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Filed:	3/28/16
180th Day:	9/24/16
270th Day:	12/23/16
Staff:	J. Street-SF
Staff Report:	4/29/16
Hearing Date:	5/11/16

STAFF REPORT: REGULAR CALENDAR

Application No.:	**9-16-0033**
Applicant:	**Coast Seafoods Company**
Agents:	Plauché and Carr, LLP
Location:	Samoa Peninsula, Samoa, Humboldt County.
Project Description:	Construct and operate an onshore shellfish hatchery, including seed setting, seed washing, storage, broodstock and larvae facilities, a seawater intake and return system, and a microalgae greenhouse, at an existing pier and warehouse.
Staff Recommendation:	Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

Coast Seafoods Company (Coast) proposes to establish an onshore shellfish hatchery at an existing pier, berth facility and warehouse owned by the Humboldt Bay Harbor, Recreation, and Conservation District at the site of a former pulp mill. The project site is located north of the Eureka Municipal Airport near the town of Samoa on the west side of the entrance channel of Arcata Bay (the northern arm of Humboldt Bay).

The proposed hatchery would be used for the spawning, feeding, and growing of juvenile shellfish seed, including Pacific oyster, Kumamoto oyster, Manila clam, Pacific geoduck, and Gallo mussel, providing Coast with a local source of seed for use in its Humboldt Bay grow-out operations and for possible sale to other growers. The proposed hatchery would consist of seven primary elements, to be constructed in two phases. Phase I projects would include: (1) a seed setting facility; (2) a seed wash system; (3) a seawater intake and return system; and (4) parking and storage facilities. Phase II projects would include: (5) a broodstock and larvae facility; (6) a microalgae greenhouse; and (7) a storage area for cultch, which are the shells used for seed setting.

The proposed project has the potential to adversely affect marine resources through the intake of seawater to support hatchery operations, and the discharge of pollutants to coastal waters during project construction and operations. Phase I development would require a relatively small 75,000 gallons of seawater per day, consistent with previous Commission approvals of upland shellfish hatcheries. Phase II development would require an additional 950,000 gallons of seawater per day, for a total of up to 1 million gallons per day. Seawater intake at this level has the potential to result in the entrainment or impingement, and the eventual mortality, of marine organisms, including plankton, larvae and adult and juvenile fish. Staff is therefore recommending denial of Phase II at this time. Project-related contaminant discharges, stormwater runoff and erosion have the potential to affect water quality in Humboldt Bay. In addition, project construction could result in the disturbance of known osprey nests near the project site.

The Commission finds that with implementation of **Special Conditions 1-6**, Phase I of the project can be carried out consistent with the marine resource, water quality protection, and environmentally sensitive habitat area (ESHA) policies of the Coastal Act. **Special Condition 1** would establish a permit term limit consistent with the current lease term for the project site, giving the Commission the opportunity to re-assess the coastal resource impacts of the operation after it has been functioning for approximately 10 years. **Special Conditions 2-6** would further reduce potential marine resource and ESHA impacts by: (a) requiring the design of the seawater intake system to reflect current standards established to minimize the entrainment and impingement of adult and juvenile fish; (b) prohibiting construction of Phase II at this time and requiring a two-year fish larvae study to determine the magnitude of potential entrainment and impingement impacts to fish larvae during Phase II, including the state-listed, threatened longfin smelt; (c) requiring submittal of a Stormwater Pollution Protection and Erosion Control Plan and evidence of project authorization by the North Coast Regional Water Quality Control Board; and (d) requiring that protective measures be carried out for nesting osprey that have been observed in close proximity to the project site.

Commission staff recommends **approval** of coastal development permit application 9-16-0033, as conditioned.

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APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** Coastal Development Permit 9-16-0033 subject to conditions set forth in the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in approval of the permit amendment as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of Commissioners present.

Resolution:

The Commission hereby approves the Coastal Development Permit 9-16-0033 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the amended development on the environment.

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment**. The permit is not valid and development shall not commence until a copy of the permit, signed by SCE or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration**. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation**. Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment**. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land**. These terms and conditions shall be perpetual, and it is the intention of the Commission and SCE to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. **Permit Term Limit.** The permit shall expire on August 15, 2025, which is the date on which the current Humboldt Bay Harbor, Recreation, and Conservation District Lease expires. If this lease is extended or a new lease is issued by the Humboldt Bay Harbor, Recreation, and Conservation District, Coast may apply to the Commission for a permit amendment to extend the term of this permit.

2. **Intake System Design.** All intake systems shall be designed with a screened intake with (a) round or square openings of no more than 3/32 inches or slotted/wedge wire openings of no more than 1.75 millimeters, a screen area of at least 5 square feet per cubic foot per second water volume intake, a minimum open area of 27%, and a maximum intake water approach velocity of 0.2 feet per second if a self-cleaning device is installed that clears the entire screen face at least once every five minutes; or (b) round or square openings of no more than 3/32 inches or slotted/wedge wire openings of no more than 1.75 millimeters, a screen area of at least 20 square feet per cubic foot per second water volume intake, a minimum open area of 27%, and a maximum intake water approach velocity of 0.05 feet per second if a self-cleaning device is not installed.

3. **Larval Fish Impacts Study.** Coast shall develop a Larval Fish Impacts Study ("Study"), in consultation with Commission staff and the California Department of Fish and Wildlife, to assess the impacts of the proposed Phase II development on larval fish. The Study shall be submitted for review and approval by the Executive Director prior to implementation. The Study shall, at a minimum, include the following:

   (1) Regular monitoring of water temperature and salinity in the vicinity of the project site, at the surface and at the depth of the seawater intakes;

   (2) Regular monitoring of the abundance and composition of pelagic larvae in samples collected from at least two depths (surface and intake) adjacent to the seawater intakes. The design and duration of the Study, and the frequency of sampling events shall be sufficient to capture larval dynamics of key species, such as the longfin smelt, over relevant time scales (i.e., seasonal, diurnal, etc.) and oceanographic regimes within Humboldt Bay.

   (3) Description of a methodology for estimating entrainment and impingement of fish larvae based on monitoring data;

   During the Study period, Coast shall provide the Executive Director with semi-annual monitoring reports to be submitted according to a schedule contained in the approved Study plan. The monitoring reports shall, at a minimum, contain a description of the monitoring and sampling conducted during the previous 6 months, and a summary of the results, including the number and species of any fish larvae detected during sampling. Coast shall provide a final monitoring report, summarizing the results of all monitoring activities, and

providing estimates of potential Phase II entrainment and impingement impacts on fish larvae, within 60 days of the end of the Study period.

No Phase II development is authorized by this permit. No Phase II development may take place until Coast has obtained a new permit or an amendment to this permit authorizing such development.

4. **RWQCB Review and Approval.** PRIOR TO COMMENCEMENT OF CONSTRUCTION, Coast shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, and/or authorizations for the approved project have been granted by the North Coast Regional Water Quality Control Board (RWQCB). Any changes to the approved project required by the RWQCB shall be reported to the Executive Director. No changes to the approved project shall occur without an amendment to this CDP unless the Executive Director determines that no amendment is legally necessary.

5. **Storm Water Pollution Prevention and Erosion Control Program**. PRIOR TO THE START OF CONSTRUCTION, Coast shall submit a project-specific Storm Water Pollution Prevention and Erosion Control Plan ("Plan") to the Executive Director for review and approval, for any excavation, trenching or other ground-disturbing activities, including but not limited to the installation of the saltwater intake and discharge pipes (during Phase I of the project) and the construction of the microalgae greenhouse (during Phase II). The Plan shall identify and implement measures that prevent adverse impacts to Humboldt Bay related to runoff and erosion during construction activities, and shall include Best Management Practices such as temporary berms, barriers and sedimentation traps, silt fencing, straw bales, sand bags, storm drain inlet protection, seeding and mulching, and dust control measures. In addition, the plan shall specify the site restoration activities that will be undertaken following ground-disturbing construction activities. The Plan shall also include a hazardous substance management section that identifies handling, storage, disposal and emergency response procedures related to any hazardous waste that may be generated or identified during project activities. Coast shall implement the Plan as approved by the Executive Director.

6. **Protection of Nesting Ospreys**. Coast shall implement the following nesting osprey protection measures for all trenching, excavation, heavy equipment use or other outdoor construction activities occurring during the osprey nesting season, defined here as March 15 through August 15.

   A. Biological Monitor: PRIOR TO COMMENCEMENT OF CONSTRUCTION, Coast shall retain the services of one or more qualified biologists approved by the Executive Director to ensure compliance with all relevant osprey protection measures. The approved biologist(s) shall conduct the required preconstruction surveys and monitoring during construction, keep required records, and notify Commission staff and staff of other agencies as necessary regarding project conformity to these measures. The approved biologist(s) shall be present during all project construction activities and on a periodic basis when the biologist determines operational activities

may affect areas previously undisturbed by project activities. The biologist(s) shall monitor construction equipment access and shall have authority to halt work activities, if the potential for impacts to nesting ospreys is identified, until the issue can be resolved. The biologist(s) shall immediately report any observations of significant adverse effects on nesting ospreys to the Executive Director.

B. Pre-construction Surveys NO MORE THAN 14 DAYS BEFORE COMMENCEMENT OF CONSTRUCTION, the biologist(s) shall conduct a field survey of osprey nesting activity at the former pulp mill site, and shall identify all osprey nests (active or inactive) within 500 feet of the location of any proposed construction activity.

C. Limitations on Construction Activity: (a) Between March 15 and August 15, excavation, trenching, heavy equipment use and other outdoor construction activities shall be avoided within 500 feet of an osprey nest unless the nest is determined to be inactive by the approved biologist(s). (b) If trenching, excavation, heavy equipment use or other outdoor construction within the 500-foot disturbance-free buffer cannot be postponed until after the osprey breeding season, such activities may proceed only under the oversight of the approved biological monitor(s), who shall have the authority to halt construction activities if and when the ospreys occupying a nest show signs of disturbance, agitation, or abnormal behavior. (c) All excavation, trenching, heavy equipment use or other outdoor construction within 500 feet of an active osprey nest shall cease if the biological monitor(s) documents behavioral signs of nest disturbance, and shall remain suspended until the approved biologist(s) has determined that chicks have fledged and the osprey nesting season is complete.

IV. FINDINGS AND DECLARATIONS

A. PROJECT DESCRIPTION

Coast Seafoods Company (Coast) proposes to construct and operate an upland saltwater shellfish hatchery on property leased from the Humboldt Bay Harbor, Recreation and Conservation District (Harbor District) at the existing Redwood Terminal Berth 2 pier facility (RWT2), formerly associated with the former Louisiana-Pacific Samoa pulp mill. The Berth 2 facility is located on the Samoa Peninsula, north of the Eureka Municipal Airport and on the west side of the entrance channel to Arcata Bay (**Exhibit 1**). The proposed hatchery facilities would be installed in and around an existing warehouse that is already used by Taylor Mariculture LLC (Taylor) for a similar shellfish hatchery pursuant to CDP Nos. E-11-029 and E-11-029-A1. Coast also proposes to install saltwater intake and discharge pipes along the existing pier and dock facility in order to serve the upland hatchery (**Exhibits 2**, **3**). The Harbor District has issued a ten-year lease to Coast for the use of a portion of the land and existing structures on-site; the lease expires in August 2025. As a part of the lease, Coast also holds an option to expand its use of the existing warehouse and surrounding area in order to accommodate later development (Phase II, see below).

The proposed hatchery will provide Coast with a local source of juvenile shellfish seed for use in its existing and future grow-out operations in Humboldt Bay, and as a possible seed source for

sale to other growers. Coast states that it requires an inventory of juvenile seed at specific times throughout the year to ensure a steady supply of future marketable-size shellfish for distribution and sale. At present, Coast does not operate a shellfish hatchery in the Humboldt Bay region, and depends on seed grown at a Coast hatchery in Washington State. Coast proposes to use the hatchery to cultivate seed of several non-native shellfish species common to shellfish aquaculture, including Pacific oyster (*Crassostrea gigas)*, Kumamoto oyster (*C. sikamea*), Manila clam (*Venerupis philippinarum*), Pacific geoduck (*Panopea generosa*), and Gallo (Mediterranean) mussel (*Mytilus galloprovincialis*), depending on future market demand.

Coast's proposed shellfish hatchery would be an integrated upland facility for the purpose of spawning, feeding, and growing juvenile shellfish seed to a size suitable for transfer to the company's existing nurseries. The proposed shellfish hatchery development would include two phases. In Phase I, Coast proposes to construct: (1) a seed setting facility; (2) a seed wash system; (3) a seawater intake and return system; and (4) parking and storage facilities. In Phase II, Coast proposes to construct (5) a broodstock and larvae facility; (6) a microalgae growing area (greenhouse); and (7) a cultch storage area. The proposed locations of major project components are shown in **Exhibit 2**.

Seed Setting Facility
Coast proposes to convert approximately 10,000 square feet of the existing warehouse into a seed setting facility. The purpose of the seed setting facility is to produce shellfish seed from larvae hatched either on site or elsewhere. Seed is "set" when free-swimming larvae, spawned in a hatchery, attach themselves to a surface, a small piece of shell or half shell. Once they are settled they are called "spat." The seed setting facility would require the installation of holding tanks and water intake, filtration, heating and water discharge systems. Retrofit activities would be limited to the interior of the warehouse, and no changes to the warehouse structure are proposed. The seed setting facility would require a continuous source of seawater at a rate of up to 300 gallons per minute (*see* seawater intake system, below).

Seed Wash System
A seed wash facility, consisting of a concrete pad area with a catchment system and pump, along with a 396-gallon freshwater storage tank, is proposed to be constructed inside the existing warehouse. The seed wash system will allow the juvenile shellfish to be cleaned to the level necessary for transport out of state. A storage tank would be used to prepare a freshwater and sodium hypochlorite (bleach) wash solution. Within the concrete catchment area, totes containing shellfish seed would be filled with the wash solution, and the seed would be left to soak for at least one hour. After the wash treatment, the seed would be removed, and the wash solution would be neutralized using sodium thiosulfate, in accordance with industry standards. The concrete pad/catchment system would be designed with sufficient excess capacity to contain the maximum possible spill from the storage tank and totes (20% excess capacity) in order to minimize the chance of spillage of the chlorinate wash solution due to overflow.

The treated wash solution used in Coast's proposed seed wash system would be pumped to an existing on-site septic system and leach field used by Taylor for the same purpose. During peak seed production season (March through November), Coast's seed wash system would discharge approximately 396 gallons of treated wash solution to the existing leach field an average of two

times per week (approximately 800 gallons per week). Coast will use the same piping as Taylor to convey discharge water to the leach field. Taylor also discharges to the leach field at a maximum rate of 10,080 gallons per week. The leach field has a capacity of 16,000 gallons and a maximum flow of 102,900 gallons per week. The cumulative discharge to the existing septic system between Taylor's use and Coast's proposed use would be within the system's capacity.

Saltwater Intake and Return System

In order to provide a continuous source of seawater for the seed setting facility and, eventually, the broodstock and larvae facilities and the microalgae greenhouse, Coast proposes to install intake and discharge pipes running from the existing warehouse to Humboldt Bay as a part of Phase I (**Exhibits 2**, **3**). The intake system would consist of four six-inch diameter PVC pipes, while the discharge system would use two six-inch PVC pipes. The pipes would be installed beneath the existing roadway, along the underside of the existing pier, and down to the water along one of the pier support pilings. The intake pipes would extend to approximately six feet above the seafloor; discharge pipes would terminate approximately five feet above the seafloor. An elbow bend in the discharge pipes would direct the outflow parallel to rather than down toward the seafloor. A small amount of excavation (≤ 50 cubic yards) would be necessary to install the pipes underneath the roadway.

The seawater intake and discharge system would be driven by two, 20-horsepower variable-speed electric pumps, each capable of pumping up to 300 gallons per minute (gpm) (600 gpm total). The intake water would be passed through a sand filtration system to control turbidity, and collected in a centralized area within the warehouse to be distributed to the various hatchery facilities. The intakes would be enclosed by stainless steel screens designed to meet National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) fish screening standards. Return water would be drained to a central sump, passed through sand filters and run through a heat exchanger prior to being discharged back into the Bay.

Following the completion of the Phase II projects, Coast estimates that the maximum total seawater intake from and discharge to Humboldt Bay could reach 1,025,314 gallons per day, with the highest volumes of seawater intake typically occurring between March and November.[1]

Storage and Parking

During Phase I of the project, Coast proposes to refurbish an existing 93-foot x 41-foot shed to serve as an equipment storage space. Refurbishment would include replacement of worn siding to provide adequate weather protection, but would not require ground disturbing activities. During Phase II of the project, Coast would begin to use a 12,000 square-foot area adjacent to the warehouse to store bags of cultch (shell). No construction would be associated with the cultch storage area. Parking for the proposed hatchery facility would occur in an existing asphalt and gravel area adjacent to the warehouse.

Broodstock and Larvae Facility

During Phase II of the project, Coast proposes to convert an additional 10,000 square feet of the existing warehouse into a broodstock and larvae facility. Broodstock are mature shellfish used

[1] Total includes approximately 75,000 g/d for the seed setting facility, 900,000 g/d for the broodstock and larvae facilities, 50,000 gal/d for the microalgae greenhouse, and 314 g/d for facility wash water.

for the breeding and production of larvae. The broodstock to be used at this facility would be sourced from both within Humboldt Bay and other areas (e.g., Washington State). The broodstock would be held in large [insert capacity] culture tanks. The proposed larvae culture area would consist of several culture tanks used to store larvae prior to seed settling. Retrofitting activities associated with the broodstock and larvae facilities would include the installation of the holding tanks and the necessary plumbing, and would be limited to the interior of the warehouse (no external or structural modifications are proposed). The broodstock and larvae facilities would use seawater provided by the intake/discharge system installed during Phase I and described above.

Microalgae Greenhouse

In Phase II, Coast also proposes to construct a greenhouse for the culturing of microalgae (i.e., phytoplankton) to provide a supplemental food source for the hatchery larvae and broodstock. Species proposed for cultivation include *Thalassiosira pseudonana, Skeletonema menzellii, Tisochrysis lutea, Pavlova lutheri, Tetraselmis sp*., and *Chaetoceros calcitrans*. The microalgae greenhouse would occupy approximately 15,000 square feet along the southern exterior wall of the existing warehouse (**Exhibit 2**), and would be 15 feet in height. The greenhouse would house multiple culture tanks containing a total of 100,000 gallons of water. The water to support the microalgae cultures would be supplied from Humboldt Bay via the seawater intake system described above.

Before beginning construction of the greenhouse facility, Coast would apply for and obtain all necessary permits from the County of Humboldt and would develop and implement an erosion control and soil loss prevention plan that incorporates County-approved construction best management practices such as use of silt fencing and fiber rolls around areas of ground disturbance.

B. Other Agency Approvals

Humboldt Bay Harbor, Recreation, and Conservation District

On August 11, 2015, the Humboldt Bay Harbor, Recreation and Conservation District (Harbor District) issued to Coast a ten-year lease for the use of portions of the land and warehouse at the project site. The lease includes 9,990 square feet of the existing warehouse and an additional 12,600 square feet of outdoor area that would be used for storage, parking, and construction of the seawater intake and discharge pipes. The lease expires on August 10, 2025. The lease agreement also includes an option for Coast to expand into an additional 10,560 square feet of warehouse space and 26,000 square feet of outdoor area at a later date to accommodate Phase II development.

The Harbor District issued a use permit to Coast for installation of the project's saltwater intake and discharge pipes on March 10, 2016. At this time, the Harbor District determined that the operation and construction of the saltwater intake and discharge system was categorically exempt from review under the California Environmental Quality Act (CEQA).

County of Humboldt

Portions of the proposed project are located within the local coastal program (LCP) jurisdiction of Humboldt County, while the remainder is located within the retained jurisdiction of the

Coastal Commission. In a letter dated February 4, 2016, the County requested that the Commission review the project as a consolidated permit pursuant to Section 30601.3 of the Coastal Act. The Acting Executive Director agreed to this request on March 4, 2016.

U.S. Army Corps of Engineers
The U.S. Army Corps of Engineers (ACOE) has regulatory authority over the proposed project under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 1344). Section 10 of the Rivers and Harbors Act regulates structures or work in navigable waters of the United States. The ACOE is considering Coast's December 14, 2015 application to authorize the proposed project pursuant to Nationwide Permit 7 (for installation of intake and outfall structures). The ACOE will also serve as the lead agency for consultation with the National Marine Fisheries Service (NMFS) under Section 7(a)(2) of the Endangered Species Act and on essential fish habitat for species managed under the Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagics Fishery Management Plans pursuant to Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act.

Pursuant to Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), any applicant for a required federal permit to conduct an activity affecting any land or water use or natural resource in the coastal zone must obtain the Commission's concurrence in a certification to the permitting agency that the project will be conducted consistent with California's approved coastal management program. The subject coastal development permit (9-16-0033) will serve as Commission review of the project under the CZMA.

North Coast Regional Water Quality Control Board
The North Coast Regional Water Quality Control Board (RWQCB) is considering Coast's December 3, 2015 application for a Report of Waste Discharge and its request for a waiver of waste discharge requirements. The RWQCB would need to complete its review prior to the Coast's use of the proposed onshore facility.

C. MARINE RESOURCES AND WATER QUALITY
Section 30230 of the Coastal Act states:

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

Section 30231 of the Coastal Act states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and*

substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

The proposed installation and operation of an upland shellfish hatchery, including seawater intake and discharge pipes, a seed setting facility, an onshore seed washing facility, broodstock and larvae facilities, and a microalgae greenhouse, has the potential to adversely affect marine resources, biological productivity, special status species and water quality of coastal waters in Humboldt Bay due to the entrainment and impingement of marine organisms during seawater intake, and through the discharge of pollutants related to the construction and operation of the proposed hatchery.

Special Status Species

Three species of salmonids that inhabit Humboldt Bay and its tributaries are listed as threatened under the federal Endangered Species Act of 1973. Two of these species are also listed as threatened under the California Endangered Species Act. Coho salmon (*Oncorhynchus kisutch*) is federally and state listed for the Southern Oregon/Northern California Coasts Evolutionarily Significant Unit (ESU), Chinook salmon (*O. tshawytscha*) is federally and state listed for the California Coastal ESU, and steelhead (*O. mykiss*) is federally listed for the Northern California ESU. These salmon species are present in Humboldt Bay both as adults during their migration from the sea into spawning rivers in the fall and winter and as juveniles as they move downstream into the ocean in the spring and early summer. Due to the anadromous salmonid life-cycles, the earliest and smallest life stages (eggs, larvae (alevins) and fry) would not be present near the project site or elsewhere in Humboldt Bay.

In addition, longfin smelt (*Spirinchus thaleichthys*) is listed as a threatened species under the California Endangered Species Act. Longfin smelt generally spawn in freshwater and move downstream to estuarine conditions to grow. Although once among the most abundant fish species in Humboldt Bay, present in larval, juvenile, and adult life stages, longfin smelt were considered to be possibly extinct there by 1996 (Eldridge and Bryan 1972, USFWS 1996). In recent years, however, longfin smelt have again been observed in Humboldt Bay and are thought to be present year-round (Pinnix et al 2005; CDFW 2009a). Surveys conducted by CDFW biologists during the winter of 2015-2016 have confirmed that that longfin smelt are still present in at least three tributaries to Humboldt Bay (Freshwater, Elk River and Salmon Creek), and are spawning in at least two of the three (R. Garwood, CDFW, pers. comm.).

Seawater Intakes

The removal of seawater through intake structures is known to result in the impingement and entrainment of marine life. The type and quantity of marine life that may be adversely affected in this way is related to the size and velocity of the intake structures. Larger, high-velocity structures can cause the impingement and entrainment of larger organisms that can include adult fish while smaller low-velocity structures can typically only impinge and entrain smaller larval and juvenile organisms. While impingement (capture of fish and other marine organisms against an intake screen due to suction) can often result in the injury or mortality of the affected organism, adverse effects of entrainment (capture of fish and other marine organisms in the intake stream) vary based on the type of intake system (configuration of pipes, pressure changes, temperatures) and ultimate use of the entrained water.

As part of its proposed operations, Coast would carry out a variety of activities that would require the use of seawater extracted from Humboldt Bay. These activities include the operation of the following: (1) the seed setting facility, requiring up to 75,000 gallons of seawater intake per day (27 million gallons per year); (2) the broodstock and larvae facility, requiring up to 900,000 gallons per day (329 million gallons per year); (3) the microalgae greenhouse, requiring up to 50,000 gallons per day (18 million gallons per year); and (4) facility washing and cleaning, requiring up to 314 gallons per day (115,000 gallons per year). Coast proposes to use the Samoa Channel (i.e., North Channel) leading to Arcata Bay as the water source for these facilities and activities, with a maximum combined seawater use of up to 374 million gallons per year.

In reviewing previous similar permit applications, notably the Taylor Mariculture (CDP #E-11-029) and Hog Island Oyster Company (CDP # 9-13-0500) hatcheries on Humboldt Bay, the Commission has found that entrainment and impingement impacts associated with upland cultivation facilities would not result in significant adverse impacts to marine resources, in part due to the relatively modest volumes of seawater intake proposed for these facilities. The Taylor facility is permitted to take in approximately 60 gallons of seawater per year, while the Hog Island facility is permitted to take in 37 million gallons per year. In contrast, the proposed Coast hatchery would require the intake of up to 374 million gallons per year. In light of the much larger proposed use of seawater at the Coast facility, a more detailed evaluation of the potential environmental effects is warranted.

Adult and Juvenile Fish

Due to the presence of endangered and threatened fish species in the project area, specific intake limits and criteria that are relevant to these species are necessary to minimize the potential for entrainment and impingement of adult and juvenile fish. Intake system standards developed by NMFS for salmonid species limit approach velocities[2] at the intake screen to 0.4 feet per second for actively-cleaned systems, and 0.2 feet per second for systems without self-cleaning capabilities (NMFS 2011).[3] To further minimize impingement risk, the NMFS standards also specify a minimum effective screen size[4] for passive and active intake screens based on the proposed rate of water withdrawal. For each cubic foot per second of water withdrawal, the effective screen size should be increased by 2.5 square feet with an active screen and 5 square feet with a passive screen (NMFS 2011). The NMFS standards also include screen pore size criteria to minimize entrainment risk. While these criteria vary slightly based on the shape of the screen pores and the screen design, in general the criteria establish a maximum pore size of 3/32 inch in areas where juvenile fish are present and require a minimum open screen area of 27% (NMFS 1997).

The presence of state-listed, threatened longfin smelt in the project area (Cole 2004, Pinnix et al. 2005, CDFW 2009, CDFW 2012) means that specific intake limits and criteria that are relevant to this species must also be considered. Because of the more limited swimming abilities of smelt

[2] Defined by NMFS (2011) as the calculated water velocity component perpendicular to the screen face.

[3] Self-cleaning helps ensure that the velocity of water through the screen stays consistent since partial blockage of the screen face will increase the velocity of water through the remaining open screen pores.

[4] Defined by NMFS (2011) as the total submerged screen area, excluding major structural members, but including the screen face material.

in comparison to salmon, as well as their smaller size, CDFW technical staff has determined that a lower approach velocity of 0.2 feet-per-second is warranted with active intake screen systems and 0.05 feet-per-second is appropriate for passive systems in areas in which longfin or delta smelt are present. In addition, CDFW fish screening criteria establish a minimum screen size of five square feet per cubic foot per second of intake for active systems, and 20 square feet per cubic foot of intake for passive systems. The Commission has previously found that these screening standards reduce the potential impingement and entrainment of juvenile and adult fish, because an intake velocity of 0.2 feet per second is not likely to exceed a fish's swimming ability and most juvenile and adult fish exceed 3/32 inch in size.

Coast committed in its project description to use an intake system designed according to NMFS and CDFW standards to reduce the entrainment and impingement of adult and juvenile fish, including salmonids and longfin smelt. Specifically, Coast proposes to limit intake screen openings to 3/32 inches (2.4 mm) or slotted/wedge wire openings of no more than 1.75 millimeters, and intake velocities to a maximum 0.2 feet per second if self-cleaning screens are used and 0.05 feet per second if the screens are not self-cleaning. In order to incorporate this commitment into Coast's Coastal Development Permit and, further, to ensure that all relevant NMFS and CDFW standards for intake screens are met, the Commission is requiring in **Special Condition 2** that Coast use a screened intake system designed to meet either of the following sets of criteria: (a) round or square openings of no more than 3/32 inches or slotted/wedge wire openings of no more than 1.75 millimeters, a screen area of at least 5 square feet per cubic foot per second water volume intake, a minimum open area of 27%, and a maximum intake water approach velocity of 0.2 feet per second if a self-cleaning device is installed that clears the entire screen face at least once every five minutes; or (b) round or square openings of no more than 3/32 inches or slotted/wedge wire openings of no more than 1.75 millimeters, a screen area of at least 20 square feet per cubic foot per second water volume intake, a minimum open area of 27%, and a maximum intake water approach velocity of 0.05 feet per second if a self-cleaning device is not installed.

With the implementation of this special condition, the Commission finds that the proposed project would protect against significant adverse effects from impingement and entrainment to adult and juvenile fish, including special status species (Coho and Chinook salmon, steelhead trout and longfin smelt) known to inhabit Humboldt Bay.

Entrainment and Impingement of Planktonic Organisms

While the screening and intake standards discussed in the previous section would protect against the entrainment and impingement of larger, mobile organisms, including adult and juvenile fish, they would not prevent the entrainment of marine organisms smaller than the screen openings (1.75 to 2.4 millimeters), nor the impingement of organisms unable to overcome the system's intake velocity. These organisms include phytoplankton and zooplankton, as well as free-floating fish eggs and larvae which may be present in the water column. The maximum combined seawater use by all the proposed facilities (Phases I and II) would slightly more than 1 million gallons per day (374 million gallons per year). The combined effects of mechanical stress, heating, filter-feeding by the cultured shellfish, and filtration prior to discharge is expected to cause mortality to a large fraction of any organisms, eggs, or larvae entrained in the intake system, with negligible amounts returned to the Bay. Moreover, organisms (including some

larvae and fish eggs) too large to pass through the intake screens but lacking the ability or strength to overcome the intake stream may suffer mortality due to impingement against the screens.

In reviewing previous projects involving seawater intakes, such as power plant cooling systems and desalination facilities, the Commission has required applicants to evaluate alternatives, such as the use of sub-surface intakes, with the potential to avoid or reduce significant impacts to marine organisms from entrainment. In the present case, because the proposed hatchery would depend on the presence of naturally-occurring planktonic organisms in seawater to provide food for juvenile and adult shellfish, there is no other feasible alternative that would meet the project objectives; the seawater is specifically needed, in part, because of the planktonic organisms that would be entrained.

Impacts to Productivity

Although no site-specific, detailed entrainment study has been conducted for the proposed project, the available evidence suggests that the project's impacts on primary and secondary productivity (phytoplankton and zooplankton) within Humboldt Bay would be less than significant. Based on the analysis contained in the *Humboldt Bay Berth II Mariculture Facility Initial Study* (Confluence Environmental, December 21, 2015) submitted in support of Coast's application, the combined maximum daily seawater intake proposed for the hatchery facilities of just over one million gallons (3880 cubic meters) per day would equate to approximately 0.002% of the estimated volume of Humboldt Bay at high tide (166.5 million cubic meters). Considering just Arcata Bay, the project's daily seawater intake would represent approximately 0.005% of the estimated total volume (85.1 million cubic meters) and 0.01% of the average tidal prism (the volume of water exchanged between Arcata Bay and the nearshore Pacific Ocean each tidal cycle).[5] A recent study of phytoplankton diversity and abundance in Humboldt Bay measured a total phytoplankton biovolume of 3 to 8 cubic micrometers per liter ($\mu m^3/L$) at a North Channel dock not far from the proposed project site (O'Connell 2013); if these measures of phytoplankton density are extrapolated to the whole of Arcata Bay, a rough estimate is that the project would consume on the order of 0.005% of the total phytoplankton stock of Arcata Bay on a daily and annual basis. These gross volumetric comparisons suggest that the fraction of the Bay's primary and secondary productivity entrained by the project's seawater intakes would be very small. Moreover, previous studies have documented that during much of the year, in particular the spring and summer months when seasonal upwelling results in high productivity in coastal waters, the large majority of phytoplankton biomass within Humboldt Bay originates in the nearshore ocean (Barnhart et al. 1992; O'Connell 2013) rather than the Bay itself. Combined with the relatively rapid tidal exchange observed in Arcata Bay, this pattern ensures that the phytoplankton stock within the Bay is replenished over the course of a few tidal cycles, and that the actual impact of the project on productivity within Humboldt Bay would be less than indicated by simple volumetric calculations.

Coast's proposed upland shellfish hatchery represents just one of several existing and proposed aquaculture projects that are ultimately dependent on the primary productivity of Humboldt Bay and the nearshore Pacific Ocean. Individually, these aquaculture projects may have a negligible

[5] In Arcata Bay, 44% of the total volume of water is replaced each day and 99% of the total volume of water is replaced every seven days. Volume and tidal prism estimates are from Barnhart et al. 1992.

impact on the Bay's productivity; cumulatively, their effects may be much larger. In its recently completed *Humboldt Bay Mariculture Carrying Capacity Analysis* (SHN Consulting, October 2015), the Harbor District evaluated the potential cumulative effects of existing and planned in-water aquaculture projects on productivity and food resources available to the marine food web within the Bay. Depending on the water residence times and shellfish clearance rates (how quickly the animals take in and filter seawater) assumed, the *Carrying Capacity Analysis* found that the amount of filtration by cultured shellfish biomass associated with existing and planned aquaculture projects in Arcata Bay could range from 9% to 77% of the bay's flushing rate. In other words, the volume of water filtered by existing and planned aquaculture projects is a substantial fraction of the daily water exchange with the nearshore ocean. However, due to rapid phytoplankton turnover rates and tidally-driven replenishment from the ocean, this future volume of filtration was not expected to have a significant effect on productivity and the availability of resources to the Bay food web. As noted above, the maximum seawater intake associated with the proposed upland hatchery would represent a tiny fraction (0.01%) of the tidal prism of Arcata Bay, and even assuming complete consumption of the phytoplankton within this intake volume, would not make a substantial contribution to the cumulative effects on phytoplankton biomass and primary productivity of the broader array of aquaculture projects in Humboldt Bay. Based on these considerations, the intake of approximately 1 million gallons per day of seawater from Arcata Bay is not expected to substantially reduce the amount of available phytoplankton or overall productivity within Humboldt Bay, even when considered cumulatively with other existing and planned mariculture operations in Humboldt Bay.

Impacts to Fish Eggs and Larvae

As noted above, seawater intake systems can entrain or impinge substantial numbers of fish eggs and larvae,[6] with impacts to fish populations that do not necessarily mirror those to planktonic organisms due to the more heterogeneous distribution of fish species within the estuarine environment, and, in the case of Humboldt Bay, the presence of several rare and sensitive species.

The distribution, density and diversity of larval fish within Humboldt Bay is poorly understood, having been the subject of just a single study dating to 1969. During bi-weekly sampling extending over a full calendar year, Eldridge and Bryan (1972) collected 37 species of larval and juvenile fish, with five species accounting for 95% of the larval fish sampled: bay goby (43%), Pacific herring (39%), longfin smelt (8%), arrow goby (3%) and Pacific staghorn sculpin (3%). Larval abundance was markedly greater at sampling sites within the open, shallow areas of Arcata Bay, and lowest at sites near the mouth of the Bay and in the North Channel. This pattern of distribution is broadly consistent with more recent research demonstrating that populations of many fish species inhabiting Humboldt Bay tend to be concentrated in the shallow-water estuarine, eelgrass, and emergent wetland habitat areas of Arcata Bay rather than the deeper waters of the North Channel (Cole 2004; Pinnix et al. 2005).

As a supplement to its CDP application, Coast submitted an additional analysis of the potential for entrainment and impingement impacts to fish larvae (Confluence Environmental, March 24,

[6] Due to the absence of data on the abundance, diversity and distribution of fish eggs in Humboldt Bay, the analysis contained in this report focuses on larvae only.

2016). Using an average daily abundance of 0.05 larvae per cubic meter for the nearest North Channel sampling station (Eldridge and Bryan 1972), and assuming no screening of the intakes, Confluence then estimated that the proposed daily seawater intake of 1 million gallons (3778 cubic meters) per day could be expected to entrain 189 fish larvae per day, or 68,985 larvae per year. This rough estimate, however, does not take into account significant seasonal differences in larval abundances, nor differences in the spatial distributions of larvae of different species. Most of this estimated entrainment impact is attributable to seawater intake necessary to support Phase II development (algae greenhouse , broodstock and larvae facility). For comparison, seawater intake to support the Phase I seed-setting facility (75,000 gallons per year) could be expected to entrain only 14 fish larvae per day.

Confluence also offered several arguments for why in its opinion these simple calculations may overestimate entrainment impacts to fish larvae from the project:

- Currents within the North Channel typically exceed the proposed intake velocities of the seawater system (either 0.05 or 0.2 feet per second) (NOAA 2016), which may limit the exposure of larvae to the intake stream;
- Net tidal currents in the Entrance Bay are circular, with water masses moving from Arcata Bay southward along the eastern shore, and the net currents along the western side of the North Channel flowing northward (Costa 1982), also limiting exposure to the intake stream.
- The proposed size of the intake screen openings (3/32 inches (2.4 mm), or slotted/wedge wire openings of no more than 1.75 millimeters) would reduce or prevent the entrainment of the five most commonly observed fish larvae in the Eldridge and Bryan (1972) study, which range in size from 2.5 to 8.0 mm in length.

In approving CDPs for similar hatchery facilities proposed by Taylor Mariculture (E-11-029) and Hog Island Oyster Company (9-13-0500), the Commission found that neither project would result in significant adverse effects on marine resources due to entrainment and impingement. These conclusions were based primarily on the relatively modest volumes of seawater intake proposed (approximately 100,000 to 150,000 gallons per day). During Phase I of Coast's proposal, when seawater use would be limited to the seed setting facility (75,000 gallons per day) and facility cleaning purposes (314 gallons per day, the total seawater demand would be smaller than, but on the same order of magnitude, as in the previous hatchery projects. The total proposed seawater intake for Phase I projects of approximately 27 million gallons per year is consistent with daily and annual intake rates previously approved by the Commission for other hatchery facilities, and would not result in significant adverse impacts to larval fish. However, with the implementation of Phase II projects, including the microalgae greenhouse (50,000 gallons per day) and the broodstock and larvae facilities (up to 900,000 gallons per day), Coast's seawater intake would increase drastically, to volumes six to ten times greater than those permitted for the Taylor and Hog Island projects. This large proposed increase in the aggregate usage of seawater by hatcheries on the Samoa Peninsula also raises the possibility of cumulative impacts on larval fish abundances within Arcata Bay.

Initially, the calculations of potential entrainment and impingement based on the 1969 larval abundance and distribution data suggest that the project, including seawater intake of up to 374 million gallons a year associated primarily with Phase II development, would have only a minor impact on larval productivity within Humboldt Bay. While it is unknown what fraction of total larval productivity in the Bay would be represented by the estimated 69,000 fish larvae that could be entrained or impinged at the project intakes, it would necessarily be a small fraction, given that individual females of the common fish species in the Bay may produce thousands to tens of thousands of eggs each year (e.g., Lassuy 1989; CDFW 2009).

However, the primary source of information on larval abundance and diversity in Humboldt Bay, the Eldridge and Bryan (1972) study, provides just a single-year's "snapshot" of the Bay's larval ecology from over 45 years ago; there is little basis to conclude that this study provides an accurate accounting of fish larvae in the Bay at present, particularly in light of substantial environmental changes, in terms of fish populations, oceanographic conditions, and humans uses of adjacent lands and waters, that have occurred over the last five decades. Most notably, fish species inhabiting the Bay, including both Pacific herring and longfin smelt, have experienced major populations fluctuations and declines over this time period (e.g., Barnhart et al. 1992; USFWS 1996; CDFW 2006; CDFW 2009). These changes are likely to have affected both larval abundances and distributions and the vulnerability of Humboldt Bay fish populations to stressors.

In response to Coast's additional arguments, Commission staff agrees that tidal currents within the North Channel are known to be strong and would generally exceed the intake velocities of the proposed system. However, depending on the type and orientation of the intake structure, strong oscillatory currents may drive larvae directly into the intake screen during certain periods of the tidal cycle, potentially exacerbating rather than alleviating larval entrainment and impingement. While it is likely that the proposed intake screen sizes would reduce the entrainment of larger larvae, they would not alleviate the problem of impingement; despite the low intake flow rates, an unknown number of passive-floating or less mobile larvae would be impinged against the screen and would likely perish. In the absence of actual data, there is no evidence to conclude that physical conditions and the intake screens alone would protect fish larvae from entrainment and/or impingement.

Of particular concern are potential impacts to larvae of the State-listed, threatened longfin smelt. The longfin smelt was added to the state threatened species list in 2009 in response to substantial population declines occurring since the 1980s. Although the largest and most well-studied population of longfin smelt occurs in the San Francisco Estuary, the CDFW has suggested that Humboldt Bay supports the second-most significant population within the state (CDFW 2009). Primary threats to the longfin smelt include reductions in freshwater outflows, entrainment into water diversion systems, habitat destruction and alteration of spawning and nursery areas, logging, toxic substances and introduced species (Moyle et al. 1995; Musick 2000; CDFW 2009). In its status review of the species at the time of listing, the CDFW included the following recommendation for achieving population-level benefits:

> *Reduce entrainment and loss of longfin smelt at water diversions — including diversions for cooling of power plants and diversions operated by the State Water Project, Central Valley Project, municipal entities, and for agricultural and recreational purposes.*

The California Endangered Species Act (CESA) prohibits the "take" of listed species without an incidental take permit issued by the CDFW (California Fish and Game Code Sections 2080 – 2085). Prior to issuing an incidental take permit application, the CDFW must determine that the take would not jeopardize the continued existence of the species, and would be minimized and fully mitigated (14 Cal. Code Reg. Sec. 783.4).

Longfin smelt seasonally occupy a range of estuarine habitats within Humboldt Bay, from fresh to brackish water for spawning to brackish and marine habitats for juvenile rearing. Spawning is concentrated in upstream tributaries in the winter months, after which larvae are carried downstream into the estuary. Eldridge and Bryan (1972) detected longfin smelt larvae at multiple sampling locations, including a North Channel site, during all months of the year in 1969. Since that time, the longfin smelt populations in Humboldt Bay have declined, and the current status of the population is poorly known. Recent surveys by the CDFW have determined that smelt are present and spawning in several Bay tributaries, but the broader distribution of this species and its larvae remains uncertain. Based on past distributions of the species, larval longfin smelt have the potential to occur in the project vicinity, and are potentially at risk of entrainment and/or impingement at the project's seawater intakes. Using the Phase II seawater intake rate of 1 million gallons (3778 cubic meters) per day, and assuming a total larval density of 0.05 larvae per cubic meter, of which 8% are longfin smelt (Eldridge and Bryan 1972), the project could be expected to entrain or impinge over 5,500 larval smelt per year.[7]

However, the information currently available to the Commission is inadequate to determine whether loss of longfin smelt at the proposed intakes would actually occur, or whether this loss would occur at levels that would adversely affect this species within Humboldt Bay and meet the Coastal Act criteria that (a) a healthy population be maintained and (b) special status species be given special protection. While an analysis performed pursuant to an incidental take permit review by the CDFW would assist in this determination, it is unclear whether or when such analysis will occur. CDFW biologists have informed Commission staff that studies are underway to better characterize the abundance and distribution of adult and larval longfin smelt within Humboldt Bay, providing hope that better, more currently applicable scientific information will become available in the future. Until such time as more comprehensive information is available, the Commission believes that, in order to better assure that longfin smelt and other fish species within Humboldt Bay will be protected from significant adverse effects, **Special Condition 3** is necessary; this condition prohibits Coast from undertaking its proposed Phase II development. It further requires that Coast prepare a Larval Fish Impact Study that includes regular monitoring of the potential for entrainment and/or impingement of larval fish, in particular longfin smelt, as a result of the operation of the seawater intakes. Based on the results of this study, Coast can apply for an amendment to this permit or a new coastal development permit to undertake Phase

[7] For comparison, using the same assumptions, Phase I seawater intake (75,314 gallons per day) could be expected to entrain or impinge about 1 larval smelt per day.

II of its proposed development. Implementation of **Special Condition 3**, in combination with on-going CDFW research, will ensure that sufficient information is available to accurately characterize the impacts of Phase II development on larval fish and fish populations if Coast chooses to pursue an amendment to this permit or a new permit to authorize this development in the future.

Seawater Discharge

The proposed intake of up to 1 million gallons of seawater per day to support hatchery operations would necessitate the return flow of a similar amount of water from the various hatchery facilities. The return flow would occur through two six-inch PVC discharge pipes running parallel to the intake pipes. The discharge pipes would terminate at a point approximately 5 feet above the seafloor, and would include an elbow bend to ensure that the discharge stream is directed away from the seafloor. Prior to discharge, the return flow would be passed through a heat exchanger to bring the water to a temperature similar to ambient conditions in the Bay. With the inclusion of these design features, the seawater discharge would not result in significant physical or thermal disruption of benthic habitats at the base of the pier, including nearby seagrass beds.

Non-native Species

The construction of a microalgae greenhouse during Phase II of the proposed project would enable coast to culture phytoplankton on-site in order to supplement and enrich the feed for its shellfish. Seawater used for these cultivation activities would be withdrawn from Arcata Bay, circulated through the water tanks of the greenhouse system and directed to the combined discharge line for release back into the Bay. As such, viable biological material from these cultivated algae may be released into Arcata Bay. However, this would not result in adverse environmental effects because all algae species to be cultivated are already present in the Humboldt Bay area or are incapable of surviving and reproducing under local conditions.

Water Quality

Seed Washing

Because some of the shellfish seed is proposed to be transported to Washington for grow-out, prior to shipment, the shellfish seed is proposed to be soaked in a 60 ppm freshwater sodium hypochlorite (chlorine bleach) solution as required by the Washington Department of Fish and Wildlife. A 396-gallon freshwater storage tank would be placed adjacent to the seed wash facility and used to prepare the wash solution. Harvested shellfish seed would be placed into totes, the totes would be filled with the wash solution and the seed left to soak for at least one hour. At the end of the treatment, the seed would be removed and the wash solution would be neutralized using sodium thiosulfate (per industry standards). The neutralized solution would then be discharged to the existing septic system, which discharges to a leach field located on the former pulp mill site southwest of the project site. Because the proposed seed wash operations would be carried out within a concrete pad area with a catchment system and sump, any spill of chlorinated wash solution would be contained within this area. Additionally, as described above, the wash water would be tested and neutralized prior to discharge. This would ensure that water discharged to the leach field, and ultimately to the groundwater, would not be contaminated with reactive chlorine. These two proposed measures are therefore adequate to protect and maintain the quality of coastal waters during seed washing operations.

Discharges to Existing Leach Field

As described in Section III.A, above, Coast proposes to dispose of the neutralized seed-washing solution to an existing leach field previously used as part of the septic system of the former pulp mill. Taylor's use of the leach field, located approximately 800 feet southwest of the warehouse to be used for the shellfish hatchery, was approved by the RWQCB in July 2015, allowing for the discharge of 10,000 gallons per week of treated wash water from the Taylor seed-washing facility. Under Taylor's system, wash water is pumped to a 5,000 gallon freshwater holding tank, where it is dechlorinated. The treated water is the transferred via pipeline to a 16,000 gallon septic tank which discharges to the leach field. The proposed Coast facility would make use of the existing infrastructure operated by Taylor, and contribute up to 800 gallons per week of additional discharge to the leach field. As described above, the discharge of treated, neutralized wash water to groundwater within the leach field would not result in chlorine or other contamination. However, due to the presence of soil and groundwater contamination related to historic pulp mill operations on the former mill site, the proposed discharge of water to the leach field must be evaluated for its potential to mobilize existing contaminants into coastal waters.

Previous investigations of soil and groundwater contamination at the mill site have identified several areas of known or suspected contamination by volatile organic compounds (VOCs), hydrocarbons and heavy metals. A January 30, 2014 report prepared by Integral Consulting, Inc., on behalf of Taylor Mariculture synthesized soil and groundwater testing results from six previous investigations conducted over the past 15 years, and evaluated the effects of the proposed reuse of the leach field on the groundwater flow regime (i.e., hydraulic gradient). The January 2014 Integral report did not identify any areas of contamination within the leach field flow path (the area between the leach field and Arcata Bay), but acknowledged that the data for this area were limited and that elevated levels of VOCs and arsenic had previously been detected in several wells to the north of the leach field. In order to rectify this data gap, in 2014 the RWQCB required the Harbor District and Taylor to establish and test a new groundwater monitoring well and conduct additional soil testing within the leach field flow path. This additional testing, summarized in the *Leach Field Monitoring Well Installation Report* (Integral, November 5, 2014), did not detect VOCs, hydrocarbons, or toxic metals in groundwater within the leach field flow path. In addition, groundwater modeling contained in the January 2014 Integral report indicated that reuse of the leach field at the discharge levels proposed by Taylor would not result in appreciable changes in the groundwater flow regime, nor in the mobilization of contaminant plumes in areas adjacent to the leach field.

In a letter dated March 14, 2014, the North Coast RWQCB determined that the Taylor hatchery, "which includes the mariculture project and disposal of wash water from the seed wash facility in a separate infiltration area," qualified for a waiver of waste discharge requirements under RWQCB Resolution No. R1-2012-0099 (Policy for Waiving Waste Discharge Requirements for Specific Types of Discharge for Flow-through Seawater Systems and Aquaculture Operations). The RWQCB Cleanups Program conducted additional assessments of the potential for groundwater contamination in the leach field area (area "AOI-6"), and based on the data and reports discussed above, concluded the following in an August 13, 2014 letter:

> [W]*e conclude that reuse of the leach field … will not exacerbate groundwater pollution immediately north of AOI-6. The Report's data comparisons to numeric groundwater quality goals indicates no significant degradation to groundwater quality in AOI-6.*

As of December 17, 2014, the RWQCB Cleanups Program required no further assessment of the leach field area.

The additional discharge to the leach field of 800 gallons per week of discharge proposed by Coast would represent an 8% increase above the 10,000 gallons per week that Taylor is authorized to discharge. Given that there is no evidence of existing contamination within the leach field flow path, and that the additional 800 gallons per week of discharge appears to be bounded by the discharge rate scenarios modeled in the January 2014 Integral report and, it is unlikely that Coast's proposed use of the existing leach field would result in the mobilization of legacy pollutants or further degradation of water quality within Humboldt Bay. Nonetheless, to ensure that this potential has been fully assessed by the expert agency, and that contaminant releases which would degrade the quality of coastal waters are avoided, the Commission is imposing **Special Condition 4**, which requires that prior to project use of the leach field, Coast provide evidence that the North Coast RWQCB has approved the proposed discharges.

Ground Disturbance During Construction

During Phase I of project implementation, Coast proposes to install seawater intake and discharge pipes beneath the existing road between the warehouse and pier (**Exhibit 2**). Coast estimates that the pipe installation may require between 10 – 20 cubic yards of excavation. During Phase II of the project, Coast proposes to construct a 15,000 square foot microalgae greenhouse adjacent to the existing warehouse (**Exhibit 2**). Coast has not yet commissioned building or engineering plans for the greenhouse structure, nor determined whether ground-disturbing activities (e.g., installation of foundations) will be necessary for its construction. In both cases, Coast proposes to develop and implement an erosion control and soil loss prevention plan, incorporating best management practices (BMPs) such as silt-fencing and fiber rolls, around areas of ground disturbance. However, since these plans have not yet been developed and are not available for review, the Commission is unable to determine whether the erosion control and water quality protection measures to be included in the plans would be adequate to prevent erosion, control runoff, and protect coastal water quality. In order to assure that the quality of coastal waters is maintained during project construction, the Commission is adopting **Special Condition 5**. This condition requires Coast to develop, and submit for the Executive Director's review and approval, Storm Water Pollution Prevention and Erosion Control Plans prior to the commencement of any ground-disturbing construction activities during Phases I and II of the project.

Conclusion

Although the Commission finds that the proposed project as proposed has the potential to adversely impact marine resources and the biological productivity of coastal waters, with implementation of **Special Conditions 2 – 5**, the Commission finds that the project would be carried out in a manner that would maintain marine resources, protect species of special biological significance, sustain the biological productivity of coastal waters, and maintain healthy and optimum populations of all species of marine organisms. The Commission therefore

finds the proposed project, as conditioned, is consistent with the marine resource sections (Sections 30230 and 30231) of the Coastal Act.

D. ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Coastal Act Section 30240 states:

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

In addition, Coastal Act Section 30107.5 defines "Environmentally sensitive area" as follows:

> *"Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

Osprey Nests

Due to the status of osprey (*Pandion haliaetus*) as a Species of Special Concern in California, occupied osprey nests may be considered to be environmentally sensitive habitat areas (ESHA). In recent years, several occupied osprey nests have been observed on the former mill site (**Exhibit 4**), including on a power pole platform near the base of the Berth Two pier, in close proximity to the project site. A pair of ospreys was identified nesting on this tower in 2013 and 2014, and Coast has stated that the pair is believed to have continued using the nest during the 2015 nesting season.[8] The occupied power pole platform is located approximately 400 feet west of the pier and 250 feet from Coast's portion of the existing warehouse.

Osprey is a large raptor species that historically nested throughout much of California (as well as other parts of the country and world). Due to human persecution, habitat alteration, and the use of DDT following World War II, the osprey population in the state declined throughout much of its historic range. Today the osprey breeding range in California is restricted to the northern parts of the state, and the species is listed by the Department of Fish and Game as a Species of Special Concern. Ospreys primarily prey on fish, and the species is sometimes referred to the fish eagle or sea hawk. The birds generally nest in forested habitats near large water bodies, in tall, stable snags or in live trees with flat or broken tops that will support large stick nests. Sometimes ospreys build nests on tall cliffs or on human-made structures, as is the case at the subject site. Adult birds often show a high degree of nest fidelity, meaning that they return to a particular nesting site each year. Ospreys can be sensitive to disturbance during the courtship and nesting seasons (typically March through September), and disturbance during this time may

[8] A nesting pair was also observed by Commission staff at this location during a June 2012 site visit.

result in nest abandonment. In other cases, ospreys have been observed to tolerate human disturbance surrounding their nest sites, and at times nest in areas where industrial or recreational activities occur, including on the Samoa peninsula.

In an August 2013 memorandum submitted to the Commission as a part of condition compliance for the Taylor Mariculture CDP (E-11-029), Taylor's biological consultant presented observational evidence that the power pole nesting platform nearest the Berth Two pier and warehouse has been used, by ospreys, at least on occasion, since at least 2005. Combined with observations that nesting has occurred on this platform in each year since 2012, it is reasonable to conclude that the ospreys using this nest are, to some degree, habituated to the noise and disturbance levels associated with human activities, vehicle traffic and the existing shellfish hatchery on site.

The proposed construction of shellfish hatchery facilities at the project site would not directly affect the existing osprey nests on the former pulp mill property. However, the noise, vibration and increased activity generated during project-related construction occurring outside the existing warehouse have the potential to disturb ospreys during the nesting season. This disturbance could deter adult birds from returning to active nests close to the construction area, thus inhibiting incubation or feeding of young, or result in the total abandonment of active nests, ultimately leading to the loss of osprey eggs or young.

Coast has proposed to provide a qualified ornithologist to conduct a pre-construction survey before initiating any trenching or excavation activities on the site, and to avoid trenching and excavation activities within 300 feet of an active osprey nest unless such activities need to occur within 300 feet of the active nest, in which case Coast would implement biological monitoring and a reduced disturbance-free buffer. However, CDFW biologists familiar with the osprey nests on site and with other osprey nesting locations at disturbed sites elsewhere on the Samoa Peninsula have recommended an expanded, 500-foot disturbance-free buffer around active nests during the breeding season (March 15 to August 15) to protect against disruption of nesting activity and nest abandonment during construction, and that any construction necessary within this 500-foot radius be preceded by a nesting survey and accompanied by close monitoring by a qualified ornithologist.

The Commission agrees with the CDFW experts that a 500-foot, disturbance-free buffer is necessary to prevent significant disturbance to active osprey nests, and thus is imposing **Special Condition 6**, which requires that Coast implement osprey nesting protection measures for all trenching, excavation and other outdoor construction activities, and heavy equipment use proposed to occur during the osprey nesting season, defined here as March 15 to August 15. These protection measures shall include the following: (a) provision of a qualified biologist to conduct pre-construction osprey nesting surveys and identify all osprey nests within 500 feet of the site of any proposed construction activity; (b) prohibition of all trenching, excavation, outdoor construction, and heavy equipment use within 500 feet of an osprey nest unless the nest is determined to be inactive by a qualified biologist; (c) if trenching, excavation, outdoor construction or heavy equipment use within the 500-foot disturbance-free buffer cannot be delayed until after the osprey breeding season, such activities may proceed only under the oversight of a qualified biological monitor with the authority to halt construction activities if and

when the ospreys occupying a nest show signs of disturbance, agitation, or abnormal behavior; (d) cessation of construction activities within 500 feet of the active nest if the biological monitor documents behavioral signs of nest disturbance, until a qualified biologist has determined that chicks have fledged and the osprey nesting season is complete.

With implementation of this condition, the Commission finds that disturbance of occupied osprey nests would not occur, that adverse impacts to ESHA would be avoided, and that the proposed project is consistent, as conditioned, with Section 30240 of the Coastal Act.

E. California Environmental Quality Act

On March 7, 2016, the Humboldt Bay Harbor, Recreation, and Conservation District, acting as the CEQA lead agency, issued a notice of exemption concluding that the proposed construction and operation of an upland shellfish hatchery and saltwater intake and discharge pipes was categorically exempt from CEQA pursuant to State CEQA Guidelines Sections 15303 (New Construction or Conversion of Small Structures) (California Code of Regulations, Title 14, Section 15303).

In addition, Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act ("CEQA"). Section 21080.5(d)(2)(A) of CEQA prohibits approval of a proposed development if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant impacts that the activity may have on the environment. The project as conditioned herein incorporates measures necessary to avoid any significant environmental effects under the Coastal Act, and there are no less environmentally damaging feasible alternatives or mitigation measures. Therefore, the proposed project is consistent with CEQA.

Appendix A: Substantive File Documents

Coastal Development Permits and Application Materials:

Coastal Development Permit Application No. 9-16-0033 (Coast Seafoods Company).

Staff Report and Application File for Coastal Development Permit No. E-11-029 (Taylor Mariculture).

Staff Report for Coastal Development Permit No. 9-13-0500 (Hog Island Oyster Company)

Correspondence:

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D.W. Parson, North Coast Regional Water Quality Control Board, letter to A. Ingram, Louisiana-Pacific Corporation, and J. Crider, Humboldt Bay Harbor, Recreation and Conservation District, re: Cleanups Regulatory Program – No Further Assessment Required for Area of Interest 6 (AOI-6), December 17, 2014.

M.A. Hillyard and E.P. Conti, Integral Consulting, Inc., letter to D.W. Parson, North Coast Regional Water Quality Control Board, re: Leach Field Monitoring Well Installation Report, November 5, 2014.

D.W. Parson, North Coast Regional Water Quality Control Board, letter to A. Ingram, Louisiana-Pacific Corporation, and J. Crider, Humboldt Bay Harbor, Recreation and Conservation District, re: Response to Potential Reuse of Leach Field – Technical Review, August 13, 2014.

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Coast Seafoods
Upland Hatchery Vicinity

Upland Hatchery Facility
Humboldt Bay, CA
For Coast Seafoods

Prepared on:09/16/2015
Prepared by: Ruth Park
Map/Data Source: ESRI, Humboldt County

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Exhibit 1
Application No. 9-16-0033
Coast Seafoods
Project Location
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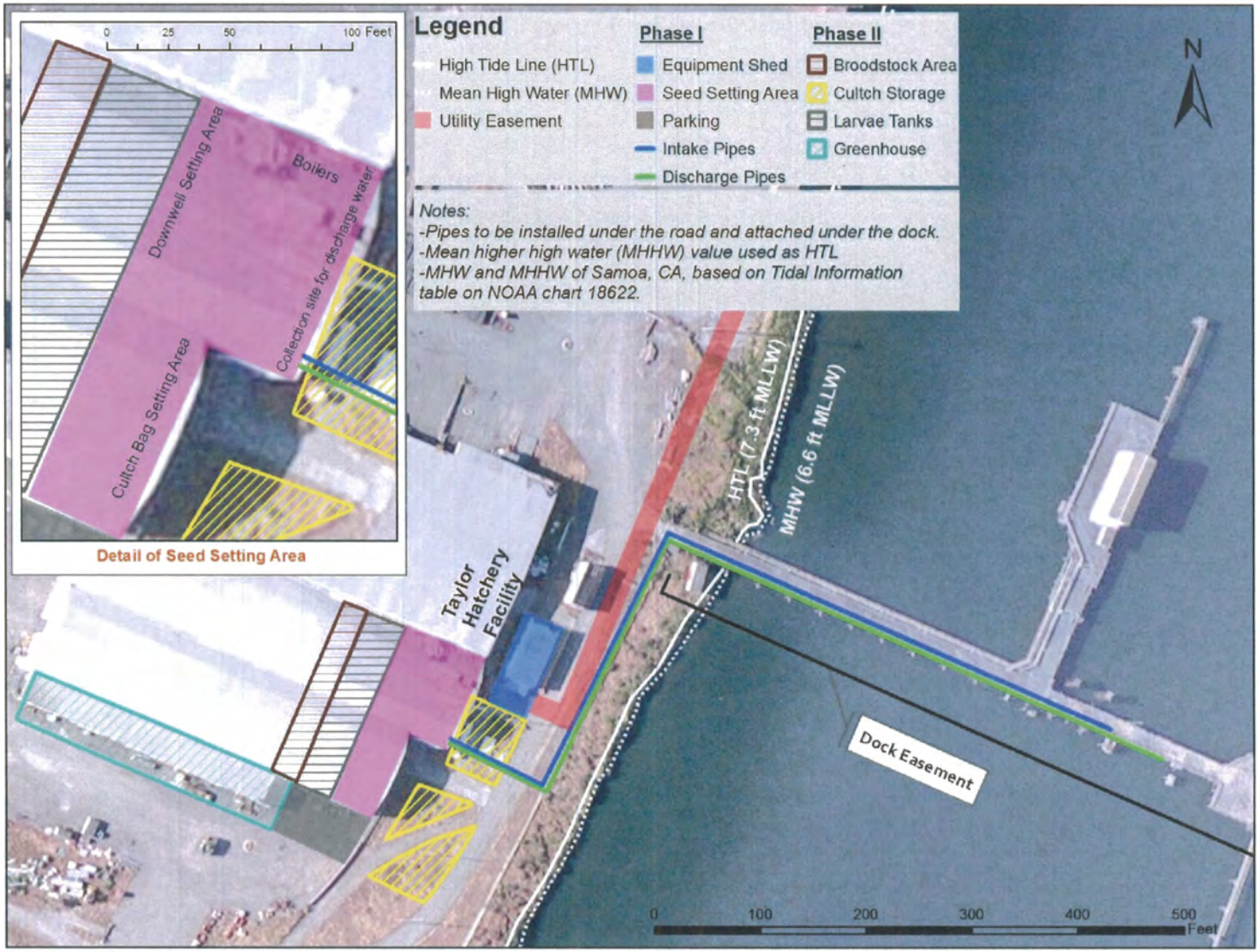

FIGURE 2

Humboldt Bay, Berth II Mariculture Facility
Initial Study

Plan View
Humboldt Bay, CA
For Coast Seafoods

Prepared on:12/14/2015
Prepared by: Ruth Park
Map/Data Source: ESRI

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Exhibit 2
Application No. 9-16-0033
Coast Seafoods
Project Components
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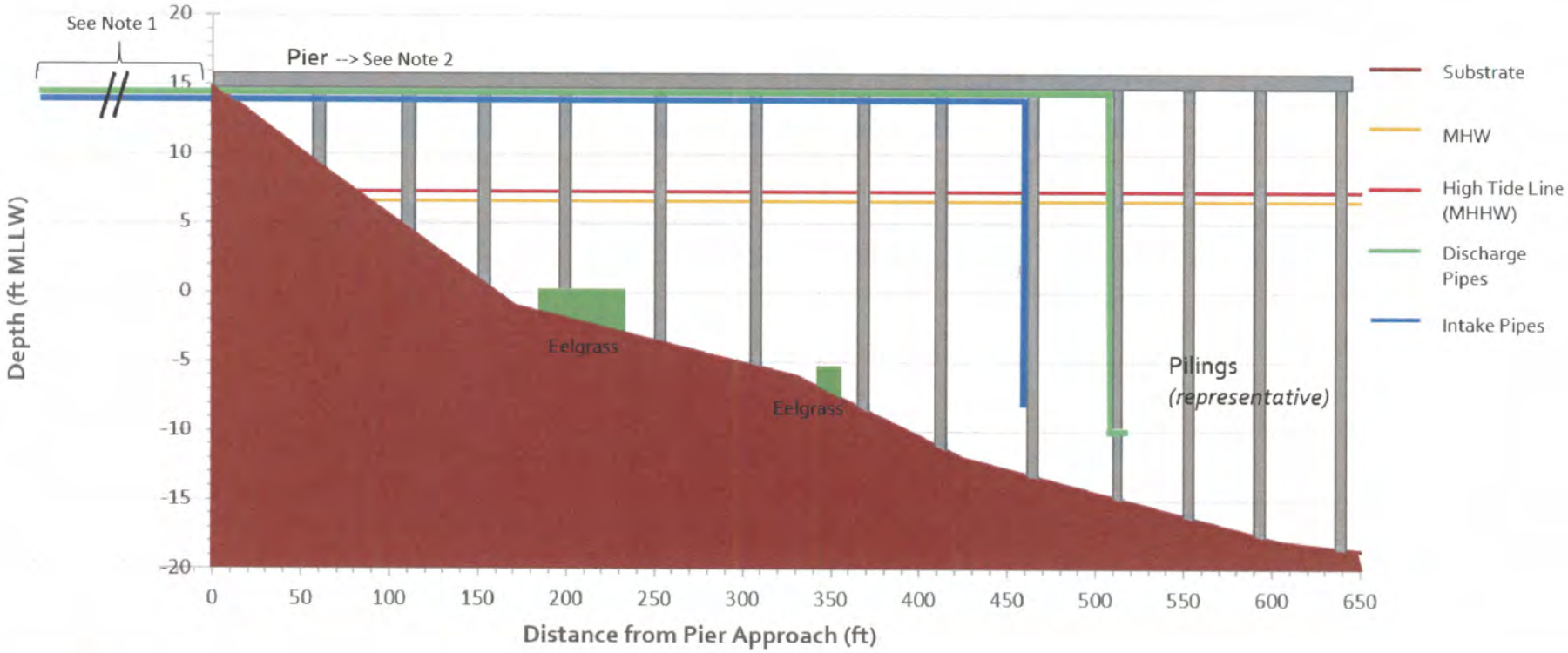

Notes:

1. Pipes contain a bend and continue under the road for approximately 365 ft to the building (Plan View, Figure 2).
2. Pier height was estimated based on site photographs.
3. MHW and MHHW of Samoa, CA, based on Tidal Information table on NOAA chart 18622. Bathymetry information from NOAA chart 18622.
4. Eelgrass location information provided by the Harbor District (Appendix B).

FIGURE 3

Humboldt Bay, Berth II Mariculture Facility
Initial Study

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Cross-Section of Pipes along RWT2 Pier
Humboldt Bay, CA
For Coast Seafoods

Prepared on:12/14/2015
Prepared by: Ruth Park

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Exhibit 3
Application No. 9-16-0033
Coast Seafoods
RWT2 Pier Cross-Section
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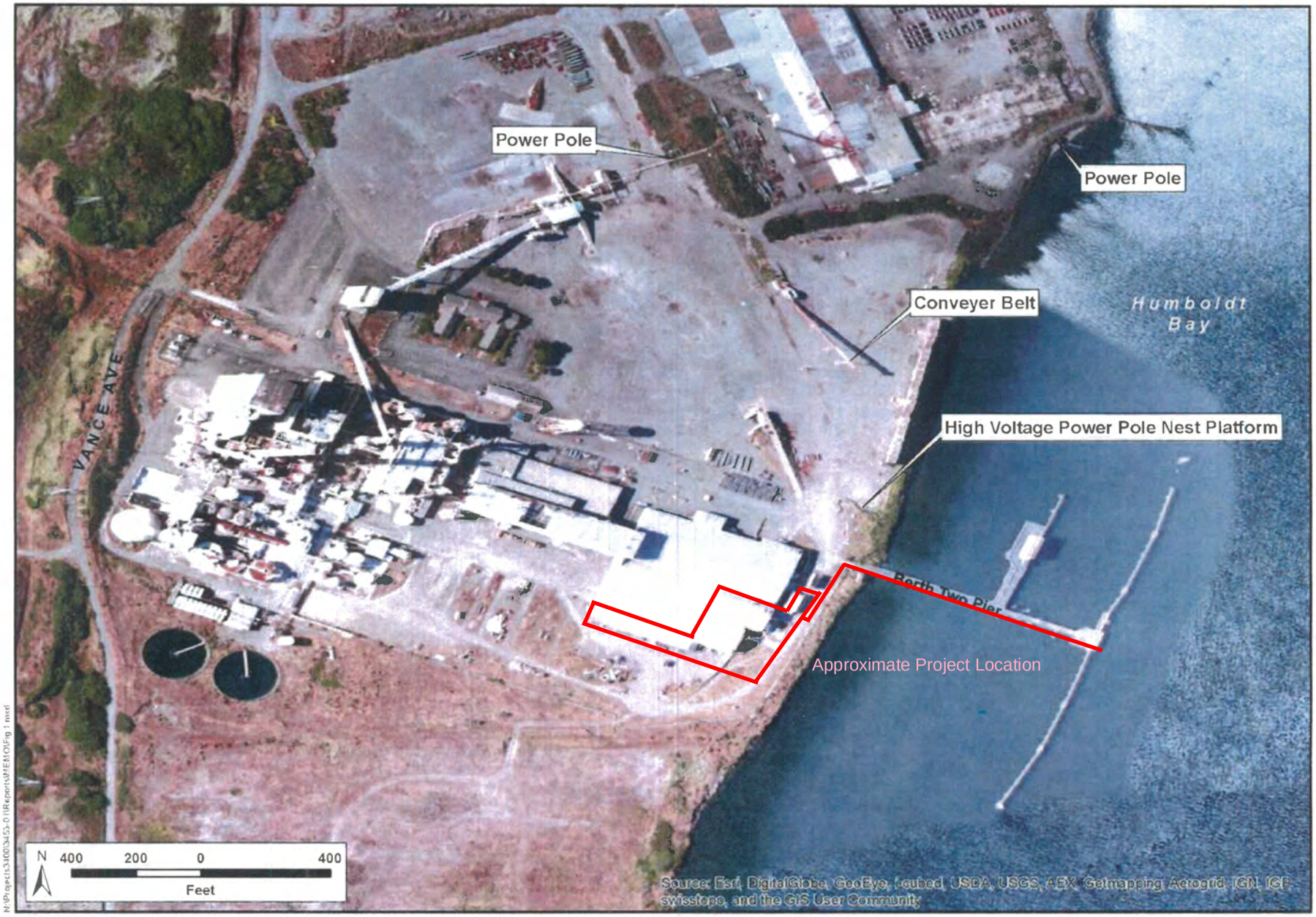

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 1: Osprey Nest Locations Observed During 2013 Breeding Season

Taylor Mariculture Shellfish Seed Production Project, Berth Two Site, Samoa, California (3453-01)
August 2013

Exhibit 4
Application No. 9-16-0033
Coast Seafoods
Osprey Nest Locations
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