resembling a natural sand dune and retains a high percentage of native cover is designated high quality dune habitat and for purposes of this analysis is considered ESHA, as discussed above. These areas of higher quality dune mat habitat constitute approximately 0.34 acres. These areas of ESHA will be protected by establishing a minimum 35-foot buffer from the nearest proposed Building 2. Within the 35-foot setback, a 20-foot-wide pervious fire road will be constructed.

In contrast, dune mat plots north of the cyclone fence, near the current footprint of the pulp mill, showed diagnostic levels of native dune species (11% absolute cover), but they are dominated by non-native species (76% relative cover of non-native species). Some of the non-native species includes a large patch of Invasive Yellow Bush Lupine Scrub, which based on its growth pattern in rows following the septic leach lines, benefits from the presence of the aging septic system. Due to the graded condition of the site, installed improvements, the impact of the septic system on the vegetation pattern and the high concentration of non-native plants, this area is not ESHA. Approximately 4.32 acres of dune mat would be impacted by the Project.

The 0.34 acres of mapped higher quality dune would be protected as ESHA under Mitigation Measure BIO-7a and are located along the southern edge of the Project Site, south of Building 2. As noted above, anywhere dark-eyed gilia are found, the dark-eyed gilia will be replaced at a 3:1 ratio (MM BIO-1). High-quality dune mat would be protected under Mitigation Measure BIO-7a to avoid significant impacts.

Coastal willow thickets (Salix hookeriana Alliance) (G4 S3)

Coastal willow thickets are dominated by mature coastal willow (*Salix hookeriana*), with lower cover of other shrub species such as coyote brush (*Baccharis pilularis*). Coastal willow thickets are a Sensitive Natural Community with a state rank of S3 and thus Vulnerable in California. Coastal willow thickets primarily occurred in swale topography along Vance Avenue (east and west), and Brewer's rush (*Juncus breweri*) was common in the understory. Spatial data showing coastal willow thickets from the previous SHN mapping effort was incorporated into current mapping (SHN 2020a), and the southern willow thicket east of Vance Avenue was expanded slightly to include associated swale vegetation. Coastal willow thickets cover 0.28 acres of the APE. Coastal willow thickets would not be impacted as a result of the Project. Thus, no mitigation is necessary.

Coastal brambles (Rubus ursinus Alliance) (G4 S3)

Coastal brambles are a Sensitive Natural Community with a state rank of S3 and thus Vulnerable in California. Coastal brambles within the APE primarily consisted of mixed native shrubs, co-dominated by California blackberry (*Rubus ursinus*) with coast silk tassel (*Garrya elliptica*), coyote brush (*Baccharis pilularis*), and wax myrtle (*Morella californica*) and are largely located along a cut slope of the site that has been highly modified. A mixture of native and non-native species occurred in the herbaceous layer. Coastal brambles occurred in a single 0.20-acre patch along the roadside ridge east of Vance Avenue. Approximately 0.01 acres of coastal brambles would be impacted as a result of the Project. Given the location in a highly modified location and the non-native vegetation mixed with the community, the coastal brambles are not considered ESHA. However, onsite mitigation will be required to compensate for the loss of the sensitive plant community.

Mitigation

Mitigation Measure BIO-7a: Implement Compensatory Mitigation for Sensitive Natural Communities

Loss of Sensitive Natural Communities shall be mitigated through compensatory mitigation based on the ratios (acreages) stated below. Mitigation shall include removal of invasive European beachgrass, yellow bush lupine scrub, and other non-natives on- and off-site in locations where restoration planting is being conducted. On-site restoration is preferred by jurisdictional permitting resource agencies.

- Coastal Brambles: No less than 3:1, on-site only
- Dune Mat: No less than 2:1, on-site and off-site (BIO-1 can be combined with this requirement in which case the mitigation ratio is 3:1)
- Pre-construction surveys for rare plants shall occur at both on-site and off-site mitigation areas, as identified in the RMP
- Annual success criteria shall be defined as follows in Table 3.3-3:

Table 3.3-3 Annual Success Criteria

Invasive Vegetation	1	≥50% Reduction in target invasive plant cover (absolute) at dune restoration sites.
	2	≥65% Reduction in target invasive plant cover at dune restoration sites.
	3	≥80% Reduction in target invasive plant cover at dune restoration sites.
	4	≥90% Reduction in target invasive plant cover at dune restoration sites.
	5	≥95% Reduction in target invasive plant cover at dune restoration sites.
Native Dune Mat	5	Dune restoration areas (at all sites) are dominated by native dune mat species (≥50% relative percent cover).
Native Coastal Brambles	5	Coastal brambles restoration areas are dominated by native species associated with the community (≥50% relative percent cover).
Maintenance	All Years	The restoration crew completed invasive plant removal on schedule.

Mitigation Measure BIO-7b: Construction Protocol for Protection of ESHA

Prior to issuance of any permits, orange net or other appropriate fencing shall be placed around the 35-foot ESHA setback or at the limit of the Fire Road encroachment. The fencing shall remain in place throughout the construction period to prevent vehicles, equipment, or materials from entering the ESHA. The grading plans for the project site shall design finished pad grades to not result in grade changes at the edge of the buffer or fire road within the ESHA buffer.

With the implementation of mitigation measures BIO-7a and BIO-7b, potential impacts to ESHA would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Ocean Discharge

Riparian Habitat

Pertaining to the Ocean Discharge, riparian habitat is not present in the Pacific Ocean. No impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Sensitive Natural Communities

Pertaining to the Ocean Discharge, Sensitive Natural Communities are not present in the Pacific Ocean. No impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Humboldt Bay Water Intakes

Riparian Habitat

The Humboldt Bay Water Intakes component of the Project does not include a stream, tributary, or other waterway with riparian habitat. Riparian habitat is not present in proximity to the water lines (Figures 3.3-1 through 4 – Humboldt Bay Water Intakes Biological Resources). Thus, no impact to riparian habitat would result from the Project and no mitigation is necessary.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Compensatory Off-Site Restoration

Riparian habitat is not present near the Kramer Dock in Fields Landing, California. Thus, riparian habitat would not be impacted by pile removal. Any potential riparian habitat located near the location treated for Spartina removal would not be impacted. Riparian habitat would not be removed or altered. No impact would result to riparian habitat.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Sensitive Natural Communities

Vegetation mapping and an assessment of Sensitive Natural Communities and ESHA was conducted for the Humboldt Bay Water Intakes Study Area, encompassing the proposed water lines between the RMT II dock beyond the RMT I Manifold (Figures 3.3-2 and 3; SHN 2020a). The majority of plant species documented were non-native, and no special-status plant species were observed within the Humboldt Bay Water Intakes Study Area. Construction and operation of this component will not impact dune mat, coastal willow thicket, coastal bramble or any other terrestrial Sensitive Natural Communities.

Eelgrass is a sensitive natural community that occurs in Humboldt Bay. Gilkerson (2008) found the maximum depth capable of supporting eelgrass in north Humboldt Bay was -1.3 m MLLW. The depths at the proposed RMT II and Red Tank dock water intakes are -4.5 m MLLW and -1.8 m MLLW, respectively. The depth of the RMT II intake prohibits growth of eelgrass, but the depth at Red Tank dock is only slightly greater than the maximum growing depth (Gilkerson 2008). The intake at Red Tank is within the area evaluated under the Humboldt Bay Harbor, Recreation and Conservation District Coastal Development Permit 9-16-0204 Subtidal Mariculture Pre-permitting project. An associated Environmental Impact Report (SCH #2013062068) was certified by the Harbor District which included eel grass surveys prepared by Thomas Gast and Associates and impact analysis. An active mariculture lease (Starbid) with a site-specific eel grass protection plan includes the area where the Red Tank intake is proposed to be located. Condition 8 of this permit requires:

> *Eelgrass Protection. Prior to the initiation of installation activities for aquaculture gear or mooring piles, the Harbor District shall submit for Executive Director review and approval a plan showing that all such activities and associated structures or infrastructure (including pilings, moorings, anchors, longlines, surface rafts, FLUPSYs) shall remain a minimum of 30-feet away from the outside edge of any eelgrass bed within or adjacent to the three subtidal aquaculture sites. This report shall include a map of all eelgrass within each subtidal site and a 50-foot perimeter outside. The map shall be based on the results of an eelgrass survey carried out consistent with the timing and methodology guidelines of the National Marine Fisheries Service's California Eelgrass Management Program. Areas with depths greater than twice the minimum expected eelgrass growing depth in Humboldt Bay are exempt from this survey requirement.*

The Red Tank intake will be required to comply with this condition of approval.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Compensatory Off-Site Restoration

Removal of up to 1,007 piles would occur along the Humboldt Bay shoreline (tidal mudflats) and wetted environment where eelgrass (*Zostera marina*) could occur.

Eelgrass could also occur in proximity the pile removal and/or the area selected for Spartina removal. Eelgrass is a sensitive natural community that occurs in Humboldt Bay. Pile removal would benefit eelgrass in Humboldt Bay by creating additional eelgrass habitat and would thus self-mitigate temporary impacts to eelgrass. The 2013 Spartina PEIR also evaluated effects to eelgrass, noted below.

- **Spartina PEIR Impact BIO-6: Potential Impacts of Mechanical to Eelgrass -** Eelgrass beds are considered essential fish habitat under the Magnuson-Stevens Act and environmentally sensitive habitat areas under the California Coastal Act. Any impacts to eelgrass generally require mitigation in the form of transplanting the eelgrass and/or creating new eelgrass habitat. Spartina has not been observed in close proximity to eelgrass. However, it is possible that Spartina and eelgrass could occur together. When conducted in mudflats, all of the Spartina removal methods have the potential to directly impact eelgrass. For example, eelgrass plants could be impacted by a brush cutter. With implementation Mitigation Measure Spartina PEIR BIO-5, this impact is less than significant (From 2013 Spartina PEIR, H.T. Harvey & Associates and GHD 2013, page 66).

To ensure potential impacts to eelgrass as a result of Spartina removal would be avoided, Mitigation Measure Spartina PEIR BIO-5 would be incorporated into the Project.

Mitigation

Mitigation Measure Spartina PEIR BIO-5: Avoid Impacts to Eelgrass

- Workers removing Spartina in areas with the potential for eelgrass shall be trained to recognize eelgrass and the mudflats that are habitat for eelgrass. Training shall be conducted by a qualified biologist. Only methods that avoid physical disturbance to eelgrass plants shall be used in close proximity to eelgrass, such as top mowing and excavation. With this mitigation measure, there will be no impact to eelgrass (H.T. Harvey & Associates and GHD 2013, page 66-67).

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant with Mitigation Incorporated

Impact BIO-c: Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filing, hydrological interruption, or other means? (No Impact)

Terrestrial Development

A wetland delineation was completed for the Project Site (Appendix F, GHD 2021d). The investigation included mapping of wetland boundaries to meet the three-parameter definition of the U.S. Army Corp of Engineers (USACE) and the one-parameter definition of the Local Coastal Plan. Coastal willow thickets within the APE are characterized by a strong dominance of *Salix hookeriana*, a Facultative-Wetland species, and qualify as one-parameter wetlands in addition to being S3 Sensitive Natural Communities. These one-parameter wetlands directly east of Vance Avenue were revisited on February 10, 2021, and confirm findings from the May 2020 visit, which found these areas lack wetlands hydrology and soils, and are thus one-parameter wetlands. The coastal willow thickets would not be impacted as a result of Project construction or operation. Wetland fill would not occur. No direct impact to one-

parameter or three-parameter wetlands would result. One- and three-parameter wetlands do exist west of Vance Avenue, but are outside of the Project Site.

The Project is located outside the urban limit. The Humboldt Bay Area Plan establishes a wetland setback of 100 feet to 200 feet for areas outside the urban limit, with the exact buffer dimensions dependent on site-specific characteristics. Delineated wetlands are small and of poor quality; thus, this analysis assumes an applied buffer of 100 feet.

Development within the buffer is allowable provided no more than 25% of the developed surface is effectively impervious, stormwater runoff does not detrimentally affect the wetland, areas of temporary disturbance are restored and promptly replanted, and erosion impacts related to construction are minimized with BMPs.

East of Vance Avenue, on-site one-parameter wetlands are separated from the Project footprint, with setbacks ranging from approximately 53 feet to 64 feet. Development within the buffer would be predominantly limited to site grading and would not result in extensive new impervious surface. Following construction, graded surfaces would be reseeded and/or replanted as identified in the Project's landscaping plan. The Project's stormwater drainage system would route stormwater away from the one-parameter wetlands, avoiding any potential impact related to stormwater. Erosion control BMPs are included as Mitigation Measures under Section 3.6 – Geology and Soils. Given construction would maintain a buffer of at least 50 feet from any on-site one-parameter wetlands and that construction activities within the buffer would not result in detrimental effects from impervious surfaces, stormwater, erosion, or other environmental factors, the potential indirect impact to wetlands resulting from development within a wetland buffer would be less than significant.

Off-site one-parameter and three-parameter wetlands are located west of Vance Avenue and separated from the planned development and construction by Vance Avenue itself, which is a paved roadway that will continue to be used. The distance between off-site wetlands and the disturbance footprint ranges from approximately 25 feet to 53 feet. Project construction would not route any stormwater toward off-site wetlands, and off-site wetlands would not be affected by erosion or other detrimental environmental factors with the implementation of Mitigation Measure GEO-2.

Mitigation

Mitigation Measure GEO-2 – Construction Best Management Practices

Given Vance Avenue is situated between delineated one- and three-parameter wetlands and the western edge of the Project, buffers for off-site wetlands are considered sufficient. The potential impact would be less than significant.

With the implementation of Mitigation Measure GEO-2, potential impacts to wetlands would be less than significant.

Level of Significance: Less than Significant with Mitigation Incorporated

Ocean Discharge

One area of special biological significance, and a marine reserve are located to the north of the diffuser. The Samoa State Marine Conservation Area (SSMCA) is a Marine Conservation Area protected under the California Marine Life Protection Act of 1999 and is located approximately 4 miles north of the diffuser. The SSMCA has a sandy, soft bottom with beaches that accumulate wrack kelp and eelgrass that drift to the SSMCA from adjacent areas supporting kelp forests, estuary (eelgrass) and rocky intertidal ecosystems (Nielsen et al. 2017). Approximately 15 miles to the north of the diffuser is the Trinidad Head Area of Special Biological Significance (THASBS).

There are no adopted Habitat Conservation, Community Conservation, or approval local, regional, or state habitat conservation plans that apply to the Project. No impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Humboldt Bay Water Intakes

A cursory-level wetland assessment was completed for the Humboldt Bay Water Intakes Study Area by SHN on April 28, 2020 (SHN 2020b). The investigation included mapping of wetland boundaries to meet the three-parameter definition of the U.S. Army Corp of Engineers (USACE) and the one-parameter definition of the Local Coastal Plan. The assessment identified approximately half an acre of coastal dune willow thicket which falls under both USACE and LCP jurisdiction; however, it is located beyond the limits of disturbance to construct the Humboldt Bay Water Intakes Pipeline (Figures 3.3-2; SHN 2020a). Although several stormwater features within the Humboldt Bay Water Intakes Study Area meet wetland parameters, these should be excluded from LCP or USACE wetland classification because the anthropogenic features, surrounding paved surfaces and stormwater drainage infrastructure are causing abnormal conditions (SHN 2020b). Based on the mapping of wetland boundaries completed by SHN during the wetland assessment (SHN 2020b), no one-parameter/ three-parameter wetlands occur along the Humboldt Bay Water Intake pipeline within the ground disturbance footprint.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Compensatory Off-Site Restoration

Wetlands previously mapped by Stantec (Stantec 2018) would not be temporarily or permanently impacted by the pile removal effort. Staging would occur south of South Bay Depot Drive in Fields Landing, in upland areas only. Removal of piles would not result in wetland impacts by filling or excavating. Removal of the piles would remove “fill” from the bay.

By the very nature of the activity, Spartina removal would occur in wetland habitat (salt marsh). However, the purpose of Spartina removal is to improve the quality of wetland habitat. Any potential impact to wetlands related to Spartina removal would be less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Impact BIO-d: **Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (Less than Significant)**

Terrestrial Development

The Project Site is located within the Pacific Flyway for migratory birds. The Project Site is also located along the North Spit, which serves as a natural funnel for avian movement along the coast. No large expanses of high-quality natural habitat exist that would support high levels of migratory species stopover use, breeding, or wintering specifically within the Project Site (although there is considerable suitable habitat in the vicinity, around Humboldt Bay). No “essential connectivity areas,” “natural landscape blocks,” or “small natural landscape areas” have been identified or mapped in the Project vicinity by the California Essential Habitat Connectivity Project (CDFW 2021c).

Wildlife movement corridors are areas that connect suitable wildlife habitat in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, peninsulas, or areas with vegetative cover provide wildlife corridors. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas and facilitate the exchange of genetic traits between populations.

The Terrestrial Development component of the Project does not include any features that would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or

migratory wildlife corridors. In addition, the Project would not impede the use of native wildlife nursery sites. The habitat in the Terrestrial Development Study Area has been fragmented by infrastructure developments. In addition, fencing along the Project Site limits the ability of large species (e.g., deer) to move freely. However, mesocarnivore species (e.g., Virginia Opossums [*Didelphis virginiana*], Raccoons [*Procyon lotor*], skunks [*Mephitis* spp.], and Gray Foxes [*Urocyon cinereoargenteus*]) do have opportunities to move between the dunes and Humboldt Bay in non-fenced areas and along vegetated corridors in the area, although they are subject to being hit by vehicles if they attempt to cross New Navy Base Road.

The Terrestrial Development component of the Project would not result in the creation of barriers to fish passage, as aquatic habitat is not present in the Project Site. The Project does not include fencing or other structures that would impede wildlife and would not preclude wildlife mobility, breeding, or reproduction beyond the existing conditions. No construction-related impact has been identified. Following construction, the proposed Project would not create an impediment to wildlife movement beyond the existing conditions. No construction or operational impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Ocean Discharge

Potential effects of the diffuser effluent are described in Impact BIO-a above.

Due to the modelled localized, limited spatial extent of the toxicity mixing zone, zone of potential water quality degradation, and zone of potential benthic impacts, and the short temporal duration of exposure to highly mobile marine organisms of concern, it is unlikely for the effluent to have any direct adverse effects on marine resources of concern, including protected cetaceans and pinnipeds, Marbled Murrelet, salmonids, Longfin Smelt, Coastal Cutthroat Trout, White and Green Sturgeon or on designated critical habitat for Green Sturgeon, essential fish habitat, or non-special status commercial and recreational fisheries (Appendix D, GHD and H. T. Harvey 2021). Similarly, it is unlikely for the effluent to have any direct or indirect adverse effects on marine biological resources such as Dungeness Crab, and other commercially and recreationally important fish species such as night smelt and other species of nearshore fish (Appendix D, GHD and H. T. Harvey 2021). There could be potential indirect effects to benthic organisms with limited mobility and immobile benthic prey species of marine species of concern, (e.g., polychaetes) associated with sedimentation of organic matter, but the limited spatial extent of potential benthic impacts, and high mobility of marine resources of concern, make any potential indirect effects less than significant (Appendix D, GHD and H. T. Harvey 2021).

Biological surveys using ROVs and/or drop cameras will be conducted as required by the NPDES order to evaluate any effects of the Ocean Discharge on marine species along with other monitoring requirements established in the NPDES order, additional monitoring to be completed by NAFC, and operational contingency procedures that could be implemented by NAFC if necessary, as discussed above under Special Status Fish/Ocean Discharge as well as in Section 3.9 (Hydrology and Water Quality), Impact (a).

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Humboldt Bay Water Intakes

The proposed water intakes will be screened to meet design criteria to prevent fish entrainment and impingement (SHN 2021c). The design criteria assume the presence of anadromous salmonid fry and juvenile Longfin Smelt. The ETM model conducted by Tenera Environmental (2021a) focused on potential to entrain larval fish including four taxa: Pacific Herring (*Clupea pallasi*), Northern Anchovy (*Engraulis mordax*), Bay Goby (*Lepidgobius lepidus*) and Arrow/Cheekspot Goby complex (unidentified Gobiidae). Several groups of fishes such as surfperches and some of the sharks and rays give birth to fishes that are fully developed and are large enough that they would not be subject to entrainment due to the small size of the slot openings planned for the intakes. Overall, operation of the proposed

seawater intake system would not cause populations of target species to fall below self-sustaining levels or otherwise eliminate such species, because entrainment from the proposed project's intake would not result in a substantial decrease in marine populations that could be detected over natural variability. Impingement of most organisms would be eliminated with the low intake velocity and screen design proposed.

The seawater intake system is not expected to substantially reduce numbers of larval (megalopae) Dungeness Crab, as the location of the intake is subject to strong tidal currents both on flood and ebb tides, the intake volume is low relative to source waters (Tenera Environmental 2021a), and megalopae are capable of swimming at speeds of 8.5 to 44.8 cm/s (Fernandez et al. 1994), and are likely to settle to the bottom of shallow water nearshore and bay habitats that they use as juvenile nursery areas (including eelgrass beds) soon upon entry to Humboldt Bay.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Compensatory Off-Site Restoration

Compensatory off-site restoration would not result in a terrestrial or aquatic migration barrier. Fencing or other similar structures would not be erected. Spartina removal could occur in an estuary setting, which are nurseries for aquatic species, including special status fish. Please see discussion above under Special Status Fish, Compensatory Off-Site Restoration, which addresses how significant impacts to special status fish would be avoided with the incorporation of mitigation.

Mitigation

Mitigation Measure HWQ-3: Protection of Water Quality During Pile Removal

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure HWQ-3: Protection of Water Quality During Pile Removal.

Mitigation Measure Spartina PEIR WQ-3: Minimize Fuel and Petroleum Spill Risks

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR WQ-3: Minimize Fuel and Petroleum Spill Risks.

Mitigation Measure Spartina PEIR WQ-6: Designate Ingress/Egress Routes

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR WQ-6: Designate Ingress/Egress Routes.

Mitigation Measures Spartina PEIR WQ-7: Removal of Wrack

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR WQ-7: Removal of Wrack.

Mitigation Measure Spartina PEIR HHM-2: Accidents Associated with Release of Chemicals and Motor Fuel

Refer to Chapter 3.9 (Hydrology and Water Quality), Impact (a), for the full text of Mitigation Measure Spartina PEIR HHM-2: Accidents Associated with Release of Chemicals and Motor Fuel.

Mitigation Measure Spartina PEIR BIO-1: Minimize Effects of Mechanical Spartina Removal Methods to Special Status Fish Species

Please refer to Chapter 3.2 (Biological Resources), Impact (a), Special Status Fish, Compensatory Off-Site Restoration for the full text of Mitigation Measure Spartina PEIR BIO-1: Minimize Effects of Spartina Removal to Special Status Fish Species.

With the incorporation of mitigation measure to avoid potential nursery habitat impacts related to off-site compensatory restoration would be reduced to a less than significant level.

Level of Significance: Less than Significant with Mitigation Incorporated

Impact BIO-e: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (Less Than Significant)

Terrestrial Development

Applicable local policies and ordinances include those in the Humboldt Bay Area Plan. The Project's adherence to applicable policies is documented below. The Project's consistency with applicable policies in the Humboldt Bay Area Plan (HBAP) is summarized in Table 3.3-4. Applicable policies require the Project's effluent discharge to protect beneficial uses and not discharge into a coastal wetland or area of special biological significance; neither would occur as a result of the effluent discharge. Additionally, as evaluated in Section 3.3 (a) above and documented in Appendix D (GHD and H. T. Harvey 2021) and Appendix E (GHD 2021c), marine resources and the biological productivity of coastal waters would be maintained. The Project would not conflict with any policies in the Humboldt Bay Area Plan; thus, no impact would result.

Table 3.3-4 Consistency with Applicable Policies in the Humboldt Bay Area Plan

Policy	Project Adhere to Policy
3.14 Industrial – 13412.5 (a) Coastal Marine Environment – Wastewater Discharge	The Project's effluent discharge would be treated in accordance with NPDES and Ocean Plan requirements, which identify thresholds required to protect beneficial uses of receiving waters; ocean chemistry, mixing processes, and marine life (Appendix E, GHD 2021c).
3.14 Industrial – 131412.5 (c) Coastal Marine Environment – New Discharges	The Project's effluent discharge would not discharge into a coastal wetland or area of special biological significance, marine reserves, or kelp beds; the ecological balance of the receiving area would not be significantly impacted (Appendix E, GHD 2021c).
3.14 Industrial – 131412.5(b) Coastal Marine Environment – Seawater for Cooling, Heating or Industrial Processing	The Project's saltwater withdrawal from the sea chests have been developed using the best available site, design and technology. Mitigation measures have been incorporated to offset the loss of bioproductivity in the Bay, and potential take of Longfin Smelt associated with the water intakes.
3.30 Natural Resources Protection Policies and Standards – ESHA	With the implementation of mitigation measures, ESHA located on the Project Site would not be significantly impacted (see 3.4 (b) above).
3.30 Natural Resources Protection Policies and Standards – Coastal Streams, Riparian Vegetation, and Marine Resources	Marine resources would be maintained. The Project's effluent discharge into the Pacific Ocean would not limit biological productivity in coastal waters (Appendix D and Appendix E, GHD 2021c).
3.30 Natural Resources Protection Policies and Standards – Coastal Streams, Riparian Vegetation, and Marine Resources Section 30231	The biological productivity and coastal waters would not be significantly impacted by the Project (Appendix D and Appendix E, GHD 2021c). Stormwater runoff would be controlled to avoid water quality impacts (Appendix H).

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Ocean Discharge

As detailed above, the Project would not conflict with any policies in the Humboldt Bay Area Plan; thus, no impact would result, and no mitigation is necessary.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Humboldt Bay Water Intakes

As detailed above, the Project would not conflict with any policies in the Humboldt Bay Area Plan. Specifically, Section 3.30 of the HBAP requires protection of biological productivity and coastal waters. Harbor District staff has had informal consultations with staff from regulatory agencies regarding potential environmental effects of the proposed water intakes. Based on the consultations, the Harbor District will implement compensatory off-site restoration to offset the reduction in biological productivity that will be caused by entrainment of aquatic (non-special status) larvae from water withdrawal and for potential take of Longfin Smelt. The need to offset the impact on biological productivity is based on Section 30231 of the California Coastal Act, California Ocean Plan requirements for desalination plant water intakes, and a Memorandum of Agreement among regulatory agencies during environmental review of applications for proposed seawater desalination facilities. Additionally, Section 3.14 of the Humboldt Bay Area Plan (consistent with Section 13142.5 (b) of the Ocean Plan) outlines requirements that the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life. As described above, the water intakes are designed to avoid impingement of all aquatic species and entrainment of juvenile and adult aquatic species, by meeting design criteria related to screen mesh, water approach velocity and other parameters and avoiding potential significant impacts to biological productivity. It is expected that only non-special status aquatic larvae will be entrained, except a small amount of Longfin Smelt larvae is estimated at up to 200 larvae per year. This can be mitigated with 1:1 mitigation. Mitigation for potential impacts to Longfin Smelt larvae are described in Mitigation Measure BIO-6a. Tenera Environmental (2021a, 2021b) developed a model to estimate entrainment impacts of the proposed water intakes on larvae. Tenera Environmental (2021a, 2021b) predicts that the portion of larvae in Humboldt Bay that will be entrained is 0.1% or less. However, Tenera Environmental (2021a, 2021b) likely provides an overestimate of larval impacts because:

1. The model assumes even distribution of larvae throughout Humboldt Bay. However, the intakes are located at a site with strong currents and high salinity near the entrance of the bay. It is expected that larvae of most fish species are more concentrated in parts of the bay where they are subject to less tidal action and currents. Additionally, larvae of some species (i.e. Longfin Smelt) are not associated with the high water salinities at the water intakes, as described above; and
2. The model was developed based on a water intake screen slot (mesh) size of 1.75 mm, but has been reduced to 1.0 mm, which will further reduce larval entrainment by design, as recommended by CDFW and the Coastal Commission.

To offset the loss of productivity in the Bay as a result of entrainment of non-special status species pursuant to the California Ocean Plan, the Harbor District would implement compensatory off-site restoration, described in Section 2.4.7 of the Project Description, which will ultimately result in a no-net loss of biological productivity.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Compensatory Off-Site Restoration

Implementation of compensatory off-site restoration is consistent with all applicable HBAP policies as summarized in Table 3.3-4. Additionally, pile removal would result in a water quality benefit and is consistent with the NCRWQCB's

Water Quality Control Plan for the North Coast, which sets regulations for the waters of Humboldt Bay, as well as cooperative, multi-agency regional Spartina removal planning and implementation efforts. No impact would result.

This habitat restoration may include the following measures:

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Impact BIO-f: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (No Impact)

Terrestrial Development

- The Terrestrial Development Study Area is not located within the boundaries of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan; however, freshwater, which will be delivered to the site, is sourced from the Mad River. Water supply from the Mad River provided by the Humboldt Bay Municipal Water District is authorized under the following plans and permits:
- Humboldt Bay Municipal Water District 2021 Urban Water Management Plan (HBMWD 2021);
- Humboldt Bay Municipal Water District 2004 Habitat Conservation Plan (HBMWD 2004); and
- Humboldt Bay Municipal Water District 2012 California Department of Fish and Wildlife Long-Term Lake and Streambed Alteration Agreement No. R1-2010-0093 (HBMWD 2012).

Consistent with the above-referenced documents, the District has allocated water rights to extract freshwater and supply to local customers ., The Project would not conflict with the provisions of any of these plans. No impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Ocean Discharge

One area of special biological significance, and a marine reserve are located to the north of the diffuser. The Samoa State Marine Conservation Area (SSMCA) is a Marine Conservation Area protected under the California Marine Life Protection Act of 1999 and is located approximately 4 miles north of the diffuser array. The SSMCA has a sandy, soft bottom with beaches that accumulate wrack kelp and eelgrass that drift to the SSMCA from adjacent areas supporting kelp forests, estuary (eelgrass) and rocky intertidal ecosystems (Nielsen et al. 2017). Approximately 15 miles to the north of the diffuser is the Trinidad Head Area of Special Biological Significance (THASBS). Based upon the modeling discussed in section 3.9 Hydrology, these areas are sufficiently far from the diffuser as to have no impact,

There are no adopted Habitat Conservation, Community Conservation, or approval local, regional, or state habitat conservation plans that apply to the Project. No impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Humboldt Bay Water Intakes

There are no adopted Habitat Conservation, Community Conservation, or approval local, regional, or state habitat conservation plans that apply to the Project. No impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

Compensatory Off-Site Restoration

There are no adopted Habitat Conservation, Community Conservation, or approval local, regional, or state habitat conservation plans that apply to the compensatory off-site restoration component of the Project. No impact would result.

Mitigation Measures: No mitigation is necessary

Level of Significance: No Impact

3.3.7 Cumulative Impacts

Impact BIO-C-1: Would the Project contribute to a cumulatively significant impact to Biological Resources? (Less than Significant)

Terrestrial Development

Known projects that may, or are currently proposed to, occur in the area of the proposed Project are identified within Chapter 3, Table 3-1, all of which have upland construction components that have the potential to impact terrestrial biological resources. These projects include: (1) the Harbor District Mariculture Development Program, with associated projects; (2) the existing NPDES permit for DG Fairhaven Power, LLC; (3) the existing NPDES permit for Peninsula Community Services District and Samoa Pacific Group Town of Samoa Wastewater Treatment Facility, and new Peninsula Community Services District Samoa Peninsula Wastewater Treatment Facility; (3) a permitted fiber optic off-shore cable landing project currently under construction; (4) Samoa Town Improvements; (5) Manila Shared Use Pathway Project along Highway 255; (6) speculative future off-shore wind projects; and a (7) renewable energy port.

The discharge of Fairhaven Power and the existing Peninsula Community Services District and Samoa Pacific Group Town of Samoa Wastewater Treatment Facility, and the proposed development activities of the Samoa Town Improvements project have been previously analyzed by separate CEQA documentation and approvals issued by Humboldt County. The future off-shore wind projects, and a renewable energy port are still speculative, and these projects have yet to undergo CEQA review. The fiber optic off-shore cable landing project is permitted, currently under construction, and has been analyzed by a separate CEQA document. The Manila Shared Use Pathway Project is currently being analyzed by separate CEQA documentation and awaiting approvals from Humboldt County.

While these developments may have the potential to impact biological resources, implementation of site-specific mitigation measures for this Project have been developed to reduce impacts to less than significant levels.

When evaluating the proposed Project, in light of the other approved and known potential projects in the immediate vicinity, the proposed Project is not anticipated to contribute to a cumulatively considerable impact to biological resources. This is because the other projects impacts have been or will be fully evaluated and mitigated to less than significant.

While the proposed Project could impact biological resources, the implementation of uniform development standards from federal, state and local plans, policies and regulations, in addition to Project specific mitigation measures would result in biological impacts being avoided, minimized and otherwise reduced to a less than significant level and the Project's contribution to the cumulative impact would not be considerable.

Mitigation Measures: No mitigation is necessary.

Level of Significance: Less than Significant

Ocean Discharge

Cumulative effects analysis of impacts on marine biological resources encompasses the nearshore waters (within 3 miles from shore) of the north coast from the Humboldt Bay Harbor Entrance to Trinidad. The Dilution Study (Appendix E, GHD 2021c) evaluated 3 cases: 1) the existing Fairhaven discharge at the outfall, 2) the existing Fairhaven and future NAFC and Samoa Wastewater Treatment Plant discharges with 16 existing open ports, and 3) the existing Fairhaven and future NAFC and Samoa Wastewater Treatment Plant discharges with 64 open ports. Results from Case 3 were reported and discussed above.

In Humboldt Bay, there are additional dischargers that include the wastewater discharges from the cities of Eureka and Arcata, which amount to a combined annual average of 5.85 mgd (Table 3 in Swanson 2015). During upwelling season, nutrients levels from upwelled ocean waters can exceed the levels produced by runoff and wastewater discharge into Humboldt Bay (Swanson 2015).

As described in Section 3.9 (Hydrology and Water Quality), Impact (a), the NAFC discharge would be regulated and monitored under the NPDES order. Additional monitoring, above and beyond regulatory requirements, would also be implemented by NAFC and is also described in Section 3.9 (Hydrology and Water Quality), Impact (a) along with contingency operational controls that would be implemented if necessary to avoid any unanticipated water quality impacts.

Off the coast, the Humboldt Open Ocean Disposal Site (HOODS), approximately 1.6 nautical miles from the ocean discharge, is the disposal site for the dredged sediment from Humboldt Bay. Monitoring has shown that there have been no significant adverse effects from disposal at HOODS (EPA and USACE 2020). Previous disposal of dredged material at the existing HOODS has resulted in mounding of sand and burial of benthic organisms within the site but no discernable physical, chemical, or biological effects offsite. During disposal, effects on water quality are temporary, spatially limited, and return to background levels prior to the next disposal event. The predicted gross sedimentation rate from the Ocean Discharge is very low and poses a low risk of impact to the benthic community in the locale of the RMT II multiport diffuser. The short-term, long-term, and cumulative effects of dredged material disposal in the proposed expanded HOODS would be negligible and sedimentation from the Ocean Discharge would be very low. Therefore, no significant cumulative effects to marine resources would occur from the Ocean Discharge and HOODS.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Humboldt Bay Water Intakes

Cumulative effects analysis of impacts on biological resources encompasses the waters within Humboldt Bay in the interior channel east of Samoa. This area includes the water intakes and is dredged annually by hopper dredge, where pumps bring bottom material up to the vessel where it is dewatered and taken to HOODS for disposal (NMFS 2016). Pumping sediment up to the vessel from the bottom may result in entrainment of listed salmonids and Green Sturgeon, but the risks were considered low and discountable (NMFS 2016). Because the intakes will be screened to meet NMFS and CDFW screening criteria, the potential for short-term, long-term or cumulative effects is considered to be negligible.

As described in Impact BIO-a, the seawater intake system is not expected to substantially reduce numbers of larval (megalopae) Dungeness Crab, as the location of the intake is subject to strong tidal currents both on flood and ebb tides, the intake volume is low relative to source waters (Tenera Environmental 2021a), the intake velocity is low (6 cm/s). Megalopae are capable of swimming at speeds of 8.5 to 44.8 cm/s (Fernandez et al. 1994), faster than the intake velocity so are capable of swimming away from the intakes. In addition, megalopae are likely to settle to the bottom of shallow water nearshore and bay habitats that they use as juvenile nursery areas (including eelgrass beds) soon upon entry to Humboldt Bay.

Chapter 3, Table 3-1 includes four existing water intakes on Humboldt Bay. Of the four permits for existing water intakes on Humboldt Bay, the CCC concluded withdrawal of water from Humboldt Bay sustained, and did not impact, biological productivity in Humboldt Bay following limitations on the velocity and volume of water CCC, 2014, CCC

2013, CCC 2012) with the inclusion of mesh size and intake velocity limitations, maintenance and cleaning requirements, and provisions for avoiding of operation near marine mammals. For the largest withdrawal permitted to Coastal Seafoods, the CCC also found funding the treatment of one acre of Spartina would be required to offset potential losses to biological productivity in Humboldt Bay (CCC 2016). Thus, anticipating off-site compensatory restoration requirements likely to be required by the CCC, the removal of up to one acre of Spartina and up to 1,007 creosote piles has been incorporated into the Project to ensure potential impacts related to the potential loss of Longfin Smelt larva and reduced biological productivity in Humboldt Bay remain less than significant.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

Compensatory Off-Site Restoration

Compensatory off-site restoration would result in a cumulative benefit to biological resources. Removal of up to 1,007 creosote piles in Humboldt Bay would remove a source of hazardous pollution and support expanded habitat for eelgrass. Treatment of up to one acre of Spartina would similarly benefit biological resources by improving salt marsh quality and function. Under the 2013 Spartina PEIR noted in Chapter 3, Table 3-1, efforts to treat Spartina are ongoing throughout Humboldt Bay. The cumulative outcome of regional Spartina treatment is beneficial and best support a landscape-scale restoration outcome. Any potential impact would remain less than significant and beneficial overall.

Mitigation Measures: No mitigation is necessary

Level of Significance: Less than Significant

3.3.8 References

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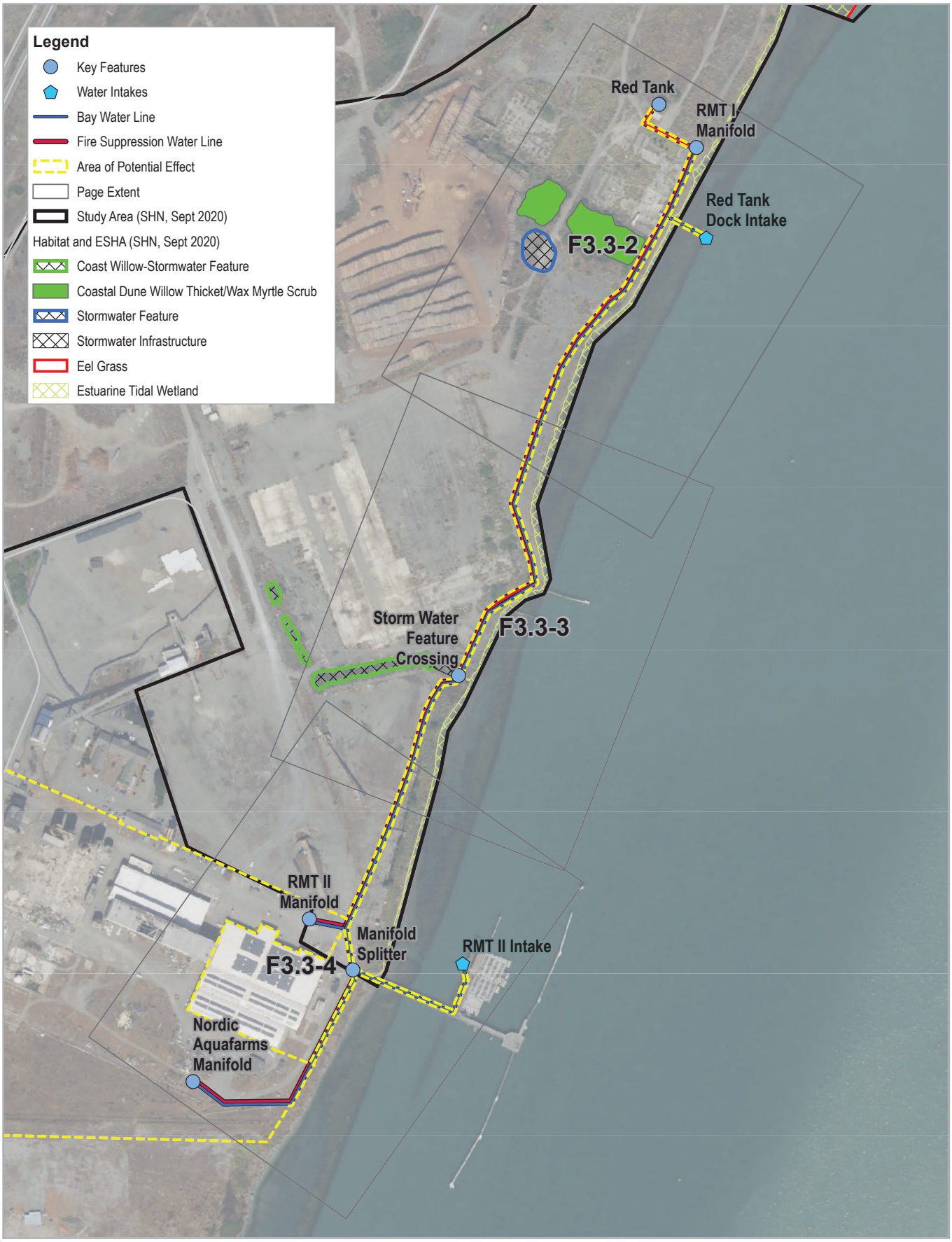

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GHD

Nordic Aquafarms California, LLC
Samoa Peninsula Sustainable Aquaculture Development Project
Samoa, Humboldt County, California

Humboldt Bay Water Intakes-Sea Chests Biological Resources Overview

Project No. 11205607
Revision No. -
Date Jul 2021

FIGURE 3.3-1

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Print date: 14 Jul 2021 - 16:04

Data source: Project design elements, April 1st, 2021; APE, June 12, 2020; USDA, NAIP Imagery, 2018; Humboldt County Parcel Dataset, 2019. Created by: jclark2

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Nordic Aquafarms California, LLC
Samoa Peninsula Sustainable Aquaculture Development Project
Samoa, Humboldt County, California

Humboldt Bay Water Intakes-Sea Chests Biological Resources

Project No. **11205607**
Revision No. **-**
Date **Jul 2021**

FIGURE 3.3-2

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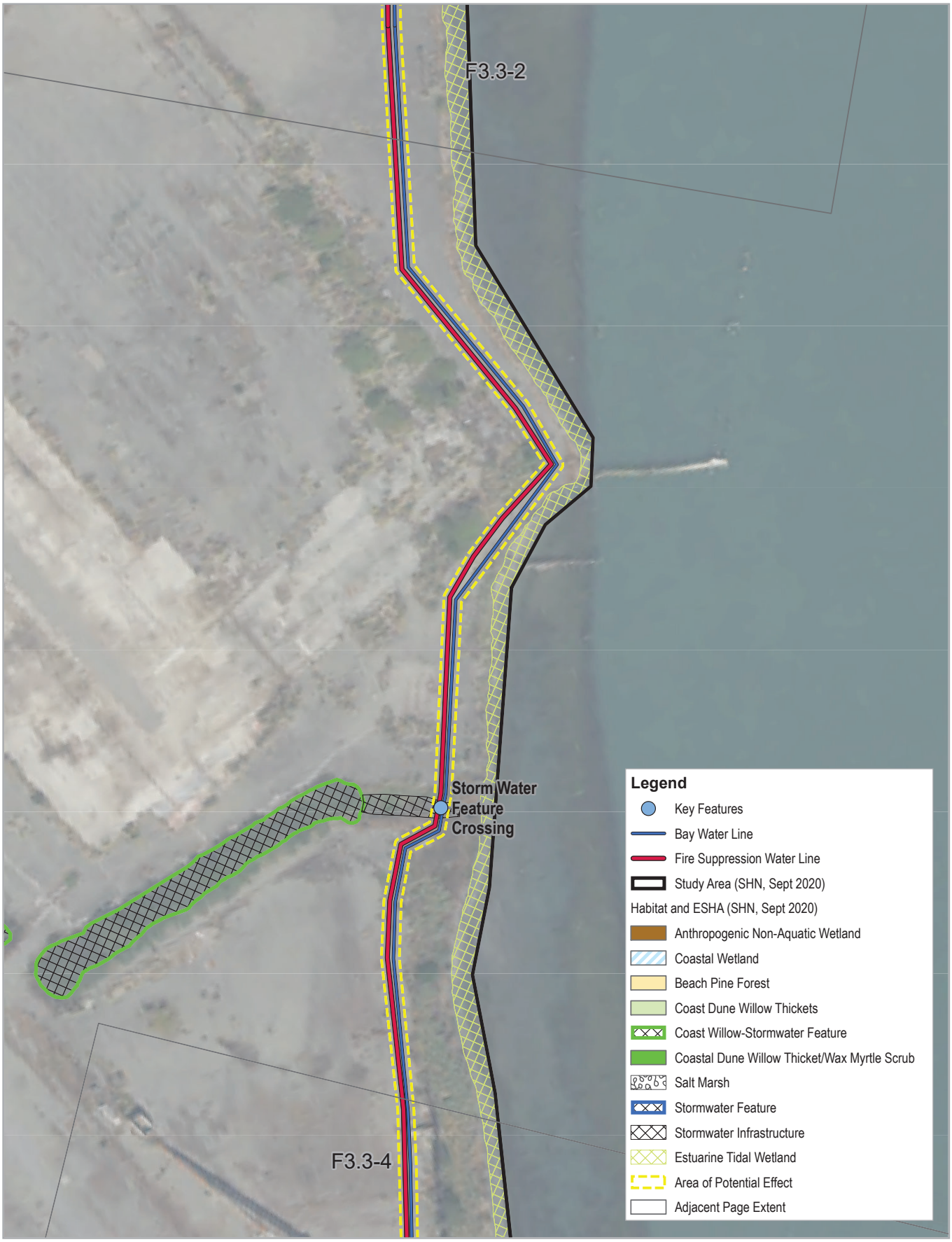

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Nordic Aquafarms California, LLC
Samoa Peninsula Sustainable Aquaculture Development Project
Samoa, Humboldt County, California

Humboldt Bay Water Intakes-Sea Chests Biological Resources

Project No. **11205607**
Revision No. **-**
Date **Jul 2021**

FIGURE 3.3-3

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Nordic Aquafarms California, LLC
Samoa Peninsula Sustainable Aquaculture Development Project
Samoa, Humboldt County, California

Humboldt Bay Water Intakes-Sea Chests Biological Resources

Project No. **11205607**
Revision No. **-**
Date **Jul 2021**

FIGURE 3.3-4

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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Nordic Aquafarms California, LLC
Samoa Peninsula Sustainable Aquaculture Development Project
Samoa, Humboldt County , California

North Humboldt Bay Prime Habitat for Longfin Smelt

Project No. **11205607**
Revision No. **-**
Date **8/26/2021**

FIGURE 3.3-5

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Data source: Google Maps Sat: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: zporteous