ATTACHMENT F - FACT SHEET

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ATTACHMENT F - FACT SHEET

As described in section 2.2 of this Order, the Regional Water Board incorporates this Fact Sheet as findings of the Regional Water Board supporting the issuance of this Order. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

1. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	1B20161NHUM
Discharger	Nordic Aquafarms California, LLC
Name of Facility	Nordic Aquafarms California, LLC
Facility Address	1 TCF Drive Samoa, CA 95501 Humboldt County
Facility Contact, Title and Phone	David Noyes, Vice President of Technology, 1 207-505-5728
Authorized Person to Sign and Submit Reports	David Noyes, Vice President of Technology, 1 207-323-6733
Mailing Address	P.O. Box 1477 514 H ST, Eureka, CA 95501
Billing Address	Same as Mailing Address
Type of Facility	Aquaculture Facility, SIC Code 0273 Animal Aquaculture
Major or Minor Facility	Minor
Threat to Water Quality	2
Complexity	B
Pretreatment Program	Not Applicable
Recycling Requirements	Not Applicable
Facility Permitted Flow	10.3 MGD

Facility Design Flow	10.3 MGD
Watershed	Eureka Plain
Receiving Water	Pacific Ocean
Receiving Water Type	Ocean Waters

Nordic Aquafarms California, LLC is the owner and operator of Nordic Aquafarms California, LLC, a land-based aquaculture facility. The Humboldt Bay Harbor, Recreation and Conservation District (HBHRCD) is the owner and operator of the Intake System and Ocean Outfall that serves the Facility. Upon permit issuance, Nordic Aquafarms California, LLC and HBHRCD will become co-permittees. Specific requirements apply to each permittee as outlined in the Order.

The Permittees are authorized to discharge subject to waste discharge requirements (WDRs) in this Order at the discharge location described in Table 1 on the cover page of this Order. The Code of Federal Regulations at 40 C.F.R. section 122.46 limits the duration of National Pollutant Discharge Elimination System (NPDES) permits to be effective for a fixed term not to exceed five years. Accordingly, Table 2 of this Order limits the effective period for the discharge authorized by this Order. Pursuant to California Code of Regulations (CCR), title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending issuance of a new permit if all requirements of the federal NPDES regulations on continuation of expired permits are complied with.

Nordic Aquafarms California, LLC proposes to acquire water from a sea chest owned by the HBHRCD. The sea chest consists of a screened marine intake and pumping infrastructure, which provides bay water to the Facility via dock-mounted piping. HBHRCD intends to retrofit the sea chest and associated infrastructure as part of the project.

The Facility discharges filtered, ultraviolet (UV) disinfected wastewater to the Pacific Ocean, a water of the United States. This is a new NPDES permit for the Permittees and Facility. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

Nordic Aquafarms California, LLC filed a report of waste discharge and submitted an application for issuance of its waste discharge requirements (WDRs) and NPDES permit on August 17, 2020. Supplemental information was submitted on August 31, 2020 and November 9, 2020. The application was deemed complete on December 4, 2020.

2. FACILITY DESCRIPTION

The Facility is bounded on the west by the Pacific Ocean and the east by Humboldt Bay. The Facility is located on the eastern shore of the Samoa Peninsula, east of

New Navy Base Road, and due west, across Humboldt Bay, from the City of Eureka. The Facility is accessed from Vance Avenue vie New Navy Base Road and LP Drive.

The Permittees have redeveloped the site of the decommissioned Freshwater Tissue Samoa Pulp Mill facility to construct a land-based finfish recirculating aquaculture system (RAS) facility and install a three to five-megawatt photovoltaic solar panel array covering approximately 690,000 square feet of the facility roofs. The Facility consists of 36 acres that will be used for the land-based finfish aquaculture facility and associated infrastructure.

The proposed total water volume of effluent discharge is 10.3 million gallons per day (MGD), which would be comprised of 10 MGD seawater legally sourced from Humboldt Bay (salinity 30.0 to 33.5 parts per thousand (PPT)) and 2.5 MGD of freshwater sourced from the Humboldt Bay Municipal Water District (HBMWD) via the Mad River pumping station (salinity 0 PPT).

Intake water will be treated in the following order to ensure that the water used in the Facility is of high quality.

- First stage drum filter filtration
- Ozone treatment
- Fine filtration
- Ultraviolet (UV-C) disinfection

The Facility will be developed in two phases and will have an annual production capacity of approximately 33,000 metric tons of whole fish. The Facility will include a complete process, from egg to harvestable fish in a single indoor location, and contains the following elements:

- A hatchery operation where eggs are hatched, and fish fry grow to juvenile size.
- A grow-out operation with large tanks where fish are grown to market size.
- A fish processing facility from which fish are processed and fresh product is shipped out five days a week while coproducts are chilled and stored for sale.
- Backup system to enable Facility functions to operate for many days in the event of a power outage.
- Oxygen generation plant and liquid oxygen storage.
- Water intake treatment to ensure clean water for the fish.

- An advanced wastewater treatment plant to treat the discharge water, including a Moving Bed Biofilm Reactor (MBBR), a membrane bioreactor (MBR) and UV-C disinfection.

The aquaculture Facility will be built in two phases. Construction work associated with Phase 1 is anticipated to begin in 2025. Phase 1 will include construction of the Phase 1 hatchery and production modules and the central utility structures, including connection to the intake and discharge infrastructure needed to bring water to the facility and discharge treated process wastewater. Following the construction of the Phase 1 production modules, construction will commence on the fish processing and administrative building. Access roadways will be built and expanded during each phase of construction, as construction proceeds along the site. As the construction footprint expands, a corresponding expansion of the stormwater management systems will be implemented to account for the increase in impervious surfaces.

Once Phase 1 construction and equipment installation is complete, commissioning and startup of the facility will begin. As the commissioning process is underway, the aquaculture facility site will undergo permanent stabilization measures including seeding of disturbed areas and slopes, establishment of the permanent stormwater system and native landscaping. Only once the Phase 1 region is fully stabilized and the facility is independently operating, will Phase 2 construction commence.

Design and construction work associated with Phase 2 is expected to begin two years after completion of Phase 1 (tentatively in 2028). Prior to the beginning of Phase 2 construction, additional clearing and demolition infrastructure within the proposed footprint will occur. An overall construction perimeter will be established to prevent impacts from development on the surrounding areas, and localized erosion and sediment control measures will be implemented as construction proceeds across the Project Site. The Phase 2 grow-out building footprint will be prepared for foundation and envelope construction. Access roads and supporting infrastructure will be expanded to facilitate the construction effort. The stormwater system developed for the Phase 1 facility will also be extended to encompass the Phase 2 area, with proper sediment collection basins established downgrade of the site. Once Phase 2 building construction is completed the site will undergo permanent stabilization measures similar to those implemented in Phase 1, and the permanent stormwater system will be established.

The largest buildings at the proposed aquaculture facility contain the grow-out modules. Maximum building height within the facility is expected to be approximately 60 feet. The footprint of the Phase 1 production modules is approximately 284,332 square feet, and the Phase 2 production module footprint is approximately 295,733 square feet. Construction of the grow-out modules will occur over two construction phases. Egg raising in the hatchery will begin as early as feasible during Phase 1, followed thereafter by the completion of remaining Phase 1 construction. The hatchery facility, located in the center of the site, will raise the fish from egg to juvenile stage, after which they will be transported to the grow-out modules via underground pipes to be raised to market size. The Facility will subject all influent

and wastewater to a stringent treatment process, including fine filtration, biological treatment, and UV disinfection.

Saltwater will be supplied to the aquaculture facility from the HBHRCD sea chests located at the Facility and Red Tank docks. The sea chest pumps will supply seawater through piping affixed to the existing docks. The piping infrastructure will extend onshore underground at least 50 feet from the Redwood Marine Terminal II (RMT II) dock terminus. The aquaculture facility will tie into the sea chest piping at the northeast corner of the RMT II building.

2.1. Intake Structure Analysis

Water Code section 13142.5(b) states that "for each new or expanded facility using seawater for cooling, heating, or industrial processing, 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."

2.1.1. Site

2.1.1.1. Consideration of Subsurface Intakes

The Ocean Plan requires the Regional Water Board to "consider whether subsurface intakes are feasible."

The Final Environmental Impact Report (FEIR) analyzed three alternatives to the sea chest intakes that are proposed to be used at the Facility. Intake alternatives include slant wells, oceanic seawater intakes and Humboldt Bay seawater intakes.

A slant well (or number of slant wells) could be drilled to withdraw brackish or saltwater from beneath the ground surface. The saltwater is extracted from the ground via pumping. The Humboldt Bay Municipal Water District (HBMWD) previously installed a test well at the Facility to evaluate the potential water yield. The test well used a five-inch saltwater well and encountered saline water at 320 feet below the ground surface. Although volume tests were not conducted, the goal was to withdraw up to 200 gallons per minute (288,000 gallons per day). The combined capacity of the sea chest water intakes would be 8,250 gallons per minute. Approximately 40 slant wells would be required to achieve an equivalent volume of water. Its unlikely 40 slant wells could be spatially situated on the Facility, given the large size; there is likely not enough room for such a substantial field of wells. Given the historic soil and potential for groundwater contamination on the site any risk associated with a large scale ground filtered water production system would be deemed too great for a food production system.

Oceanic seawater intake pipes could be directionally drilled under adjacent properties, New Navy Base Road, and the surf zone, "daylighting" in the Pacific on the ocean floor. An oceanic seawater intake would require

substantial in-water construction. The location of the oceanic seawater intake would need to be sufficiently off-shore to avoid the wave energy and shifting sands associated with the surf zone. The pipes would need to be attached to a screened intake system installed from the ocean surface, connected to the directionally drilled pipes, and sufficiently anchored to the seafloor. The screens would require intermittent cleaning to maintain intake screen approach velocities and functionality. A compressed air line would need to be similarly installed parallel to the intake pipes. The compressed air would be used intermittently to clear the screen. The screens would need to be lifted to the surface periodically to be inspected and clean.

Humboldt Bay seawater intake pipe wells would be drilled beneath the seafloor of Humboldt Bay to extract salt water. Salt water would be brought to the Project Site via piping. The pipe would need to be attached to a screened intake system installed on the Humboldt Bay seafloor, connected to the directionally drilled pipe, and sufficiently anchored to the Humboldt Bay seafloor. The screens would require intermittent cleaning to maintain intake screen approach velocities and functionality. A compressed air line would need to be similarly installed parallel to the intake pipe. The compressed air would be used intermittently to clear the screen. The screens would also need to be lifted to the surface periodically to inspect and clean. More than one Humboldt Bay sea water well would be required to meet the water requirements of the Project. This alternative water source would require substantial in-water construction.

Construction and operation of a new oceanic water intake would require extensive in-water construction and thus potential environmental impacts. The oceanic water intake would result in its own biological and water quality impacts, resulting from both construction and operations. Pumping would require significant operational energy resources. Up to 40 slant wells would be required to achieve equivalent water withdrawals, compared to the existing sea chest intakes. Assuming there is enough room for 40 slant wells on the Project Site, which is unlikely, the slant wells would increase potential impacts to groundwater resources and would require substantial operational energy requirements, resulting in an increase to climate related resources. Even if Nordic Aquafarms California, LLC elected not to utilize the sea chest intakes, the HBMWD would continue to independently pursue upgrades to the two intakes for their existing and future lessees and other coastal industrial uses. Thus, impacts related to the oceanic seawater intake and up to 40 slant wells would be in addition to the water intakes from Humboldt Bay, not instead of such impacts. A potential cumulative impact would thus result.

2.1.1.2. **Urban Water Management Plan**

The Ocean Plan requires the Regional Water Board to “consider whether the identified need for desalinated water is consistent with an applicable urban

water management plan". The Facility will not be producing desalinated water but will be using source water from Humboldt Bay and the Mad River.

The 2020 HBMWD Urban Water Management Plan (UWMP) estimated that demand up to 36 MGD (compared to a current annual average usage of 10 MGD) can be met reliably, even if the condition of continuous hydrology similar to the 1976-77 drought occurred.

2.1.1.3. Alternative Sites to Avoid Impacts to Sensitive Habitats and Sensitive Species

The Ocean Plan requires analysis of the "feasibility of placing intake, discharge, and other facility infrastructure in a location that avoids impacts to sensitive habitats and sensitive species".

HBHRCD plans to modernize two existing saltwater intakes and distribution infrastructure located in Humboldt Bay on property owned by the Humboldt Bay Development Association, Inc. and managed by HBMWD. At full operational capacity, the Facility will discharge a maximum of 10.3 mgd via the existing RMT II ocean outfall pipe, which extends 1.55 miles offshore to a diffuser array.

Two potentially suitable alternative sites with appropriate zoning for coastal dependent industrial use, one in King Salmon and another in Fields Landing were analyzed. These sites were dismissed because neither had access to deep water ocean discharge of treated wastewater and a new outfall would need to be constructed, leading to increased impacts to species and habitat. In addition, the King Salmon site includes the Humboldt Bay Generating Station, which is an existing use as the region's largest power generating facility, including storage of nuclear material, and thus not available for development into a RAS facility.

Additional off-site locations that were considered but rejected include the former Sierra Pacific Industries property (SPI) located on the Mad River Slough, the California Redwood Company property (CRC) located along Highway 101 and Humboldt Bay, various industrial properties in Fields Landing (FL), the Eureka Municipal Airport property (EMA), the Fairhaven Terminal property and the Redwood Marine Terminal I property (RMT I).

The SPI property was rejected because it was recently encumbered for cannabis development, is not currently on the market nor available for development by the Permittees. Unlike the Project Site, however, the SPI property lacks both an industrial water intake from Humboldt Bay and an outfall pipe for effluent discharge. The SPI property would require construction of new intake and outfall infrastructure, which would entail in-water construction and horizontal directional drilling over a period of several years. Accordingly, constructing the Facility at the SPI site would be impactful to

biological resources and water quality, as well as greenhouse gases, air quality, noise, and hazardous resources associated with construction (from legacy site contamination).

The CRC property currently provides office space and facility space for CRC. The property is not currently on the market nor available for development by the Permittees. As with the SPI property, the CRC property was rejected from consideration as an off-site alternative because it does not currently have infrastructure for industrial water intake from Humboldt Bay nor effluent discharge. For the same reasons discussed above for the SPI property, this option would have greater environmental impacts and was therefore rejected from consideration.

The Eureka Municipal Airport property was considered but rejected due to the large footprint of Environmentally Sensitive Habitat Area (ESHA) likely present on the parcel, given the significant area of undeveloped dune habitat. Development within ESHA for the proposed Project would conflict with the Humboldt Bay Area Plan (LCP) and would likely not be allowable. Despite the parcel's zoning as a Coastal Dependent Industrial property, the site is not currently an industrial site and is largely undeveloped aside from the runway, which remains active. The Humboldt Bay Social Club, a local business with lodging, a bar, and an on-site restaurant, is also located on the parcel. The parcel lacks an industrial water intake, water discharge, and freshwater utilities. An electrical substation, which is a key component of the proposed Project Site, is not present. The parcel is closer in proximity to residential areas of Fairhaven than the proposed Facility, which conflicts with the objectives of the Project.

The Fairhaven Terminal was considered but rejected. The property is partially encumbered by an existing business (Fox Farm) and is thus not fully available for redevelopment. The property lacks water supply from Humboldt Bay. The existing water intake from Humboldt Bay would need to be extended to the site from the sea chest at the RMT II dock via a pipeline. The status of electrical and freshwater industrial service to the parcel is unknown. The existing Simpson Outfall associated with the site is in disrepair and unlocatable. The Simpson Outfall would need to be reconstructed, which would be environmentally impactful and require extensive in-water construction. Alternatively, trenching, or horizontal directional drilling would be used to route the effluent discharge northwest to the existing RMT II ocean outfall. The property is not presently on the market nor available for development by the Permittees.

The Redwood Marine Terminal I (RMT I) site is owned by the Harbor District. While the site is largely vacant, RMT I is included in the Harbor District's proposal for a Renewable Energy Port, which would include a seven-acre dock capable of supporting large cargo vessels and assembling wind generating infrastructure. As a Priority I site under the Humboldt Bay Area

Plan Coastal Dependent Industrial policies, the parcel is considered by the County to be an existing facility suitable, with minor alteration, to accommodate the proposed use, or that could accommodate the proposed use through expansion.

As with the other Samoa Peninsula properties considered, development of the RMT I site by the Permittees would require trenching or horizontal directional drilling to the existing RMT II ocean outfall. Water intake from Humboldt Bay would need to be extended via the Red Tank dock, which is the nearest existing water intake. Given the shape of the parcel, the Facility would need to be reshaped and elongated and thus would be located parallel to the shoreline. Extending the facility north to south (increasing length and reducing width compared to the proposed Project footprint) would detrimentally reduce operational efficiencies and is thus infeasible. An extended footprint adjacent to the length of the RMT I site, along the Humboldt Bay shoreline, would also increase the potential for water quality and biological impacts to Humboldt Bay, including wetlands and ESHA located along the shoreline.

2.1.1.4. Direct and Indirect Effects on Marine Life

The Ocean Plan requires analysis of "direct and indirect effects on all forms of marine life resulting from facility construction and operation, individually and in combination with potential anthropogenic effects on all forms of marine life resulting from other past, present, and reasonably foreseeable future activities within the area affected by the facility".

The FEIR Biological Resources section analyzed impacts to marine life and are summarized as follows.

2.1.1.4.1. Special Status Marine Mammals (Humboldt Bay due to Facility Construction)

No in-water work in Humboldt Bay is proposed as part of the terrestrial development component of the Facility. 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 FEIR. 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. Construction noise and vibration from the Facility would not

propagate to the Pacific Ocean; thus, marine noise-related impacts in the Pacific Ocean would not result.

Under the Marine Mammal Protection Act, National Marine Fisheries Service 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).

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. 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.

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; 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 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 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.

Mitigation Measure BIO-6 puts limits on soil densification construction to avoid impacts to marine mammals. When soil densification construction occurs within the Phase 2 footprint, 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. 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.

2.1.1.4.2. **Special Status Fish (Humboldt Bay due to Facility Construction)**

Given no in-water work in Humboldt Bay is proposed (for terrestrial development of the Facility) 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 FEIR. 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.

Nordic Aquafarms California, LLC's preferred species is female Yellowtail Kingfish. This is subject to approval by the California Department of Fish and Wildlife (CDFW). 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 to the Ocean Outfall. 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.

2.1.1.4.3. **Marine Critical Habitat (Humboldt Bay due to Facility Construction)**

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 Measure HWQ-1 requires implementation of BMPs as part of construction permitting and Stormwater Pollution Prevention Plan (SWPPP) for terrestrial development. Nordic Aquafarms California, LLC will implement, at a minimum, the list of Best Management Practices identified below as part of approved construction permits and as part of compliance with State Water Resources Control Board (Water Board) Order No. 2009-0009-DWQ,[1] Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction and Land Disturbance Activities. Nordic Aquafarms California, LLC will include these requirements on all construction plans and submit permit registration documents (notice of intent, risk assessment, site maps, Stormwater Pollution Prevention Plan

[1] The Construction General Permit, Order No. 2009-0009-DWQ, will be superceded by Order No. 2022-0057, which becomes effective on September 1, 2023. The Permittees will be required to comply with the effective order.

(SWPPP), annual fee, and certifications) to the Water Board. The SWPPP will address pollutant sources, BMPs, and other requirements specified in the Order. The following BMPs are the minimum necessary to reduce potential impacts to a less than significant level:

General Construction

- Construction activities shall be scheduled and sequenced to minimize the areal extent and duration of site disturbance at any time.
- Drainage from outside the construction area shall be directed away from or around the site through use of berms, ditches, or other structures to divert surface runoff.
- Install weed-free fiber rolls, straw-wattles, coir logs, silt fences, or other effective devices along locations where water drain off the construction site.
- All graded slopes shall receive slope protection measures such as fiber rolls, drainage ditches, or erosion control fabrics to minimize the potential for concentrated surface runoff to cause erosion.
- Implement wind erosion or dust control procedures consisting of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. The contractor may choose to cover small stockpiles or areas as an alternative to applying water or other dust palliatives.
- Control water application rates to prevent runoff and ponding. Repair leaks from water trucks and equipment immediately.

Hazardous Materials

- Hazardous materials shall be stored in areas protected from rain, provide secondary containment and must be a minimum of 100 feet from any wetland or Environmentally Sensitive Habitat Area.
- Implement the following hazardous materials handling, storage, and spill response practices to reduce the possibility of adverse impacts from use or accidental spills or releases of contaminants:
    - Conduct all refueling and servicing of equipment more than 100 feet from any wetland or Environmentally Sensitive Habitat Area with absorbent material or drip pans underneath to contain spilled fuel. Collect any fluid drained

from machinery during servicing in leak-proof containers and deliver to an appropriate disposal or recycling facility.

- Prevent raw cement; concrete or concrete washings; asphalt, paint, or other coating material; oil or other petroleum products; or any other substances that could be hazardous to aquatic life from contaminating the soil or surface water.

Dewatering and Treatment Controls

In the event dewatering is determined to be necessary the following steps shall be taken:

- Prepare a dewatering plan prior to excavation.
- Impound dewatering discharges in sediment retention basins or other holding facilities to settle the solids and provide treatment prior to discharge to receiving waters as necessary to meet Basin Plan water quality objectives.

Mitigation Measure GEO-2 includes requirements for construction BMPs. Nordic Aquafarms California, LLC shall ensure that the contractor shall implement BMPs during construction, including the following BMPs from the current California Stormwater BMP Handbook for Construction: EC-1: Scheduling; EC-2: Preservation of Existing Vegetation; NS-2: Dewatering Operations; NS-9: Vehicle Equipment and Fueling; NS-10: Vehicle & Equipment Maintenance; WM-2: Material Use; WM-4: Spill Prevention and Control. Additionally, the following conditions shall be required during construction:

- Silt fences shall be deployed as needed at onshore construction areas to prevent any sediment from flowing into Humboldt Bay. Required silt fence and erosion control locations and specifications for installation shall be included in the final construction plan set. If the silt fences are not adequately containing sediment, construction activity shall cease until remedial measures are implemented that prevents sediment from entering the waters east of the construction area;
- Construction materials and debris shall not be placed or stored where it may be allowed to enter into or washed by rainfall into Humboldt Bay;
- Best Management Practices (BMPs) shall be implemented to prevent: 1) entry of stormwater runoff into Humboldt Bay during construction, 2) the entrainment of excavated contaminated materials

leaving the site, and 3) the entry of polluted stormwater runoff into coastal waters during the transportation and storage of excavated materials. These BMPS will be included in the Stormwater Pollution Prevention Program (SWPPP), which is required for the Project (see Section 3.9 – Hydrology and Water Quality);

  - Construction Storm Water Pollution Prevention Plan (SWPPP): The SWPPP shall be required to be implemented during the demolition and construction phases of the project. The SWPPP shall be submitted to the SWRCB Stormwater Multiple Application and Report Tracking System website (SMARTS) and contain the following components: best management practices to address erosion and sediment control, monitoring and testing for site runoff, an inspection program, and site maps. The SWPPP shall be updated and documented in the annual reporting to the RWQCB during the project to reflect changes in conditions.

- Non-essential work vehicles and equipment shall be parked at least 100 feet away from the shoreline;

- Sufficient erosion control supplies shall be maintained on-site at all times, available for prompt use in areas susceptible to erosion during rain events;

- Disturbance of existing vegetation shall be minimized to only areas approved for development;

- Dewatering operations shall be conducted in the event that groundwater is encountered at the work location and stored or disposed of appropriately. Any groundwater encountered during demolition and construction that requires removal would be pumped into appropriate containers, such as Baker tanks for characterization. Excavation depths for construction are not anticipated to extend to groundwater and the use of dewatering wells for the Project is not planned (SHN 2020b). Water sourced from dewatering shall not be discharged to on-site one-parameter wetlands or Humboldt Bay;

- Dewatering and Discharge Plan (DDP): It is not anticipated that groundwater will be encountered during demolition or construction, but in the event that it is encountered, development of a plan for water management that includes handling, storage, testing, treatment, monitoring, and discharge shall be prepared for the project and submitted to the RWQCB for approval to complete the project. The plan shall use available groundwater testing results to identify appropriate treatment and include a monitoring program to ensure discharge parameters contained in the permit are met. The

approved plan shall be submitted to the Humboldt County Planning and Building Department prior to water management activities;

- Vehicle and equipment maintenance shall not occur within 100 feet of Humboldt Bay or wetlands;

- As required in the SWPPP, the contractor shall ensure that the site is prepared with BMPs prior to the onset of any storm predicted to receive 0.5 inches or more of rain over 24 hours;

- All erosion and sediment control measures shall be maintained in accordance to their respective BMP fact sheet until disturbed areas are stabilized. Erosion and sediment control measures shall be explicitly included in the final construction plan set and shall be conditions of the Coastal Development Permit; and

- The (SWPPP may not cover all the situations that arise during construction due to unanticipated field conditions. Variations may be made to the SWPPP in emergency circumstances in the field subject to the approval of or at the direction of the Regional Water Board and NAFC Project Manager or Construction Manager.

2.1.1.4.4. **Essential Fish Habitat (Humboldt Bay due to Facility Construction)**

Given no in-water work in Humboldt Bay is proposed and Mitigation Measure HWQ-1 and Mitigation Measure GEO-2 (see above) 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.

2.1.1.4.5. **Special Status Marine Mammals (Pacific Ocean due to Discharge)**

The Marine Resources Biological Evaluation evaluated potential impacts to special status marine species 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.

2.1.1.4.5.1. California Sea Lion (Zalophus californianus) Marine Mammal Protection Act (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 area of the discharge. 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. Any potential impact would be less than significant.

2.1.1.4.5.2. 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. Any potential impact would be less than significant.

2.1.1.4.5.3. 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. Any potential impact would be less than significant.

2.1.1.4.5.4. 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. Any potential impact would be less than significant.

2.1.1.4.5.5. 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. Any potential impact would be less than significant.

2.1.1.4.6. **Special Status Fish (Pacific Ocean due to Discharge)**

Marine impacts related to the ocean effluent discharge are analyzed for applicable species below. Construction noise and vibration from the Facility would not propagate to the Pacific Ocean; thus, marine noise-related impacts to special status marine species would not result.

The Marine Resources Biological Evaluation evaluated potential impacts to special status fish species 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 include Southern distinct population segment (DPS) Green Sturgeon (Acipenser medirostris), Southern Oregon/Northern California Coast Coho Salmon evolutionarily significant unit (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.

2.1.1.4.6.1. 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.. Any potential impact would be less than significant.

2.1.1.4.6.2. 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. Any potential impact would be less than significant.

2.1.1.4.6.3. 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. Any potential impact would be less than significant.

2.1.1.4.6.4. 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.. Any potential impact would be less than significant.

2.1.1.4.6.5. 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. Any potential impact would be less than significant.

2.1.1.4.7. **Marine Critical Habitat (Pacific Ocean due to Discharge)**

Marine critical habitat was evaluated in the Marine Resources Biological Evaluation; 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 Facility 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.

2.1.1.4.8. **Essential Fish Habitat (Pacific Ocean due to Discharge)**

Essential Fish Habitat (EFH) was evaluated for the Ocean Discharge Study Area in the Marine Resources Biological Evaluation; 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).

2.1.1.4.8.1. 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) and 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 Facility 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 (. Any potential impact to Pacific Groundfish EFH would be less than significant.

2.1.1.4.8.2. 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.

2.1.1.4.8.3. 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. Any potential impact to coastal pelagic species EFH would be less than significant.

2.1.1.4.8.4. 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. Any potential impact to Pacific Coast Salmon EFH would be less than significant.

2.1.1.4.9. **Commercial and Recreational Fish Species (Pacific Ocean due to Discharge)**

The Marine Resources Biological Evaluation 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.

2.1.1.4.9.1. 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. They are relatively common in Humboldt Bay, and have been found in low numbers in trawl surveys in the vicinity of the diffuser outfall. They occur to depths of 900 feet, but are most common in shallower waters. 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.

2.1.1.4.9.2. 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. They have been captured in trawl surveys in the vicinity of the diffuser pipe. 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, 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.

2.1.1.4.9.3. 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. Although not considered migratory, Rockfish can have relatively extensive movements. 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.

2.1.1.4.9.4. 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. 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.

2.1.1.4.9.5. 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. Night Smelt aggregate annually nearshore to spawn on coastal beaches in California as early as January and through September. 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.

2.1.1.4.9.6. 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. Movements of Redtail Surfperch of up to 20 km have been observed. 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.

2.1.1.4.9.7. 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. 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. 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.

2.1.1.4.9.8. 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. 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 TriState Dungeness Crab Committee, which is overseen by the Pacific States Marine Fisheries Commission. 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. 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.

2.1.1.4.9.9. 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). 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. 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. Movements of Rock Crabs are limited, studies suggest movements are on the order of a few miles maximum. 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.

2.1.1.4.9.10. 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. 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. Apparently incapable of voluntary horizontal movement, Razor Clams are capable of burrowing vertically extremely fast. 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.

2.1.1.4.9.11. 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. Because it is unlikely that Gaper Clams would be on the open coast in PSB, there is no risk of exposure to effluent from the outfall.

2.1.1.4.9.12. 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.

2.1.1.4.9.13. 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. 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. 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.

2.1.1.4.9.14. 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 and species-habitat relationships. Sea Star Wasting Disease affected Sea Stars along the entire west coast, and was likely due to extremely high water temperatures. 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.

2.1.1.4.9.15. 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. 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. They are mobile but their dispersal is thought to occur during larval life stages. 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.

2.1.1.4.10. **Special Status Marine Mammals (Humboldt Bay Intakes)**

Marine mammals that occur in Humboldt Bay include the California sea lion, harbor seal, and harbor porpoise, described in the Appendix D. 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, 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. 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. A less than significant impact will occur.

2.1.1.4.11. **Special Status Fish (Humboldt Bay Intakes)**

The HBMWD 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. 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. 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 as well as in the Ocean Plan. 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) (Ocean Plan requires 1.0 mm slot size screen)
- 0.2 feet per second (fps) maximum approach velocity at maximum intake flow rate (Ocean Plan requires a minimum of 0.5 fps)
- 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 (and the Ocean Plan) for screening water intakes to prevent impingement or entrainment of juvenile salmonids. The specifications in the 1997 NMFS document are also consistent with updated criteria provided by NMFS for the design of anadromous salmonid passage facilities. 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 (and Ocean Plan) criteria. In addition, CDFW was consulted for design criteria to protect juvenile Longfin Smelt.

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). 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. 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 empirical transport model (ETM) modeling, the probability of entrainment would be less than 1.0%. 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. Longfin Smelt are 5-8 mm in length at hatching. 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. Larvae are distributed near the surface of the water column in fresh and brackish waters; the center of larval distribution is closely associated with the position of the 2ppt isohaline (“X2”) regardless of outflow conditions.

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. 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. 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. 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, 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. 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.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 HBMWD mitigate for the potential loss of Longfin Smelt larvae and obtain and implement an Incidental Take Permit from CDFW under CESA. Additionally, the HBMWD will be required to obtain a Coastal Development Permit from the California Coastal Commission (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 Measure BIO-6a requires HBMWD to 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.

2.1.1.4.12. **Essential Fish Habitat (Humboldt Bay Intakes)**

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. 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. 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 m3 per minute) or 11.9 million gallons per day (mgd) (44,970 m3 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. 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 [PM] 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 PM 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 PM 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 PM. All of the models have increased estimates of PM 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 PM 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 below.

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

Models	Pacific Hearing	Arrow Goby	Bay Goby	Northern Anchovy	Maximum Turnover
Durations (day)	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%)

Tenera's model likely overestimates levels of larvae entrainment because:

- 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.

- 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.

2.1.1.4.13. **Commercial and Recreational Fish Species (Humboldt Bay Intakes)**

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). 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.

2.1.1.5. Analyze oceanographic geologic, hydrogeologic, and seafloor topographic conditions at the site, so that the siting of a facility, including the intakes and discharges, minimizes the intake and mortality of all forms of marine life.

The siting of the Facility has been optimized to use existing infrastructure to minimize the intake and mortality of all forms of marine life. See Fact Sheet sections 2.1.1.1, 2.1.1.3 and 2.1.1.4.

2.1.1.6. Analyze the presence of existing discharge infrastructure, and the availability of wastewater to dilute the facility's brine discharge.

The existing discharge infrastructure includes the existing RMT II ocean outfall (Ocean Outfall) which is owned by HBHRCD Nordic Aquafarms California, LLC will lease capacity in the RMT II ocean outfall and HBHRCD will remain responsible for ongoing maintenance and monitoring of the ocean outfall infrastructure.

The outfall pipe collection point is located within a below-grade concrete vault, west of the pump house at the northwest corner of the old pulp mill facility. The outfall was formerly used to discharge an average of 22.5 million gallons per day of treated industrial wastewater from the Evergreen Pulp Mill into the Pacific Ocean. The pulp mill facility is no longer in operation and the outfall is being used to discharge industrial process water from DG Fairhaven Power Plant and domestic wastewater from the Samoa wastewater treatment facility.

The combined permitted discharge for these two Facilities is 200,000 gallons per day.

The 36-inch internal diameter outfall pipe extends underground in a westerly direction from the intake for 1.55 miles (8,200 feet). The outfall pipe ends with an 852-foot, 36 inch, multiport diffuser. The diffuser consists of 144 individual ports, paired along its length, discharging at a 45-degree vertical orientation, aligned perpendicular to the shoreline. The diffuser orifices have a spacing of 12 feet on center with openings 2.4 inches in diameter. Eight pairs of diffusers are currently open and flowing, however there are an additional 69 diffuser pairs offshore of the eight open diffusers that are currently sealed with toggle bolt blind assemblies. The plates bolted onto the ports were cleared using water jetting and inspected by MM Diving in October 2019. The diffuser assembly rests on the seafloor approximately 82 feet below the surface. A study completed in 2016, commissioned by Harbor District, concluded that hydraulic assessment indicates the outfall can discharge up to 40 MGD based on 144 2.4-inch diffuser ports

2.1.1.7. Ensure that the intake and discharge structures are not located within a Marine Protected Area (MPA) or State Water Quality Protected Area (SWQPA) with the exception of intake structures that do not have marine life mortality associated with the construction, operation, and maintenance of the intake structures (e.g., slant wells). Discharges shall be sited at a sufficient distance from a MPA or SWQPA so that the salinity within the boundaries of a MPA or SWQPA does not exceed natural background salinity. To the extent feasible, surface intakes shall be sited so as to maximize the distance from a MPA or SWQPA.

There are no MPA's or SWQPA's in the intake area or discharge area. The closest ASBS (SWQPA) is to the North at the Trinidad Head ASBS. The Trinidad ASBS is approximately 16.5 miles Northeast of the discharge location. The Samoa State Marine Conservation Area (Samoa SMCA) is located 3.5 miles Northeast of the discharge location. Inside of Humboldt Bay, the South Humboldt Bay State Marine Recreational Management Area (SMRMA) is located approximately 6.75 miles Southwest of the sea chest intakes. Both the Samoa SMCA and the SMRMA are considered MPA's.

The Facility's effluent is projected to have a salinity of 26.8 Practical Salinity Units (PSU). The receiving water has a median value of 33.5 PSU with a 20th percentile value of 32.3 PSU. Discharge of low salinity water into the ocean has the potential to lens on the surface with limited mixing or dilution due to the differential density. The salinity will rapidly dilute to background concentrations which will eliminate the risk of lensing at the surface. Based on modeling conducted, a dilution of seven gallons of ocean water per gallon of effluent is needed to dilute the low salinity. This dilution is met within five feet of the diffuser.

2.1.2. **Design**

Design is the size, layout, form, and function of a facility, including the intake capacity and the configuration and type of infrastructure, including intake and outfall structures. The Regional Water Board will require HBHRCD to perform the following in determining whether a proposed facility design is the best available design feasible to minimize intake and mortality of all forms of marine life:

2.1.2.1. For each potential site, analyze the potential design configurations of the intake, discharge, and other facility infrastructure to avoid impacts to sensitive habitats* and sensitive species.

Existing infrastructure for the Humboldt Bay intakes and the Ocean Outfall were the preferred infrastructure as it would not require in water work to construct a new intake and outfall infrastructure. The construction of new intake and outfall infrastructure at the alternatives discussed in section 2.1.1.3 above, would have greater environmental impacts to biological resources and water quality than the use of the existing infrastructure.

2.1.2.2. If the regional water board determines that subsurface intakes are not feasible and surface water intakes are proposed instead, analyze potential designs for those intakes in order to minimize the intake and mortality of all forms of marine life.

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 with the California Department of Fish and Wildlife (CDFW; personal communication with Arn Aarreberg, Environmental Scientist, CDFW–Marine Region), 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.

2.1.2.2.1. Flow Rate

Maximum Intake Flow Rate:

- RMT II Dock intake Screen: 5,500 gallons per minute (gpm)
- Red Tank Dock Intake Screen: 2,750 gpm
- Total: 8,250 gpm (11.88 mgd)

2.1.2.2.2. The screened intake shall be designed to withdraw water from the most appropriate elevation, considering juvenile fish attraction, appropriate water temperature control downstream, or a combination thereof. The design must accommodate the expected range of water surface elevations.

2.1.2.2.3. Where possible, intakes should be located off shore to minimize fish contact with the facility. Water velocity from any direction toward the screen shall not exceed the allowable approach velocity. Where possible, locate intakes where sufficient sweeping velocity exists. This minimizes sediment accumulation in and around the screen, facilitates debris removal, and encourages fish movement away from the screen face.

2.1.2.2.4. Maximum Approach Velocity

- Self-cleaning screens: 0.2 feet per second (fps)
- Non self-cleaning screens: 0.05 fps
- The screen design must provide for uniform flow distribution over the surface of the screen, thereby minimizing approach velocity.

2.1.2.2.5. Screen Orientation

For screen lengths greater than six feet, screen-to-flow angle must be less than 45 degrees.

2.1.2.2.6. Screen Face Material

- Perforated plate: screen openings shall not exceed 3/32 inches (2.38 millimeters [mm]), measured in diameter.
- Profile bar: screen openings shall not exceed 0.0689 inches (1.75 mm) in width.
- Woven wire: screen openings shall not exceed 3/32 inches (2.38 mm), measured diagonally. (e.g.: 6-14 mesh).
- Screen material shall provide a minimum of 27% open area.
- The screen material shall be corrosion resistant and sufficiently durable to maintain a smooth and uniform surface with long term use.\

2.1.2.2.7. Civil Works and Structural Features

- The face of all screen surfaces shall be placed flush with any adjacent screen bay, pier noses, and walls, allowing fish unimpeded movement parallel to the screen face.
- Structural features shall be provided to protect the integrity of the fish screens from large debris. Trash racks, log booms, sediment sluices, or other measures may be needed. A reliable on-going preventive maintenance and repair program is necessary to ensure facilities are

kept free of debris and the screen mesh, seals, drive units, and other components are functioning correctly.

2.1.2.2.8. Operations and Maintenance

- Fish Screens shall be automatically cleaned as frequently as necessary to prevent accumulation of debris. The cleaning system and protocol must be effective, reliable, and satisfactory to NMFS. Proven cleaning technologies are preferred.

- The head differential to trigger screen cleaning for intermittent type systems shall be a maximum of 0.1 feet (0.03 m), unless otherwise agreed to by NMFS.

- The completed screen and bypass facility shall be made available for inspection by NMFS, to verify compliance with design and operational criteria.

- Screen and bypass facilities shall be evaluated for biological effectiveness and to verify that hydraulic design objectives are achieved.

2.1.2.2.9. Final Screen Design

The RMT II dock and Red Tank dock intake structures are currently designed with openings on the face of the structures with vertical guide channels to hold flat screens over the intake openings. Based on the required intake flow rates, flat screens will not be of sufficient surface area to provide the required intake flow rates. Therefore, the HBHRCD is proposing to install tee-style intake screens over the intake openings. The tee 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 increases the allowable approach velocity and, thus, the intake flow rates.

The manufacturer has provided a preliminary design for an intake screen that meets the design criteria described above. A similar 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 gpm, and the Red Tank Dock screen will be 24-inch diameter with a maximum intake flow rate of 2,750 gpm.

The proposed screens include the following features:

- 316 stainless steel woven wire screen material; 1.0 mm spacing between bars.

- 36% open area on screen material.
- 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 screen manufacturer indicates head loss through the screen will be approximately 0.17 pounds per square inch (psi) at design conditions; 0.44 feet. 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 greater than the design head difference of 0.44 feet, for a total maximum head difference of 0.54 feet prior to automated screen cleaning.

2.1.2.3. Design the outfall so that the brine mixing zone does not encompass or otherwise adversely affect existing sensitive habitat.

The Facility will not be discharging brine, as it is not a desalination plant. The salinity difference is discussed in section 2.1.1.7. above and will not adversely affect existing habitat.

2.1.2.4. Design the outfall so that discharges do not result in dense, negatively buoyant plumes that result in adverse effects due to elevated salinity or hypoxic conditions occurring outside the brine mixing zone.* An owner or operator must demonstrate that the outfall meets this requirement through plume modeling and/or field studies. Modeling and field studies shall be approved by the Regional Water Board in consultation with State Water Board staff.

Numeric modeling was performed by Nordic Aquafarms, LLC as part of its ROWD application for the NPDES permit. The modeling effort analyzed three separate cases for the ocean outfall: case one with the existing discharge from DG Fairhaven Power Plant, case two with comingled discharge from the existing Fairhaven Power plant, the Samoa Wastewater Treatment Plant, and the proposed NAFC aquaculture facility (Combined Discharge) with the existing diffuser configuration of 16 open ports (8 diffuser pairs), and the Combined Discharge with 64 open ports (32 diffuser pairs). The modeling

effort also used two horizontal bearings for the port angles of 45 (northeast) and 135 degrees (southwest)

Near-field modelling of these three discharge cases was carried out with the US Environmental Protection Agency's (USEPA's) Visual Plumes UM3 model (Frick et al. 2001). UM3 simulates the dilution of a discharge with the ambient marine water during the jet (momentum or velocity dominated) and plume (buoyancy dominated) phases that occur in the immediate vicinity of a diffuser. The near-field simulation with UM3 terminates when the plume intersects the sea surface or seabed. At this point, the near-field mixing processes are no longer simulated with UM3.

2.1.2.4.1. Typical Summer Ambient Salinity Climate

The key factor that influences the vertical extent of the water column that is influenced by the comingled plume that emanates from the multiport diffuser is the vertical salinity structure. During the summer simulation at the start (8 July 2018), middle (30 July 2018) and end (22 August 2018) of the analysis period, salinity stratification was weak with vertical variations of ~0.1 psu along the simulated 4 km east-west transect just offshore of the multiport diffuser to the nearshore waters. The relatively homogeneous vertical salinity structure does not greatly impede the rise of the buoyant plumes to the water surface. Hence, a strong surface expression of the plume is anticipated under such conditions. Plots of salinity profiles collected on 6 June 2007 (summer) and 8 October 2007 (autumn) near the RMT II diffuser were vertically homogeneous, per the 2016 CH2M dilution modeling effort performed by the HBHRCD.

2.1.2.4.2. Winter High River Flow Effects on Ambient Salinity Climate

During the high flow event at the start (1 January 2017), middle (23 January 2017) and end (15 February 2017) of the simulation analysis period, salinity stratification was relatively strong with vertical variations of ~0.3, 4.6 and 3 psu, respectively, at the diffuser as illustrated along the simulated 4 km east-west transect. Hence, salinity stratification is effective at 'trapping' the rising plume prior to reaching the surface. As the plume entrains the higher salinity deeper waters, the average plume salinity increases in excess of the lower salinity surface waters (and thereby the plume is no longer positively buoyant and does not rise further). Hence, a stronger mid-water column expression of the plume is anticipated under such conditions.

2.1.2.5. Design outfall structures to minimize the suspension of benthic sediments.

Estimates of potential gross sedimentation (neglecting resuspension) from the organic particles in the combined comingled facility's effluent were evaluated over a range of settling velocities as no information was available on the density or diameter of these particles. Modelling gross sedimentation rates is

a conservative measure to ascertain whether organic sediment loading is likely to be an issue for the proximal benthic habitat.

Resuspension of these organic particles is likely, which would greatly diminish the predicted gross sedimentation impacts through subsequent transport and dispersal of these resuspended particles by the near-sediment currents. In other words, the gross sedimentation rate used to assess effect/impact on the benthos yields a larger value than if resuspension was accounted for (i.e. net sedimentation), so if gross sedimentation is well below typical effect/impact thresholds, then this would be more so the case if resuspension was considered.

Gross sedimentation expressed as mass per unit area was calculated for each seabed cell between the start and end simulation analysis dates for the high inflow event and representative summer scenarios. Spatial contour plots of a range of gross sedimentation rates were generated to evaluate the potential risk to benthic habitat from organic particle deposition for each of the four particle settling velocities simulated.

Organic sedimentation rates of 0.22 g/m2/d (San-Jazaro et al. 2011) and 1.9 g/m2/day (Cromey et al. 1998, Gellbrand et al. 2002) were used to define thresholds for ‘potential seabed effect’ and ‘degraded seabed impacts’, respectively.

2.1.2.5.1. Summer Scenario

There was no material gross sedimentation (<0.1 g/m2) simulated over the 45 day analysis period for a particle settling velocity of 0.0001 m/s. A summary of the predictions include:

- A particle settling velocity of 0.001 m/s yielded a sizeable spatial area of gross sedimentation >0.1 g/m2 over the 45 days that was up to ~1.5 km from the diffuser with a maximum gross sedimentation <0.5 g/m2. A 0.5 g/m2 gross sedimentation over the 45 days of the analysis period is equivalent to 0.01 g/m2/day, which is below the indicative sedimentation threshold that some benthic ‘effects’ from organic loading may occur.

- A particle settling velocity of 0.01 m/s yields a small spatial area with gross sedimentation of >0.1 g/m2 over the 45 days limited to within ~10-20 m of the diffuser. The maximum gross sedimentation of 0.7 g/m2 (0.015 g/m2/day) is well the indicative sedimentation threshold that some benthic ‘effects’ from organic loading may occur.

- A particle settling velocity of 0.1 m/s yields a similar spatial area of gross sedimentation of >0.1 g/m2 as that for a 0.01 m/s settling velocity. However, the maximum gross sedimentation of 1 g/m2 (0.02

g/m2/day) is well below the indicative sedimentation threshold for some 'benthic effects' form organic loading.

2.1.2.5.2. Winter High River Flow Scenario

There was no material gross sedimentation (<0.1 g/m2) simulated over the 45 day analysis period for a particle settling velocity of 0.0001 m/s. A summary of the predictions include:

- As with the representative summer period, a particle settling velocity of 0.001 m/s yielded a sizeable spatial area of gross sedimentation >0.1 g/m2 over the 45 days that was up to ~1.5-2 km to the south of the diffuser with a maximum gross sedimentation ~0.8 g/m2 in the immediate vicinity of the diffuser. The 0.8 g/m2 maximum gross sedimentation over the 45 days of the analysis period was within ~100 m of the diffuser and is equivalent to 0.018 g/m2/day, which is below the indicative sedimentation threshold in which some benthic effects from organic loading may occur.

- A particle settling velocity of 0.01 m/s yields a small spatial area with gross sedimentation of 0.4- 0.5 g/m2 over the 45 days up to ~100 m from the diffuser. The maximum gross sedimentation of 0.5 g/m2 (0.01 g/m2/day) is below the indicative sedimentation threshold in which some benthic effects from organic loading may occur.

- A particle settling velocity of 0.1 m/s yields a smaller spatial area for gross sedimentation >0.1 g/m2 as the 0.01 m/s settling velocity. However, the maximum gross sedimentation of 1 g/m2 (0.02 g/m2/day) is below the indicative sedimentation threshold in which some benthic effects from organic loading may occur (0.22 g/m2/day). Thus, only minor effects on the benthos would be expected in the immediate vicinity (~25 m) of the diffuser with this particle settling rate as well.

2.1.3. **Mitigation**

2.1.3.1. Marine Life Mortality Report

HBHRCD[2] shall submit a report to the Regional Water Board estimating the marine life mortality resulting from construction and operation of the facility after implementation of the facility's required site, design, and technology

[2] This language is from the Environmental Impact Report for the project. As discussed in the Order, the HBHRCD is solely responsible for mitigation measures associated with the maintenance and operation of the intake and discharge structures.

measures. The final Marine Life Mortality Report (Report) was submitted by the Harbor District on May 4, 2023.

HBHRCD shall mitigate for the mortality of all forms of marine life determined in the Report above by choosing to either complete a mitigation project as described in chapter III.M.2.e.(3) of the Ocean Plan or, if an appropriate fee-based mitigation program is available, provide funding for the program as described in chapter III.M.2.e.(4) of the Ocean Plan. The mitigation project or the use of a fee-based mitigation program and the amount of the fee that the owner or operator must pay is subject to regional water board approval.

HBHRCD, as owner and operator of the intake and discharge systems, has elected to proceed with the mitigation project option.

2.1.3.2. Mitigation Project

On December 31, 2021, the Harbor District finalized "*The Use of Piling Removal for Mitigating Effects of Entrainment Losses to Longfin Smelt and Other Marine Resources Resulting from Operation of the Proposed Samoa Peninsula Intakes in Humboldt Bay*" as the technical memo for the mitigation project.

The piling removal project proposed by the Harbor District as mitigation for the effects of potential entrainment on long fin smelt (LFS) is located along the eastern shore of the South Bay portion of Humboldt Bay. The abandoned pilings were previously part of a structure referred to as the Kramer Dock and extend over an area of approximately two acres of shoreline. At the upcoast end of the abandoned dock, the pilings are more numerous and extend further out from the shoreline, while at the downcoast end they only extend a short distance from the shore. All the pilings have been cut off and extend various lengths above the surface of the water. There are over 1,400 pilings below the high tide line and several hundred additional pilings, not proposed for removal, that occur along the shoreline above the high tide line that helped support a retaining wall.

Removal of the pilings in the water will restore the habitat to support aquatic vegetation, such as eelgrass, and associated invertebrates and fishes, including LFS and result in the removal of creosote laden piles out of the bay.

2.1.3.2.1. Benefits of Piling Removal

Removal of derelict and existing pilings in marine and estuarine areas has been a goal of agencies responsible for the stewardship of marine resources in several areas along the west coast (CSCC 2010, Werme et al. 2010, ESA 2020, ICF 2019). One of the restoration objectives in the San Francisco Bay Subtidal Habitat Goals Report (CSCC 2010) is to "Where feasible, remove artificial structures from San Francisco Bay that have negative or minimal beneficial habitat functions and to promote pilot projects

to remove artificial structures and creosote pilings at targeted sites in combination with a living shoreline restoration design that will use natural bioengineering techniques (such as native oyster reefs, stone sills, and eelgrass plantings) to replace lost habitat structure." The report lists several other benefits to the removal of old and derelict pilings including:

- Reduced substrate for introduced species;
- Reduced shading of the bottom and water column;
- Reduced toxic effects of creosote and other contaminants;
- Reduced restrictions to flow and sediment movement;
- Restoration, re-creation, or realignment of intertidal mudflats, sand flats, rock, and shellfish, eelgrass, and macroalgal beds;
- Reduced navigational hazards; and
- Improved aesthetics.

An issue mentioned in the report that inventoried pilings for Snohomish County (ESA 2020) is the restriction on growth of eelgrass or other submerged vegetation (SUV) in the areas around pilings, that they term as a "halo" around each piling. Depressions around the base of pilings are common and are most likely the result of increases in the speeds of ambient currents around the pilings that pull away sediment. In an area where there are numerous pilings closely spaced, such as the abandoned Kramer Dock, this effect would likely be expected to severely limit growth of eelgrass and SUV in the area. Therefore, the removal of a piling results in the restoration of a much larger area than just the area occupied by the piling.

Probably the most often cited reason for removal of old pilings is from the use of creosote as a preservative that was a way to reduce the effects of marine boring organisms on the wood pilings. Creosote was used as a preservative treatment for wood pilings up until 1993 when the CDFW stopped approving its use in state waters (Werme et al. 2010). Other states such as Washington have also initiated programs to eliminate creosote treated pilings (see https://www.dnr.wa.gov/programs-and-services/aquatics/restoring-washingtons-waterways). Many of these programs have compiled maps of the derelict pilings and have developed programs for the phased removal of the pilings.

Creosote is derived from coal tars and is made up of hundreds of thousands of chemical compounds with various forms of polycyclic aromatic hydrocarbons (PAH) accounting for up to 90% of the creosote mixture

(Werme et al. 2010). Previously, it was thought that the leaching of these compounds occurred at such low rates that no effects could occur to marine organisms. Studies resulting from the Exxon Valdez oil spill in Prince William Sound in Alaska related to the crash of the Pacific Herring fishery and sharp declines in the Pink Salmon fishery showed that very low levels of PAHs (~1.0 ppb) could affect developing fish embryos and potentially affect adult populations (see Heintz 2007). Further research verified the impacts that exposure to PAHs in natal habitats could have on the adult population size of Pink Salmon (Heintz 2007). More recent research also showed that exposure to trace levels of oil affects the development of cardiac muscle in salmon and herring and reduces cardiorespiratory function in juvenile and adults, which is likely a key factor in survival and population recruitment (Incardona et al. 2015).

Therefore, even very low levels of leaching of PAHs from the weathered pilings in Humboldt Bay may still represent a risk to fishes and other marine organisms. Assuming that the total lengths of the pilings average 30 ft (9.14 m) that includes a length above the seabed that averages 10 ft (3.05 m) and an average diameter of 12” (0.3 m), the total average surface area of each piling would be approximately 94.25 ft2 (8.75 m2) (2*π*radius*length). Based on these assumptions, the removal of all 1,400 pilings would result in the removal from the environment of 131,947 ft2 (12,258 m2) or approximately 3.0 acres of surface contaminated with PAHs.

2.1.3.2.2. Benefits to Longfin Smelt

Longfin Smelt would be most susceptible to the effects of PAHs in the habitats where spawning occurs, which are areas upstream from Humboldt Bay. Freshwater deltas and bays provide important habitat for LFS spawning. Although, specific locations of spawning events vary with a multitude of conditions (Rosenfield 2010), shallow brackish tidal marshes and sloughs are identified as important spawning and recruitment areas (Lewis et al. 2020), because the newly hatched larvae have a salinity tolerance of 2–6 practical salinity units (psu) (Baxter et al. 2010). In Humboldt Bay, these are likely areas such as the Eureka Slough and the marsh areas around Salmon Creek and Hookton Slough in the South Bay.

Developing larvae would also be expected to be highly susceptible to the effects of PAHs. Although recent sampling for ichthyoplankton in Humboldt Bay in 2019 and 2020 only found LFS larvae in areas near the Eureka Slough (Brennan 2021), historical data presented by Garwood (2017) showed that LFS were collected in Salmon Creek and Hookton Slough, and also in the area around the abandoned Kramer Dock (Figure 2). These data are attributed to M. Wallace (unpublished data) by Garwood (2017). Larvae exported out of Salmon Creek and Hookton Slough that occurred in the area of the Kramer Docks would be especially susceptible to any effects of PAHs leaching from the pilings.

The abandoned pilings at the Kramer Dock might be expected to attract fishes and other marine organisms due to the structure they provide, which tend to attract fishes, as evidenced by the report of LFS in that area in Garwood (2017). While these structures may attract fishes, the benefits to LFS and other marine organisms would be much greater if the pilings were removed, and the area restored to more natural conditions. The removal of the pilings would return natural current flow to the area allowing the reestablishment of eelgrass and other SUV in the area. The piling removal and resulting restoration of the area will provide all of the benefits listed previously that were identified by the San Francisco Bay Subtidal Habitat Goals Report (CSCC 2010). Most importantly, the restoration removes potential contaminants that could affect populations of fishes and other marine organisms in the Bay.

The approach of using piling removal as an approach for mitigation for the potential take of life stages such as larval LFS due to entrainment at the project intakes is consistent with other mitigation approaches of using habitat restoration to cover a wide range of impacts that may not specifically address the life stage impacted. While the piling removal will not specifically benefit the spawning habitat for LFS, it does provide specific benefits to all life stages that may be affected by increased levels of PAHs in the vicinity of the Kramer Dock. Therefore, Humboldt County believes that this approach is reasonable for this project because it is unlikely that spawning habitat for LFS is limited in the marsh areas associated with Humboldt Bay. A greater concern is the presence of contaminated surfaces that may result in the direct mortality on the larvae of LFS and other fishes and the leaching of PAHs that, as described above, have been shown to affect adult and juvenile stages of fishes, and organisms living in the sediments where the pilings are buried. Also, the proposed mitigation ratio of four acres of restoration credit for each acre of habitat restoration at the Kramer Dock reflects the multiple benefits of piling removal from the project report for San Francisco Bay listed above, that go beyond the restoration of the habitat previously occupied by the pilings.

The estimated loss of productivity will result from the final calculations of the Empirical Transport Model (ETM) estimates of Area of Production Foregone (APF) resulting from the results of the study. The Preliminary Intake Assessment report dated May 13, 2021 analyzed potential entrainment losses for larval populations in Humboldt Bay potentially affected by entrainment. The period of time that the larvae are subject to entrainment will vary by species, but for all the ETM models that used periods of exposure of up to 30 days, the losses to the larval populations were estimated to be 0.1% or less when any form of tidal exchange was included in the model. These levels would likely not result in any impacts on the resulting adult populations due to the high levels of natural mortality of small fish larvae and the potential that larger larvae that are more likely to survive

to adult age would be protected from entrainment due to the 0.0394 inch (1.0 mm) slot opening used in the wedgewire intake screens.

Although no effects on adult populations may not result from the effects of entrainment, APF can be used to estimate the amount of habitat necessary to compensate for the loss of production to all forms of marine life due to entrainment. This would include benthic and demersal invertebrates that may be directly impacted by PAH contamination from the pilings. Therefore, for calculating the mitigation required to compensate for the estimated APF we would propose to use the 4:1 mitigation ration described above which accounts for the removal of the contaminated surface area of each of the pilings.

An initial estimate of APF was provided for the Harbor District in Appendix N of the Draft EIR for the project that was based on the results of the Initial ETM Assessment prepared by Tenera (2021) (Appendix P of the Draft EIR). The APF estimate of 10.4 acres (4.2 hectares) in Appendix N was based on a source water area of 10,000 acres (4,047 hectares) and was intended to be used as an example of how APF was calculated. The source water area based on the data in Swanson (2015) that was used in the APF calculations in the Initial ETM Assessment and in this report was 15,104 acres (6,112 hectares). Therefore, the corrected APF from the Initial ETM Assessment would be 15.7 acres (6.3 hectares), which is mitigation close to the APF estimate of 17.9 acres (7.2 hectares) in this report. Using the same 4:1 ratio proposed in Appendix N, an area of piling removal equivalent to 4.5 acres (1.8 hectares) would fully compensate for the losses to marine resources resulting from entrainment at the two intakes.

2.2. Description of Wastewater and Solids Treatment and Controls

The Facility is designed to remove nutrients and provide UV disinfection before discharging to the Pacific Ocean.

The Facility will include biological anoxic denitrification of nitrate with an external carbon source, biological aerobic biochemical oxygen demand and ammonia removal, ferric coagulation for phosphorus removal, ultra-filtration membrane systems with 0.04 um pore openings and UV-C disinfection using a 300 mJ/cm^2 designed for 99.9 percent virus removal. This level of treatment is highly sophisticated and provides a high level of treatment before discharge.

If electrical power supply is shut down to the aquaculture facility, an onsite emergency backup power system would activate to maintain all critical functions for the fish and wastewater treatment. Nordic Aquafarms, LLC will be constructing several natural gas turbines with a maximum capacity of up to 30 MW to supply emergency power to the fully developed facility. The fuel source will be natural gas from the existing 4-inch main on site. The backup generation system will be designed to rapidly respond to interruptions in the power supply to the facility and

maintain critical equipment and infrastructure. Additional onsite power will be generated by the rooftop solar installation.

Dewatered sludge (fish feces and feed) will be a byproduct of the wastewater treatment process. The sludge will be recycled for other uses such as fertilizer, biogas, etc. The sludge is stored in sealed tanks for regular out-shipment and will not result in local odors or discharge from stormwater runoff.

2.3. Discharge Points and Receiving Waters

Process wastewater will be discharged at Discharge Point 001 at 40° 49' 10" N latitude and 124° 13' 32" W longitude to the Pacific Ocean. HBHRCD owns and maintains the 48-inch diameter outfall line with 64 diffuser ports that terminates approximately 1.5 miles off-shore.

HBHRCD acquired the ocean outfall during a property acquisition of Freshwater Tissue/Freshwater Pulp property in August 2013. T Nordic Aquafarms California, LLC has entered into a lease agreement with the HBHRCD that allows Nordic Aquafarms California, LLC use and access to the outfall for Facility operations.

2.4. Summary of Existing Requirements and SMR Data

Since the Permittees are proposing a new discharge, there was no previous permit and, therefore, no existing requirements and SMR data.

2.5. Compliance Summary

Since the Permittees are proposing a new discharge, there was no previous permit and, therefore, no compliance history for the Facility.

2.6. Planned Changes

Nordic Aquafarms California, LLC will be constructing Phase 1 of the Facility once the permit is adopted. Nordic Aquafarms California, LLC is planning to construct Phase 2 of the Facility toward the end of this permit term.

3. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

3.1. Legal Authorities

This Order serves as WDRs pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES

permit authorizing the Permittees to discharge into waters of the United States at the discharge location described in Table 1 subject to the WDRs in this Order.

3.2. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code. Facility construction and/or construction projects necessary to implement mitigation requirements may require additional analysis and documentation to ensure compliance with CEQA.

3.3. State and Federal Laws, Regulations, Policies, and Plans

3.3.1. Water Quality Control Plan

The Regional Water Board adopted a Water Quality Control Plan for the North Coast Region (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Pacific Ocean are as follows:

Table F-2. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Existing: Navigation (NAV); Water contact recreation (REC-1); Non-contact water recreation (REC-2); Commercial and sport fishing (COMM); Wildlife habitat (WILD); Rare, threatened, or endangered species (RARE); Marine habitat (MAR); Migration of aquatic organisms (MIGR); Spawning, reproduction, and/or early development (SPAWN); Shellfish harvesting (SHELL); and Aquaculture (AQUA). Potential: Industrial water supply (IND); Industrial process supply (PRO); and Preservation of Areas of Special Biological Significance (ASBS)
---	Groundwater	Existing: Municipal and domestic supply (MUN); Agricultural supply (AGR); Industrial service supply (IND); and Native American Culture (CUL). Potential Industrial Process Supply (PRO); and Aquaculture (AQUA)

3.3.2. **Thermal Plan**

The State Water Board adopted the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) on January 7, 1971 and amended this plan on September 18, 1975.

The Thermal Plan is applicable to the discharge from the Facility. The discharge from the Facility is considered to be a New Discharge of Elevated Temperature Waste to Coastal Waters, as defined by the Thermal Plan. The Thermal Plan in section 3.B contains the following temperature objectives for new discharges to coastal waters:

3.3.2.1. *Elevated temperature wastes shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.*

The proposed discharge at Discharge Point 001 will occur through and existing outfall located 1.5 miles offshore, which meets the requirement of an open ocean discharge away from the shoreline.

3.3.2.2. *Elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperatures in these areas.*

The Facility will not discharge in the vicinity of an area of special biological significance (ASBS).

3.3.2.3. *The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F.*

The proposed Facility will not discharge thermal waste, which is defined as cooling water and industrial process water used for the purposes of transporting waste heat. Therefore, this Thermal Plan requirement is not applicable to discharges from the Facility.

3.3.2.4. *The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of the ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.*

These Thermal Plan requirements are established as receiving water limitations in this Order, as described in section 5.1.2. of this Fact Sheet.

3.3.2.5. *Additional limitations shall be imposed when necessary to assure protection of beneficial uses.*

This Order establishes effluent monitoring requirements for temperature to characterize the effluent temperature and potential impacts to water quality.

3.3.3. **California Ocean Plan**

The State Water Board adopted the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan) in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, 2005, 2009, 2012, and 2015. The State Water Board adopted the latest amendment on May 6, 2015, and it became effective on January 28, 2016. The Ocean Plan is applicable, in its entirety, to point source discharges to the Pacific Ocean. In order to protect the beneficial uses, the Ocean Plan establishes water quality objectives and a program for implementation. The Ocean Plan identifies the beneficial uses of ocean waters of the state to be protected as summarized below:

Table F-3: Ocean Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Existing: Industrial Water Supply; Water contact and non-contact recreation, including aesthetic enjoyment; Navigation; Commercial and sport fishing; Mariculture; Preservation and enhancement of designated Areas of Biological Significance (ASBS); Rare and endangered species; Marine habitat; Fish migration; Fish spawning; and Shellfish harvesting.

3.3.4. Antidegradation Policy

Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.

3.3.5. Anti-Backsliding Requirements

Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Since this Order is a new NPDES Permit, anti-backsliding is not applicable to the issuance of this permit.

3.3.6. **Endangered Species Act Requirements**

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state, including protecting rare, threatened, or endangered species. The Permittees are responsible for meeting all requirements of the applicable Endangered Species Act.

3.4. **Impaired Water Bodies on the CWA section 303(d) List**

Section 303(d) of the federal CWA requires states to identify water bodies that do not meet water quality standards and are not supporting their beneficial uses after implementation of technology-based effluent limitations on point sources. Each state must submit an updated list, the 303(d) List of Impaired Water Bodies, every two years. In addition to identifying the water bodies that are not supporting beneficial uses, the 303(d) list also identifies the pollutant or stressor causing impairment and establishes a schedule for developing a control plan to address the impairment. The CWA requires development of a total maximum daily load (TMDL) or alternate program of implementation for each 303(d)-listed pollutant and water body to remedy the impairment. TMDLs establish the maximum quantity of a given pollutant that can be added to a water body from all sources without exceeding the applicable water quality standard for that pollutant and determine waste load allocations (the portion of a TMDL allocated to existing and future point sources) and load allocations (the portion of a TMDL attributed to existing and future nonpoint sources).

On April 6, 2018, the U.S. EPA provided final approval of the 2014 and 2016 303(d) List of Impaired Water Bodies prepared by the state. The Pacific Ocean, in the vicinity of the discharge, is not listed as an impaired water body on the 303(d) list.

3.5. **Other Plans, Polices and Regulations**

3.5.1. Coverage under State Water Board Water Quality Order No. 2014-0057-DWQ, NPDES General Permit No. CAS000001, General Permit for Storm Water Discharges Associated with Industrial Activities (Industrial Storm Water General Permit) is required. Nordic Aquafarms California, LLC meets the requirements for enrollment under the Industrial Storm Water General Permit due to storm water not being contained to the Facility property.

3.5.2. Coverage under State Water Board Water Quality Order No. 2009-0009-DWQ, NPDES General Permit No. CAS000002, General Permit for Discharges of Storm Water Associated with Construction Activities (Construction Storm Water

General Permit) is required. Nordic Aquafarms California, LLC meets the requirements for enrollment under the Construction Storm Water General Permit for are of disturbed earth during construction of the Facility.

4. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the C.F.R.: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where a reasonable potential to exceed those criteria exist.

4.1. Discharge Prohibitions

4.1.1. Discharge Prohibition 3.1

The discharge of any waste not disclosed by the Permittees or not within the reasonable contemplation of the Regional Water Board is prohibited.

This Prohibition is based on the Basin Plan and State Water Board Order No. WQO 2002-0012 regarding the petition of WDRs Order No. 01-072 for the East Bay Municipal Utility District and Bay Area Clean Water Agencies. In State Water Board Order No. WQO 2002-0012, the State Water Board found that this prohibition is acceptable in Orders, but should be interpreted to apply only to constituents that are either not disclosed by the Permittees, or are not reasonably anticipated to be present in the discharge but have not been disclosed by the Permittees. It specifically does not apply to all constituents in the discharge that do not have “reasonable potential” to exceed water quality objectives.

The State Water Board has stated that the only pollutants not covered by this prohibition are those which were “disclosed to the permitting authority and…can be reasonably contemplated.” [In re the Petition of East Bay Municipal Utilities District et al., (State Water Board, 2002) Order No. WQO 2002-0012, p. 24]. In that Order, the State Water Board cited a case which held the Permittee is liable for the discharge of pollutants “not within the reasonable contemplation of the permitting authority…whether spills or otherwise…” [Piney Run Preservation Assn. v. County Commissioners of Carroll County, Maryland (4th Cir. 2001) 268 F. 3d 255, 268.] Thus, the State Water Board authority provides that, to be permissible, the constituent discharged (1) must have been disclosed by the

Permittee and (2) can be reasonably contemplated by the Regional Water Board.

4.1.2. **Discharge Prohibition 3.2**

Creation of pollution, contamination, or nuisance, as defined by Water Code section 13050, is prohibited.

This prohibition is based on section 13050 of the Water Code and section 5411 of the California Health and Safety Code.

4.1.3. **Discharge Prohibition 3.3**

The discharge of waste to Humboldt Bay is prohibited.

This prohibition is consistent with the Water Quality Control Policy for the Enclosed Bays and Estuaries of California (EBE Policy), established in 1974 and amended in 1995. The EBE Policy prohibits point source discharges to enclosed bays and estuaries unless specific exemption criteria are met.

4.1.4. **Discharge Prohibition 3.4**

The discharge of domestic waste, treated or untreated, to surface waters is prohibited.

This prohibition is based on the Basin Plan policy on the control of water quality with respect to on-site waste treatment and disposal practices.

4.1.5. **Discharge Prohibition 3.5**

The discharge of waste to land that is not owned by the Permittees or under agreement to use by the Permittees is prohibited.

This prohibition is established to prohibit unauthorized discharges to land.

4.1.6. **Discharge Prohibition 3.6**

The discharge of waste at any point not described in Finding 2.2 of the Fact Sheet or authorized by a permit issued by the State Water Resources Control Board or Regional Water Quality Control Board is prohibited.

This prohibition is established as a general prohibition that allows the Permittees to discharge waste only in accordance with WDRs. It is based on sections 301 and 402 of the Federal CWA and section 13263 of the Water Code.

4.1.7. **Discharge Prohibition 3.7**

The maximum daily flow of waste through the Facility in excess of 10.3 mgd is prohibited. Compliance with this prohibition shall be determined as defined in sections 7.7 of this Order.

This prohibition is established based on the maximum flow through the Facility as submitted in Nordic Aquafarms California, LLC report of waste discharge. This prohibition, along with the flow effluent limitation, is established to protect water quality objectives and beneficial uses in and around the diffuser.

4.1.8. **Discharge Prohibition 3.8**

The discharge of any radiological, chemical, or biological warfare agent into waters of the state is prohibited.

This prohibition is based on the discharge prohibitions contained in section III.I of the Ocean Plan and section 13375 of the Water Code.

4.1.9. **Discharge Prohibition 3.9**

The discharge of waste resulting from cleaning activities is prohibited.

This prohibition applies to the direct discharge of untreated cleaning waste to waters of the United States and is based on the Basin Plan's Policy on the Regulation of Fish Hatcheries, Fish Rearing Facilities, and Aquaculture Operations.

4.1.10. **Discharge Prohibition 3.10**

The discharge of detectable levels of chemicals used for the treatment and control of disease, other than salt (NaCl), is prohibited.

This prohibition is based on the Basin Plan's Policy on the Regulation of Fish Hatcheries, Fish Rearing Facilities, and Aquaculture Operations. When chemicals and aquaculture drugs used for the treatment and control of disease are used, Nordic Aquafarms California, LLC is required to submit a chemical use report documenting the method used to determine compliance with this prohibition.

4.2. **Technology-Based Effluent Limitations**

4.2.1. **Scope and Authority**

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 C.F.R. section 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge

authorized by this Order must meet minimum federal technology-based requirements based on Effluent Limitations Guidelines and Standards for the Concentrated Aquatic Animal Production Point Source Category in 40 C.F.R. part 451 and Best Professional Judgment (BPJ) in accordance with 40 C.F.R. section 125.3.

The CWA requires that technology-based effluent limitations be established based on several levels of controls:

- Best practicable treatment control technology (BPT) represents the average of the best existing performance by well-operated facilities within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.

- Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

- Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease. The BCT standard is established after considering a two-part reasonableness test. The first test compares the relationship between the costs of attaining a reduction in effluent discharge and the resulting benefits. The second test examines the cost and level of reduction of pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources. Effluent limitations must be reasonable under both tests.

New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires U.S. EPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BAT, BCT, and NSPS. Section 402(a)(1) of the CWA and 40 C.F.R. section 125.3 authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the Regional Water Board must consider specific factors outlined in 40 C.F.R. section 125.3.

4.2.2. Applicable Technology-Based Effluent Limitations

4.2.2.1. Best Management Practices (BMP) Plan

On August 23, 2004, U.S. EPA published ELGs for the Flow-Through and Recirculating Systems Subcategory of the Concentrated Aquatic Animal Production Point Source Category at 40 C.F.R. part 451, subpart A. The ELGs became effective on September 22, 2004. The ELGs establish national technology-based effluent discharge requirements for CAAP facilities that produce 100,000 pounds or more of aquatic animals in flow-through and recirculation systems based on BPT, BCT, BAT and NSPS. In its proposed rule, published on September 12, 2002, U.S. EPA proposed to establish numeric limitations for TSS while controlling the discharge of other constituents through narrative requirements. In the final rule, however, U.S. EPA determined that, for a nationally applicable regulation, it would be more appropriate to promulgate qualitative TSS limitations in the form of solids control BMP requirements.

In the process of developing the ELG, U.S. EPA identified an extensive list of pollutants of concern in discharges from the aquaculture industry, including several metals, nutrients, solids, BOD, bacteria, drugs, and residuals of federally registered pesticides. U.S. EPA did not include specific numeric limitations in the ELG for any pollutants on this list, believing that BMPs would provide acceptable control of these pollutants. U.S. EPA did conclude during the development of the ELG that control of TSS would also effectively control concentrations of other pollutants of concern, such as BOD, metals and nutrients, because other pollutants are either bound to the solids or are incorporated into them. And, although certain bacteria are found at high levels in effluents from settling basins, U.S. EPA concluded that disinfection is not economically achievable. U.S. EPA also allowed permitting authorities to apply technology-based limits for other pollutants and WQBELs for pollutants considered in the ELGs in order to comply with applicable water quality standards.

The ELGs at 40 C.F.R. part 451, subpart A require implementation of BMPs, including solids control, materials storage, structural maintenance, recordkeeping, and training requirements, to represent the application of BPT. Consistent with the ELGs at 40 C.F.R. part 451, subpart A, Special Provision 7.3.3.2 of this General Order requires Nordic Aquafarms California, LLC to maintain a BMP Plan.

EPA promulgated Seafood Processing Effluent Guidelines and Standards (a.k.a. Canned and Preserved Seafood Category; 40 CFR Part 408) in 1974 and 1975. The regulation covers wastewater discharges from facilities that preserve and can seafood. Specifically, Part 408 subpart S regulates “West Coast Mechanized Salmon” that this Facility will be processing.

The ELGs at 40 C.F.R. part 408, subpart S require NSPS facilities to meet mass loading effluent limitations for BOD_5, TSS, oil and grease and pH. Phase 1 will process approximately 165,000 lbs of Kingfish daily while Phase 2 will process approximately 330,000 lbs of Kingfish daily. Consistent with 40 C.F.R. part 408, subpart S, mass-based effluent limitations for oil and grease have been established per 1,000 lbs of fish processed daily in Table 2 of this Order for both Phase 1 and Phase 2 of build-out. Mass based effluent limitations for BOD and TSS have been established based on design criteria submitted by Nordic Aquafarms as they are more protective of beneficial uses.

4.2.2.2. Flow

A flow limitation of 10.3 mgd has been established as the maximum daily flow to be discharged per information provided in Nordic Aquafarms California, LLC's report of waste discharge. The flow limitation is required to ensure that the proper dilution ratio is achieved, water quality objectives are maintained, and beneficial uses are protected.

4.3. Water Quality-Based Effluent Limitations (WQBELs)

4.3.1. Scope and Authority

CWA Section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) of 40 C.F.R. requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water, as specified in the Ocean Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the Ocean Plan.

4.3.2. **Applicable Beneficial Uses and Water Quality Criteria and Objectives**

4.3.2.1. **Beneficial Uses**

Beneficial use designations for receiving waters for discharges from the Facility are presented in section 3.3.1 and 3.3.3 of this Fact Sheet.

4.3.2.2. **Ocean Plan Water Quality Objectives**

Water quality criteria applicable to ocean waters of the Region are established by the Ocean Plan, which includes general provisions and water quality objectives for bacterial characteristics, physical characteristics, chemical characteristics, biological characteristics, and radioactivity. These water quality objectives from the Ocean Plan are incorporated as receiving water limitations in section V.A of the Order. Table 1 of the Ocean Plan contains numeric water quality objectives for 83 toxic pollutants for the protection of marine aquatic life and human health. Pursuant to NPDES regulations at 40 C.F.R. section 122.44(d)(1), and in accordance with procedures established by the Ocean Plan, the Regional Water Board has performed an Ocean Plan reasonable potential analysis (RPA) to determine the need for effluent limitations for the Table 1 toxic pollutants.

4.3.2.3. **Minimum Initial Dilution**

WDRs Order Nos. R1-2010-0033, R1-2018- 0013 and R1-2020-0005 for the Freshwater Tissue Company's Samoa Pulp Mill, DG Fairhaven Power, LLC, and the Samoa Community Services District and Samoa Pacific Group were previously regulated, or are currently regulated, for discharge out of the Ocean Outfall where the Permittees propose to discharge at Discharge Point 001. These previous Orders applied a minimum initial dilution of 115:1 (i.e., 115 parts ocean water to 1 part effluent) for discharges from the ocean outfall.

In 2020, the Permittees submitted a Numeric Modeling Report with their ROWD that included near field and three-dimensional modeling for dilution analysis to characterize the mixing zone at the Facility. The 2020 Report concludes that the proposed commingled discharge will be readily mixed within less than five feet of the diffuser with and exit velocity of approximately ten feet per second, which should keep the ports clear of sediment build-up and biofouling to maintain optimal levels of jet-induced near-field mixing.

A February 2016 Diffuser Performance Assessment Report for the Redwood Marine Terminal II Ocean Outfall prepared for the County of Humboldt and the Harbor District conducted on this outfall and diffuser suggest that a minimum initial dilution of 115:1 is appropriate for the discharge. The 2016 report indicated that greater than 100:1 dilution could be achieved for flows ranging up to 40 MGD, except where the effluent salinity is greater than 30 practical salinity units (similar to seawater) and effluent temperature is similar to the receiving water temperature. These high salinity/low temperature conditions

are not anticipated from the combined discharge from the existing dischargers and the Facility; therefore, this Order utilizes a minimum initial dilution of 115:1.

4.3.3. Determining the Need for WQBELs

NPDES regulations at 40 C.F.R. section 122.44(d) require effluent limitations to control all pollutants which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard.

4.3.3.1. Ocean Plan Reasonable Potential Analysis (RPA)

Procedures for performing an RPA for ocean dischargers are described in section III.C and Appendix VI of the Ocean Plan. In general, the procedure is a statistical method that projects an effluent data set while taking into account the averaging period of water quality objectives, the long-term variability of pollutants in the effluent, limitations associated with sparse data sets, and uncertainty associated with censored data sets. The procedure assumes a lognormal distribution of the effluent data set and compares the 95th percentile concentration at 95 percent confidence of each Table 1 pollutant, accounting for dilution, to the applicable water quality criterion. The RPA results in one of three following endpoints.

- Endpoint 1: There is "reasonable potential," and a WQBEL and monitoring are required.
- Endpoint 2: There is "no reasonable potential." WQBELs are not required, and monitoring is required at the discretion of the Regional Water Board.
- Endpoint 3: The Ocean Plan RPA is inconclusive. Existing WQBELs are retained, and monitoring is required.

The State Water Board has developed a reasonable potential calculator. The calculator (RPcalc 2.2) shall be used in conducting the RPA and considers several pathways in the determination of reasonable potential.

4.3.3.1.1. First Path

If available information about the receiving water or the discharge supports a finding of reasonable potential without analysis of effluent data, the Regional Water Board may decide that WQBELs are necessary after a review of such information. Such information may include: the facility or discharge type, solids loading, lack of dilution, history of compliance problems, potential toxic effects, fish tissue data, 303(d) status of the receiving water, or the presence of threatened or endangered species or their critical habitat, or other information.

4.3.3.1.2. **Second Path**

If any pollutant concentration, adjusted to account for dilution, is greater than the most stringent applicable water quality objective, there is reasonable potential for that pollutant.

4.3.3.1.3. **Third Path**

If the effluent data contains three or more detected and quantified values (i.e., values that are at or above the ML), and all values in the data set are at or above the ML, a parametric RPA is conducted to project the range of possible effluent values. The 95th percentile concentration is determined at 95 percent confidence for each pollutant and compared to the most stringent applicable water quality objective to determine reasonable potential. A parametric analysis assumes that the range of possible effluent values is distributed lognormally. If the 95th percentile value is greater than the most stringent applicable water quality objective, there is reasonable potential for that pollutant.

4.3.3.1.4. **Fourth Path**

If the effluent data contains three or more detected and quantified values (i.e., values that are at or above the ML), but at least one value in the data set is less than the ML, a parametric RPA is conducted according to the following steps:

- If the number of censored values (those expressed as a “less than” value) account for less than 80 percent of the total number of effluent values, calculate the ML (the mean of the natural log of transformed data) and SL (the standard deviation of the natural log of transformed data) and conduct a parametric RPA, as described above for the Third Path.

- If the number of censored values account for 80 percent or more of the total number of effluent values, conduct a non-parametric RPA, as described below for the Fifth Path. (A non-parametric analysis becomes necessary when the effluent data is limited, and no assumptions can be made regarding its possible distribution.)

4.3.3.1.5. **Fifth Path**

A non-parametric RPA is conducted when the effluent data set contains less than three detected and quantified values, or when the effluent data set contains three or more detected and quantified values but the number of censored values accounts for 80 percent or more of the total number of effluent values. A non-parametric analysis is conducted by ordering the data, comparing each result to the applicable water quality objective, and accounting for ties. The sample number is reduced by one for each tie,

when the dilution adjusted method detection limit (MDL) is greater than the water quality objective. If the adjusted sample number, after accounting for ties, is greater than 15, the pollutant has no reasonable potential to exceed the water quality objective. If the sample number is 15 or less, the RPA is inconclusive, monitoring is required, and any existing effluent limitations in the expiring permit are retained.

4.3.3.2. **Reasonable Potential Determination**

Since no effluent data is available for the proposed discharge to the Pacific Ocean at Discharge Point 001, a qualitative RPA using RPcalc 2.2 could not be conducted. The Monitoring and Reporting Program (MRP) (Attachment E) for this Order requires Nordic Aquafarms California, LLC to conduct monitoring for the parameters subject to water quality objectives in Table 1 of the Ocean Plan within 1 year following commencement of discharges from the Facility at Discharge Point 001 in order to obtain representative data to conduct an RPA. Results from the RPA will be used to determine the need for effluent limitations, in the next permit term, for Table 1 parameters given in the Ocean Plan. Alternatively, this Order may be reopened to establish new effluent limitations based on the monitoring results.

The Facility is a land-based aquaculture facility as defined in 40 C.F.R., part 451. Pollutants of concern from aquaculture facilities include conventional pollutants and certain toxic pollutants, such as ammonia. U.S. EPA's September 2010 NPDES Permit Writer's Manual, states, "*State Implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" U.S. EPA's Technical Support Document for Water Quality Based Toxics Control (TSD) also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.*

Based on Nordic Aquafarms California, LLC's design specifications, the Proposed Facility will be designed to achieve treatment of total ammonia nitrogen (as N) to concentrations of 0.004 mg/L in the effluent. Table 1 of the Ocean Plan includes 6-month median, daily maximum, and instantaneous maximum effluent limitations of 0.6 mg/L, 2.4 mg/L and 6.0 mg/L, respectively. It is uncertain whether the discharge from the Facility will exhibit reasonable

potential to cause or contribute to an exceedance of the water quality objectives in the Ocean Plan for ammonia. Therefore, this Order requires Nordic Aquafarms California, LLC to conduct monthly effluent monitoring for total ammonia nitrogen (as N) to collect sufficient data for conducting an RPA prior to the next permit renewal.

4.3.3.3. Non-Table 1 Water Quality Objectives

4.3.3.3.1. Temperature

The Ocean Plan has the following temperature water quality objective:

The discharge shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.

The Facility's effluent temperature is projected to be a maximum of 68° F. Nordic Aquafarms California, LLC performed near and far field dilution analysis for temperature discharged from the Facility combined with the current discharges from the Ocean Outfall.

Based on the near field temperature modeling, the temperature objective of 4 degrees Fahrenheit will be met within five feet of the diffuser. Therefore, temperature will not be included as an effluent limitation, but continuous effluent monitoring and additional receiving water temperature sampling is required under this Order to collect sufficient data for conducting an RPA prior to the next permit renewal.

4.3.4. WQBEL Calculations

At this time, no effluent data for Ocean Plan Table 1 pollutants are available since the Facility has yet to be constructed. Therefore, this Order does not establish WQBELs applicable to the discharge to the Pacific Ocean at Discharge Point 001.

4.3.5. Whole Effluent Toxicity (WET)

Whole Effluent Toxicity monitoring triggers protect the receiving water from the aggregate effect of a mixture of pollutants that may be present in the effluent. There are two types of WET tests – acute and chronic. An acute toxicity test is conducted over a short time period and measures mortality. A chronic test is conducted over a longer period of time and may measure mortality, reproduction, and/or growth.

WET requirements are derived from the CWA, and the Basin Plan. The Basin Plan establishes a narrative water quality objective for toxicity that states "*All*

waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, or aquatic life." Detrimental responses may include, but are not limited to, decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alterations in population, community ecology, or receiving water biota. For compliance with the Ocean Plan's narrative toxicity objective (Waste discharged to the ocean must be essentially free of: (3) Substances which will accumulate to toxic levels in marine waters, sediments or biota), this Order requires Nordic Aquafarms California, LLC to conduct WET testing for chronic toxicity, as specified in the MRP (Attachment E, section 5).

The Ocean Plan contains toxicity testing requirements based on minimum initial dilution (Dm) factors in section III.C.4.c. Following the implementation procedures of the Ocean Plan, dischargers with Dm factors ranging from 100:1 to 350:1 are required to conduct chronic toxicity testing and may be required to conduct acute toxicity testing as necessary for the protection of beneficial uses of ocean waters. This Order allows for a Dm of 115 for the acute and chronic conditions. Nordic Aquafarms California, LLC has not completed construction of the Facility; therefore, neither acute nor chronic WET data representative of the permitted Facility is available. Since the planned Facility is an aquaculture and fish processing facility with a high level of treatment, and drugs will be used on an infrequent basis, there is a low potential for acutely toxic substances to be present in the treated industrial wastewater. Therefore, acute toxicity testing requirements are not required in this Order. In accordance with the Ocean Plan (section III.C, Implementation Provisions for Table 1), this Order establishes chronic toxicity monitoring requirements for the discharge at Discharge Point 001.

Test of Significant Toxicity (TST)

The Ocean Plan establishes a daily maximum chronic toxicity objective of 1.0 TUc = 100/NOEC, using a five-concentration hypothesis test, and a daily maximum acute toxicity objective of 0.3 TUa = 100/LC50, using a point estimate model. In 2010, U.S. EPA endorsed the peer-reviewed TST two-concentration hypothesis testing approach in National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document (EPA 833-R-10-003, 2010) as an improved hypothesis-testing tool to evaluate data from U.S. EPA's toxicity test methods. The TST hypothesis testing approach more reliably identifies toxicity—in relation to the chronic (0.25 or more) and acute (0.20 or more) mean responses of regulatory management concern—than the current NOEC hypothesis-testing approach used in the Ocean Plan.

This Order does not include effluent limitations for toxicity based on the TST approach. However, this Order does require t Nordic Aquafarms California, LLC to monitor and report results in a manner that will allow the Regional Water Board to conduct an RPA in accordance with the TST approach at the time of the next permit renewal.

The State Water Board is developing a toxicity amendment to the Water Quality Control Plan for Enclosed Bays and Estuaries of California that will standardize the regulation of aquatic toxicity for all non-oceanic surface waters. U.S. EPA's TST approach is an essential component of this draft toxicity amendment as it forms the basis for utilizing numeric water quality objectives and acts as the primary means of determining compliance with the proposed effluent limitations.

In a letter dated February 12, 2014, the State Water Board submitted an alternative test process (ATP) request to U.S. EPA Region 9 for the statewide use of a two-concentration toxicity test design when using the TST approach. This two-concentration test design is composed of a single effluent concentration and a control concentration. U.S. EPA approved the ATP request on March 17th, 2014. In June 2014, the approval was challenged in court on procedural grounds under the Administrative Procedures Act by the Southern California Alliance of Publicly Owned Treatment Works (SCAP) and the Central Valley Clean Water Association (CVCWA). U.S. EPA withdrew the approval and notified State Water Board in a memo dated February 11, 2015.

It is important to note that U.S. EPA's rescission of its approval of the ATP is not based on the substantive TST statistical analysis or the scientific validity of a two-concentration test design. The withdrawal letter also states that currently there is a proposed rulemaking to change the language in the ATP regulations at 40 C.F.R. part 136.

The benefits of requiring the TST in new or amended permits include improving the statistical power of the toxicity test and simplifying the analysis as compared to the traditional hypothesis statistical approaches or point estimates. The calculations are straightforward and provide a clear pass/fail result. With the withdrawal of the two-concentration test design approval, an NPDES permit can still require the TST for statistical analyses. If the two-concentration test design is approved at a future date, the MRP may be modified to remove the need for a five-concentration test. Toxicity tests shall be run using a multi-concentration test design in accordance with 40 C.F.R. section 136.3, and the TST shall be utilized with the biological responses from the permitted in-stream waste concentration (IWC) and the control (effluent concentration of zero). However, even with only two of the five concentration biological responses being used, cost savings in the form of time and effort are still realized for the statistical analysis and data interpretation carried out by the permittee, laboratory, and permit manager. This Order requires application of the TST for statistical analysis of whole effluent toxicity data.

Test of Significant Toxicity (TST) Design

The TST's null hypothesis for chronic toxicity is:

H0: Mean response (In-stream Waste Concentration (IWC) in % effluent) ≤ 0.75 mean response (control)

Results are analyzed using the TST approach and an acceptable level of chronic toxicity is demonstrated by rejecting the null hypothesis and reporting "Pass" or "P".

The chronic IWC (in % effluent) for Discharge Point 001 is 0.87%.1 The chronic toxicity trigger for Discharge Point 001 is expressed as a null hypothesis (H0) and regulatory management decision (b value) of 0.75 for the chronic toxicity methods in the MRP. The null hypothesis for this discharge is:

H0: Mean response (0.87% effluent) ≤ 0.75 mean response (control)

Nordic Aquafarms California, LLC has not conducted chronic toxicity testing prior to construction of the Facility and reasonable potential to cause or contribute to an exceedance of water quality objectives for chronic toxicity cannot be assessed using the TST toxicity.

This Order requires monitoring for chronic toxicity twice during the permit term, within the first 2 years following commencement of discharges from the Facility at Discharge Point 001. Results shall be analyzed using the TST hypothesis testing approach in section V.A.6.a of the MRP. Compliance with this chronic toxicity limitation is demonstrated by rejecting the null hypothesis and reporting "Pass" or "P".

When the chronic toxicity test results in a "Fail" or "F," Nordic Aquafarms California, LLC must initiate accelerated monitoring as specified in the MRP (Attachment E, section V). After accelerated monitoring, if conditions of chronic toxicity are found to persist, Nordic Aquafarms California, LLC will be required to conduct a TRE, as described by the MRP.

Notification requirements for chronic WET testing include a 72-hour verbal notification requirement and a 14-day written report requirement, if test results indicate toxicity. The 14-day written notification is established in the U.S. EPA WET Guidance documents cited in the MRP. The 72-hour verbal notification requirement is being added to provide the Regional Water Board with knowledge of the toxicity in advance of the written report. The 72-hour requirement is intended to give Nordic Aquafarms California, LLC sufficient time to make a telephone call to Regional Water Board staff and accounts for non-working days (e.g., weekends). Verbal notification of WET test exceedances may be left by voice mail if the Regional Water Board staff person is not immediately available by telephone.

This Order requires Nordic Aquafarms California, LLC to conduct a screening test using at least one vertebrate, invertebrate, and plant species. After the screening test is completed, monitoring can be reduced to the most sensitive species.

Chronic WET limitations will be established if future monitoring results demonstrate that discharges from the Facility are causing or contributing to chronic toxicity in the receiving water.

4.4. Final Effluent Limitation Considerations

4.4.1. Anti-Backsliding Requirements

Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Anti-backsliding requirements do not pertain to this Order, since the planned Facility is a newly regulated discharge.

4.4.2. Antidegradation Policies

The Permittees have requested authorization to discharge up to a maximum daily flow of 10.3 mgd from the Facility to the Pacific Ocean. As discussed below, the Regional Water Board conducted an antidegradation analysis to evaluate whether changes in water quality associated with the proposed discharge of treated wastewater to the Pacific Ocean is consistent with the antidegradation provision of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16. The Regional Water Board followed the procedures established in State Water Board Administrative Procedures Update (APU) 90-004 to conduct the antidegradation analysis.

APU 90-004 specifies that a antidegradation analysis is required and a complete antidegradation analysis is not required under certain conditions, including where a Regional Board determines that the proposed action will produce minor effects which will not result in a significant reduction in water quality and where the Regional Board determines that the reduction of water quality will be spatially localized or limited with respect to the waterbody; e.g., confined to the mixing zone. Based on the level of treatment provided, the use of an approved BMP Plan and modeling performed that shows the Ocean plan constituents of concern are below the water quality objectives within five feet of the diffuser, the Regional Water Board finds that the proposed discharge will produce minor effects which will not result in a significant reduction in water quality. Additionally, construction of the Facility on the Samoa peninsula was evaluated as part of the **Nordic Aquafarms California, LLC Land-based Aquaculture Project Environmental Impact Report (**State Clearinghouse No. 2021040532). Therefore, the Regional Water Board determined that a simple antidegradation

analysis is sufficient. Findings of the antidegradation analysis are summarized below.

4.4.2.1. **Water Quality Parameters and Beneficial Uses Which Will be Affected by the Proposed Expansion and the Extent of the Impact.**

Compliance with this Order will not adversely impact beneficial uses of the receiving water. All beneficial uses will be maintained and protected. 40. C.F.R. section 131.12 defines the following tier designations to describe water quality in the receiving water body.

*Tier 1 Designation: Existing instream water uses, and the level of water quality is necessary to protect the existing uses shall be maintained and protected. (*40. C.F.R. §131.12)

Tier 2 Designation: Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. (40 C.F.R. §131.12

The tier designation is assigned on a pollutant-by-pollutant basis. Pollutants of concern in aquaculture facilities include conventional pollutants and certain toxic pollutants, such as ammonia. The Pacific Ocean is not identified on the 2014 and 2016 3030(d) list as impaired. Therefore, the Pacific Ocean is considered a Tier 2 receiving water for all pollutants considered.

Monitoring data for the pollutants of concern is not available to characterize the extent of their impact since the Facility has yet to be constructed. Nevertheless, this Order establishes terms and conditions to ensure that the discharge does not unreasonably affect the present and anticipated beneficial uses of the Pacific Ocean, including effluent limitations for TSS, oil and grease, settleable solids and pH. This Order includes effluent monitoring for ammonia, temperature and Ocean Plan Table 1 parameters. This Order may be reopened to include effluent limitations for ammonia and any parameters that indicate reasonable potential to cause or contribute to and exceedance of a water quality objective.

As discussed below, the antidegradation analysis evaluated whether allowance of the proposed discharge and associated increase in concentration and mass loading in this Order will result in the best practicable treatment or control of the discharge necessary to assure a pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit of the people of the State will be maintained.

4.4.2.2. **Scientific Rational for Determining Potential Lowering of Water Quality**

The Rationale used in the Antidegradation Analysis is based on 40 C.F.R. section 131.12, U.S. EPA Region 9 Guidance on Implementing the Antidegradation Provisions of 40 C.F.R. section 131.12 (U.S. EPA 1987), State Water Board Resolution No. 68-16, a State Water Board 1987 policy memorandum to the Regional Water Boards, and APU 90-004 issued by the State Water Board to the Regional Water Boards.

4.4.2.2.1. Nitrogen

The Facility is proposed to discharge 1,224 lbs/day of nitrogen at full build-out with a maximum flow of 10.3 mgd, as updated in new information submitted by Nordic Aquafarms on June 6, 2023. The Ocean Plan does not have a numeric effluent limitation for nitrogen. However, it does include a narrative objective that states, “nutrient materials shall not cause objectionable aquatic growths or degrade indigenous biota.”

This Order includes a dilution ratio of 115:1. Using the proposed 1,224 lbs/day, a maximum flow of 10.3 mgd and the dilution ratio of 115:1 results in a concentration of 0.12 mg/L of nitrate at the edge of the mixing zone.

4.4.2.2.2. Ammonia

The Facility will be designed to discharge ammonia at 0.004 mg/L. The Ocean Plan includes numeric water quality objectives for ammonia. The instantaneous maximum is 6 mg/L, the daily maximum is 2.4 mg/L and the six-month median is 0.6 mg/L.

4.4.2.2.3. Temperature

In the June 6, 2023 characterization update, the Facility is proposed to discharge effluent with a temperature of 68 degrees Fahrenheit. Hourly temperature data collected at the North Spit Tide Gage was analyzed from April 2020 to April 2021 to determine background temperature of the discharge location. Of the 8,784 data points, 1.8 percent of the hourly values were 20 degrees less than the proposed 68 degrees in the effluent. The data had an average of 52 degrees Fahrenheit, a 20th percentile of 50 degrees Fahrenheit and a 10th percentile of 49.5 degrees Fahrenheit. Section 4.3.3.1 of the Fact Sheet further discusses temperature objectives.

4.4.2.3. Alternative Control Measures Considered

The Regional Water Board has considered the feasibility of alternative treatment and control methods which might reduce, eliminate, or compensate for the negative impacts of the proposed discharge, including discharge to land and discharge to Humboldt Bay, under the Enclosed Bays and Estuaries Policy.

The land discharge alternative would require a higher level of treatment (i.e., Full Advanced Treatment) as compared to the proposed discharge. However, without Full Advanced Treatment, land discharge would have the potential to cause adverse effects to the municipal and domestic supply uses of the underlying groundwater. Furthermore, a discharge to Humboldt Bay would require the Permittees to develop a project that meets the criteria for an Enclosed Bays and Estuaries discharge prohibition exemption. The exemption project would increase construction and maintenance costs associated with showing that beneficial uses are promoted or enhanced further than without the proposed discharge.

The Regional Water Board finds that the environmental impacts associated with the proposed discharge alternative are lower than those associated with the land discharge alternative and the Humboldt Bay alternative. The treatment system is designed to achieve compliance with the requirements of the Ocean Plan. The utilization of UV disinfection on influent and effluent, along with micro-filtration of the effluent, will ensure compliance with applicable water quality objectives for those parameters in the Ocean Plan. Therefore, the Regional Water Board finds that the proposed discharge alternative will provide for the best practicable treatment or control of the discharge.

4.4.2.4. Socioeconomic Evaluation

The Regional Water Board performed a socioeconomic analysis to determine if the lowering of water quality in the Pacific Ocean is in the maximum interest of the people of the state. For the socioeconomic evaluation, the Regional Water Board considered:

- The social benefits and costs based on the ability to accommodate socioeconomic development in the Nordic Aquafarms, LLC ROWD and the Humboldt County Master Plan;

- The anticipated change in water quality from existing conditions, the water quality impacts, and expected effects on beneficial uses of the Pacific Ocean;

- The feasibility and effectiveness of reducing the lowering of water quality by implementing alternatives to lowering of Pacific Ocean water quality; and

- The economic costs of alternatives compared to the costs of the proposed discharge.

- The far-field modeling does not predict effluent from the discharge to enter Humboldt Bay. The model predicts a negligible effect of the proposed discharge (i.e., a dilution factor of 2,000) on Humboldt Bay during the conservative, worst case summer scenario. Based on the modeling results, the effluent discharge would be compliant with established water quality thresholds in the Ocean Plan and the Thermal Plan, and the waters of Humboldt Bay would not be impacted.

4.4.2.5. Justification for Allowing Degradation

The Regional Water Board finds that the proposed discharge and associated degradation is appropriate, as follows:

- The proposed discharge will accommodate important economic and social development in the area and provide maximum benefit to the people of the state. Specifically, the proposed discharge will provide 130 to 150 full-time jobs and increased tax revenue for Humboldt County, which supports multiple disadvantaged communities.

- The cleanup and redevelopment of an environmentally impacted site at the former Samoa Pulp Mill.

- The new discharge will not adversely affect existing or probable beneficial uses of the Pacific Ocean or Humboldt Bay, nor will it cause water quality to fall below applicable water quality objectives.

The Regional Water Board finds that the proposed discharge of 10.3 mgd from the Facility is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the best practicable treatment or control of the discharges from the Facility.

4.4.3. Stringency of Requirements for Individual Pollutants

This Order contains technology-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on total suspended solids, settleable solids and pH. Restrictions on total suspended solids, settleable solids and pH are discussed in section 4.2 of the Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order

contains effluent limitations for pH, TSS and settleable solids that are more stringent than the minimum, federal technology-based requirements but are necessary to meet water quality standards.

4.5. Interim Effluent Limitations

This Order does not establish interim effluent limitations or schedules for compliance with final effluent limitations.

4.6. Land Discharge Specifications

This Order does not establish land discharge specifications.

4.7. Recycling Specifications

This Order does not establish recycling specifications.

4.8. Other Requirements

4.8.1. Disinfection Process Requirements for Ultraviolet Light (UV) Disinfection System

This Order contains monitoring requirements for the UV disinfection system in section 4.4.1. These requirements are needed to ensure that the disinfection process achieves effective pathogen reduction per the design of the system.

UV system operation requirements are necessary to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses, bacteria) in the wastewater. UV dosage is dependent on several factors such as UV transmittance, UV power setting, and wastewater flow through the UV system. Minimum dosage requirements are based on Nordic Aquafarms California, LLC's proposed design specifications for the UV disinfection system, which identify site-specific UV operating specifications for virus inactivation necessary to protect Beneficial Uses. Minimum UV dosage requirements specified in section 4.4.1 of the Order ensure that adequate disinfection of wastewater will be achieved.

5. RATIONALE FOR RECEIVING WATER LIMITATIONS

5.1. Surface Water

CWA section 303 (a-c) requires states to adopt water quality standards, including criteria, where they are necessary to protect beneficial uses. The State Water Board adopted water quality criteria as water quality objectives in the Ocean Plan. Receiving water limitations within this Order reflect all applicable, general water quality objectives in the Ocean Plan.

The Ocean Plan includes numeric and narrative water quality objectives for various beneficial uses. This Order contains receiving water limitations for discharges to the Pacific Ocean based on the Ocean Plan numerical and narrative water quality objectives for dissolved oxygen, floating particulates, oil and grease, pH, discoloration, natural lighting, deposition of solids, dissolved sulfides, organic materials in sediments, Table 1 parameters, nutrient materials, radioactive wastes, and biological characteristics.

5.2. Thermal Plan

The Thermal Plan is applicable to the discharge from the Facility. The discharge is considered to be a New Discharge of Elevated Temperature Waste to Coastal Waters, as defined in the Thermal Plan. Therefore, as described in section 3.3.2 of this Fact Sheet, the water quality objectives for new discharges to coastal waters at section 3.B.(4) of the Thermal Plan have been established as receiving water limitations in this Order.

6. RATIONALE FOR PROVISIONS

6.1. Standard Provisions

6.1.1. Federal Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The rationale for the special conditions contained in the Order is provided in section 6.2, below.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

6.1.2. Regional Water Board Standard Provisions

In addition to the Federal Standard Provisions (Attachment D), the Permittees shall comply with the Regional Water Board Standard Provisions provided in Standard Provisions 6.1.2 of this Order.

6.1.2.1. Order Provisions 6.1.2.1 identifies the State's enforcement authority under the Water Code, which is more stringent than the enforcement authority specified in the federal regulations (e.g., 40 C.F.R. sections 122.41(j)(5) and (k)(2)).

6.1.2.2. Order Provisions 6.1.2.2. requires the Permittees to notify Regional Water Board staff, orally and in writing, if the Permittee does not comply or will be unable to comply with any Order requirement. This provision requires the Permittees to make direct contact with a Regional Water Board staff person.

6.2. **Special Provisions**

6.2.1. Reopener Provisions

6.2.1.1. **Standard Revisions (Special Provision 6.3.1.1)**

Conditions that necessitate a major modification of a permit are described in 40 C.F.R. section 122.62, and include the following:

6.2.1.1.1. When standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision. Therefore, if revisions of applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA or amendments thereto, the Regional Water Board will revise and modify this Order in accordance with such revised standards.

6.2.1.1.2. When new information that was not available at the time of permit issuance would have justified different permit conditions at the time of issuance.

6.2.1.2. **Reasonable Potential (Special Provision 6.3.1.2)**

This provision allows the Regional Water Board to modify, or revoke and reissue, this Order if present or future investigations demonstrate that the discharge governed by this Permit is causing or contributing to excursions above any applicable priority pollutant criterion or objective, or adversely impacting water quality and/or the beneficial uses of receiving waters.

6.2.1.3. **Whole Effluent Toxicity (WET) (Special Provision 6.3.1.3.)**

This Order may be reopened to include a narrative or numeric chronic toxicity limitation and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity objective is adopted by the State Water Board, this Order may be reopened to include numeric chronic toxicity effluent limitations based on that objective.

6.2.1.4. **303(d)-Listed Pollutants (Special Provision 6.3.1.4).**

This provision allows the Regional Water Board to reopen this Order to modify existing effluent limitations or add effluent limitations for pollutants that are the subject of any future TMDL action.

6.2.1.5. **Co-Permittee Status**

This provision allows the Regional Water Board to reopen this Order to remove HBHRCD as a co-permittee in the event that HBHRCD obtains their own NPDES permit that will allow the regulation of the intake structures and Ocean Outfall.

6.2.1.6. **Mitigation Project**

This provision allows the Regional Water Board to reopen this Order to modify the mitigation project required for compliance with Water Code section 13142.5

6.2.2. Special Studies and Additional Monitoring Requirements

6.2.2.1. Disaster Preparedness Assessment Report and Action Plan (Special Provision 6.3.2.1)

Natural disasters, extreme weather events, sea level rise, and shifting precipitation patterns, some of which are projected to intensify due to climate change, have significant implications for wastewater treatment and operations. Some natural disasters are expected to become more frequent and extreme according to the current science on climate change. In order to ensure that Facility operations are not disrupted, compliance with conditions of this Order are achieved, and receiving waters are not adversely impacted by permitted and unpermitted discharges, this Order requires the Permittees to submit a Disaster Preparedness Assessment Report and Action Plan. The Permittees may complete the Disaster Preparedness Assessment Report and Action Plan as part of a collaborative effort with DG Fairhaven Power, LLC and any additional dischargers that utilize the ocean outfall.

6.2.2.2. New Chemical and Aquaculture Drug Use Reporting

The Effluent Limitation Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category at 40 C.F.R. part 451 include the following reporting and narrative requirements for CAAP facilities:

- Each facility must notify the permitting authority of any INAD or extra-label drug use where the use may lead to a discharge to waters of the United States.
- Each Facility must report for failure in or damage to the structure of an aquatic animal containment system, resulting in an unanticipated material discharge of pollutant to waters of the United States.
- Each facility must develop a BMP Plan for solids control, material storage, structural maintenance, record keeping and training.

Prior to using any new chemical or aquaculture drug at a CAAP facility, a Permittee is required to notify the Regional Water Board of the proposed use. The notification must contain the toxicity testing results of the new chemical or aquaculture drug as specified in Section 10.3.2.1 of this General Order. These reporting and toxicity testing requirements are needed for the Regional Water Board to determine if the discharge of a new drug or chemical by the Facility has reasonable potential to cause, or contribute to an in-stream excursion above any chemical-specific water quality criteria, narrative water quality objective for chemical constituents from the Basin Plan, or narrative water quality objective for toxicity from the Basin Plan.

6.2.2.3. Monitoring of Coastal Oceanography and Water Quality

This Order requires monitoring of coastal oceanography and water quality to characterize baseline conditions prior to discharge from the Facility and compare that data with post-discharge monitoring. The monitoring in the vicinity of the diffuser will better allow the Regional Water Board to determine compliance with Ocean Plan numeric and narrative water quality objectives and assess any impacts to beneficial uses using best available science.

6.2.3. Best Management Practices and Pollution Prevention

6.2.3.1. Best Management Practices (BMP) Plan (Special Provision 6.3.3.1)

Provision 6.3.3.1 is established based on requirements in Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category at 40 C.F.R. part 451. CAAP facilities are required to develop and maintain a BMP Plan that addresses the following requirements: solids control, material storage, structural maintenance, record-keeping, and training. Nordic Aquafarms California, LLC must make the BMP Plan available to the Regional Water Board upon request and submit certification that the BMP Plan has been developed.

6.2.3.2. Pollutant Minimization Plan (Special Provision 6.3.3.2)

This provision is included in this Order pursuant to section III.C.9 of the Ocean Plan. The Regional Water Board includes provisions in all NPDES permits requiring development of a PMP when there is evidence that a toxic pollutant is present in the effluent at a concentration greater than an applicable effluent limitation.

6.2.4. Construction, Operation, and Maintenance Specifications

6.2.4.1. Operation and Maintenance (O&M) (Special Provision 6.3.4.1)

40 C.F.R. section 122.41(e) requires proper O&M of permitted wastewater systems and related facilities to achieve compliance with permit conditions. An up-to-date O&M Manual, as required by Provision 6.3.4.1 of this Order, is an integral part of a well-operated and maintained facility.

6.2.4.2. New Facility Certification Report

This provision requires t Nordic Aquafarms California, LLC to certify the construction of the Facility and provide the Regional Water Board with as-built plans and records.

6.2.5. **Special Provisions for Publicly-Owned Treatment Works (POTWs) – Not Applicable**

6.2.6. Other Special Provisions

6.2.6.1. Solids Disposal and Handling Requirements (Special Provision 6.3.6.1)

The disposal or reuse of wastewater treatment screenings, or other solids removed from the liquid waste stream is regulated by 40 C.F.R. parts 257, 258, 501, and 503, and the State Water Board promulgated provisions of title 27 of the CCR. Sludge generated at the Facility is currently proposed to be pumped into sealed holding tanks and likely used as a fertilizer/soil amendment, biogas or composting. The Facility will be producing two to four trucks daily at full production.

Dead fish are proposed to be ground and stored in storage tanks with a weak acidic solution to maintain a pH of 4 to prevent odor.

6.2.6.2. Storm Water (Special Provision 6.3.6.2)

This provision requires Nordic Aquafarms California, LLC, if applicable, to obtain coverage under the State Water Board's Water Quality Order No. 2014-0057-DWQ, NPDES General Permit No. CAS000001, General Permit for Storm Water Discharges Associated with Industrial Activities (or subsequent renewed versions of the NPDES General Permit CAS000001).

The provision also requires Nordic Aquafarms California, LLC to obtain coverage under State Water Board Water Quality General Order No. 2009-0009-DWQ, General Permit for Discharges of Storm Water Associated with Construction Activity for control of storm water discharges from construction at the Facility.

The Order requires Nordic Aquafarms California, LLC to implement and maintain BMPs to control the run-on and runoff of storm water to the Facility and to describe the effectiveness of these storm water BMPs, as well as activities to maintain and upgrade these BMPs during the previous year, in its Annual Facility Report to the Regional Water Board.

6.2.7. Compliance Schedules – Not Applicable

This General Order does not establish interim effluent limitations or schedules of compliance for final numeric effluent limitations.

7. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

CWA section 308 and 40 C.F.R. sections 122.41(h), (j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program (MRP), Attachment E of this Order establishes monitoring, reporting, and recordkeeping requirements that implement

federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

7.1. Effluent Monitoring

Effluent monitoring requirements are necessary to determine compliance with prohibitions and/or effluent limitations established by the Order. Monitoring at Monitoring Location EFF-001 is necessary to demonstrate compliance with effluent limitations and demonstrate whether or not the discharge poses reasonable potential for a pollutant to exceed any numeric or narrative water quality objectives for discharges to the Pacific Ocean.

7.1.1. Effluent monitoring requirements have been established for flow, oil and grease pH, TSS, settleable solids, and turbidity at Monitoring Location EFF-001 in order to determine compliance with applicable prohibitions and effluent limitations.

7.1.2. Ammonia is a pollutant of concern in domestic wastewater and is extremely toxic to aquatic life. The Facility is designed to achieve an ammonia concentration of 0.004 mg/L after dilution. This Order requires monthly effluent monitoring for ammonia to determine if discharges from the Facility exhibit reasonable potential to cause or contribute to an exceedance of the applicable water quality objectives for ammonia.

7.1.3. This Order requires effluent monitoring for Ocean Plan Table 1 pollutants annually during the permit term, within the first year following commencement of discharges from the Facility, at Monitoring Location EFF-001 to generate adequate data to perform an RPA. Samples for Ocean Plan Table 1 pollutants shall be collected as 24-hour composites, with the exception that grab samples shall be collected for those priority pollutants that are volatile.

7.2. Whole Effluent Toxicity Testing Requirements

WET monitoring requirements are established for discharges to the Pacific Ocean from Discharge Point 001 at Monitoring Location EFF-001 and are included in the Order to protect the receiving water quality from the aggregate effect of a mixture of pollutants in the effluent. Acute toxicity testing measures mortality in 100 percent effluent over a short test period and chronic toxicity testing is conducted over a longer time period and may measure mortality, reproduction, and/or growth. The Ocean Plan (section III.C.4.c.(3)) requires chronic toxicity testing where the minimum initial dilution of the effluent is between 100:1 and 350:1 and allows for the Regional Water Board to require acute toxicity testing as necessary to protect beneficial uses of ocean waters. This Order allows for a Dm of 115 for the acute and chronic conditions.

As described in section 4.3.5 of this Fact Sheet, since the planned Facility is an aquaculture and fish processing facility with a high level of treatment, and drugs will be used on an infrequent basis, there is a low potential for acutely toxic substances to be present in the treated industrial wastewater. Therefore, the

Regional Water Board has determined that acute toxicity testing requirements are not necessary to protect the beneficial uses of the ocean waters. In accordance with the Ocean Plan, WET monitoring shall consist of chronic toxicity testing only. This Order includes monitoring requirements for chronic toxicity to assess whether there is reasonable potential to exceed the Ocean Plan's narrative water quality objectives for toxicity. Consistent with Appendix III of the Ocean Plan, this Order requires chronic toxicity testing annually following the commencement of discharges at Discharge Point 001.

In addition to routine toxicity monitoring, this Order requires Nordic Aquafarms California, LLC to develop a TRE Work Plan, in accordance with appropriate U.S. EPA guidance, to ensure that Nordic Aquafarms California, LLC have a plan to immediately move forward with the initial tiers of a TRE in the event effluent toxicity is encountered in the future. The TRE is initiated by evidence of a pattern of toxicity demonstrated through the additional effluent monitoring provided as a result of an accelerated monitoring program.

7.3. Land Discharge Monitoring Requirements – Not Required

This Order does not authorize discharges to land.

7.4. Recycling Monitoring Requirements – Not Required

This Order does not authorize discharges of recycled water.

7.5. Receiving Water Monitoring – Not Required

This Order does not require surface water monitoring at this time.

7.6. Groundwater – Not Required

This Order does not require groundwater monitoring at this time.

7.7. Other Monitoring Requirements

7.7.1. Accelerated Monitoring Requirements

Table E-3 includes accelerated monitoring requirements for parameters that are required to be monitored weekly and monthly.

7.7.2. Biological Survey

This Order requires the Permittees to perform a biological survey of the outfall location once every 5 years. The Permittees may complete the biological survey in collaboration with the Humboldt Bay Harbor District, DG Fairhaven Power, LLC, Samoa Wastewater Treatment Plant and any additional dischargers that utilize the ocean outfall.

7.7.3. Flow Monitoring

Section I.D of the MRP requires proper installation, calibration, operation, and maintenance of flow metering devices.

8. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, North Coast Region (Regional Water Board) has considered the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Nordic Aquafarms California, LLC and the land-based RAS Facility. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs and has encouraged public participation in the WDR adoption process.

8.1. Notification of Interested Parties

The Regional Water Board notified the Permittees and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the following posting on the Regional Water Board's Internet.

8.2. Written Comments

Interested persons were invited to submit written comments concerning these tentative WDRs as provided through the notification process. Comments were due to the Regional Water Board Executive Office electronically via e-mail. The guidelines for electronic submittal of documents can be found on the Regional Water Board website.

To be fully responded to by staff and considered by the Regional Water Board, the written comments were due at the Regional Water Board office by 5:00 p.m. on **June 4, 2021.**

8.3. Public Hearing

The Regional Water Board held a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date:	**October 5 and 6, 2023**
Time:	8:30 a.m. or as announced in the Regional Water Board's agenda
Location:	Regional Water Quality Control Board 5550 Skylane Blvd. Suite A Santa Rosa, California

Interested persons were invited to attend. At the public hearing, the Regional Water Board heard testimony pertinent to the discharge, WDRs, and permit. For accuracy of the record, important testimony was requested in writing.
Please be aware that dates and venues may change. Our Web address is where you can access the current agenda for changes in dates and locations.

8.4. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be received by the State Water Board at the following address within 30 calendar days of the Regional Water Board's action:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

For instruction on how to file a petition for review see this website.

8.5. Information and Copying

The ROWD, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address identified in section **8.3**, above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling (707) 576-2220.

8.6. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this Facility, and provide a name, address, and phone number.

8.7. Additional Information

Requests for additional information or questions regarding this order should be directed to Justin McSmith at Justin.McSmith@waterboards.ca.gov or (707) 576-2082.