CALIFORNIA COASTAL COMMISSION
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W12a&W12b

February 6, 2017

TO: Coastal Commissioners and Interested Parties

FROM: Alison Dettmer, Deputy Director
Mark Delaplaine, Manager
Cassidy Teufel, Senior Environmental Scientist

SUBJECT: Addendum to Staff Report for Amendments to Coastal Development Permit Nos. E-02-005-A6 and E-06-003-A5, Coast Seafoods Company

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This addendum includes revisions to the Jaunuary 27, 2017 staff report on the request by Coast Seafoods Company to extend by six months the coastal development permits for its existing intertidal and subtidal shellfish aquaculture operation in Arcata Bay, Humboldt County.

CORRESPONDENCE
The attached correspondence represents all public and interested party comment letters and emails receieved by Commission staff through February 3, 2017.

REVISIONS
The following are revisions to the text of the staff report and recommendation. Proposed deletions are marked with ~~strikethrough~~ text and additions are marked with <u>underlined</u> text.

Summary of Staff Recommendation: Additional and revised text to the second and third full paragraphs on page 2.

Several prior amendments to these permits have been approved as immaterial by the Commission for similar or shorter permit term extensions. However, additional information recently provided to Commission staff <u>during the expansion permitting process</u> suggests that Coast's current operations have the potential for adverse impacts to coastal resources beyond those that were considered and addressed in the Commission's previous actions on Coast's permit and amendment applications. Continuation of these operations through an extension of their permit term therefore has the potential to result in adverse impacts to coastal resources and is thus considered as material amendments. <u>While Coast disagrees that the existing mitigation for the existing footprint is inadequate, Coast has agreed to include, as part of this permit</u>

extension, several conditions and mitigation measures that it also intends to incorporate in the expansion permitting.

…(6) the potential entrainment or impingement of state listed longfin smelt in intake systems; and ~~(6)~~ (7) spatial use conflicts between the operation and on-water recreation activities such as boating, kayaking, and waterfowl hunting.

Additional text to the first paragraph on page 3:

With the inclusion of these new and modified special conditions, the continuation of Coast's current shellfish aquaculture operation in Arcata Bay would be carried consistent with the Coastal Act. Commission staff therefore recommends adoption of the new and modified special conditions and **approval** of Coast's requested permit amendments. The **motion** to implement this recommendation is found on **Page 5.** The standard of review for this project is Chapter 3 of the Coastal Act.

Green Sturgeon: Revised text in fourth paragraph on page 23.

This strong indication of sturgeon use and potential foraging behavior in the immediate vicinity of the SI-Nk cultivation bed emphasizes the concerns regarding potential habitat exclusion, entanglement and injury raised by NMFS in its comment letter and suggests that the location of this densely planted cultivation bed may be resulting in or potentially leading to adverse impacts to green sturgeon. Because it is the only cultivation bed known to be located in such close proximity to an area of consistently observed high use by green sturgeon, and because it may preclude or limit sturgeon movement and foraging of a portion of the high use area or potentially contribute to injury or entanglement of this protected species of~~or~~ special biological significance, **Special Condition 13** would require Coast to phase out use of this bed and remove it completely at the time of its next harvest. While Coast disagrees with the need for this bed to be removed in order to provide additional protection for green sturgeon and accurately cites the absence of documentation of green sturgeon entanglement or injury in the bed - or exclusion from it – Coast has included removal of the bed as part of its proposed expansion project and does not object to the requirements of **Special Condition 13.**

Marine Debris: Revised text in third paragraph on page 25.

To address the ongoing and potential release and distribution of marine debris resulting from Coast's aquaculture operations in Arcata Bay, **Special Condition 9** of CDP No. E-06-003-A4 would be modified to require the immediate collection and removal of cultivation gear that has been out of use on culture bed GI 1-2 for at least the past several years. This gear (in particular, PVC stakes) appears not to have been subject to inspection and maintenance activities during this time and is increasingly falling into disarray and in danger of loss and dispersal into the marine environment. To prevent similar situations from arising in the future, **Special Condition 9** would also be modified to require the removal of cultivation gear from any bed taken out of service for ~~three~~ six months or more…

Eelgrass: Additional text to the third full paragraph on page 35.

As part of its review of Coast's proposed permit amendments to extend the duration of its operations, Commission staff reviewed information included in the RDEIR and its technical appendices on impacts to eelgrass beds in which longline cultivation operations are carried out. This information was reviewed in order to evaluate the accuracy of the Commission's 2006 eelgrass impact estimate of 137 acres. Although the RDEIR and its appendices include extensive discussion and analysis of the potential impacts to eelgrass from the proposed expansion project, it includes very little information about the amount of eelgrass within existing cultivation beds. Further, the proposed expansion project involves a slightly different type of impact to eelgrass since it would involve the potential loss of existing eelgrass associated with the placement, use and presence of culture gear in eelgrass beds that are not currently used for aquaculture, whereas the Commission's 2006 analysis of Coast's operation considered limits on the amount of eelgrass that could naturally expand into an area due to its use for cultivation. Therefore, the discussion and analysis in the RDEIR cannot be used to directly quantify the total amount of eelgrass actually affected by the existing operation. However, Coast also provided an analysis included in its Biological Assessment (2016) submitted to the U.S. Army Corps of Engineers, which concluded that Coast's existing footprint suppresses between 19.6 acres and 141.6 acres of eelgrass growth. Additionally, the Biological Assessment also accurately notes that the National Marine Fisheries Service identified a range of potential eelgrass suppression in its 2005 consultation with the Corps of between 59 acres and 230 acres, which NMFS acknowledged was likely too low of an estimate at the lower end and too high of an estimate at the upper end of the range. The conservative end of the range recently estimated by Coast (141 acres) and the middle of the NMFS(2005) range (144 acres) are consistent with the Commission's estimate of 137 acres.

Additional and revised text to the final paragraphs on page 36 and first paragraph on page 37:

~~Although t~~This review of the Commission's 2006 eelgrass impact estimate and the mitigation suite does not provide a clear indication of a mitigation deficit or surplus.~~, it is important to note~~ One of the things it does show is that the Commission did not, in 2006, consider how the loss of eelgrass associated with Coast's operation would adversely affect wintering and staging black brant. Because this impact was not considered, mitigation was not specifically provided. However, those elements of the mitigation suite that protect and promote eelgrass would benefit black brant by providing forage and thus provide some level of mitigation for black brant. ~~Based on currently available information, the loss of 137 acres of eelgrass would adversely affect brant by reducing the amount of forage available to them.~~

~~Recognizing this need for additional mitigation to address adverse impacts to black brant forage, Commission staff is recommending~~ Additionally, several of the resource protection measures Commission staff is recommending are expected to provide at least modest benefits to eelgrass, therefore further mitigating for the project's ~~continuing~~ impacts to black brant. These measures would provide new areas into which eelgrass may naturally expand. For example, implementation of **Special Condition 13** (removal of the SI Nk cultivation bed that Coast has also proposed to remove as an element of its expansion project)~~, while not intended as an eelgrass restoration measure,~~ is ~~nevertheless~~ expected to result in the creation of additional eelgrass habitat in Arcata Bay. The SI Nk bed is approximately 11 acres and currently includes areas of patchy eelgrass and eelgrass appropriate habitat that are likely to expand and increase in

density, once removal of the cultivation bed is complete. Without the results of a thorough survey, it is not possible to accurately quantify the exact area and density of eelgrass that may expand into the SI Nk area~~.~~, ~~h~~However,~~. A~~ although potentially small in area, expanding eelgrass in close proximity to Sand Island may nevertheless provide a direct benefit to black brant due to its proximity to a brant grit site (discussed further in the terrestrial biological resources section below) and the importance of forage areas located adjacent to grit sites. Additionally, **Special Condition 14**, the requirement for Coast to remove a limited number of lines from its most densely planted cultivation beds in order to create wildlife access channels, may also provide an opportunity for a small amount of eelgrass expansion into these channel areas due to the removal of longline equipment. Although brant typically avoid densely planted cultivation beds, the introduction of wider open channels within these beds may provide brant with additional forage opportunities.

Nesting Seabirds: Additional and revised text to the final paragraph on page 38 and first paragraphs on page 39.

Commission staff consulted the researcher cited by the Harbor District, Dr. Philip Capitolo, for more recent information about the status and trends of these nesting colonies. Dr. Capitolo has been monitoring these colonies for many years as part of west coast-wide double crested-cormorant population assessments and his research in 2004 showed that Sand Island supports the largest nesting colony of double-crested cormorants in California (Capitolo et al 2004). However, information shared with Commission staff by Dr. Capitolo shows that both tern and cormorant nesting colonies on Sand Island experienced sharp declines in 2016, falling from a combined total of over 700 in 2014 to only about 25 in 2016. Dr. Capitolo also indicated that in his experience evaluating numerous such colonies, the Sand Island colony appeared more susceptible than others to these wide swings in nesting use between years. Although it is unclear what has caused this decline, there are a variety of potential explanations for the large interannual variability in nesting use that Sand Island appears prone to, ranging from changes in prey availability, ~~to~~ avian predation, ~~and~~ disturbance from other wildlife, and disturbance from human activities~~ is also a well-established cause~~. In particular, high levels of human activity near nesting areas during the months of April and May when birds are seeking out appropriate nesting habitat and establishing nests can often lead to abandonment of nesting and/or nesting areas…

However, ~~A~~an evaluation of recent information, including recent nesting colony survey results and its higher than usual inter-annual variability, ~~however,~~ suggests that this buffer distance may not adequately provide the intended protection. ~~Among this information is the recent collapse of the nesting colony, its higher than usual interannual variability (which suggests it is not thriving under the current level of protection), and Coast's increased level of activity (associated with planting and harvesting bed SI-Nk) near the island in May of 2016 (as indicated in its annual report) – one of the most sensitive periods for the nesting colonies.~~ Although there is no direct evidence that Coast's~~these~~ operations contributed to the reduced nesting at Sand Island in 2016, the fact remains that the colonies are in a poor condition and may benefit from more robust protection to help ensure that potential sources of human disturbance, such as Coast's operations, are less likely to adversely affect the island's resources.

CORRESPONDENCE

From:	Stan Brandenburg
To:	Teufel, Cassidy@Coastal
Subject:	Existing Operations- Coast Seafoods intertidal operations- North Humboldt Bay, CA
Date:	Friday, January 06, 2017 4:16:26 AM
Attachments:	image.png

Mr. Teufel,

This letter is regarding impacts to the waterfowl hunting community from the existing oyster farming operations by Coast Seafoods in northern Humboldt Bay, CA. As a brief background, there are a few main methods of waterfowl hunting on Humboldt Bay, with one of the most unique being the scull. Scull boats were developed on Humboldt Bay over 100 years ago and whose design is referred to as the Humboldt Bay Scull Boat design by hunters around the world.

Sculling remains an active and popular sport in north Humboldt Bay. Waterfowl hunting takes place in winter months when conditions can change quickly, and safety is always a first priority. This method uses a scull boat that incorporates some specific defining features necessary to sneak up on birds for hunting. First, the boat must be un-motorized, and be designed to allow a person to row while lying down. Second, the boat is designed to minimize the profile of the watercraft and be as low to the water as possible.

These design features enable hunters to get right up to the ducks and brant they are pursuing, though require constant re-evaluation once in the water regarding tacks and the possibility of deteriorating conditions. For a successful hunt, a hunter must be able to row long distances while lying down, often in low light conditions or in marginal weather, to get from the put in to the area for hunting. Areas hunted on a given day depend on where the birds are located, tides, what the weather and wind is doing, where other hunters are located, and other factors dependent on the conditions of the day. This method of sport also provides a unique and important coastal dependent recreational activity that cannot be provided in inland waters (§ 30220 CA Coastal Act). This recreational activity must be protected from further industrialization of the bay by oyster farms, and our concerns regarding ongoing operations must be addressed to ensure access to public trust resources and ensure the sport can continue in a safe manner.

We believe the concerns from the waterfowl hunting community were not considered during the last round of permitting for Coast Seafoods operations 10 years ago. We have the following concerns and recommendations:

- When Coast Seafood went from on-bottom to off-bottom methods they inadvertently took away one of the most popular and utilized hunting areas in north Humboldt Bay. The oyster farm areas operated by Coast Seafoods in the north-west area of the bay, next to the Mad River Slough channel, were once a great place to hunt. With the addition of extensive off-bottom gear, this area is no longer available to hunters or to recreational boaters and requires a much longer tack to get around the existing gear. This severe decrease in safety and the taking of area from hunters and other recreational users for corporate aquaculture uses was never considered in

the previous permitting process. As we don't feel we can realistically regain this area back, we ask that you enhance our ability to utilize other frequented areas in North Bay for hunting. Of importance is the area circled in orange in the attached picture. Removing operations from this area would enhance our safety when utilizing the T-Street and Target boat launches to get to North Bay in general, and would greatly enhance our access to productive hunting grounds from any access point.

- Coast Seafood operators often disrupt our hunts. We are limited to only certain days per year to hunt Brant and other waterfowl. During those times, Coast Seafood boats have often (seemingly purposefully) flushed birds we were trying to hunt and sometimes even come dangerously close to our scull boats. They have shown blatant disregard for our sport and our safety. We ask that Coast Seafood boats be disallowed in north Humboldt Bay during brant season during daylight hours.

- The current operations should be consolidated as much as possible to allow recreational hunting and boating. We recommend consolidating operations in the west side of the bay to give recreational boaters, kayakers, windsurfers, stand-up paddle boarders, and hunters access to the east side of the bay for use and enjoyment of the bay. No operations should occur east of the Arcata Channel. This would provide much needed access for the people of the state to the public trust resources you protect.

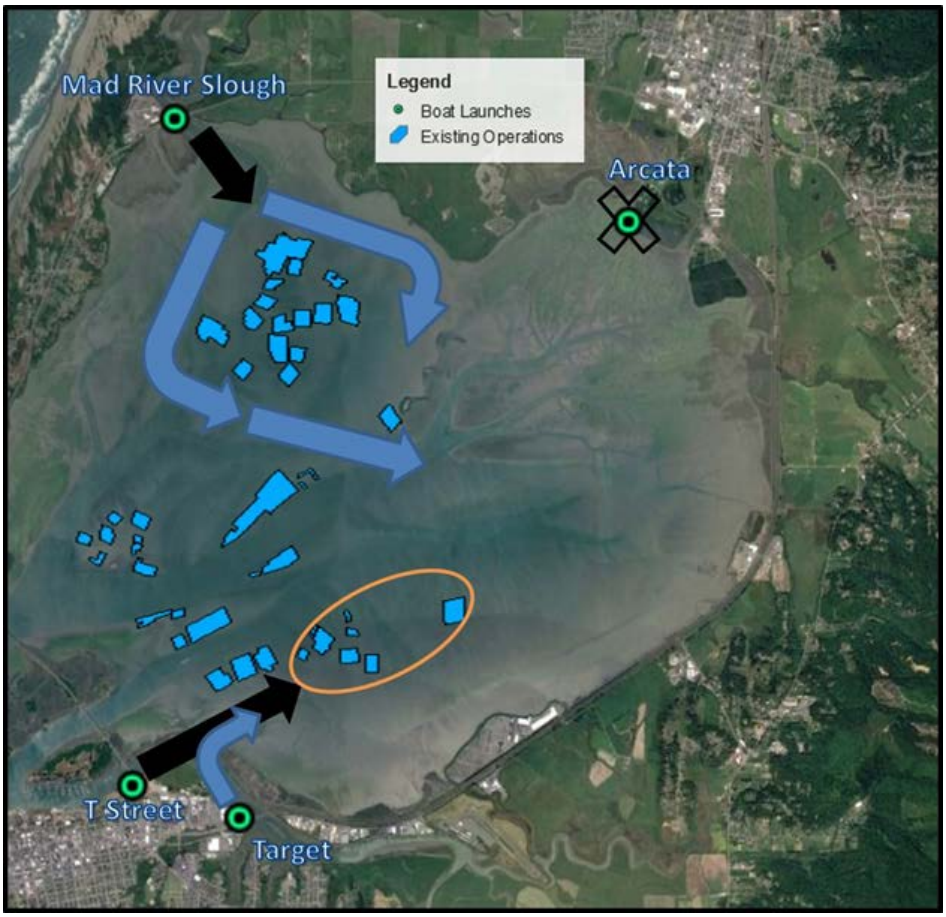
- In addition, the view-shed of the bay has been significantly diminished due to the gear visible at low and high tides. When we hunt or otherwise recreate in north bay our use and enjoyment of the area is severely diminished due to the wide-spread PVC pipes and other gear visible at all tides. This severely reduces the beauty of the bay and ruins the scenic vistas that previously existed. To address this we ask that you greatly consolidate operations as described above.

Thank you for the opportunity to comment on this. As we were not consulted in the previous round of permitting, we ask that you integrate our concerns into any permit for ongoing operations. We have additional and extensive comments regarding the expansion plans for north Humboldt Bay aquaculture, but have restrained our comments here to ongoing operations for Coast Seafoods. Please give me a call if you have any questions or would like to discuss further.

Regards,

Stan Brandenburg

707-599-7272


Mad River Slough
Legend
Boat Launches
Existing Operations
Arcata
T Street
Target

From: Ted Romo
To: Teufel, Cassidy@Coastal
Subject: Existing Boating Problems Caused by Oysters on North Bay
Date: Tuesday, January 10, 2017 12:24:34 PM

Mr. Teufel,

My name is Ted Romo, and I have been hunting on both North Bay and South Bay for over 25 yearns. After hunting both bays, North Bay is extremely challenging to safely hunt or navigate in because of having to avoid the existing oyster equipment and being subjected to the continuous fear of its existence and where it might interfere with safe boating. What we are dealing with is a real-world scenario.

The effect of up to one square mile of aquaculture ropes, plastic, steel cages, and shading equipment will have a negative visual impact on the enjoyment of the bay and an environmental impact on the ecosystem of Humboldt Bay, including eel grass, black brant, salmon, crab, and herring. The recreational use of boating will be significantly impacted by increasing the overall oyster farm footprint because the existing equipment currently is hazardous and impedes the safety of all boaters that use North Bay.

The following statement pretty much sums up the problems of boating in North Bay. One example is our hunting experience of two years ago. Our boat motor became entangled within the current oyster gear around Sand Island due to the tidal current and wind pushing us into the gear before our engine could be restarted. We were lucky to be able to extricate ourselves from the current oyster structures without damaging our boat motor or endangering us; however, if the conditions were at a different level, we could have found ourselves in a precarious situation of life-endangering circumstances.

This is an example of the gear we encounter. The buoys only mark the equipment under ideal navigational situations.

Humboldt Bay is a public bay that is to be used and enjoyed by ALL of the people who would like to enjoy its beauty in its various aspects, whether they are local residents or tourists. Increased commercialization with its visual and physical pollution and safety concerns is only addressing a monetary advantage for the oyster farmers and robs us, the private citizens, of our use of public land.

The natural beauty of Humboldt Bay needs to be preserved by not interfering with eelgrass beds, maintaining undisturbed wide corridors and areas on which wildlife may feed and rest, and allowing recreational users to safely navigate and enjoy the overwhelming magnificence of the entire bay.

Thank you.

Ted Romo, Humboldt County Fish and Game Commissioner
3419 Edgewood Rd.
Eureka, CA 95501
(707) 496-0525
blackbrantsky@yahoo.com

RECEIVED
JAN 12 2017
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COASTAL COMMISSION

January 10, 2017

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RE: Existing Operations- Coast Seafoods intertidal operations- North Humboldt Bay, CA

Mr. Teufel,

This letter is regarding impacts to the waterfowl hunting community from the existing oyster farming operations by Coast Seafoods in northern Humboldt Bay, CA. As a brief background, there are a few main methods of waterfowl hunting on Humboldt Bay, with one of the most unique being the scull. Scull boats were developed on Humboldt Bay over 100 years ago, and whose design is referred to as the Humboldt Bay Scull Boat design by hunters around the world.

Sculling remains an active and popular sport in north Humboldt Bay. Waterfowl hunting takes place in winter months when conditions can change quickly, and safety is always a first priority. This method uses a scull boat that incorporates some specific defining features necessary to sneak up on birds for hunting. First, the boat must be un-motorized, and be designed to allow a person to row while lying down. Second, the boat is designed to minimize the profile of the watercraft and be as low to the water as possible.

These design features enable hunters to get right up to the ducks and brant they are pursuing, though require constant re-evaluation once in the water regarding tacks and the possibility of deteriorating conditions. For a successful hunt, a hunter must be able to row long distances while lying down, often in low light conditions or in marginal weather, to get from the put in to the area for hunting. Areas hunted on a given day depend on where the birds are located, tides, what the weather and wind is doing, where other hunters are located, and other factors dependent on the conditions of the day. This method of sport also provides a unique and important coastal dependent recreational activity that cannot be provided in inland waters (§ 30220 CA Coastal Act). This recreational activity must be protected from further industrialization of the bay by oyster farms, and our concerns regarding ongoing operations must be addressed to ensure access to public trust resources and ensure the sport can continue in a safe manner.

We believe the concerns from the waterfowl hunting community were not considered during the last round of permitting for Coast Seafoods operations 10 years ago. We have the following concerns and recommendations:

- When Coast Seafood went from on-bottom to off-bottom methods they inadvertently took away one of the most popular and utilized hunting areas in north Humboldt Bay. The oyster farm areas operated

by Coast Seafoods in the north-west area of the bay, next to the Mad River Slough channel, were once a great place to hunt. With the addition of extensive off-bottom gear, this area is no longer available to hunters or to recreational boaters and requires a much longer tack to get around the existing gear. This severe decrease in safety and the taking of area from hunters and other recreational users for corporate aquaculture uses was never considered in the previous permitting process. As we don't feel we can realistically regain this area back, we ask that you enhance our ability to utilize other frequented areas in North Bay for hunting. Of importance is the area circled in orange in the attached picture. Removing operations from this area would enhance our safety when utilizing the T-Street and Target boat launches to get to North Bay in general, and would greatly enhance our access to productive hunting grounds from any access point.

- Coast Seafood operators often disrupt our hunts. We are limited to only certain days per year to hunt Brant and other waterfowl. During those times, Coast Seafood boats have often (seemingly purposefully) flushed birds we were trying to hunt and sometimes even come dangerously close to our scull boats. They have shown blatant disregard for our sport and our safety. We ask that Coast Seafood boats be disallowed in north Humboldt Bay during brant season during daylight hours.
- The current operations should be consolidated as much as possible to allow recreational hunting and boating. We recommend consolidating operations in the west side of the bay to give recreational boaters, kayakers, windsurfers, stand-up paddle boarders, and hunters access to the east side of the bay for use and enjoyment of the bay. No operations should occur east of the Arcata Channel. This would provide much needed access for the people of the state to the public trust resources you protect.
- In addition, the view-shed of the bay has been significantly diminished due to the gear visible at low and high tides. When we hunt or otherwise recreate in north bay our use and enjoyment of the area is severely diminished due to the wide-spread PVC pipes and other gear visible at all tides. This severely reduces the beauty of the bay and ruins the scenic vistas that previously existed. To address this, we ask that you greatly consolidate operations as described above.

Thank you for the opportunity to comment on this. As we were not consulted in the previous round of permitting, we ask that you integrate our concerns into any permit for ongoing operations. We have additional and extensive comments regarding the expansion plans for north Humboldt Bay aquaculture, but have restrained our comments here to ongoing operations for Coast Seafoods. Please give us a call if you have any questions or would like to discuss further.

Regards,

Rick Pastori
Member of the Waterfowl Hunting and Recreational Community

Audubon CALIFORNIA

February 3, 2017

California Coastal Commission
45 Fremont St., #1900
San Francisco, CA 94105

Via e-mail

Re: Application Nos. E-02-005 and E-06-003-A5, Coast Seafoods Company

Dear Coastal Commissioners:

We write to express our concerns regarding ongoing and proposed aquaculture operations by Coast Seafoods (Coast) in Humboldt Bay. We appreciate the Commission staff's recommendations for additional mitigation requirements to address the significant impacts of Coast's existing operations over the next six months. At this time, we emphasize that any permit for renewed long-term operations or expanded operations must fully address significant new information and require greater mitigation to fully address the long-term impacts on unique and sensitive natural resources in Humboldt Bay.

Coast has applied for a six-month extension of the coastal development permit for its current operations, following a two-month extension already granted by the Commission. While we do not oppose this extension, we note that, if it is granted, Coast will have operated on its outdated permit for a total of eight months. We do not believe that any further extensions would be appropriate before the Commission acts on Coast's application for a new permit.

The project consists of 300 acres of off-bottom cultivation in eelgrass beds, sand flats, and mudflats and 30 floating clam cultivation rafts within a subtidal channel. The area includes 275 acres of mapped eelgrass habitat. The staff report recommends several conditions requiring changing to these operations, including an 11-acre reduction in operational footprint, increases in spaces between beds in some areas, and a variety of other measures.

While additional special conditions recommended in the staff report would further minimize the significant impact of the project for the next six months, these additions would fall far short of mitigating significant impacts to resources caused by this project if renewed on a long-term basis. Substantial new information and new regulations and policy guidance have appeared since the issuance of the 2006 CDP. Much of this information is not included in the staff report. We have detailed this information in numerous letters to the lead agency, the Humboldt Bay Harbor

District, and have shared those concerns with Commission staff over the past 18 months.

To the extent that it is intended to address the long-term impacts of Coast's operations, should these be granted a new permit, we disagree with the staff report's conclusion that: "With implementation of Special Condition 9 of CDP No. E-02-005-A6 and Special Conditions 3, 9, 10, 13, 14, 15 and 16 of CDP No. E-06-003-A5, the continuation of Coast's current shellfish aquaculture operation in Arcata Bay would be carried out in a manner that maintains marine resources, provides special protection for species and areas of special biological significance, sustains the biological productivity of coastal waters, and maintains healthy populations of all species of marine organisms."

While we do not oppose Coast's request for a six-month extension, we note that the criteria for permitting this extension are not applicable to, and do not set a precedent for, the new CDP that staff is evaluating for Commission consideration later this year. We see this extension as an opportunity to allow staff an additional six months to address fully and carefully the CDP application for existing and expanded operations. We expect the Commission ultimately to require full mitigation of impacts on public trust resources and recreational opportunities, taking new information and policy guidance into full account.

This is especially important given that Coast has not complied with Special Conditions #2, 3, and 9 of its 2006 CDP. Further, Coast's application fails to adequately describe impacts of existing operations. Coast's assertion that the "quantum of mitigation exceeded the actual impacts of Coast's operations… Coast essentially over-mitigated for the impacts of its existing operations" is not supported by the best available science.

Any permit for long-term continuation or expansion of operations must fully account for new information and avoid significant impacts to the environment

The staff report's discussion of "new issues" (pg 4) reflects some of the new information that has come to light since the 2006 CDP, however, significant information relating to impacts to herring and other fish species, shorebirds, brant, other waterfowl, and eelgrass is missing.

Herring

The staff report notes that Coast has not reported any observations of herring spawn in the 10 years since its 2006 CDP was issued. However, the report does not note the possibility that Coast simply did not comply with Special Condition 3, which requires it to report spawning activity. (pg 20) It will be important to verify Coast's compliance with this and all other conditions in order to assess their effectiveness.

A modified Special Condition 3 has the potential to improve avoidance of harmful impacts from Coasts' activities in spawning areas during a spawning event. However, Special Conditions 2 and 3 fail to account fully for impacts on herring in two ways. First, as Commission staff previously noted, herring may well be avoiding spawning at all in aquaculture areas. This is an impact of Coast's continued operations that must be acknowledged and taken into account in any long-term permitting decision.

If, on the other hand, herring spawn in these areas, expert agencies have noted negative impacts, i.e. PFMC: "Numerous comments have been provided to Coast Seafoods regarding potentially significant impacts to Pacific herring caused by placing aquaculture infrastructure within core herring spawning areas, including loss of native eelgrass habitat, increased desiccation of eggs deposited on aquaculture gear, differential survival of eggs deposited on artificial substrates (aquaculture gear), and changes in fish community structure within core herring spawning areas that may increase predation of eggs and early larval herring."[1]

In addition, future consideration of longer term operations must take into account that herring have declined in California and along the West Coast, making any further impacts to the species more significant. Future analyses must also address the herring's key role in the food web. Herring are often the number one prey item in the northern California Current and are essential food for larger fish, birds, and much other wildlife.

Sturgeon

The staff report notes that since the issuance of the 2006 CDP, green sturgeon were identified as federally threatened and a state species of special concern and white sturgeon identified as a state species of special concern. Under the federal Endangered Species Act, Humboldt Bay is designated critical habitat for the southern distinct population segment of green sturgeon. That critical habitat was designated after the 2006 permit was issued. We appreciate the staff effort to develop a new mitigation measures

The staff report states: "In contrast to the more densely configured beds that are structured more as a solid, contiguous network E-02-005-A6 and E-06-003-A5 (Coast Seafoods Company) of lines, these beds with a mix of five and ten foot channels provide a variety of opportunities for larger marine wildlife species, such as green and white sturgeon, to more safely pass among and through them. As such, Special Condition 14 would require Coast to develop and implement a plan for the conversion of its 14 longline beds with 2.5-foot spacing to the same configuration of its remaining beds that include five and ten foot wide access channels. In combination with the requirement in Special Condition 13 for the removal of the cultivation bed located in the area of high use by green sturgeon, this measure would help ensure that sturgeon movement, foraging, and health in other potentially lower use areas of Arcata Bay would not be adversely affected."

We agree Special Condition 13 would help to minimize Project effects on sturgeon. But Special Condition 14, requiring a "mix of five and ten foot channels [to] provide a variety of opportunities for larger marine wildlife species, such as green and white sturgeon, to more safely pass among and through them," requires substantiation and further testing. The critical habitat designation for green sturgeon notes that "unimpeded passage is necessary for adult and subadult green sturgeon to access feeding areas, holding areas, and thermal refugia, and to ensure passage back out into the ocean."[2]

[1] Pacific Fishery Management Council. 2016. Letter to the Humboldt Bay Harbor, Recreation and Conservation District.

[2] National Marine Fisheries Service. 2016. Letter to the Humboldt Bay Harbor, Recreation and Conservation District.

Endangered Salmon

The staff report notes the importance of eelgrass habitat for endangered salmon but does not evaluate the adequacy of mitigation measures to reduce impacts to these species. Humboldt Bay is a very important area for salmon, as demonstrated by the fact that NMFS has designated the bay as critical habitat for salmon, and has designated eelgrass habitat there as a Habitat Area of Particular Concern for multiple fish species.[3] Future analyses concerning long term operations must fully account for impacts to salmon and salmon habitat.

Migratory and Wintering Shorebirds

The staff report concludes that "there is no indication that Coast's aquaculture operation is resulting in significant adverse impacts to shorebirds. Although substantial, the operation takes up less than 10% of the intertidal area available for shorebird foraging and resting." This assertion is unsubstantiated. Many species of shorebirds, including species that visit Humboldt Bay, are declining, and "vast amounts of intertidal flats critically important to shorebirds and other migratory waterbirds are still being reclaimed by humans."[4] Humboldt Bay tidelands support large global populations of shorebirds, e.g., 23% of western sandpiper (close to 1 million birds per year) and well over 50% of all Pacific dunlin.

The staff report notes that studies show that "two common species" are absent from culture areas. Three sandpipers—dunlin, least, and western sandpipers—account for 53-87 percent of all shorebirds using Humboldt Bay.[5] All three species primarily use open habitats, such as mudflats, during migration and winter. Conservation Plans have been published for dunlin and western sandpiper since the 2006 CDP. Both note population declines in these species due to wintering habitat loss and the critical need to preserve remaining mudflat habitat. These data are consistent with counts at Bolinas Lagoon, for which a 30-year data set shows a significant decline in numbers of nonbreeding dunlin in California. Habitat loss, degradation, and disturbance may be the most significant threats to western sandpipers.

The staff report's Special Conditions 9 and 13 would help shorebirds by removing structure from intertidal areas. However, Special Condition 14, "creating 5 and 10 foot channels at regular intervals within 14 of Coast's most densely planted cultivation beds," is untested and unsubstantiated regarding its effects on shorebirds. Special Condition 15, which would prohibit Coast personnel from intentionally approaching, flushing, chasing, or otherwise disturbing foraging or resting shorebirds or waterfowl, should be strengthened to require Coast to avoid unintentional disturbance as well. In addition, future analyses should account for the cumulative impacts of long-term operations in the context of declining bird populations.

Impacts to eelgrass from existing operations

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[3] PFMC. 2016. Approved and adopted amendments. Amendment 18. Pacific Coast Salmon Plan.

[4] Stralberg, Diana et al. 2011. Identifying habitat conservation priorities and gaps for migratory shorebirds and waterfowl in California. Biodivers Conserv 20:19–40

[5] Colwell, M. 1994. Shorebirds of Humboldt Bay, California: abundance estimates and conservation implications. Western Birds 25:137-145.

We appreciate the staff report's additional discussion of the importance of eelgrass to black brant and consideration of those impacts in requiring additional mitigation, particularly Special Condition 13, to reduce eelgrass impacts. We also agree with the staff report's statement that Coast's analysis of eelgrass impacts due to its proposed expansion do not necessarily reflect impacts from its existing operations. An analysis of impacts from long-term continuation of operations and any expanded operations will have to address cumulative impacts and require significantly more stringent avoidance and mitigation measures. In addition, such analyses must address substantial new information on the importance of eelgrass to commercial and recreational fisheries and the marine ecosystem, the requirements of the California Eelgrass Mitigation Policy (CEMP), and substantial declines in eelgrass in Humboldt Bay and on the west coast, including Morro Bay and San Diego Bay, over the last 10 years.

The staff report relies on the premise that the impact to eelgrass from the 300-acre operational footprint is equivalent to the loss of 137 acres of eelgrass habitat – the finding of the 2006 CDP . But this approach falls short of the mitigation requirements of the CEMP.

NMFS's CEMP states that: "The spatial distribution of eelgrass habitat should be delineated by a contiguous boundary around all areas of vegetated eelgrass cover extending outward a distance of 5 m, excluding gaps within the vegetated cover that have individual plants greater than 10 m from neighboring plants. To encompass fluctuating eelgrass distribution and functional influence around eelgrass cover, for the purposes of this policy and guidelines, eelgrass habitat is defined as areas of vegetated eelgrass cover (any eelgrass within 1 m2 quadrat and within 1 m of another shoot) bounded by a 5 m wide perimeter of unvegetated area."

Under the CEMP, the mitigation ratio for loss of eelgrass habitat in northern California is 4.82 to 1, and the general ratio is 1.2:1. The reduction of the operational footprint from 500 to 300 acres was the primary mitigation for significant impacts to eelgrass habitat in the 2006 CDP. Another condition of the 2006 CDP was "Coast will not initiate any new bottom culture in Humboldt Bay" indicating that the Commission believed that expanding the operational footprint in Humboldt Bay would cause unacceptable impacts to eelgrass habitat. The staff report recognizes that previous eelgrass restoration efforts in Humboldt Bay have failed, which significantly limits the ability to successfully mitigate any further impacts to eelgrass and underscores the critical need to avoid such impacts when considering any proposal to expand operations.

Commission staff has identified existing operations in eelgrass as undesirable. "Commission staff have consistently expressed significant concerns with continued or expanded shellfish aquaculture activities within eelgrass (*Zostra marina*) habitat in Humboldt Bay, a state and federally recognized habitat of particular ecological importance and sensitivity. These same concerns have been similarly conveyed over the past year through comments provided to Coast and the Harbor District by the Commission's partner agencies, the California Department of Fish and Wildlife, the National Marine Fisheries Service, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service. Continued and expanded use of eelgrass habitat for shellfish aquaculture operations was identified as a very challenging aspect of the proposed project during its initial development and Commission staff specifically requested that Coast and the Harbor District's EIR carefully consider project modifications and alternatives that avoided

and minimized placement of aquaculture material in eelgrass habitat."[6]

Elevation Study

The Coastal Commission has previously questioned Coast's conclusion that cultivating eelgrass in areas higher than 1.5 feet MLLW is infeasible: "the conduct of this study was a requirement of the Commission's 2006 authorization of Coast's current operation and it was to 'evaluate the feasibility of cultivating oysters at depths typically unsuitable for eelgrass (*Zostera marina*) growth (i.e., 1.5 feet above mean lower low water (MLLW)) in Humboldt Bay.'" The staff report notes this condition but does not discuss any resulting data or conclusions from it. The Commission further notes in its December, 2015 letter that "It's additionally unclear why the DEIR concludes that cultivating in areas higher than 1.5 feet MLLW is infeasible when the Harbor District is pursuing a project proposing cultivating oysters at those elevations."

Eelgrass as forage for black brant and impacts of disturbance to brant and other waterbirds

The staff report notes that reduction of eelgrass is likely to adversely affect black brant but does not discuss current information about the impacts of disturbance to this highly sensitive species. The impacts of disturbance to brant and other waterfowl including wigeon were not considered in the 2006 CDP. Moreover, Special Condition 14 is not likely to provide brant with additional foraging opportunities because brant avoid structure.

Conclusion

As noted above, we do not oppose the six-month extension of the existing permit, which will allow Commission staff the time to fully explore the impacts of a new permit for Coast's existing operations, which should also take account of the cumulative threats from Coast's expansion plans and other proposals to increase aquaculture in Humboldt Bay. However, we urge staff to take into account all relevant new information about Humboldt Bay resources that has emerged since the 2006 CDP, including the various issues discussed in this letter.

Thank you for the opportunity to comment and for your consideration of our views.

Sincerely,

Anna Weinstein

Anna Weinstein
Marine Program Director

[6] California Coastal Commission. 2015. Letter to the Humboldt Bay Harbor, Recreation and Conservation District. December.

CALIFORNIA COASTAL COMMISSION

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W12a&W12b

Filed:	1/18/17
180th Day:	7/17/17
Staff:	C. Teufel-SF
Staff Report	1/27/17
Hearing Date:	2/8/17

STAFF REPORT: AMENDMENTS

Application Nos.:	**E-02-005-A6 and E-06-003-A5**
Applicant:	**Coast Seafoods Company**
Agents:	Plauché and Carr, LLP
Location:	Intertidal and subtidal lands of Arcata Bay (northern Humboldt Bay) in the County of Humboldt.
Original Project Descriptions:	E-02-005: Development of a permanent clam seed nursery by permanently anchoring (1) a series of 10 approximately 12-foot-wide by 20-foot-long wooden rafts with styrofoam floats for use in holding clam seed nursery trays; and (2) a 20-foot-wide by 27-foot-long floating work platform for washing, sorting, counting, and related activities. E-06-003: Plant, grow, and harvest off-bottom oyster culture on approximately 255 acres; complete conversion (from bottom culture) and plant, grow, and harvest off-bottom oyster culture on approximately 45 acres; operate a nursery area, FLUPSY, and wet storage floats.
Proposed Amendments:	Extension of the permit terms for six months; from February 10, 2017, to August 11, 2017.
Staff Recommendation:	Approval with Conditions.

SUMMARY OF STAFF RECOMMENDATION:

Since the 1950's Coast Seafoods Company (Coast) has carried out commercial shellfish aquaculture operations in Humboldt Bay. These operations currently include approximately 300 acres of intertidal oyster cultivation and 30 floating rafts located in a subtidal channel that are used for the

cultivation of juvenile clams. The intertidal operation was initially authorized by the Commission through Coastal Development Permit E-06-003 and modified through three subsequent amendments (E-06-003-A1, -A2, and -A4; application no. E-06-003-A3 was withdrawn). The raft operation was initially authorized through CDP No. 1-96-69 (later renumbered as E-02-005) and modified through five subsequent amendments (E-02-005-A1, -A2, -A3, -A4, and –A5). CDP amendment E-02-005-A2 authorized an increase in the number of Coast's cultivation rafts from 10 to 30. Both CDP E-06-003-A4 and E-02-005-A5 are set to expire on February 10, 2017.

While Coast is currently pursuing state, local, and federal authorization to significantly modify and expand its aquaculture operations in Humboldt Bay and has submitted a CDP application for these new operations that would replace E-06-003 and E-02-005, this expansion project is not yet ready to bring before the Commission for consideration. Therefore, to prevent the expiration of these CDPs for Coast's existing operation prior to the Commission's decision on a permit for its expansion, Coast requests amendments to CDP Nos. E-06-003 and E-02-005 to extend the date of their expiration by six months. This would provide sufficient time for Coast to complete development and local review of its proposed expansion project and for the CDP application (No. 9-15-1931) for this project to be brought before the Commission.

Several prior amendments to these permits have been approved as immaterial by the Commission for similar or shorter permit term extensions. However, additional information recently provided to Commission staff suggests that Coast's current operations have the potential for adverse impacts to coastal resources beyond those that were considered and addressed in the Commission's previous actions on Coast's permit and amendment applications. Continuation of these operations through an extension of their permit term therefore has the potential to result in adverse impacts to coastal resources and is thus considered as material amendments.

Specifically, Coast's existing intertidal and subtidal shellfish aquaculture operation raises several issues that were not known or adequately addressed in previous CDPs or amendments and that may result in adverse impacts to coastal resources, due to: (1) the proximity of one of the culture beds to Sand Island, the site of an important and sensitive seabird nesting colony, harbor seal haul-out and black brant grit site; (2) the proximity of one of the culture beds to a recently identified area of high use by green sturgeon, listed federally as a threatened species; (3) the potential for cultural resources or sites to be discovered or disturbed during shellfish planting and/or harvest operations; (4) the potential for operations to adversely affect spawning Pacific herring; (5) the potential release of aquaculture gear and equipment as marine debris into Humboldt Bay and marine waters; (6) the potential entrainment or impingement of state listed longfin smelt in intake systems; and (6) spatial use conflicts between the operation and on-water recreation activities such as boating, kayaking, and waterfowl hunting.

Each of these potential issues would be addressed through the addition or modification of permit special conditions. For example, on CDP No. E-02-005, Special Condition 9 would be modified to incorporate the latest screen size and intake velocity measures to prevent longfin smelt entrainment and impingement; on CDP No. E-06-003 Special Condition 3 would be modified to increase the efficacy of protections for Pacific herring spawning events; Special Condition 9 would be modified and Special Condition 10 added to remove a potential source of marine debris and require implementation of several marine debris prevention and response practices; Special Conditions 11 and 12 would be added to implement a consistent and uniform system of navigational markers for culture beds and limit operations that may adversely affect recreational hunting activities on Arcata

Bay; Special Condition 13 would be added to require a culture bed near Sand Island to be removed in order to help ensure a greater level of protection for the unique combination of ecological resources located on the island; Special Condition 14 would be added to have the most densely planted culture beds include five and ten foot wide access channels; Special Conditions 15 would be added to help protect marine wildlife (marine mammals, shorebirds and seabirds) from disturbance and Special Conditions 16, 17 and 18 would be added to provide a point of contact at Coast for cultural resource issues and to establish protocols in the event that cultural resources or remains are discovered by Coast during its operations. These conditions would be in addition to the existing unmodified permit conditions included in E-02-005-A5 and E-06-003-A4. With the inclusion of these new and modified special conditions, Commission staff recommends **approval** of Coast's requested permit amendments. The **motion** to implement this recommendation is found on **Page 5.** The standard of review for this project is Chapter 3 of the Coastal Act.

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I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** the proposed Coastal Development Permit Amendment Application Nos. E-02-005-A6 and E-06-003-A5 pursuant to the staff recommendation.*

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

Resolution:

The Commission hereby approves Coastal Development Permit Amendment Application Nos. E-02-005-A6 and E-06-003-A5 and adopts the findings set forth below on grounds that the development as amended and 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 development on the environment.

II. SPECIAL CONDITIONS

NOTE: Appendix A, attached, includes all standard and special conditions that apply to these permits, as approved by the Commission in its original actions and modified and/or supplemented by all subsequent amendments, including these amendment nos. E-02-005-A6 and E-06-003-A5. All of the Commission's adopted special conditions and any changes in the project description proposed by the applicant and approved by the Commission in this or previous actions continue to apply in their most recently approved form unless explicitly changed in this action. New conditions and modifications to existing conditions imposed in this action on amendment nos. E-02-005-A6 and E-06-003-A5 are shown in the following section. Within Appendix A, changes to the previously approved special conditions are also shown in strikeout/underline format. This will result in one set of adopted special conditions for each amended permit.

All terms and conditions of Coastal Development Permit E-02-005, as amended, shall remain in full force and effect, and the following **Special Conditions 4 and 9** shall be modified (deletions are indicated in ~~strikethrough~~ and additions are underlined):

4. Permit Term Limit. The term of the permit shall expire on August 11, 2017. ~~be limited~~

~~to the current term of the Humboldt Bay Harbor, Recreation, and Conservation District Lease for Water Bottoms for Aquaculture which ends on September 7, 2015. If this lease is amended or a new lease is issued by the Humboldt Bay Harbor, Recreation, and Conservation District, an application for a permit amendment may be submitted to request an extension of the permit term.~~

9. **Intake System Design.** All intake systems used to supply water from Arcata Bay for maintenance cleaning and clam tray washing shall be designed with a screened intake with ~~mesh openings of no more than 3/32 inches and a maximum intake water velocity of 0.33 feet per second.~~ (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, 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.

All terms and conditions of Coastal Development Permit E-06-003, as amended, shall remain in full force and effect, the following **Special Conditions 3, 6, 7**, and **9** shall be modified (deletions are indicated in ~~strikethrough~~ and additions are underlined), and the following **Special Conditions 10** through **18** shall be added:

3. **Herring Spawn**. During the months of December, January and February, Coast shall visually inspect beds prior to planting and/or harvesting, to determine if Pacific herring (*Clupea pallasi*) has spawned on eelgrass, culture materials, or substrate. Visual inspections shall be conducted in accordance with the survey protocols developed by the California Department of Fish and Wildlife (CDFW). In addition, at the beginning of the three month herring spawning period, Coast shall provide staff of the CDFW Eureka Marine Region office a schedule of planting and/or harvesting activities anticipated to occur during the period. Further, Coast shall inform CDFW Eureka office staff with the proposed location of planned planting and/or harvesting activities no less than 48 hours prior to the activities.

   If herring spawning has been recently ~~is~~ observed by Coast or CDFW staff on or in the immediate vicinity of planned planting and/or harvesting activities, Coast shall: 1) postpone ~~for two weeks~~ planting and/or harvesting activities on any culture beds in those areas for two weeks, or until CDFW staff confirm herring eggs have hatched ~~on those beds where spawning has occurred~~, and 2) notify the ~~California Department of Fish and Game ("DFG")~~ CDFW Eureka Marine Region office of the spawn within 24 hours. Coast shall keep records of when CDFW~~G~~ was notified of the spawning event, and those records shall be included with the annual report described below in **Special Condition No. 7**.

6. **Permit Term Limit.** This permit shall expire on August 11, 2017 ~~February 10, 2017~~.

7. **Annual Report.** By December 31 of each year, the applicant shall submit to the Executive Director an annual report describing the status of each bed (including harvest date and planting date) within the 300-acre operation footprint. The annual report shall also

include information regarding the results of quarterly cleanup events carried out as described in **Special Condition 10**.

9. **Plot Abandonment or Fallow.** WITHIN 30 DAYS OF THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, Coast shall remove all shellfish culture apparatus (including stakes, oysters, and ropes) from the GI 1-2 bed listed as "not planted" on the December 23, 2016, "Bed Status Report" submitted to Commission staff as well as all beds or portions of beds located outside of lands currently owned or leased by Coast. Within one week of completion of this removal work, Coast shall submit photographic documentation that all shellfish culture apparatus has been removed. Within 30 days of harvest on any plot that is being discontinued, abandoned, fallowed, or taken out of production for six months ~~one year~~ or more, the applicant shall remove all oyster culture apparatus from that plot, including but not limited to stakes, racks, baskets, floats, rope, ties, wires, tags and pallets. Coast may replant bed GI 1-2 at a future date once the existing culture apparatus at that location has been fully removed.

10. **Marine Debris Reduction and Management.** Coast shall carry out operations consistent with the following marine debris reduction and management practices:

    A. **Storm Damage and Debris**. As soon as safely possible following storm or severe wind or weather events, Coast shall patrol all active mariculture areas for escaped or damaged mariculture equipment. All equipment that cannot be repaired and placed back into service shall be properly recycled or disposed of at an appropriate onshore facility. In addition, Coast shall retrieve or repair any escaped or damaged mariculture equipment that it encounters while conducting routine daily and/or monthly maintenance activities associated with shellfish culture (e.g. bed inspections, shellfish grading and sorting). If the escaped gear cannot be repaired and replaced on the shellfish bed, it shall be properly recycled or disposed of on land.

    B. **Gear Marking.** Coast shall mark shellfish culture bags, baskets, and basket label tags in an easily identifiable manner with its company name or other identification information. Markings shall be securely attached and robust enough to remain attached and legible after an extended period in the marine environment (e.g. heat transfer, hot stamp, etching, etc.). Existing culture bags, baskets, and basket label tags currently in use in culture beds shall be marked or replaced with marked versions when replanted and all unmarked gear shall be replaced in this way within 24 months. In the event that shellfish culture gear or equipment becomes dislodged from culture beds, it shall be Coast's responsibility to retrieve the material from the shoreline, eelgrass beds, mudflat, or submerged bottom with minimal damage to the resources affected. Such material shall be removed and properly disposed of, recycled, or returned to use.

    C. **Marine Debris Reduction Training.** Coast shall implement annual employee training regarding marine debris issues and how to identify loose culture gear and proper gear repair and removal methods. Particular focus shall be placed on management and maintenance practices to reduce the loss of any gear type consistently found during bay cleanup and inspection activities. During trainings, Coast employees shall be encouraged to consider and implement field and management practices that reduce the

amount of small plastic gear (such as zip-ties, tags and fasteners) and non-biodegradable material (such as PVC stakes and nylon or polypropylene rope) used in its operations.

D. **Cleanup Events.** Coast shall conduct quarterly baywide cleanups in coordination with other interested parties or organizations, which shall include walking different portions of the bay and shorelines to pick up escaped shellfish gear and other trash (regardless of whether it is generated by the Project). The volume and type of shellfish gear collected and the cleanup location (marked on a map) and duration of cleanup activity shall be recorded and documented in the annual report submitted to the Executive Director of the Commission. If consistent discoveries of certain gear types are made during cleanup events by Coast or the public, Coast shall evaluate (and if feasible, implement use of) alternative gear types or practices that would reduce these consistent sources of debris.

E. **Ongoing Operations.** Coast shall not leave or temporarily store tools, loose gear, or construction materials on its owned or leased tidelands or surrounding areas. All aquaculture gear installed in active culture beds shall be kept neat and secure and maintained in functional condition. Coast shall carry out regular bed inspections and maintenance activities to help ensure that broken, collapsed, fallen, or buried gear is fixed or removed in a timely manner.

11. **Cultivation Bed Mapping and Marking.** WITHIN 30 DAYS OF THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, Coast shall submit for Executive Director review and approval, a Cultivation Bed Mapping and Marking Plan. This plan shall include a consistent, standardized method of marking the location of Coast's growing areas and culture beds in a manner that is obvious, identifiable, and understandable by boaters and recreational users not familiar with Coast's operation. Unless a more effective approach can be developed by Coast and approved by the Executive Director, the plan shall include the use of uniform marking stakes or posts that (1) remain visible and above water during maximum tidal heights; (2) are topped with reflective material; (3) identify the side of the stake on which the culture bed is located; and (4) are placed every 200-feet along the outer sides and at each corner of each of Coast's active culture beds. In addition, the plan shall include a method for Coast to develop, consistently update, and distribute digital and hard copy maps of Arcata Bay showing the location of its rafts and culture beds.

12. **Brant Hunting.** Except for emergency situations, activities to ensure the safety of its operations or operations required for regulatory compliance, such as marine debris cleanup response after storm events, Coast shall avoid operations in the area labeled as "Hunting Avoidance" in **Exhibit 7** from one hour before sunrise until sunset on days designated by the California Department of Fish and Wildlife as brant hunting days, including season opening and closing days (typically brant hunting is limited to Wednesdays, Saturdays, and Sundays between November 15 and December 15).

13. **Sand Island Protection.** Between the months of April and August, Coast shall carry out the minimum possible operations on the culture bed referred to in the December 23, 2016 "Annual Report for CDP E-06-003" submitted to the Executive Director as SI N k, SI-N, or Sand Island-North. Once the growth cycle for oysters on this culture bed is complete, the

bed shall be harvested, not replanted, and all cultivation gear and equipment, including all stakes, posts, lines, ropes, tags, wires, and fasteners, shall be permanently removed.

14. **Longline Spacing.** During their next harvest, Coast shall convert of all of its cultivation beds with 2.5-foot spacing throughout (including those culture bed referred to in the December 23, 2016 "Annual Report for CDP E-06-003" submitted to the Executive Director as BI N k, BI S k, BI W k, EB 2-3, EB 4-3, EB 7-2, MR 10, MR 11, MR 2, MR 5-1 k, MR 5-2, MR 8-2, and MR 9) to a configuration that includes a five foot wide channel between each group of five lines and a ten foot wide channel between the end of one 100-foot line and the beginning of the next line, as represented in the diagram included in **Exhibit 5**.

15. **Wildlife Disturbance.** During vessel transit, harvest, maintenance, inspection, and plating operations, Coast shall avoid intentionally approaching, chasing, flushing, or directly disturbing shorebirds, waterfowl, seabirds, or marine mammals.

16. **Cultural Resources Point of Contact**. Coast shall designate an authorized point of contact (Cultural Resources POC) to be used in the event any cultural or archaeological resource, human remains, or Native American grave goods are discovered during its aquaculture operations. WITHIN TWO WEEKS OF PERMIT ISSUANCE, Coast shall provide the name and contact information for this Cultural Resources POC to the Executive Director, staff of the Humboldt Bay Harbor, Recreation, and Harbor District (Harbor District), and the Tribal Historic Preservation Officers (THPOs) appointed by the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria and Wiyot Tribe.

17. **Cultural Resource Discovery Protocols**. In the event an archaeological resource is discovered during ground-disturbing activities, Coast shall immediately notify the THPOs appointed by the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria and Wiyot Tribe. As soon as feasible after such a discovery, Coast shall retain a qualified archaeologist with local experience to consult with Commission staff, the Harbor District, the three THPOs, Coast, and other applicable regulatory agencies to employ best practices for assessing the significance of the find, developing and implementing a mitigation plan if avoidance is not feasible, and reporting in accordance with this Special Condition and Harbor District Protocol. If no such discovery is made, no reporting is required. In addition:

    A. Ground-disturbing activities shall be immediately stopped if potentially significant historic or archaeological materials are discovered. Examples include, but are not limited to, concentrations of historic artifacts (e.g., bottles, ceramics) or prehistoric artifacts (chipped chert or obsidian, arrow points, groundstone mortars and pestles), culturally altered ash-stained midden soils associated with pre-contact Native American habitation sites, concentrations of fire-altered rock and/or burned or charred organic materials, and historic structure remains such as stone-lined building foundations, wells or privy pits. Ground-disturbing aquaculture operations may continue in other areas outside the discovery locale.
    B. As soon as feasible after a discovery, Coast shall establish (e.g., tape off or mark with stakes) an "exclusion zone" where unauthorized equipment and personnel are not permitted around the discovery area and a 100-foot buffer zone.

C. Coast shall secure (e.g., provide 24-hour surveillance) the discovery locale if directed to do so by the Harbor District or Executive Director, if either deems it necessary to avoid further disturbances.

D. Coast's plant manager (located at 25 Waterfront Drive in Eureka) or party who made the discovery and initiated these protocols shall be responsible for immediately contacting by telephone the parties listed below to report the find:
   a. Commission staff;
   b. The Harbor District's authorized point of contact; and
   c. Coast's Cultural Resources POC

E. Upon learning about a discovery, Coast's Cultural Resources POC shall be responsible for immediately contacting by telephone the POCs listed below to initiate the consultation process for its treatment and disposition:
   a. THPOs with Blue Lake Rancheria, Bear River Band and Wiyot Tribe; and
   b. Other applicable agencies involved in Project permitting (e.g., U.S. Army Corps of Engineers, etc.).

F. In cases where a known or suspected Native American burial or human remains are uncovered, Coast's Cultural Resources POC shall also immediately notify the Humboldt County Coroner (707-445-7242), along with the property owner of the discovery site. In addition, the protocols established through **Special Condition 18** shall be followed.

G. Ground-disturbing project operations at the find locality shall be suspended temporarily while the Executive Director, the Harbor District, the three THPOs, a consulting archaeologist and other applicable parties consult about appropriate treatment and disposition of the find. Based on this consultation, Coast shall, within three working days of discovery notification, prepare a Treatment Plan and submit it for review and approval by the Executive Director, the Harbor District, and the three THPOs. Where the Project can be modified to avoid disturbing the discovery site (e.g., through project redesign), the Treatment Plan shall consider this as a preferred option. Should human remains be encountered, the provisions of State laws shall apply and **Special Condition 18** shall be followed. The Treatment Plan shall reference appropriate laws and include provisions for analyses, reporting, and final disposition of data recovery documentation and any collected artifacts or other archaeological constituents. If feasible, the field phase of the Treatment Plan shall be accomplished within five days after its approval (with the understanding that circumstances may require longer periods for data recovery).

H. Any and all inadvertent discoveries shall be considered strictly confidential, with information about their location and nature being disclosed only to those with a need to know. The Commission's and Harbor District's authorized representatives shall be responsible for coordinating any requests by or contacts to the media about a discovery.

I. Coast shall immediately communicate these protocols to its field work force (including contractors, employees, officers and agents), and such communications shall be made and documented at safety briefings.

J. Ground-disturbing work at a discovery locale may not be resumed until authorized in writing by the Executive Director and Harbor District.

K. The plant manager or party who made the discovery and initiated these protocols, shall make written notes available to the Executive Director and Harbor District describing: the circumstances, date, time, location and nature of the discovery; date and time each point of contact was informed about the discovery; and when and how security measures were implemented.

L. Treatment Plans and corresponding Data Recovery Reports shall be authored by professionals who meet the Federal criteria for Principal Investigator Archaeologist and reference the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48 Fed. Reg. 44734-44737).
M. Final disposition of all collected archaeological materials shall be documented in a final Data Recovery report and its disposition determined in consultation with Tribal representatives.
N. Coast shall file Final Data Recovery Reports, along with updated confidential, standard California site record forms (DPR 523 series), at the Northwest Information Center of the California Historical Resources Information System, with report copies provided to the three identified THPOs.

18. Discovery of Remains. In the event human remains or Native American grave goods are discovered during ground-disturbing activities, work at the discovery locale shall be halted immediately, Commission staff, the Harbor District and County Coroner shall be contacted, and, consistent with State law, the following protocol shall be followed (in addition to the protocol described under **Special Condition 17**).

A. If human remains are encountered, they shall be treated with dignity and respect. Discovery of Native American remains is a very sensitive issue and serious concern of affiliated Native Americans. Information about such a discovery shall be held in confidence by all Project personnel on a need-to-know basis. The rights of Native Americans to practice ceremonial observances on sites, in labs and around artifacts shall be upheld.
B. Violators of Section 7050.5 of the California Health and Safety Code may be subject to prosecution to the full extent of applicable law (felony offense).
C. In addition, the provisions of California law (Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code) shall be followed:

a. The Coroner has two working days to examine the remains after being notified of the discovery. If the remains are Native American, the Coroner has 24 hours to notify the NAHC in Sacramento at (916) 653-4082.

b. The NAHC is responsible for identifying and immediately notifying the most likely descendant (MLD) of the deceased Native American.

c. Within 48 hours of their notification by the NAHC, the MLD shall be granted permission by the property owner of the discovery locale to inspect the discovery site if the MLD so chooses.

d. Within 48 hours of their notification by the NAHC, the MLD may recommend to the owner of the property (discovery site) the means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The recommendation may include the scientific removal and non-destructive or destructive analysis of human remains and items associated with Native American burials. Only

those osteological analyses (if any) recommended by the MLD may be considered and carried out.

Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the property owner rejects the recommendation of the MLD and mediation between the parties by NAHC fails to provide measures acceptable to the property owner, the applicant shall cause the re-burial of the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance.

III. FINDINGS AND DECLARATIONS

A. PROJECT DESCRIPTION AND BACKGROUND

Coast Seafoods Company (Coast) proposes to amend two existing coastal development permits (E-02-005-A5 and E-06-003-A4) that authorize its existing shellfish aquaculture operations in northern Humboldt Bay (also known as Arcata Bay and North Bay). These operations have been modified over the years and their associated permits have been amended several times to reflect these changes. Currently, the operations are made up of two primary elements: (1) approximately 300 acres of off-bottom oyster cultivation in intertidal eelgrass beds and sand- and mudflats; and (2) maintenance and use of 30 floating clam cultivation rafts within a subtidal channel. The oyster operation is used to grow Pacific oysters (*Crassostrea gigas*) and Kumamoto oysters (*Crassostrea sikamea*) for commercial sale to individuals, restaurants, and seafood suppliers, and the clam operation is used to grow juvenile Manila clams (*Venerupis philippinarum*) for sale and transport to other shellfish aquaculture operations elsewhere in the state and west coast.

Clam Cultivation

More specifically, Coast's clam cultivation operation involves the use of 30 rafts located in a roughly one acre area of submerged tidelands leased from the Humboldt Harbor, Recreation, and Conservation District (Harbor District) along the west side of the entrance to the Mad River Slough Channel opposite Bird Island, approximately ½ mile north of the Samoa/Highway 255 bridges (see **Exhibit 1**). Each clam raft is approximately 12 feet wide by 20 feet long, constructed from aluminum and using polyethylene encapsulated Styrofoam for floatation (see **Exhibit 2**). The rafts are moored in place with nearly two dozen 500-pound steel anchors placed in water depths of approximately 20 feet. Each raft has 24 tray wells and each well contains a stack of about 20 suspended plastic clam cultivation trays. The rafts are stocked with Manila clam seed of approximately 0.05 inches in size imported from land based hatchery facilities in Washington and Hawaii. These seed are then grown to approximately 0.14 inches over a period of one to six months in the cultivation trays. Once it reaches the appropriate size, the clam seed is harvested by hand, sold, and shipped out of Humboldt Bay for further cultivation (mostly to Willapa Bay, Washington). Each year, Coast cultivates up to 270 million seed clams on each raft.

Each set of ten rafts is linked together in a line, separated and held in place by two 60 foot long steel cables between each raft; eight anchors keep the array of ten in place (see **Exhibit 3**). During operation, the clam rafts are accessed by skiff and scow. Activities at the clam rafts include regular washing, maintenance, harvest, and planting of clam seed. Washing and maintenance activities are carried out on a daily basis and include the use of a pressure washer, an onboard water intake pump

and hose system on the maintenance vessels. Twice each year the raft anchors and ground tackle are examined and repaired as necessary by divers using scuba, skiffs and an oyster barge.

Consistent with the term of the Harbor District lease in place at the time the clam rafts were authorized by the Commission, that authorization was granted for a limited term. This CDP term expires on February 10, 2017. Although the Harbor District lease has subsequently been amended and restated and now extends into 2025, Coast has requested in this CDP amendment to only extend the term of its CDP by six months. Although Coast plans to continue its operation well beyond this six month period, it is currently in the process of seeking a new CDP for a modified and expanded operation (CDP application no. 9-15-1931). If approved, this new CDP would then replace and consolidate the two existing CDPs Coast holds for its operations in northern Humboldt Bay. The requested CDP amendment evaluated in this staff report is therefore intended to serve as a "bridge" authorization that will provide Coast with the time needed prepare its expansion project for the Commission's consideration by completing final project development and seeking local approvals from the Harbor District and City of Eureka.

Oyster Cultivation

In the 1950s, Coast began commercial bottom culture of the non-native Pacific oyster (*Crassostrea gigas*) in Arcata Bay. Within Arcata Bay, Coast currently owns approximately 514 acres of tidelands, and leases roughly 3,800 additional acres from the Harbor District, the City of Eureka, Manila Community Services District and the Karamu Corporation. These leases have terms extending through the middle to end of 2025. Between its owned and leased areas, Coast currently holds a total of roughly 4,315 acres in Arcata Bay, slightly more than half of the total area of Arcata Bay at mean high water. However, as established through mitigation associated with the local, state, and federal authorizations it received in the mid-2000s, Coast's current operations are located on only 300 acres of this total. These 300 acres are comprised of 50 separate plots or beds that individually range in size from one to 20 acres (as shown on **Exhibit 4**).

Originally a bottom-culture-only operation (whereby oysters were placed directly on the substrate as loose shells and subsequently harvested by mechanical excavation or suction dredge), in the 1960s and 1970s Coast began employing various off-bottom culture methods (including stake, rack-and-bag, and long-line culture). Although Coast continued its emphasis on bottom culture until the mid-1990s, Coast has continually cultured the non-native Kumamoto oyster (*C. sikamea*) on long-lines since the 1970s. In approximately 1997, Coast engaged in discussions with various government agencies about operational changes that would reduce the environmental impacts of its operations. The primary change discussed was a full transition to off-bottom culture methods, and in accordance with these discussions, Coast began a transition to off-bottom culture in the summer of 1997. The last bottom-cultured oysters were planted in 1999 and harvested in 2001; currently Coast cultures oysters using only off-bottom methods.

These methods currently include over 283 acres of oyster longlines, over ten and a half acres of oyster baskets on longlines, and roughly five acres used as a "nursery" area where mesh bags of seeded oyster shell are placed on intertidal mudflats for three to eight months as an initial step in the culture process. The operation also includes 0.4 acres used for floating storage baskets and another 0.4 acres used for a floating upwelling system (FLUPSY) raft used for the initial grow out of oyster seed.

Longlines
Coast's oyster longline practice (also known as cultch on longline) involves the placement of nylon or polypropylene ropes on notched PVC stakes that are arranged in 100-foot long rows on the mudflats. Included at regular intervals on the ropes are clusters of empty oyster shells on which groups of small oysters are growing. The rope and shell clusters are suspended approximately one foot above the bay bottom. Long-line spacing varies from bed to bed, but most beds have five long-lines spaced 2.5 feet apart, with a ten-foot space between each group of five lines. Some beds have long-lines spaced 2.5 feet apart over the entire bed. **Exhibit 5** presents a graphic showing the design of the long-line culture apparatus and the typical configuration of lines within cultivation beds.

A crew of six typically "plants" or installs the long-line ropes when the tide is low enough to allow the crew to walk on the bed. Each bed is inspected monthly, and apart from the inspection virtually no activity occurs at the bed until harvest. A bed inspection typically involves one or two people walking a small portion of the bed at low tide or floating over it at higher tides to verify that lines are in the stake notches and suspended above the bay bottom. During these inspections, lines that have collapsed are restored and unnatural debris is removed.

Long-line beds are usually harvested at 18 to 36 months, using one of two harvest methods. Hand-picking involves walking the bed and filling 20-bushel tubs by hand at low tide. To accomplish this, the lines are cut between each oyster cluster and the clusters are placed in the harvest tubs. These tubs may be temporarily stored on the mudflat between tidal cycles during harvest. Harvest with a long-line harvester involves positioning a scow over the bed at high tide, then pulling the lines into the floating scow either by hand or by means of a hydraulically-operated roller. Whenever feasible, the long-line harvester does not come into contact with the bay bottom while harvesting long lines.

Baskets
In 2013, Coast received an after-the-fact CDP amendment (E-06-003-A1) to authorize its use of a new cultivation method in its operation, baskets on longlines. This method replaced the use of oyster filled mesh bags placed on 12-foot long by 3-foot wide metal racks over the mudflats. Basket on longline culture involves the use of 100-feet of enclosed monofilament line stretched between metal stake anchors and elevated above the substrate by two-inch diameter PVC pipe posts installed every 10-feet. Plastic mesh baskets (roughly two-feet long by one-foot wide) filled with oysters are hung from the monofilament line with plastic clips and held one-foot above the substrate. Each 100-foot longline supports 40 baskets and the lines are arranged in groups of three spaced three-feet apart and separated from the next group by 20-feet (as shown in **Exhibit 6**). Coast currently uses this method in two areas totaling roughly ten and a half acres.

Based on Coast's estimates, planting, harvest, inspections, and maintenance activities are approximately six times more frequent for the basket lines compared to the longlines. Coast estimates, however, that many of these visits are carried out from a boat during higher tides. Roughly every four months, Coast removes the baskets for sorting and harvest. The lines and stakes remain in place during harvest.

FLUPSY (Floating Upwell System)
The FLUPSY is located on the west side of the bay entrance channel, south of the Simpson wood chip loading dock in Fairhaven. It is tied to a dock at the Eureka Boat Yard 200 yards from the shoreline in 20 feet of water. Exhibit 6 presents a graphic depicting the FLUPSY. It is used to

nurse single-seed oysters immediately after arrival from the hatchery (approximately 1.4 mm) until they are ready to be bagged and planted on racks for rack-and-bag culture (approximately 6 mm.) Coast also uses the FLUPSY for clam seed, and to grade single-seed oysters by size.

Storage Floats
Coast's operation also includes the use of four 20-foot wide by 20-foot long wooden floats or rafts anchored in a channel with an average depth of roughly 20-feet. Bags and baskets of recently harvested oysters are placed on these floats and held in a submerged area for short durations until they are ready for transport by boat to Coast's onshore base of operations.

Vessel Operations
Coast maintains a fleet of six small watercraft and three larger vessels to assist with its operations. These vessels typically operate between the culture beds in Arcata Bay and Coast's onshore plant on the shoreline in Eureka. Four skiffs operate throughout the bay, with each skiff making an average of one four-hour trip per day, five days per week. Three of the skiffs are staffed by crews of five, while the fourth carries a smaller two-person crew. Coast also maintains two small scows, which each make an average of two four-hour trips per day, five times a week. Scows are staffed by crews of five. Total operations include roughly 57 vessel trips and 218 combined hours of use per week (over eight trips and 31 hours of use per day).

Resource Protection Measures
As described in the Commission's Adopted Findings for CDP No. E-06-003 and/or required in Harbor District Permit No. 04-03, Coast carries out its oyster cultivation operation in accordance with the following parameters:

- The operational footprint will be reduced from 500 acres to 300 acres.
- Coast will not initiate any new bottom culture in Humboldt Bay. All previously existing bottom culture beds shall lie fallow unless such beds are included within the 300 acre operational footprint to be used for long line off-bottom culture.
- Coast will submit to the Harbor District by December 1 of each year an annual report describing the status of each bed within the 300-acre operation footprint.
- Where feasible, Coast will avoid contact between the long-line harvester vessel and the bay bottom. To avoid potential impacts to eelgrass from shading, Coast will not anchor the long-line harvester in such a way as to shade the same area of eelgrass for more than twelve hours.
- Project operations will not take or harass (as defined by the Marine Mammal Protection Act) any marine mammals.
- All oyster culture activities for the plot identified as "Sand Island NK" will remain at least 100 meters from the MHHW line of Sand Island.
- Coast will not discharge feed, pesticides, or chemicals (including antibiotics and hormones) into marine waters.
- Coast will not intentionally deposit shells or any other material on the sea floor. Natural deposition of shells and other materials will be minimized.
- During the months of December, January and February, Coast will visually inspect beds prior to planting and/or harvesting, to determine if Pacific herring (*Clupea pallasi*) has spawned on

eelgrass, culture materials, or substrate. If herring spawning is observed, Coast will: 1) postpone for two weeks planting and/or harvesting activities on those beds where spawning has occurred, and 2) notify the California Department of Fish and Game ("DFG") Eureka Marine Region office within 24 hours.

- Coast will not engage in any dredging, hydraulic harvesting, "bed cleaning," or other activities with an hydraulic harvester.
- Coast shall develop and implement an equipment maintenance program for all vessels that are used in its mariculture activities, and shall consider the likelihood of release of fuels, lubricants, paints, solvents, or other potentially toxic materials that may be associated with these vessels as a result of accident, upset, or other unplanned events. The applicant shall prepare an annual summary statement that identifies the maintenance status of each vessel and shall present the statement for review.
- Coast will not conduct on-bottom culture.
- Coast will not use bat ray fencing, and has removed all bat ray fencing previously installed in the Bay.
- Coast will maintain in place its leases with the Harbor District, the City of Eureka, and the Karamu Corporation (approximately 3,645 acres). Coast will exercise its renewal options, and satisfy its payments and other obligations, in each of the aforementioned leases to ensure that all three leases remain in effect until at least the year 2015. Aside from the fixed 300-acre operational footprint established pursuant to this permit application, Coast will not conduct oyster harvesting activities on any of its leased lands.
- Coast transferred fifty acres of the tidelands it owns in Humboldt Bay to the Harbor District to permanently protect it from any development. The 50 acres are in the Mad River area of Coast's holdings.

Also, as described in the Commission's Adopted Findings for CDP No. E-02-005, Coast carries out its clam cultivation operation in accordance with the following parameters:

- Coast Seafoods Company will make every effort to minimize further introduction of live clams into the bay through diligent management practices during grading and handling to prevent spillage.
- During washdown of seed and equipment, screens will be used to contain all clams regardless of size and any culls will be discarded in onshore trash containers.
- All clam seed will be removed from the clam raft system and shipped back to Washington for planting by Coast, or sold to other shellfish customers prior to reaching 12mm shell size, at which size they are not sexually mature.

B. OTHER AGENCY APPROVALS

Humboldt Bay Harbor, Recreation, and Conservation District

A portion of Coast's 300 acre operation in Humboldt Bay is carried out on tidelands that are owned and managed by the Humboldt Bay Harbor, Recreation, and Conservation District (Harbor District). In 2015, the Harbor District renewed and restated its lease to Coast for aquaculture operations in Humboldt Bay. This lease terminates on September 7, 2025. In addition, the Harbor

District issued a Use Permit to Coast for its aquaculture operation in 2007. In 2013, the Harbor District approved an amendment to that Use Permit authorizing the installation of longlines-with-baskets on 10.86 acres within Arcata Bay.

U.S. Army Corps of Engineers
In 2006, the U.S. Army Corps of Engineers (ACOE) issued Individual Permit No. 2002-26912N to Coast under Section 404 of the Clean Water Act of 1972 and Section 10 of the Rivers and Harbors Act of 1899. This permit authorized Coast to conduct oyster mariculture operations, over a ten year period, on approximately 300 acres in Arcata Bay. In 2016, this permit was modified to extend the expiration date for one year. The permit is now set to expire on June 30, 2017.

National Marine Fisheries Service
As part of the ACOE permit amendment review process, the ACOE consulted with the National Marine Fisheries Service (NMFS). In addition, Commission staff worked closely with NMFS during the review of this permit amendment application and the staff recommendation reflects and incorporates technical feedback received from NMFS staff.

California Department of Fish and Wildlife
Coast's aquaculture operations are required to be registered annually with the California Department of Fish and Wildlife (CDFW). Coast has a valid registration for 2017. Commission staff worked closely with CDFW during the review of these permit amendment applications and the staff recommendation reflects and incorporates technical feedback received from CDFW staff.

North Coast Regional Water Quality Control Board
The North Coast Regional Water Quality Control Board (Regional Water Board) has permitting jurisdiction over Coast's aquaculture operation through both Section 401 of the Clean Water Act and the state Porter-Cologne Water Quality Control Act. In 2007, the Regional Water Board issued a section 401 certification to Coast for its aquaculture operation. In 2016, this certification was extended for one year and is now set to expire on June 30, 2017.

C. MARINE RESOURCES

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.*

Coastal Act section 30231 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 area of Coast's aquaculture operation, Arcata Bay, supports extensive marine resources, including some of the state's largest continuous beds of eelgrass and populations of sensitive and protected marine species, including marine mammals, migratory shorebirds and waterfowl, and listed fish species. Coast's oyster culture operations have the potential to adversely affect these marine resources and the biological productivity of coastal waters in Arcata Bay, by potentially causing adverse impacts to eelgrass, Pacific herring, listed salmonids, essential fish habitat, marine birds, migratory and wintering shorebirds and waterfowl, green sturgeon, and marine mammals.

Pacific Herring

As part of its 2006 analysis and approval of CDP No. E-06-003 for Coast's 300 acre intertidal aquaculture operation, the Commission found that the project had the potential to adversely affect Pacific herring and herring spawning areas and established **Special Conditions 2 and 3** to minimize those adverse effects:

> *Many studies have documented the importance of eelgrass as spawning substrate for Pacific herring.[1] Loss of eelgrass has been suggested as a factor affecting herring populations, which can in turn reduce the amount of prey available to predators of herring and herring eggs. Eggs and larvae of Pacific herring are eaten by walleye pollock, herring, juvenile salmon, invertebrates, and most notably, marine birds. Bird predation is more intense in the intertidal zone when eggs are exposed or in shallow water, while fish predation may be more significant in the subtidal zone.*
>
> *Within Humboldt Bay, herring appear to spawn almost exclusively on eelgrass beds.[2] In 1975 to 1976, 80 percent of all spawning in Humboldt Bay occurred in the Arcata Bay eelgrass beds closest to the freshwater input from Jacoby Creek and Freshwater Slough (i.e., the East Bay Management Area, as depicted in Exhibit 2). More recently, observations by DFG personnel indicate Pacific herring continue to heavily use this region of Arcata Bay; however, spawning occurs throughout Arcata Bay and South Bay.[3] In DFG reported that 70 percent of spawning occurred in Arcata Bay, and 48 percent of the total spawn occurred in the eelgrass beds of the East Bay Management Area.[4] DFG staff notes that in recent spawning events in East Bay, higher-density spawn has occurred at lower elevations, specifically in areas near the channel immediately south of the Arcata Channel, sometimes known as the Bracut Channel.[5]*
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> *Because of the importance of the East Bay Management Area to the Pacific herring spawn, in its 2006 review NMFS recommended the following conservation measure be included as a condition of the Corps' permit:*
>
> > *The proposed conversion of 45 acres from historic oyster bottom culture to off-bottom culture should not be sited in any known or historic eelgrass habitat within*

[1] NMFS (2005a), p. 28.
[2] Mello and Ramsey (2004).
[3] Mello, John (2006).
[4] Mello and Ramsey (2004).
[5] Mello, John. Pers comm. May 4, 2006.

Coast's East Bay Management Area unless this area is needed for spacing assessment purposes. Based upon historic and ongoing herring spawn surveys, the California Department of Fish and Game has identified much of the East Bay Management Area as a key herring spawning area… By siting additional culture outside this area, direct impacts to eelgrass habitat and indirect impacts to Pacific herring would be minimized in the East Bay Management Area.

Based on previous discussions with industry personnel, NMFS recognizes that areas outside Coast's East Bay Management Area may not have the same suite of ideal conditions for oyster growth, but areas outside the East Bay Management Area do achieve the general project purpose as demonstrated by the numerous culture sites elsewhere in Arcata Bay…[6]

…

As discussed above, the East Bay Management Area provides key herring spawn habitat. In addition, Jacoby and Freshwater Creeks drain near the East Bay Management Area. Jacoby and Freshwater Creeks are anadromous fish streams providing habitat for coho and Chinook salmon as well as steelhead, and are the two major watersheds that drain into Arcata bay.[7] *Also as discussed above, DFG staff notes that in recent spawning events in East Bay, higher-density spawn has occurred at lower elevations, specifically in areas near the channel immediately south of the Arcata Channel, sometimes known as the Bracut Channel. The East Bay plot furthest from the channel is EB 7-2.*

***Special Condition No. 2** requires that no activity authorized by this permit, except for oyster culture activities located at the plots identified on Exhibit 2 as EB 1-1, EB 1-2, EB 2-1, EB 2-3, EB 2-3 Cont., EB R&B, EB 4-3, EB 6-1, EB 6-2 and EB 6-3, as well as EB 7-2 as specified below, shall be sited in any known or historic eelgrass habitat within Coast's East Bay Management Area (as identified on Exhibit 2). Future plantings in plot EB 7-2 shall not exceed a total of 11.5 acres. Prior to planting any oyster culture outside those areas actually in production as of the date of submittal of this permit application (January 31, 2006), Coast shall submit to the Executive Director for review and approval a planting plan that identifies the nature (i.e, rack-and-bag or long-line) and the location (identified by plot name) of the proposed plantings.*

Because of its distance from key herring spawn habitat and from anadromous fish streams, impacts from the proposed project would be minimized in the Mad River Management Area. For this reason, the Commission finds that future planting outside the 11.5 acres in East Bay should be located in the Mad River Management Area preferentially, and if additional acreage outside the Mad River Management Area is required to fill the 45.49 acres, the additional acreage should be located in the Sand Island area.

As discussed in Section 4.2.2: Project Parameters above, Coast proposes that during the months of December, January and February, Coast will visually inspect beds prior to

[6] Conservation Recommendation No. 1, included on pages 3 to 4 of the cover letter transmitting the BO and EFH assessment, dated November 10, 2005, from Rodney McInnis, NMFS, to Lt. Col. Philip T. Feir, Army Corps of Engineers. See Appendix A: Substantive File Documents.

[7] Humboldt Bay Watershed Advisory Committee and Redwood Community Action Agency (2005).

> *planting and/or harvesting, to determine if Pacific herring (Clupea pallasi) has spawned on eelgrass, culture materials, or substrate. If herring spawning is observed, Coast will: 1) postpone for two weeks planting and/or harvesting activities on those beds where spawning has occurred, and 2) notify the California Department of Fish and Game ("DFG") Eureka Marine Region office of the spawn within 24 hours.* ***Special Condition No. 3*** *requires that Coast comply with this proposed measure, and further requires that Coast keep records of when DFG was notified of the spawning event. Those records shall be included with the annual report described below in* ***Special Condition No. 7.***

As part of its review of Coast's proposed permit amendments to extend the duration of its operations, Commission staff considered newly collected information on Pacific herring spawning and the efficacy of the **Special Conditions 2 and 3** from CDP No. E-06-003. This newly collected information included the results of Pacific herring spawning surveys carried out in 2014-2015 and 2015-2016 by CDFW staff. These survey results indicate that although spawning can occur in several locations across Arcata Bay, the eastern portion of Arcata Bay continues to support consistently high levels of spawning activity. The recent surveys support the pervious data, which indicates that east bay, on average, has a much higher frequency of use than other areas and often accounts for the majority of spawn in Arcata Bay. Commission staff also considered the discussion included in the RDEIR regarding the herring monitoring and reporting requirement of Special Condition 3 and consulted with CDFW staff regarding potential modifications to improve the condition's intended effect – to help ensure that herring spawn is not lost or removed during oyster harvest activities.

Although Coast has not reported any observations of herring spawn since **Special Condition 3** was established in 2006, there are a variety of potential explanations for this lack of reporting. Among these are: (1) the limited planting and harvest activities carried out by Coast in the eastern portion of Arcata Bay during the winter months (when herring spawn); (2) a potential absence of herring eggs on aquaculture gear targeted for planting or harvest by Coast; and/or (3) a potential inability for Coast's field personnel to effectively identify herring eggs. To address this latter issue, **Special Condition 3** would be modified to require Coast to make use of survey protocols developed by CDFW to aid in identification of herring eggs. Additionally, **Special Condition 3** would also be modified to facilitate greater communication and coordination between Coast and CDFW staff by requiring Coast to share its planting and harvesting scheduling with CDFW. This would allow information on spawning locations collected by trained CDFW scientists to be considered by Coast in planning its operations and would increase the likelihood that known or likely spawning areas will be avoided.

Green and White Sturgeon

Since the Commission first considered Coast's intertidal shellfish aquaculture operations, two rare and imperiled fish species known to be present within Arcata Bay have been provided with protective status, the green sturgeon (*Acipenser medirostris*) and white sturgeon (*Acipenser transmontanus)*. Additionally, in 2009 the National Marine Fisheries Service (NMFS) designated Humboldt Bay as critical habitat for the southern distinct population segment of green sturgeon. Although the Commission did not consider potential adverse impacts to these species from Coast's operations in 2006, largely because the presence of these species in Humboldt Bay was poorly understood and their protected status had not been established, information currently available indicates that the existing intertidal operation has the potential to result in adverse effects.

Both species and their use of Humboldt Bay are described in the RDEIR:

> *The green sturgeon is a long-lived, slow-growing fish species, listed as threatened under the Federal ESA (NMFS 2016a) and as a CDFW species of special concern (CDFW 2016b). Mature males range from 4.5 ft to 6.5 ft and they do not reach sexual maturity until about 15 years, while mature females range from 5 ft to 7 ft and do not mature until they are 20 to 25 years (Kelly et al. 2007). Maximum ages of adult green sturgeon can range from 60 to 70 years. The southern distinct population segment (DPS) green sturgeon generally occur from Graves Harbor, Alaska to Monterey, California (Moser and Lindley 2007).*
>
> *Green sturgeon are considered the most marine-oriented of all the sturgeon species in North America (Moser and Lindley 2007). Juveniles enter bays and estuaries after only a year in freshwater and remain in marine waters until they return as adults to spawn. While green sturgeon are not expected to spawn in any of the Humboldt Bay tributaries, adults and sub-adults use the bay for foraging habitat. Green sturgeon typically access non-spawning estuaries in the summer and early fall months, and sturgeon have been documented in Humboldt Bay between April and October (Pinnix, pers. comm., 2015). Adults and sub-adults are regularly observed in deeper channels of Humboldt Bay, channel margins and mudflats when the tideflats are inundated during high tide, and around Sand Island in North Bay. Foraging sturgeon tend to frequent areas less than 33 ft deep, moving on and off mudflats with tidal fluctuations (Kelly et al. 2007)…*
>
> *Like the green sturgeon, white sturgeon is a long-lived, slow-growing anadromous fish species. It is a CDFW species of special concern (CDFW 2016b). Mature males range from 2.5 ft to 3.5 ft and they do not reach sexual maturity until about 10 to 12 years, while mature females range from 3 ft to 4.5 ft and do not sexually mature until they are 12 to 16 years (CDFW 2016b). Maximum ages of adult white sturgeon have been known to be nearly 100 years, although more commonly, fish collected in California are no more than 27 years (CDFW 2016b). White sturgeon generally occur from Cook Inlet, Alaska to Ensenada, Mexico (PSMFC 1996).*
>
> *White sturgeon spend most of their lives in nearshore oceanic waters, bays (including Humboldt Bay), and estuaries, although they prefer estuaries of large rivers (PSFMC 1996). The only known self-sustaining spawning population in California is in the Sacramento River, although spawning is believed to also occur in the San Joaquin, Klamath, and Eel rivers (Israel et al. 2009). While white sturgeon are not expected to spawn in any of the Humboldt Bay tributaries, adults and sub-adults likely use the bay for foraging habitat. Similar to green sturgeon, burrowing shrimp are a key prey item for white sturgeon. Juvenile white sturgeon have been shown to prefer water greater than 12.5 meters (m) in the Columbia River (McCabe and Tracy 1994). Juvenile and adult white sturgeon prefer deeper water, although they are occasionally found foraging in shallower habitats (Israel et al. 2009, CDFW 2016b).*

Based on their large size, green and white sturgeon may be susceptible to entanglement in densely planted longline gear or to exclusion from foraging areas in which longline gear is located. These potential impacts are discussed in the comment letter submitted by NMFS to the Harbor District in response to its publication of the RDEIR (because the white sturgeon does not have federal protective status, this letter focuses solely on green sturgeon):

> *The District should evaluate potential harm, injuries, and stranding potential for individual green sturgeon caused by encounters or entanglement with suspended longlines and sharp oyster cultch adjacent to areas known to be frequently occupied by green sturgeon. Dense line spacing (2.5ft longline spacing) creates a high likelihood for harm, entanglement, and stranding as sturgeon are known to become stranded on mudflats even in the absence of longlines (Dumbauld et al. 2008). The statement in the R-DEIR that "…green sturgeon do not typically frequent shallow habitat where shellfish aquaculture is located" is not supported by the available scientific literature. Numerous publications and personal observations document green sturgeon use of shallow areas, as well as areas with shellfish aquaculture (Patten and Norelius 2016; Moser et al. in press; Pinnix, personal communication, 2016; Dumbauld et al. 2008; Kelly et al. 2007). NMFS designated critical habitat for green sturgeon in 2009 (74 FR 52300), which includes a primary constituent element, or physical biological feature (PBF), of estuary critical habitat [such as Arcata Bay] to be 'water depth.' The 'water depth' PBF indicates that a diversity of depths is important to support different life stages and habitat uses for green sturgeon within estuarine areas. Subadult and adult green sturgeon occupy a diversity of depths within bays and estuaries for feeding and migration (74 FR 52300). Tagged adults and subadults within the San Francisco Bay estuary primarily occupy waters over shallow depths of less than 10m, either swimming near the surface or foraging along the bottom (Kelly et al. 2007).*
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> *…*
>
> *The R-DEIR suggests that green sturgeon will avoid structured habitat, but there is no analyses of habitat lost to green sturgeon resulting from structured habitat (shellfish aquaculture) in Humboldt Bay. The existing and expanded project (~900 acres) represents a significant loss of habitat for green sturgeon if the assertion made in the R-DEIR is valid regarding sturgeon avoidance of structured habitat. The existing and expanded project either represents a significant loss of habitat for green sturgeon, or represents an increased likelihood of harm, injury, or mortality due to contact or entanglement with longline gear depending on whether sturgeon will avoid or utilize these areas.*

Commission staff has consulted directly with NMFS staff on the issues raised in this letter and their relevance to Coast's existing 300 acre operation. As noted by NMFS staff and discussed above, the highest potential for adverse impacts is associated with cultivation operations in or around areas of particularly high use by sturgeon and cultivation beds planted at the highest density – longlines placed every 2.5-feet across a bed.

High Use Area

Information collected in recent years from acoustically tagged green sturgeon indicate the presence of a potential high use area for green sturgeon in the upper reaches of the Arcata Channel near Sand Island. Specifically, approximately 30 individual tagged fish per year were observed in this area during fish surveys carried out in 2006 and 2007. Additional survey data from 2008 demonstrate a similar use pattern and field observations by researchers and NMFS staff in the late summer of 2016 indicates that high use of this area by green sturgeon continues. Although the great majority of Coast's existing operation is located far to the south, north, or east of this area, the 11 acre SI-Nk culture bed is located a short distance from the channel in which many of the observations in this area were concentrated. During its summer 2016 survey of this area, green sturgeon use of the area within the immediate vicinity of this cultivation bed was observed, as recorded in the Field Note produced as a result of the survey:

At 1010 and 1016, tagged green sturgeon individuals were detected by the USFWS directional receiver inside the small channel adjacent to an existing aquaculture bed (detections made from the R/V while at the GS2 location on the map- see Table 2). While it is unclear if these individuals were within the aquaculture beds or immediately adjacent to the beds, it is clear that these individuals were using the smaller channel for migration and feeding. Based on the data received and the direction of the detections, it is possible these individuals were within the aquaculture beds. Sturgeon have limited access to higher elevation areas, as these areas can be dry during low tides and accessible during only higher tides. Because access to these higher elevations of the intertidal zone is temporally limited, sturgeon access must be opportunistic and quick.

At 1017, the individual that was observed in the smaller channel at 1016 had swam past the boat and turned in a northerly direction and swam up into the smaller western channel (GS5). In a short amount of time (1-minute), a tagged individual moved from a smaller channel adjacent to an existing aquaculture bed and into the main Arcata Channel and then swam up the Arcata Channel and into a smaller tributary channel (GS5 area). It appears that green sturgeon are using higher elevation areas of the intertidal zone as evidenced by these observations. Furthermore, it is clear the movements can occur quickly, as one individual passed through three different channels in ~1-minute of time.

Based on observations of Northern anchovies fleeing onto higher elevations (and into eelgrass habitat) as the tide was rising, it appears green sturgeon might be pursuing anchovies into areas of higher elevation from the deeper channels as the tidal elevations provide enough depth for their access. If green sturgeon are predominantly feeding on anchovies in Humboldt Bay during portions of the summer, it is likely that sturgeon would follow anchovies as they seek cover from predation in eelgrass habitats or within the structure provided by shellfish aquaculture beds.

This strong indication of sturgeon use and potential foraging behavior in the immediate vicinity of the SI-Nk cultivation bed emphasizes the concerns regarding potential habitat exclusion, entanglement and injury raised by NMFS in its comment letter and suggests that the location of this densely planted cultivation bed may be resulting in or potentially leading to adverse impacts to green sturgeon. Because it is the only cultivation bed known to be located in such close proximity to an area of consistently observed high use by green sturgeon, and because it may preclude or limit sturgeon movement and foraging of a portion of the high use area or potentially contribute to injury or entanglement of this protected species or special biological significance, **Special Condition 13** would require Coast to phase out use of this bed and remove it completely at the time of its next harvest.

Densely Planted Cultivation Beds

Based on the Annual Report for CDP E-06-003 Coast submitted to Commission staff in December 2016, 14 of Coast's 48 existing cultivation beds are densely planted with longlines spaced every 2.5-feet. The remaining ¾ of the operation makes use of a spacing configuration that includes periodic access corridors and channels between groups of lines. Specifically, these areas have five foot channels running parallel between each group of five lines, and ten foot channels running perpendicular between the end of one set of 100-foot lines and the beginning of the next set. In contrast to the more densely configured beds that are structured more as a solid, contiguous network

of lines, these beds with a mix of five and ten foot channels provide a variety of opportunities for larger marine wildlife species, such as green and white sturgeon, to more safely pass among and through them. As such, **Special Condition 14** would require Coast to develop and implement a plan for the conversion of its 14 longline beds with 2.5-foot spacing to the same configuration of its remaining beds that include five and ten foot wide access channels. In combination with the requirement in **Special Condition 13** for the removal of the cultivation bed located in the area of high use by green sturgeon, this measure would help ensure that sturgeon movement, foraging, and health in other potentially lower use areas of Arcata Bay would not be adversely affected.

Conclusion
With implementation of **Special Conditions 13 and 14** the Commission finds that potential adverse impacts to green and white sturgeon from Coast's existing operation would be minimized.

Marine Debris
Coast's existing shellfish aquaculture operation relies on the placement and maintenance of several hundred thousand individual pieces of plastic and PVC in Arcata Bay along with nearly 650 miles of artificial rope and line (34,013 longlines lines of 100-feet each). As discussed by the Harbor District in the RDEIR excerpt below, some of this material can disperse into the environment as debris:

> *The* [Coast operation] *may result in accidental loss of mariculture gear or other debris into Humboldt Bay. Because the equipment is placed in intertidal areas, it is subject to various natural forces including tide, wind, waves and ultraviolet radiation. As a result, there is potential for equipment to become loose, wash away or otherwise escape into the environment. Escaped mariculture gear may pose a hazard to biological resources and to other users of the bay, including boaters (kayakers, stand-up paddle boarders, canoers, wind surfers) and scuba divers. When encountered, marine debris associated with mariculture equipment may damage boat bottoms or engines, snag on trailing lines or otherwise impair navigation. Recreational users of the bay may encounter escaped mariculture equipment in shallow intertidal areas, which may make transit of these areas more hazardous, particularly if escaped equipment is wholly or partially buried in the substrate and thus hidden from view.*
>
> *Longline oyster culture involves installation of PVC tubes in the substrate, which are strung with monofilament line and hung with oysters or oyster baskets (polyethylene sleeves). Coast inspects cultch-on-longlines during monthly maintenance work and during harvest. Any pipes disturbed during the harvest are re-secured or removed if damaged. Any identified loose pipes or debris are removed from the culture area. During replanting, pipes are straightened out and replaced as needed. Basket-on-longlines are inspected and maintained each time the oysters are inspected for grading. Baskets are lashed in bins during transport to prevent loss.*
>
> *Rack-and-bag culture utilizes 3' x 12' rebar frames on which are placed polyethylene mesh bags full of oysters. The bags are attached to the racks using industrial rubber bands. Worn, strained, or damaged rubber bands are routinely replaced during daily inspection and maintenance of the rack and-bags. Any debris is removed during inspections. Coast also performs a monthly inspection of its owned and leased area for marine debris at both low*

> *and high tide and picks up any identified debris, regardless of the source of the identified items.*

As noted in the final paragraph above, Coast has a long history of carrying out marine and shoreline debris collection and removal events and other environmental stewardship activities aimed at addressing the impacts to Arcata Bay of its operation and other current and historic practices (for example, by helping to improve water quality in the bay and fund waste and hazardous material collection and removal efforts). However, information submitted to Commission staff over the past several years by a variety of sources indicates that Coast's operation nevertheless continues to be a known and potential source of marine debris. Coast's use of new culture practices and equipment (such as baskets on longlines) as well as traditional practices (such as cutting longline ropes into many small pieces during hand harvest) appear to continually generate plastic debris that escapes into Arcata Bay and can disperse throughout Humboldt Bay and beyond.

Plastic in the ocean is increasingly understood to pose a threat to a wide range of marine organisms as it slowly breaks into smaller and smaller pieces over time. At each step in this process, plastic debris can be ingested by, entrap, or entangle marine wildlife from whales, dolphins, and seals down to sea turtles, seabirds, and fish. Because it often relies on the placement of large quantities and numbers of plastic equipment pieces in the dynamic, challenging, and powerful marine environment, shellfish aquaculture operations are acknowledged in some locations as primary contributors to marine debris. While Coast's current operation in Arcata Bay is not an example of such an operation, the fact remains that it generates waste that eludes the existing waste prevention, management, and response measures that Coast has in place.

To address the ongoing and potential release and distribution of marine debris resulting from Coast's aquaculture operations in Arcata Bay, **Special Condition 9** of CDP No. E-06-003-A4 would be modified to require the immediate collection and removal of cultivation gear that has been out of use on culture bed GI 1-2 for at least the past several years. This gear (in particular, PVC stakes) appears not to have been subject to inspection and maintenance activities during this time and is increasingly falling into disarray and in danger of loss and dispersal into the marine environment. To prevent similar situations from arising in the future, **Special Condition 9** would also be modified to require the removal of cultivation gear from any bed taken out of service for three months or more. The existing version of **Special Condition 9** set this removal threshold at 12 months; however subsequent review of the efficacy of this condition at preventing the release of marine debris and the absence or reduction in inspection and maintenance activities in out of service beds suggests that a shorter time period is needed to ensure consistency with the Coastal Act. **Special Condition 10** would also address the prevention, response, and management of marine debris by requiring Coast to implement a variety of best practices, including those focused on inspections following storm events; debris reduction trainings for field employees; quarterly baywide cleanup events; gear marking; and field storage of tools and construction materials.

Migratory and Wintering Shorebirds

Along the Pacific coast flyway, Humboldt Bay is the largest and most important estuary for wintering shorebirds and waterfowl between San Francisco Bay and the Columbia River. In its report, "The Importance of Humboldt Bay to Shorebirds," Audubon California notes that:

> *In 1998, Humboldt Bay was designated as a Western Hemisphere Shorebird Reserve Network (WHSRN) site of International Importance for shorebirds and supports over*

> *100,000 shorebirds annually. The relatively intact, productive intertidal mudflat and eelgrass habitats in Humboldt Bay attract large numbers of shorebirds (Figure 1). While currently classified as a site of International Importance, Humboldt Bay likely qualifies as a site of Hemispheric Importance, supporting over 500,000 birds annually and which account for more than 30% of the biogeographic population for a species.*
>
> *Compared with other Pacific coast sites, Humboldt Bay supports a rich shorebird community in terms of species diversity. Forty-six species have been recorded, including approximately 30 that may be encountered regularly.[10] In comparison, 24 species have been recorded at Grays Harbor; 38 species at San Francisco Bay; and 26 species at the Frazer River Delta in Canada. All three are designated as WHSRN sites of Hemispheric Importance.[11] The reasons for the higher diversity of shorebirds using Humboldt Bay are not well known, but suggested to be significantly correlated with substrate heterogeneity. This positive correlation suggests that tidal flats with more microhabitats (as represented by variation in substrate) support more taxa.[12] In addition to open mudflat, many shorebirds also forage in the bay's "leopard skin" mudflat characterized by patches of eelgrass in small depressions. Species commonly found in this habitat are black-bellied plover, semipalmated plover, marbled godwit, black turnstone, long-billed curlew, dunlin, whimbrel, willet, long- and short-billed dowitchers, sanderling, and lesser and greater yellowlegs.[13] In sum, a combination of diverse habitats optimally support shorebird diversity as well as abundance in Humboldt Bay.*

Although sparse, existing research and analysis on the use of shellfish cultivation areas by shorebirds suggests that adverse impacts to some species may occur. For example, work carried out by Kelly et al. (1996) in Tomales Bay comparing shorebird use of mudflats with oyster cultivation equipment and nearby areas of undeveloped mudflat indicated a significant decrease in total shorebird use in areas used for oyster culture, due largely to the absence of two common species from culture areas. Dr. John Kelly, lead author of the study, discussed his conclusions regarding the potential cause of this avoidance in his recent comment letter to the Harbor District "our observations strongly suggested that shorebirds avoid foraging near or under any structural features on the tide flats that interfere with their visibility of the surrounding area. As stated in Kelly et al. (1996), such interference is likely to delay their detection of approaching predators and disrupt associated antipredator flocking behavior. If so, oyster growing structures in Humboldt Bay are also likely to interfere with the escape behavior of cohesive, mobile shorebird flocks, forcing them to avoid oyster growing areas. With the occasional exception of Least Sandpipers, shorebirds did not generally forage on substrates immediately near or beneath artificial structures." However, application of these results to Coast's operation in Arcata Bay is made difficult by differences in the type of cultivation gear used in the two areas and differences in the presence of eelgrass within and adjacent cultivation beds between Tomales Bay and Humboldt Bay.

Similar types of surveys carried out in Arcata Bay with some of Coast's cultivation beds provide mixed results. Specifically, as discussed in the RDEIR, the results of the study carried out by Connolly and Colwell (2005):

> *…indicated greater shorebird species diversity on cultch-on-longline oyster plots relative to control tidal flats lacking oyster culture. In addition, five taxonomic groups (willet, whimbrel, dowitchers, small sandpipers and black turnstone) were more abundant on the longline plots than control plots during the study (whereas black-bellied plovers were more*

> *abundant on control plots)…Connolly and Colwell conclude "Overall, birds did not appear to avoid longline areas compared with adjacent tidal flats. Rather, many species were more abundant and diversity was greater on longline plots."*

This study derived from previous work by Connolly-Moore (2001) that is described in the Adopted Findings for CDP No. E-06-003. This study examined the differences in shorebird and wader use of long-line oyster culture plots and tidal mudflat plots in Arcata Bay:

> *The study found that shorebird use of long-line plots increased for species with more generalized diets and varied foraging methods, whereas black-bellied plovers (Pluvialis squatarola) were exclusively more abundant on control plots. Foraging by plovers may have been impeded by long-lines because of interference, obstruction of visual foraging cues, or an altered prey base. Waders also responded to long-line presence, and may have foraged by different means or upon different prey when on long-line plots.*
>
> *The study concludes that, overall, birds did not appear to avoid long-line areas in favor of control mudflats. Instead, many species were more abundant and overall species diversity was greater on long-line plots. Although the mechanisms for these effects are not understood, the study concludes that any effects are transitory because the lines are removed every 18 to 36 months. In addition, the study concludes that benefits to birds may be compromised by long-term habitat impacts, such as increased sedimentation or loss of traditional mudflat infauna. The author of the paper cautions that the study represents only a small facet of how shorebirds might be affected by aquaculture.*[8] *It does not, for instance, look at intake rates for birds on long-line plots. Although the results should be interpreted with caution, the study does not identify any negative effect on the suite of birds examined, except perhaps black-bellied plovers.*

In comments submitted to the Harbor District regarding an early iteration of Coast's proposed expansion project, Dr. Mark Colwell, one of the lead authors of the 2005 study, emphasized these final points about the high level of uncertainty that exists on shorebird use of Arcata Bay and the underlying drivers for their behavior, as well as the need to carefully consider the importance of Humboldt Bay for migratory shorebirds:

> *The point is that we know very little about the abundance and availability of invertebrate populations that provide the essential resources to sustain wintering and migrating birds on the bay. To claim that loss and degradation of tidal flats (of whatever amount of area) would have "less than significant" impact on shorebirds and other waterbirds that rely on this habitat is, at best, premature and, at worst, a misrepresentation of current knowledge on the subject.*
>
> *…*
>
> *Lastly, the section on cumulative impacts misses the point. As I understand it, 7% of the bay is already in aquaculture production with unknown impacts on shorebirds. Mounting evidence indicates that, worldwide, populations of most shorebirds are in decline. Reasons for the decline are many but principal among them is the loss and degradation of habitats. Years ago, prominent ecologists (Myers et al. 1987. American Scientist 75:19-26) likened the annual cycle of shorebirds to an annual chain of events. The individual links in the chain*

[8] E-mail dated April 12, 2006, from Mark Colwell, Humboldt State University, to Audrey McCombs, CCC.

> *were estuaries (like Humboldt Bay) where large numbers of individuals refueled for their next leg of their journey between arctic breeding and wintering sites that span hemispheres. The populations were vulnerable to the weakest link in the chain! Humboldt Bay is a relatively pristine estuary compared to others worldwide and it is likely a critical link in the chain for many species of shorebird because it provides essential food resources for millions of birds. Ironically, the DEIR mentions the 3.3 days in which spring migrating Western Sandpipers make use of the bay. A simple, back-of-the-napkin calculation[1] during the Spring period of peak passage of Western Sandpipers yields an estimated total population at Humboldt Bay that likely approaches a million birds – and this is for just 1 of 20+ species that are common migrants at that time of year! These sorts of numbers suggest that the value of Humboldt Bay and its tidal flats are unappreciated and certainly worthy of greater consideration in conservation decisions.*

At its existing levels, however, there is no indication that Coast's aquaculture operation is resulting in significant adverse impacts to shorebirds. Although substantial, the operation takes up less than 10% of the intertidal area available at low tide in Arcata Bay, leaving the great majority of the area available for shorebird foraging and resting. Additionally, as indicated in the studies described above, cultivation beds are not entirely avoided by all species of shorebirds. Further, several of the resource protection measures Commission staff is recommending are expected to provide at least modest benefits to shorebirds by decreasing the area in Arcata Bay occupied by longline cultivation gear. Specifically, **Special Conditions 9 and 13** would reduce the footprint of Coast's operations by over 16 acres (if the bed at Indian Island is eventually replanted, this would be reduced to 11 acres) and **Special Condition 14** would result in the creation of five and ten foot wide channels at regular intervals within the 14 of Coast's most densely planted cultivation beds. These channels may increase the likelihood that shorebird foraging occurs within more cultivation beds.

To help reduce potential adverse impacts to migratory birds from disturbance that may occur as a result of Coast's vessel transit or aquaculture operations, **Special Condition 15** would prohibit Coast personnel from intentionally approaching, flushing, chasing, or otherwise disturbing foraging or resting shorebirds or waterfowl.

Longfin Smelt

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 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 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 maintenance operations, Coast carries out a variety of washing and cleaning activities including the rinsing of the clam seed and cultivation trays as well as the well structures in which the trays are housed. Rinsing of the clams and cultivation trays would occur on a daily basis in order to remove any accumulated sediment or non-target organisms that may also be growing on the cultivation trays. Such non-target organisms may include native and nonnative

algae, bryozoans, hydroids, tunicates, sponges, amphipods, and mysid shrimp that are present in Arcata Bay as adults and larvae. Coast proposes to use both a hose and pressure washer for these daily cleaning activities. Coast proposes to use Arcata Bay as a water source for these activities and initially proposed to use a coarsely screened intake system on its maintenance vessel with an intake capacity of 160 gallons per minute and a velocity of 12 to 16 feet per second. Coast proposes to use this system to collect approximately 10 million gallons of bay water per year for maintenance washing activities.

To protect against the impingement of fish, in particular listed species such as longfin smelt and juvenile salmon, the Commission required in **Special Condition 9** of CDP No. E-02-005-A2 (approved in August of 2012) that Coast use intakes designed according to National Marine Fisheries Service and CDFW requirements as protective of fish – in other words, with intake velocities not to exceed 0.33 feet per second and 3/32 inch mesh screening. The Commission previously found these standards to reduce the potential impingement and entrainment of juvenile and adult fish because an intake velocity of 0.33 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. **Special Condition 9** required that the seawater intake velocity for Coast's maintenance and cleaning wash system not exceed 0.33 feet per second and that the screen openings for the intake point screen remain no larger than 3/32 inch. These screening requirements were primarily developed by the National Marine Fisheries Service (NMFS) based on research on the average size and swimming abilities of juvenile salmon.

However, the presence of state-listed, threatened longfin smelt in Arcata Bay (Cole 2004, Pinnix et al. 2005, CDFW 2009, Merz et al. 2012) means that specific intake limits and criteria that are relevant to this species must also be considered. Input from CDFW technical staff and analysis carried out by the Commission in 2014 (as discussed in the adopted findings for CDP No. 9-13-0500) on the application of the NMFS standards for other fish species, particularly the much smaller, state listed longfin smelt, suggests that a slower intake threshold would be more appropriate. Specifically, because of the more limited swimming abilities of smelt in comparison to salmon, as well as their smaller size, the Commission found that a lower approach velocity of 0.2 feet-per-second would be 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. Since 2014, the Commission has required these intake specifications and found that these screening criteria 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. Accordingly, **Special Condition 9** of CDP No. E-02-005-A5 would be modified to assure consistency with these current intake standards.

Eelgrass

Eelgrass (*Zostera marina*) provides a variety of essential ecosystem functions, including primary production, predation refuge, nursery functions, physical structure, nutrient cycling, and forage. Eelgrass is a species of special biological significance under the meaning of Section 30230 of the Coastal Act, and as such the Commission is required to afford it special protection. The Commission's Adopted Findings for Coast's original CDP for its oyster culture operations (CDP No. E-06-003) summarize several of the critical ecological services and roles provided by eelgrass:

Habitat Value of Eelgrass Beds
Eelgrass is a marine vascular plant indigenous to soft-bottom nearshore areas of the Northern Hemisphere, and occurs along the Pacific coast from the Bering Strait to lower Baja California. Morphological characteristics include horizontal rhizome structures within the sediment and at the sediment surface, with erect leafy shoots extending into the water column. Seagrass beds are critical to nearshore food web dynamics. Studies have shown seagrass beds to be one of the most productive ecosystems in the world, and many fishery resources ultimately depend on this high productivity.

The organisms that use eelgrass blades as a substrate contribute a significant amount of biomass to the eelgrass bed, often equaling the standing crop of eelgrass. Epiphytes and epizooids, which are composed of various algae, bacteria, protozoa, and invertebrates (e.g., harpacticoid copepods), comprise approximately 10 to 50 percent of the total production associated with seagrass. Organisms that live on eelgrass blades are a fundamental component of eelgrass beds' nursery functions.

Eelgrass epiphytes and epizooids are fed upon by larger organisms and are the dominant food of the fish in seagrass systems. Harpacticoid copepods are a unique component of eelgrass epiphyte assemblages in the Pacific Northwest, and serve as important prey items of juvenile salmon, Pacific herring (Clupea harengus pallasi), Pacific sand lace (Ammodytes hexapterus) and surf smelt (Hypomesus pretiosus). As eelgrass blades and their associated organisms slough away, organic matter is exported to other habitats and supports the secondary production of detritus-based food webs. The detritus is also transported outside of the eelgrass areas to the nearshore environment, where it may provide an important energy source for open-water species, including commercially-important fish species, and a source of production for coastal planktonic species.

Predation Refuge
Eelgrass provides structural shelter for a variety of marine organisms, reducing predation pressure. The protective value of eelgrass beds may vary with the structure of the bed, and is generally limited to smaller species, juveniles, or cryptic species. Eelgrass is thought to provide shelter for migrating salmonid smolts. When exposed to predators, juvenile Chinook salmon (Oncorhynchus tshawytscha) preferentially choose eelgrass habitat over oyster clusters in field experiments in an enclosure, as well as in mesocosm experiments involving exposure to a mock predator.

Nursery Function
One of the most notable roles of eelgrass beds is as a nursery for various marine fishes and invertebrates. Eelgrass provides abundant food and shelter, which may improve survival for some species. Eelgrass may also promote settlement and recruitment of planktonic larvae or early life stages of various species. Eelgrass beds also act directly as spawning areas, providing nursery grounds for numerous fish species. The commercially important species, Pacific herring, striped seaperch (Embiotoca lateralis), and chum salmon (Oncorhynchus keta) are all partially dependent on eelgrass for at least part of their life history.

Physical Structure
By slowing and retarding current flow and reducing water velocity near the sediment-water interface, eelgrass promotes the deposition of particles and inhibits resuspension of fine particles and organic materials. Eelgrass beds therefore help cleanse the water column of both sediment and water column nutrients. Dissolved nutrients are incorporated by eelgrass blades and their associated epiphytes and macroalgae into plant biomass, which can improve water quality. Sediment stabilization is enhanced by the presence of a root and rhizome mat, which bonds sediment and retards erosion. The sediment stabilization provided by eelgrass has been shown to be an important function for associated fauna; suspended material in the water column can limit the visibility and successful capture of prey by visual feeders.

Nutrient Cycling
In order for an estuary to incorporate oceanic and riverine inputs of carbon and nutrients into the food web, the estuary must have an efficient means of retaining these elements. Eelgrass plays an important role in the cycling of nutrients within estuarine and nearshore systems. Eelgrass and its associated epiphytic algae fix nitrogen, adding to the nutrient pool. Eelgrass also absorbs nutrients from the sediment and releases them into the water column from the leaves, acting as a nutrient pump. Decaying eelgrass also aids in the maintenance of an active sulfur cycle. In the absence of eelgrass, nutrients would accumulate in the sediment and/or be flushed out to sea.

Eelgrass as Habitat for Listed Salmonids
Adequate prey species and adequate cover associated with marine vegetation have been identified as important elements in estuarine and nearshore habitats for Pacific salmon. Phillips (1984) suggested Chinook salmon were "transient" users of eelgrass for feeding and cover. Murphy et al. (2000) however, did not observe a significant association of juvenile salmon with eelgrass. Murphy et al. (2000) reported that salmonid fry and smolts were generally smaller in eelgrass sites than non-eelgrass habitats, but suggested that the presence of salmon fry in eelgrass areas may be related to physical factors such as low exposure to currents, rather than the presence of eelgrass per se. In a study conducted in southeastern Alaska comparing fish use of kelp and eelgrass, the majority of juvenile coho salmon were collected in eelgrass beds (Johnson et al. 2003). Eelgrass drift habitat may also be a critical resource for Chinook salmon and coho salmon (Nightingale and Simenstad 2001). Within Humboldt Bay, coho salmon smolts have been captured under clumps of floating eelgrass (Shaw 2004).

Eelgrass as Forage for Black Brant
In addition to the important eelgrass habitat functions described above, eelgrass is also the primary food source of migratory black brant during wintering and spring staging.

Identified in 2008 by CDFW as a Species of Special Concern, the black brant (*Branta bernicla nigricans*) is a migratory goose that winters along the eastern Pacific coast from Alaska to Mexico. In California, Humboldt Bay supports the majority of brant in the state, although it is more important for spring staging than for wintering. In fact, Humboldt Bay is the fourth most heavily used staging area in the Pacific Flyway (Moore et al. 2004). Given its reliance on eelgrass as a forage source during wintering and staging, the importance of Humboldt Bay has only grown in recent years with the near total disappearance of eelgrass beds that were once common in Morro

Bay. Since Morro Bay is one of only four large coastal bay/estuary systems known to support black brant, its severely reduced ability to support brant increases their reliance on the other three areas. Peak counts of spring-staging birds totaled 20,000 to 40,000 from 1950 to 1977, declined to 10,000 to 15,000 in the 1980s, then increased to 20,000 to 25,000 in the late 1990s (Pacific Flyway Council 2002).

Potential impacts to black brant from Coast's operations primarily takes three forms: loss of foraging opportunity due to reduced availability of eelgrass resulting from use of eelgrass beds for shellfish culture; exclusion from eelgrass beds when aquaculture infrastructure is exposed above the water's surface; and disturbance from the vessel and pedestrian activity resulting from Coast's planting, harvesting, and maintenance operations.

As described in the RDEIR:

> *Black brant feed almost exclusively on eelgrass (Ward et al. 1997, 2005; Moore et al. 2004), making them vulnerable to degradation of existing eelgrass habitat (Pacific Flyway 2002; Ward et al. 2005).*
> …
> *A large proportion of Pacific Flyway brant uses Humboldt Bay, likely due to its high eelgrass abundance and relative isolation from other suitable spring staging sites (Moore et al. 2004). Eelgrass varies in quantity and quality, and is unavailable to brant during two high tides per day, making the achievement of energy demands challenging for brant (Clausen 2000, Moore and Black 2006b). Brant have been documented repeatedly returning to eelgrass beds that are relatively high in quality (density, biomass, and nutrient content), and have been seen waiting over eelgrass beds until tides recede (Moore and Black 2006b), suggesting brant are making foraging decisions based on prior experience and performance. This observation also suggests that eelgrass quality in Humboldt Bay is important to the ability of brant to meet energetic demands for migration, and thus a reduction in quality and quantity could result in impacts to the flyway population.*
>
> *Surveys conducted in Humboldt Bay each February between 1976 and 2000 found a mean number of 5,049 brant in South Bay and 1,322 brant in North Bay. Otherwise stated, approximately 80% of the birds were observed in South Bay during that period (Moore et al. 2004). Based on comparisons with historical data (1931-1941), the relative proportions of brant using South Bay and North Bay have been similarly distributed (Moore et al. 2004). However, the most recent 2015 winter/spring annual surveys conducted by the Humboldt Bay National Wildlife Refuge detected a recent shift in brant population from South Bay to North Bay, estimating a total of 192,400 bird days for North Bay and 147,930 bird days for South Bay (Refuge, unpublished data). For example, an April survey estimated 3,650 birds occupying North Bay and 2,860 birds in South Bay.*
>
> *To better inform the impact assessment process, H. T. Harvey & Associates conducted surveys for black brant in North Bay in April 2015 (Table 6.5.9), representing the approximate period of peak abundance for the species during the 2015 spring migration period (HTH 2015). A memorandum explaining survey methods and results is attached to this R-DEIR as Appendix F. Surveys were conducted throughout the entire North Bay (as weather allowed) during high and low tides to record the abundance of brant using North Bay. Surveys were also conducted in North Bay to document the number of brant occurring*

> *within Coast's existing aquaculture beds and areas that are proposed for aquaculture expansion. Time-lapse camera monitoring was conducted to augment survey efforts with behavioral observations in aquaculture structure. The mean count during low tide in North Bay was 4,164 birds (range 3,120-5,559) and the mean count during high tide was 3,170 birds (range 2,2344,340). The observed differences in low and high tide counts reflect observations that brant would congregate in areas away from inundated mudflats during high tides, concentrating in areas including Eureka Slough, areas south of Samoa Bridge (i.e., along Indian Island), or on the lee side of marsh habitats. This occurred presumably because foraging opportunities were more limited during high tides in North Bay when eelgrass was inundated and brant were likely avoiding the windy conditions in the open bay that were more prevalent during afternoon spring high tide surveys.*

As these surveys indicate, the extensive eelgrass beds of Arcata Bay (North Bay) support a significant proportion of the population of black brant that winters and stages in Humboldt Bay. Reduction or loss of this eelgrass is therefore likely to adversely affect black brant.

Impacts to Eelgrass from Existing Operations

Coast's use of intertidal eelgrass habitat – both occupied and potentially occupied with eelgrass plants – for oyster cultivation was the primary coastal resource concern evaluated by the Commission in its consideration of Coast's initial CDP for its 300 acre operation (CDP No. E-06-003). Based on extensive analysis and technical review by Commission staff ecologist, Dr. John Dixon, the Commission found that Coast's operation would result in the loss of approximately 137 acres of eelgrass habitat. The Commission determined this by finding that areas of eelgrass in which Coast's oyster longlines would be placed would support a lower density and coverage of eelgrass than they would if not used for aquaculture. Combined across the estimated 275 acres of Coast's 300 acre footprint determined to be eelgrass habitat, these reductions in eelgrass cover were found to be the equivalent of 137 acres of eelgrass. The Commission acknowledged that using the typical mitigation approach for eelgrass impacts (which requires impacts to be mitigated at a ratio of 1.2:1, restored area:impacted area) would result in a requirement for Coast to create 164 acres of new eelgrass habitat in Arcata Bay.

However, while the typical eelgrass mitigation approach is the preferred option, the Commission also acknowledged in the Adopted Findings for CDP No. E-06-003 that a restoration effort on the scale required by that approach was unlikely to succeed:

> *Discussion with staff members from the California Department of Fish and Game indicate that restoring eelgrass in Humboldt Bay has not proved successful in the past, and is most likely not a feasible mitigation measure for the proposed project. In the mid-80's, eelgrass was removed from the east side of the Eureka channel and transplanted to Indian Island. This transplant project failed. More recently, CalTrans also attempted to transplant eelgrass as mitigation for the Samoa Bridge seismic upgrade project; the transplanted eelgrass is not doing well after two years. One somewhat successful project at the Eureka small boat basin created a mudflat inside the marina, where eelgrass was planted. The eelgrass is still growing there, but no quantitative sampling or monitoring was required for that project so it is difficult to know how successful it has been. Last year, eelgrass was transplanted along the Eureka Boardwalk as mitigation for the Fisherman's Terminal project. DFG staff does not yet have any data on how well it is doing – and is concerned that heavy rain this year may affect the success of that project. Given the difficulty that past*

projects have had in successfully transplanting or restoring eelgrass in Humboldt Bay, the Commission finds that an eelgrass restoration project in Humboldt Bay is not likely to produce adequate mitigation for the proposed project.

In response, a suite of restoration efforts and mitigation measures was developed that, in combination, was found to adequately address the 137 acres of impacts to eelgrass associated with Coast's 300 acre operation. This suite of mitigation measures is discussed in the Commission's Adopted Findings for CDP No. E-06-003 and includes the following primary elements and Special Conditions:

• Coast will maintain in place its leases with the Harbor District, the City of Eureka, and the Karamu Corporation (approximately 3,645 acres). Coast will exercise its renewal options, and satisfy its payments and other obligations in each of the aforementioned leases to ensure that all three leases remain in effect until at least the year 2015. Aside from the fixed 300acre operational footprint established pursuant to this permit application, Coast will not conduct oyster harvesting activities on any of its leased or owned lands. This measure protects approximately 3,600 acres of tidelands from development of any kind for the time that the leases are in place.

• Coast will transfer fifty acres of the tidelands it owns in Humboldt Bay to an appropriate entity to ensure said transferred tidelands are permanently protected from any development. The 50 acres proposed by Coast are in the Mad River area of Coast's holdings, and are depicted in Exhibit 10. The habitat value of the 50 acres is high; however the parcel contains very little eelgrass.

• Coast will continue to work with the City of Arcata, the City of Eureka, the County of Humboldt and the State of California to identify sources of water pollution in Humboldt Bay, and to implement repairs to minimize or eliminate that pollution. Improvements in water quality help Coast commercially, but also benefit the Bay ecosystem.

• Where feasible, Coast will avoid contact between the long-line harvester vessel and the bay bottom. To avoid potential impacts to eelgrass from shading, Coast will not anchor the longline harvester in such a way as to shade the same area of eelgrass for more than twelve hours.

• Coast will not intentionally deposit shells or any other material on the sea floor. Natural deposition of shells and other materials will be minimized.

• Coast will not engage in any dredging, hydraulic harvesting, "bed cleaning," or other activities with an hydraulic harvester.

…

***Special Condition No. 1** requires that within one year of the issuance of this permit, Coast shall transfer title of 50 acres of its owned tidelands, as depicted in Exhibit 10, to the State Lands Commission, the Humboldt Bay Harbor, Recreation and Conservation District, or the City of Arcata. The conveyance document shall be submitted to the Executive Director for review and approval, and shall clearly state that the tidelands so granted shall be protected from development in perpetuity. The conveyance shall be made free of prior liens or encumbrances that the Executive Director and/or the grantee determine may affect the*

validity and effectiveness of the conveyance. If Coast is unable to transfer title to one of the three entities listed, Coast shall apply for an amendment to this permit from the Commission.

…

***Special Condition No. 3** requires the applicant to pay one hundred thousand dollars ($100,000) to the California Coastal Conservancy. These funds will be used for the purpose of habitat enhancement generally, and fish passage improvement particularly, for federally- and State-listed anadromous fish species within the Humboldt Bay watershed. The Conservancy anticipates that the site of the improvement project or projects will be located on a stream tributary to Humboldt Bay, and that funds will be expended within five years. The Conservancy will submit the project or projects proposed for funding to the Executive Director for review. (See Exhibit 12.) Payment shall be made in two phases: 1) prior to issuance of this permit, the applicant shall pay the Conservancy fifty thousand dollars ($50,000), and 2) within one year of the first payment, the applicant shall pay the Conservancy the remaining fifty thousand dollars ($50,000). Coast shall prepare a check (or other appropriate vehicle) made out to "State Coastal Conservancy," and shall send that check to the Executive Director of the Coastal Commission for forwarding to Conservancy staff.*

...

*In order to determine the feasibility of cultivating oysters at elevations not typically suitable for eelgrass, **Special Condition No. 4** requires Coast to evaluate the feasibility of culturing oysters at depths typically unsuitable for eelgrass growth (i.e., above +1.5 feet MLLW) in Humboldt Bay. Prior to planting any oyster culture outside the 255 acres currently in production, Coast shall submit a study methodology for review and approval by the Executive Director. The Commission does not currently have information regarding the various elevations of oyster plots within Coast's proposed 300-acre footprint. If no portion, or an insufficient portion (as determined by the study methodology), of Coast's proposed 300-acre operational footprint contains areas above +1.5 feet MLLW, Special Condition No. 4 requires that within two years of the issuance of this permit, Coast shall apply for a coastal development permit to conduct the study.*

As part of its review of Coast's proposed permit amendments to extend the duration of its operations, Commission staff reviewed information included in the RDEIR and its technical appendices on impacts to eelgrass beds in which longline cultivation operations are carried out. This information was reviewed in order to evaluate the accuracy of the Commission's 2006 eelgrass impact estimate of 137 acres. Although the RDEIR and its appendices include extensive discussion and analysis of the potential impacts to eelgrass from the proposed expansion project, it includes very little information about the amount of eelgrass within existing cultivation beds. Further, the proposed expansion project involves a slightly different type of impact to eelgrass since it would involve the potential loss of existing eelgrass associated with the placement, use and presence of culture gear in eelgrass beds that are not currently used for aquaculture, whereas the Commission's 2006 analysis of Coast's operation considered limits on the amount of eelgrass that could naturally expand into an area due to its use for cultivation. Therefore, the discussion and analysis in the RDEIR cannot be used to directly quantify the total amount of eelgrass actually affected by the existing operation.

While some eelgrass surveys carried out by Coast's consultants over the past several years do include information about eelgrass in existing cultivation beds, only a small portion of a limited

number of beds was sampled and the surveys were not designed to inform the question of how much eelgrass is present across all of Coast's culture beds compared to how much eelgrass would be present in those areas if they were not used for aquaculture. Coast has stated its belief that the actual impacts to eelgrass that occurred were less than those estimated by the Commission in 2006; however, the currently available information does not provide a clear indication that the Commission's 2006 impact estimate is inaccurate. The limited dataset on the amount of eelgrass in areas of existing operations appears to fall within the range estimated by the Commission in 2006. While some areas appear to support more eelgrass than initially estimated, eelgrass in other areas appears to be below the levels anticipated in 2006. Arcata Bay is a dynamic natural system and eelgrass within it experiences a very high level of natural variability and fluctuation between years and areas. Small changes in physical and environmental parameters such as elevation, light levels, tidal inundation, and susceptibility to disturbance and stress play a key role in determining how eelgrass responds and the interplay of these factors changes over both time and space. As such, it is problematic to make conclusions about large areas based on data collected over limited spatial and temporal scales. In addition, recent trends indicate that eelgrass may be declining throughout Arcata Bay and experiencing additional stress from disease. The fact is that substantial uncertainty exists about the scale of impacts to eelgrass from Coast's existing operation. The Commission's 2006 estimate of 137 acres acknowledged this uncertainty and was intended as a precautionary approach. Although more information is available at this time, the need for a precautionary approach remains.

Commission staff additionally considered the mitigation measures and Special Conditions included in its 2006 findings (excerpted above) to evaluate the benefits they provided and determine whether they met the Commission's expectations. While some elements, such as the restoration work funded by Coast, may not have been implemented as expeditiously as anticipated, Coast met its funding obligations completely and on time. The delay was related more to the challenge of finding an appropriate project to contribute the funding to and to bring the project to fruition. In any event, the project partially funded by Coast, the McDaniel Slough Restoration Project in Arcata, was completed in late 2013 and monitoring results from the past several years have been positive. The other elements of the mitigation suite have also been satisfied or followed by Coast over the past ten years, and there is no evidence suggesting that they fell short of achieving their intended benefits.

Although this review of the Commission's 2006 eelgrass impact estimate and the mitigation suite does not provide a clear indication of a mitigation deficit or surplus, it is important to note that the Commission did not, in 2006, consider how the loss of eelgrass associated with Coast's operation would adversely affect wintering and staging black brant. Because this impact was not considered, mitigation was not provided. Based on currently available information, the loss of 137 acres of eelgrass would adversely affect brant by reducing the amount of forage available to them.

Recognizing this need for additional mitigation to address adverse impacts to black brant forage, Commission staff is recommending several resource protection measures are expected to provide at least modest benefits to eelgrass, therefore mitigating for the project's continuing impacts to black brant. These measures would provide new areas into which eelgrass may naturally expand. For example, implementation of **Special Condition 13** (removal of the SI Nk cultivation bed), while not intended as an eelgrass restoration measure, is nevertheless expected to result in the creation of additional eelgrass habitat in Arcata Bay. The SI Nk bed is approximately 11 acres and currently includes areas of patchy eelgrass and eelgrass appropriate habitat that are likely to expand and increase in density, once removal of the cultivation bed is complete. Without the results of a

thorough survey, it is not possible to accurately quantify the exact area and density of eelgrass that may expand into the SI Nk area, however. Although potentially small in area, expanding eelgrass in close proximity to Sand Island may nevertheless provide a direct benefit to black brant due to its proximity to a brant grit site (discussed further in the terrestrial biological resources section below) and the importance of forage areas located adjacent to grit sites. Additionally, **Special Condition 14**, the requirement for Coast to remove a limited number of lines from its most densely planted cultivation beds in order to create wildlife access channels, may also provide an opportunity for a small amount of eelgrass expansion into these channel areas due to the removal of longline equipment. Although brant typically avoid densely planted cultivation beds, the introduction of wider open channels within these beds may provide brant with additional forage opportunities.

Conclusion

With implementation of **Special Condition 9** of CDP No. E-02-005-A6 and **Special Conditions 3, 9, 10, 13, 14, 15 and 16** of CDP No. E-06-003-A5, the continuation of Coast's current shellfish aquaculture operation in Arcata Bay would be carried out in a manner that maintains marine resources, provides special protection for species and areas of special biological significance, sustains the biological productivity of coastal waters, and maintains healthy populations of all species of marine organisms. In addition, the proposed project, as conditioned, will maintain the biological productivity of coastal waters appropriate to maintain optimum populations of marine organisms. The Commission therefore finds that the proposed project, as conditioned, is consistent with the marine resource sections (Sections 30230 and 30231) of the Coastal Act.

D. TERRESTRIAL BIOLOGICAL RESOURCES

Coastal Act Section 30240 states that:

> *(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.*

The majority of Coast's aquaculture operations are located in intertidal or subtidal areas of Arcata Bay and are not located in areas contiguous with or near dry lands. As such, the operation has little potential to affect terrestrial resources. The exceptions to this are an oyster culture bed located on mudflats extending from Indian Island/Talawa and another located near a small island in the middle of Arcata Bay. These beds are referred to in Coast's annual reports (submitted to the Executive

Director in compliance with the existing **Special Condition 7** of CDP No. E-06-003-A4) as bed GI 1-2 and bed SI-Nk, respectively.

As discussed in the previous section on marine debris, the GI 1-2 bed on Indian Island has been out of use for the past several years and until Coast decides to bring it back into use, the existing equipment there would be required to be removed through **Special Condition 9.**

The other bed located near an upland area, SI-Nk, is roughly 300 feet away from a unique island feature in Arcata Bay, Sand Island. This tiny, low elevation island includes roughly 2000-square feet of unvegetated land that extends above the mean high water line and remains dry during high tides. Isolated, separated from the bay shore, and relatively insulated from most sources of human disturbance and access by land based predators, Sand Island is a unique ecological feature in Arcata Bay and has attracted uses by a variety of wildlife species. These uses include a harbor seal haul out, a source for sandy grit for wintering black brant (as explained in more detail below, brant consume small amounts of sand from certain areas to aid in their digestion of eelgrass), roosting for various seabird species, and nesting for both the double-crested cormorant and Caspian tern. This combination of important ecological functions provided by Sand Island and its rarity as a small isolated island in Arcata Bay make it an especially valuable resource and therefore, ESHA. This value was acknowledged by the Commission, Coast, and the Harbor District in permits from 2005/2006, through which a 100-meter buffer was established between the island and the nearest aquaculture operations. Although this buffer remains in place, its adequacy and the current status of the resources and area it is intended to protect warrant further consideration.

Nesting

The Harbor District's RDEIR for Coast's expansion project provides the following information about the seabird nesting colonies on Sand Island:

> *Caspian terns and double-crested cormorants nesting colonies are present on Sand Island, approximately 320 ft from the northeastern edge of the current oyster culture area (Figure 6.5.13). In 2001-03, 809 double-crested cormorant nests (representing 13% of the statewide total and the largest colony in northern California), and 262 individual Caspian terns, were counted on Sand Island (Capitolo et al. 2004). In 2008, only 103 cormorant nests were counted (Caspian terns were not counted), reflecting a reduction in nests from previous counts; it is possible some birds may have moved to Teal Island in the South Bay where their numbers increased (365 nests in 2003 to 485 nests in 2008) (Adkins and Roby 2010). In 2014, more than 400 cormorant nests were counted and over 300 Caspian tern nests were estimated on Sand Island; the colony was also active in 2015, although numbers are not yet available (P. Capitolo, University of California Santa Cruz, Unpubl. Data). The colony is presumed to still be active.*

Commission staff consulted the researcher cited by the Harbor District, Dr. Philip Capitolo, for more recent information about the status and trends of these nesting colonies. Dr. Capitolo has been monitoring these colonies for many years as part of west coast-wide double crested-cormorant population assessments and his research in 2004 showed that Sand Island supports the largest nesting colony of double-crested cormorants in California (Capitolo et al 2004). However, information shared with Commission staff by Dr. Capitolo shows that both tern and cormorant nesting colonies on Sand Island experienced sharp declines in 2016, falling from a combined total of over 700 in 2014 to only about 25 in 2016. Dr. Capitolo also indicated that in his experience

evaluating numerous such colonies, the Sand Island colony appeared more susceptible than others to these wide swings in nesting use between years. Although there are a variety of potential explanations for the large interannual variability in nesting use that Sand Island appears prone to, ranging from changes in prey availability to avian predation and disturbance from other wildlife, disturbance from human activities is also a well-established cause. In particular, high levels of human activity near nesting areas during the months of April and May when birds are seeking out appropriate nesting habitat and establishing nests can often lead to abandonment of nesting and/or nesting areas. If this is indeed one of the reasons for the sharp decline in tern and cormorant nesting at Sand Island, it could have been caused by many types of human disturbance, such as repeat visits to the island or adjacent areas by kayakers, boaters, fishermen, or recreational users; low-elevation aircraft use; fireworks; or other similar types of human uses that result in elevated sound levels or human presence in the area on foot or in vessels. Increased aquaculture operations in the area is also a potential contributor, as acknowledged by the Harbor District in its RDEIR:

> *Human disturbance associated with* [Coast] *operations in the vicinity of Sand Island has the potential to flush nesting Caspian terns and double-crested cormorants. Such disturbances could result in the loss of eggs and/or chicks, and even cause permanent nest or colony abandonment (Ellison and Cleary 1977, Shuford and Craig 2002). However, to avoid impacts to nesting birds on Sand Island, the Harbor District imposed a condition as part of Coast's existing permit to locate its shellfish beds at least 100 m from the mean higher high water (MHHW) line of Sand Island...*

An evaluation of recent information, however, suggests that this buffer distance may not adequately provide the intended protection. Among this information is the recent collapse of the nesting colony, its higher than usual interannual variability (which suggests it is not thriving under the current level of protection), and Coast's increased level of activity (associated with planting and harvesting bed SI-Nk) near the island in May of 2016 (as indicated in its annual report) – one of the most sensitive periods for the nesting colonies. Although there is no direct evidence that these operations contributed to the reduced nesting at Sand Island in 2016, the fact remains that the colonies are in a poor condition and may benefit from more robust protection to help ensure that potential sources of human disturbance, such as Coast's operations, are less likely to adversely affect the island's resources.

Black Brant Grit Site

As discussed in the Recirculated Draft EIR (RDEIR) for the expansion of Coast's aquaculture operations in Arcata Bay,

> *Migrating brant feed almost exclusively on eelgrass and thus their ability to forage is restricted by the tidal cycle, but gritting sites are also very important areas that brant need to access to acquire sandy grit (Lee et al. 2004, Moore and Black 2006, Bjerre 2007, Spragens 2013). Gizzard grit is ingested by brant as an aid to mechanically breakdown eelgrass and provides an important source of calcium (Lee et al. 2004, Bjerre 2007). Brant tend to visit grit sites when they become available during retreating tides; grit sites occur relatively high in the intertidal zone and thus are available earlier than eelgrass beds (Lee et al. 2004, Moore and Black 2006). Brant then move from grit sites to eelgrass beds when tidal elevations are low enough for brant to access them (Moore and Black 2006). Although grit sites appear to be abundant in Humboldt Bay, brant have been observed preferentially selecting particular grit sites that provide supplemental calcium and include larger than*

> *average particle sizes (Lee et al. 2004, Bjerre 2007). In some cases, brant have been observed staging over the best gritting sites awaiting tides to recede, and brant continue to use gritting sites even when eelgrass (which occurs at lower elevations) was available for foraging (Bjerre 2007). Based on available literature, the primary grit sites in Humboldt Bay occur along the northern portion South Spit of South Bay (Figure 6.5.28). The South Spit is a large sandbar between the South Bay and Pacific Ocean where higher-elevation sandy substrate is available to brant on receding tides before eelgrass at lower elevations is available for foraging.*

In addition to these grit sites in South Humboldt Bay, the RDEIR also identifies two grit sites in Arcata Bay – including one at Sand Island.

In its comment letter provided in response to this RDEIR, the California Department of Fish and Wildlife (CDFW) discusses the presence of black brant grit sites in Arcata Bay as well as their importance and susceptibility to human disturbance:

> *The RDEIR recognizes two grit sites for black brant in North Humboldt Bay, one at Sand Island and one at Indian Island. Grit sites are rare and are a critical part of the feeding process (Lee et al. 2004; Spragens et al. 2013). Given the rarity and limited access to grit sites, anthropogenic disturbance and development of these sites have been cited as further limiting factors for black brant populations, with grit sites recognized as important areas for protection (Lee et al. 2007; Spragens et al. 2013). Black brant are also some of the most sensitive waterfowl to disturbance (Laursen et al. 2005; Pacific Flyway Council 2002).*

CDFW's letter also discussed recommendations for augmenting the protection of black brant grit sites in Arcata Bay, including by expanding the existing buffer area around Sand Island. This recommendation is consistent with the conservation measures provided in the account accompanying the designation of brant as a Species of Special Concern. These conservation measures include the need to "protect traditional gritting sites from excessive human disturbance and degradation from development and other causes."

When considering these grit sites and their protection, it is important to note that when the 100-meter buffer was discussed and established as part of Coast's permitting in the mid-2000s, black brant and grit sites were not acknowledged or evaluated. There is no reference to or discussion of this issue in the materials that resulted from the Commission and Harbor District review processes. These materials instead make clear that the 100-meter buffer was established solely to protect the nesting colonies on Sand Island. Therefore, the adequacy of a 100-meter buffer to protect black brant was not considered. In its response to the CDFW comment above, the Harbor District acknowledges that several researchers suggest the use of much larger buffers for black brant – from 2.5 to nearly 4 times larger:

> *There are some studies that recommend a greater buffer for human activity from brant and certain species of shorebirds. For example, Mathers et al. (2000) recommends a 250 m buffer from human activity for wigeon, which is identified as a particularly sensitive species. Borgmann (2011) suggests that a 250 m buffer from human disturbance impacts would likely lessen impacts on must sensitive waterfowl species. Laursen et al. (2005) recommends a 384 m buffer from brant; however, the recommended buffer may not be directly applicable given that it discusses a buffer from human approach on foot rather than boats. However,*

> *the frequency of disturbance in these studies was much greater than the proposed project; in Mathers et al. (2000), the mean interval of disturbance varied from every 7 to 68 minutes. In Laursen et al. (2005)'s study, observers experimentally approached and disturbed waterbirds over a thousand times (n=1,371) in spring and autumn in 1980-1984, which likely amounted to at least one disturbance per day during the study.*

Contrary to the Harbor District response, it is relevant to consider buffers established for on-foot disturbance since many of the maintenance, harvest, and planting activities carried out on a culture bed are done by personnel on-foot. Therefore, it appears that the current 100-meter buffer for Sand Island does not provide adequate protection of the black brant grit site located there. Expansion of the buffer to either of the distances established through research - 250-meters or 384-meters - would mean that the entirety of the SI-Nk cultivation bed is located within the buffer area.

CDFW Review

The value of Sand Island as an ecological resource is recognized by the California Department of Fish and Wildlife (CDFW) in several of the letters it submitted to the Harbor District during the CEQA review of Coast's expansion project. The following excerpt from its latest letter summarizes CDFW's views on Sand Island and the need for increased protection from disturbance of the wildlife resources it supports:

> *Sand Island is one of the few locations in Humboldt Bay that remains exposed at all but the most extreme high tides. As such, it provides unique habitat within the bay, supporting nesting colonies of Caspian terns and double crested cormorants, a marine mammal haul-out site, and a grit site currently identified for black brant (Colwell et al. 2003; Capitolo et al. 2004; Adkins & Roby 2010; RDEIR 2016). In addition, the adjacent waters are an important area for green sturgeon use in the Bay (Pinnix 2008; Lindley et al. 2011; RDEIR 2016). The RDEIR includes an existing setback distance for aquaculture gear of 100m around Sand Island to reduce impacts to marine mammals and nesting birds (Mitigation Measure BIO-3). However, the Department believes the 100m buffer may not be sufficient to prevent significant impacts due to disturbance of black brant at the grit site, nesting bird colonies, and marine mammals. In order to protect the resources that utilize the areas in and around Sand Island, including marine mammals, shorebirds, nesting birds, green sturgeon, and black brant from disturbance and loss of habitat, the Department recommends the setback distance for aquaculture gear be increased to reduce impacts. The FREIR should include a discussion of an alternative buffer distance to reduce the impacts to less than significant. The Department would be willing to assist in the development of an appropriate buffer.*

Commission staff have discussed with CDFW staff the increased buffer distance suggested in this excerpt. It is important to note that this recommendation was based on Coast's expansion project and the initial proposal in that project to expand operations near Sand Island by dramatically increasing the size of the SI-Nk culture bed and adding new beds in adjacent areas. However, it is also important to note that the views expressed above by CDFW about the potential lack of adequate protection from disturbance provided by the current roughly 300-foot buffer between Sand Island and the existing SI-Nk bed are also relevant to the existing operation that Coast has requested to extend through its CDP amendment requests. In other words, given the ecological importance of Sand Island, CDFW staff believe that the SI-Nk bed is poorly located. CDFW staff support the

removal of shellfish culture operations at this location to eliminate a potential source of human disturbance to the island's habitat and wildlife value.

Conclusion
Based on recent information regarding the declining status of the Sand Island nesting colonies and the apparent inadequacy of the current 100-meter buffer zone, research suggesting that a 250-meter to 384-meter buffer may be more appropriate to protect a black brant grit sites as well as the location of the SI-Nk cultivation bed within this larger buffer area, **Special Condition 13** would require Coast to discontinue use of this bed and remove it.

With implementation of **Special Condition 13**, the continuation of Coast's current shellfish aquaculture operation in Arcata Bay would be carried out in a manner that protects the Sand Island ESHA against any significant disruption of habitat values and helps ensure that only uses dependent on the resources of Sand Island are allowed within that area. The Commission therefore finds the proposed project, as conditioned, consistent with Section 30240 and 30241 of the Coastal Act.

E. CULTURAL RESOURCES

Section 30244 of the Coastal Act states:

> *Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.*

Archaeological resources protected under this Section include sacred lands, traditional cultural places and resources, and archaeological sites. As noted in the July 2016 Recirculated Draft Environmental Impact Report (RDEIR) developed by the Harbor District for Coast's proposed expansion project, the cultural significance of Arcata Bay and the Humboldt Bay area is well established:

> *Humboldt Bay is the ancestral heartland of the Wiyot Indians, whose native language is affiliated with the Algonquian language family and who had occupied the bay area for at least 2,000 years by the time the first European maritime explorers entered the bay and the first American towns were established in 1850. There are hundreds of known and undiscovered archaeological sites around Humboldt Bay that evidence Wiyot history and prehistory. Today, citizens of Wiyot ancestry are affiliated with three federally-recognized tribes located in the ancestral homeland: Blue Lake Rancheria; Bear River Band of the Rohnerville Rancheria; and the Wiyot Tribe at Table Bluff Reservation.*
>
> *The Wiyot Tribe has used Humboldt Bay for ceremony, gathering and subsistence since time immemorial. The Wiyot Tribe considers Humboldt Bay's extensive eelgrass beds as a cultural landscape, as defined by California Public Resources Code Section 4.21074(a). In addition to being a vital resource to The Wiyot Tribe for subsistence, eelgrass also serves as a habitat for a variety of species of importance to The Tribe, including salmonids, Dungeness crab, Pacific herring, and other aquatic species. Additional, a variety of tribally important avian species including waterfowl (e.g. ducks, swan, and geese—especially black brant) and shorebirds (e.g. curlew), utilize eelgrass habitat and associated species (e.g. macroinvertebrates).*

> *Eelgrass beds thus form an important contribution to both the historical and contemporary cultural heritage of The Wiyot Tribe. In addition to the value of the eelgrass itself, which was used for cooking, the species it supports are essential to the Wiyot diet. Supported species also support other cultural practices; for example, waterfowl feathers are used to make regalia for ceremony, including the World Renewal Ceremony held on Tuluwat in the middle of Humboldt Bay. Impacts to eelgrass thus also impact The Wiyot Tribe's ability to engage in traditional subsistence hunting and fishing, as well as have an impact on regalia making and The Wiyot Tribe's ability to conduct ceremony.*

Based on the long history of Native American use and presence on and around Arcata Bay and the importance of the bay's marine ecosystem – in particular its eelgrass beds - as a valued cultural landscape, the continuation of Coast's aquaculture operations there raise two types of primary issues: (1) issues associated with the disturbance, degradation or loss of biological resources; and (2) issues associated with the discovery and disturbance of historic, archaeological or tribal cultural resources or sites.

Discussion of the operation's potential to adversely affect terrestrial and marine biological resources and measures to address those effects is included in previous sections of this report and in the Commission's adopted findings for the previous CDPs and CDP amendments issued to Coast for its oyster and clam cultivation operations. In particular, the above sections and previous findings discuss effects to eelgrass habitat; marine, migratory, and wintering marine birds, shorebirds, and waterfowl; marine mammals; and fish species of special biological and economic significance.

Regarding potential adverse impacts to historic, archaeological and tribal cultural resources or sites, based on the discussion included in the RDEIR developed by the Harbor District for Coast's proposed expansion project, there are no identified or known historic, archaeological, or cultural resources within Coast's current footprint. While such resources are unlikely given the intertidal and subtidal operation areas and the siltation that is continually occurring in these areas, the placement, replacement, and removal of aquaculture equipment such as posts, stakes, anchors, or supports could potentially disturb previously undiscovered or unknown historic, archaeological or tribal cultural resources. Additionally, such resources could be discovered or uncovered by culturists when working in intertidal areas or through vessel scour and wash associated with the use of skiffs and support craft.

To address these potential discoveries and help ensure that cultural resources are appropriately protected through notification and consultation with tribal representatives, **Special Condition 16** would require Coast to establish a point of contact to be used in the event any cultural or archaeological resource, human remains, or Native American grave goods are discovered during its aquaculture operations. The contact information for this individual would be provided to agency staff and the Tribal Historic Preservation Officers appointed by the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria and Wiyot Tribe, thus providing a consistent and established source for communication and coordination work in the event a discovery is made. Further, **Special Conditions 17 and 18** would establish a series of notification, protection, and response protocols to be followed in the event a discovery is made. The process required through implementation of these three special conditions was initially developed by the Harbor District in consultation with representatives of the Wiyot Tribe during the development of the RDEIR. The

Tribe's subsequent letter to the Harbor District acknowledged its support for the condition language. Because this language was modified slightly by Commission staff for application here and because Commission staff was not aware of input from the other two area tribes on the condition language, Commission staff reached out directly to representatives of the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria, and Wiyot Tribe regarding the conditions and modifications. None of these representatives expressed concern with the inclusion of these special conditions in this recommendation.

Conclusion
With implementation of **Special Conditions 16, 17 and 18**, the continuation of Coast's current shellfish aquaculture operation in Arcata Bay would include reasonable mitigation measures to address potential adverse impacts to archaeological or paleontological resources. The Commission therefore finds the proposed project, as conditioned, consistent with Section 30244 of the Coastal Act.

F. COASTAL ACCESS AND WATER ORIENTED RECREATION

Section 30210 of the Coastal Act states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Section 30220 of the Coast Act states:

> *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

Recreation activities in and around Arcata Bay include boating, paddling (e.g., kayaks, canoes, and stand-up paddleboards), fishing, clamming, birdwatching and nature enjoyment, walking and hiking, beach play, and enjoyment of scenic views. Additionally, recreational hunting for waterfowl and wintering black brant also occurs throughout Arcata Bay during the permitted seasons. Hunting is generally conducted using boats, sculling in a low-profile skiff, walking along levees, and using temporary or permanent blinds along the shoreline. Hunting is allowed during the State of California waterfowl hunting season, which is generally October 10 through January 22 for ducks, and a variable period between October 10 and March 10 for geese, depending on the species. Commonly used public boating access points are limited to three locations in the south-east area of the bay near Eureka and several more in the north-west near the Mad River Slough.

Among the water oriented recreation activities that take place in Arcata Bay, those most susceptible to adverse impacts from continuation of Coast's existing aquaculture operation are waterfowl hunting in general and black brant scull hunting in particular. An excerpt from correspondence provided to Commission staff from a member of the waterfowl hunting community, Mr. Stan Brandenberg, provides a description of the scull boat hunting method and summarizes a variety of conflicts that exist between this type of recreational activity and Coast's operations:

Scull boats were developed on Humboldt Bay over 100 years ago and whose design is referred to as the Humboldt Bay Scull Boat design by hunters around the world.

Sculling remains an active and popular sport in north Humboldt Bay. Waterfowl hunting takes place in winter months when conditions can change quickly, and safety is always a first priority. This method uses a scull boat that incorporates some specific defining features necessary to sneak up on birds for hunting. First, the boat must be un-motorized, and be designed to allow a person to row while lying down. Second, the boat is designed to minimize the profile of the watercraft and be as low to the water as possible.

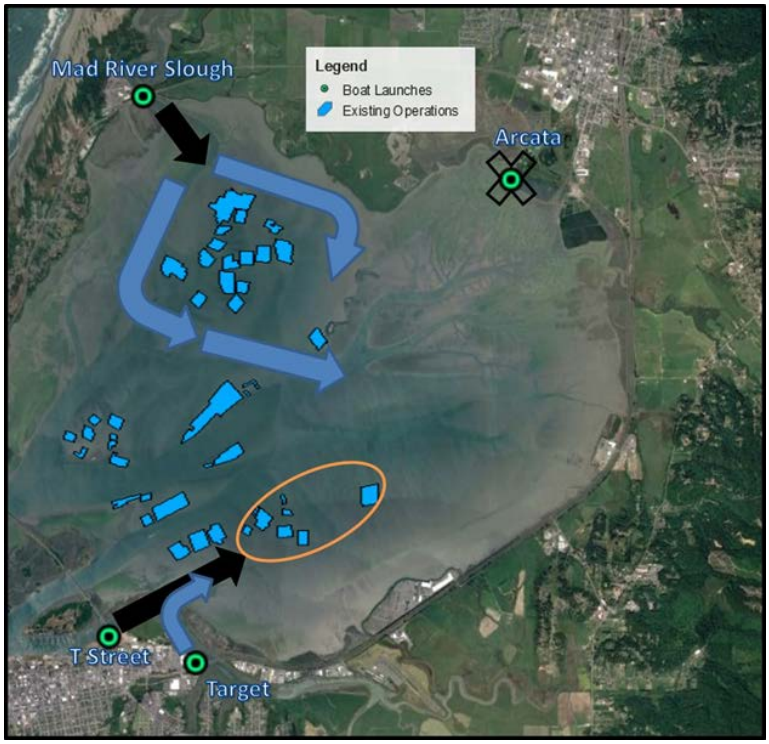
These design features enable hunters to get right up to the ducks and brant they are pursuing, though require constant re-evaluation once in the water regarding tacks and the possibility of deteriorating conditions. For a successful hunt, a hunter must be able to row long distances while lying down, often in low light conditions or in marginal weather, to get from the put in to the area for hunting. Areas hunted on a given day depend on where the birds are located, tides, what the weather and wind is doing, where other hunters are located, and other factors dependent on the conditions of the day. This method of sport also provides a unique and important coastal dependent recreational activity that cannot be provided in inland waters (§ 30220 CA Coastal Act). This recreational activity must be protected from further industrialization of the bay by oyster farms, and our concerns regarding ongoing operations must be addressed to ensure access to public trust resources and ensure the sport can continue in a safe manner.

We believe the concerns from the waterfowl hunting community were not considered during the last round of permitting for Coast Seafoods operations 10 years ago. We have the following concerns and recommendations:

• When Coast Seafood went from on-bottom to off-bottom methods they inadvertently took away one of the most popular and utilized hunting areas in north Humboldt Bay. The oyster farm areas operated by Coast Seafoods in the north-west area of the bay, next to the Mad River Slough channel, were once a great place to hunt. With the addition of extensive off-bottom gear, this area is no longer available to hunters or to recreational boaters and requires a much longer tack to get around the existing gear. This severe decrease in safety and the taking of area from hunters and other recreational users for corporate aquaculture uses was never considered in the previous permitting process. As we don't feel we can realistically regain this area back, we ask that you enhance our ability to utilize other frequented areas in North Bay for hunting. Of importance is the area circled in orange in the attached picture. Removing operations from this area would enhance our safety when utilizing the T-Street and Target boat launches to get to North Bay in general, and would greatly enhance our access to productive hunting grounds from any access point.

• Coast Seafood operators often disrupt our hunts. We are limited to only certain days per year to hunt Brant and other waterfowl. During those times, Coast Seafood boats have often (seemingly purposefully) flushed birds we were trying to hunt and sometimes even come dangerously close to our scull boats. They have shown blatant disregard for our sport and our safety. We ask that Coast Seafood boats be disallowed in north Humboldt Bay during brant season during daylight hours.

• The current operations should be consolidated as much as possible to allow recreational hunting and boating. We recommend consolidating operations in the west side of the bay to give recreational boaters, kayakers, windsurfers, stand-up paddle boarders, and hunters access to the east side of the bay for use and enjoyment of the bay. No operations should occur east of the Arcata Channel. This would provide much needed access for the people of the state to the public trust resources you protect.



• In addition, the view-shed of the bay has been significantly diminished due to the gear visible at low and high tides. When we hunt or otherwise recreate in north bay our use and enjoyment of the area is severely diminished due to the wide-spread PVC pipes and other gear visible at all tides. This severely reduces the beauty of the bay and ruins the scenic vistas that previously existed. To address this we ask that you greatly consolidate operations as described above.

As this letter and other similar correspondence describes, although waterfowl hunting and Coast's off-bottom shellfish cultivation operations undoubtedly suffer from spatial use conflicts and other negative interactions, the footprint of Coast's operations relative to the size of Arcata Bay available for waterfowl hunting and other recreational activities suggests that both types of uses could reasonably be accommodated. However, as the figure included below from Mr. Brandenberg's letter indicates, not all areas of the bay are of equal value and importance to recreational users. For example, access points and routes (noted in the figure with circles and arrows), subtidal channels, deeper intertidal areas, and productive hunting areas are not spread equally and abundantly throughout the bay. Similarly, not all areas present viable options for productive shellfish cultivation. The conflicts that have developed between the recreational community and Coast's operations are a result and indication of the scarcity of some of these features around the bay.

At least some of these conflicts have arisen as a result of Coast's conversion to off-bottom culture in the early 2000s – which caused its culture beds to extend several feet above the substrate, thus presenting an obstacle to safe navigation at a larger range of tidal heights – and were not anticipated by either Coast or the regulatory agencies that supported that conversion based on the reduction in environmental and ecological impacts it provided. The apparent lack of attention provided on this issue by both Coast and the regulatory agencies in the past means, however, that there is an opportunity to augment those elements of Coast's current operation oriented around alleviating and minimizing conflicts between it and public recreational uses of Arcata Bay. For example, although Coast makes use of a system of marking stakes for its oyster beds and nursery areas, this system appears to have been primarily focused on facilitating internal operations rather than aiding public users of the bay to safely avoid and navigate around the potential hazards posed by the culture beds.

A clearer, uniform, systematic and more easily understandable system of markers would likely alleviate some of the navigation and boating conflicts that are currently occurring. Additionally, the limited duration and timing of the brant hunting season suggests that negative interactions between Coast's vessel operations and hunting may be avoided through limitations in operations during the several week long hunting season.

Special Condition 11 implements the first of these concepts through requirements for Coast to develop and submit, for Executive Director review and approval, a Mapping and Marking Plan that includes the use of uniform marking stakes or posts that (1) remain visible and above water during maximum tidal heights; (2) are topped with reflective material; (3) identify the side of the stake on which the culture bed is located; and (4) are placed every 200-feet along the outer sides and at each corner of each of Coast's active culture beds. In addition, the plan shall include a method for Coast to develop, consistently update, and distribute digital and hard copy maps of Arcata Bay showing the location of its rafts and culture beds. **Special Condition 12** would additionally require Coast to limit its operations in high use areas authorized for brant hunting (as shown in **Exhibit 7** which includes the area circled in orange in the figure above) during the limited time of the year in which brant hunting is allowed.

Conclusion

With implementation of **Special Conditions 11 and 12,** the Commission finds the proposed project consistent with Sections 30210 and 30220 of the Coastal Act.

F. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 13096 of the California Code of Regulations requires Commission approval of a coastal development permit application to be supported by a finding showing the application, as conditioned 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 a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

As conditioned, there are no feasible alternatives or additional feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, is the least environmentally damaging feasible alternative and complies with the applicable requirements of the Coastal Act to conform to CEQA.

Appendix A: Standard and Special Conditions of CDP Nos. E-02-005-A6 and E-06-003-A5

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 Coast Seafoods Company 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 Coast Seafoods Company to bind all future owners and possessors of the subject property to the terms and conditions.

SPECIAL CONDITIONS OF E-02-005-A6

1. **U.S. Army Corps of Engineers Review.** WITHIN SIX MONTHS OF COMMISSION APPROVAL, the applicants shall submit to the Executive Director evidence that the U.S. Army Corps of Engineers has granted permission for the project authorized herein.

2. **Removal of Rafts Upon Abandonment of Clam Seed Nursery.** Within 90 days of abandonment of the clam seed nursery, the applicant or assignees shall submit a complete application and subsequently secure a coastal development permit to remove the rafts and their anchoring system from the project site.

3. **Permit Amendment.** Any deviation in the development and operation of the proposed clam seed nursery from the application project description, as modified by the applicant's representative's letter to the Commission dated May 23, 1997 to include certain measures designed to minimize the introduction of clams grown at the nursery into the habitat of Humboldt Bay, shall require an amendment of Coastal Development Permit 1-96-69.

4. **Permit Term Limit.** The term of the permit shall <u>expire on August 11, 2017</u>. ~~be limited to the current term of the Humboldt Bay Harbor, Recreation, and Conservation District Lease for Water Bottoms for Aquaculture which ends on September 7, 2015. If this lease is amended or a new lease is issued by the Humboldt Bay Harbor, Recreation, and Conservation District, an~~

~~application for a permit amendment may be submitted to request an extension of the permit term.~~

5. Salmon and Smelt Predation Assessment.

a. PRIOR TO PERMIT ISSUANCE, Coast shall submit for Executive Director review and approval a Juvenile Salmon and Longfin Smelt Predation Assessment Plan that is based on the Pacific Northwest National Laboratory's *Field Protocol for Assessment of Predation Risk to Juvenile Salmonids* (Exhibit 4) and includes the use of DIDSON acoustic camera surveys, underwater video surveys, or diver surveys, as well as hook and line sampling of fish predators and stomach content analyses of captured fish. Once approved, the Juvenile Salmon and Longfin Smelt Predation Assessment Plan shall be implemented by Coast and both interim and final results shall be submitted to the Executive Director. Interim results shall include sampling date, a description of sampling method used, data collected, and a summary of observations and shall be submitted within 10 days of the completion of each sampling event. Final results shall include all recorded data and observations from previous sampling events as well as a summary of all sampling events and methods used and shall be submitted within 30 days of completion of the final sampling event.

b. If the Executive Director determines that the results of the predation assessment demonstrate that fish species known to prey on juvenile salmon or longfin smelt are consistently present below the cultivation rafts, Coast shall within 90 day of that determination submit an application for a permit amendment to (1) temporarily remove the rafts during the season of peak juvenile salmon and longfin smelt abundance in the project area; (2) temporarily or permanently relocate the rafts to an area shown not to support juvenile salmon or longfin smelt; (3) install fish exclusion devices such as mesh netting on all of the clam cultivation rafts; or (4) otherwise modify the configuration, design, or location of the rafts to minimize attraction of fish species known to prey on juvenile salmon or longfin smelt. A permit amendment application for the installation of fish exclusion devices on the clam cultivation rafts shall also include a Fish Exclusion Effectiveness Monitoring Program.

6. Installation Location. No clam cultivation raft shall be installed south of the southernmost clam cultivation raft in the existing Coast raft array.

7. Maintenance Cleaning. All maintenance cleaning operations of the raft structures, raft floats, racks, and well infrastructure (not including clam cultivation trays) shall be carried out onshore. All biofouling organisms and biological materials removed during these cleaning operations shall be collected and disposed at an appropriate upland facility. No discharge of untreated wash water or biofouling materials into Humboldt Bay shall occur during maintenance cleaning operations.

8. Marine Wildlife. If any marine mammals or more than ten pelicans and/or cormorants are observed on one of Coast's clam cultivation rafts for more than two weeks, Coast shall within 10 days notify the Executive Director and within 30 days of such notification to the Executive Director, submit, for review and approval, a plan to install passive deterrent devices (such as exclusionary fencing or netting) to prevent future use of the clam cultivation rafts by marine mammals or seabirds. Coast shall install the passive deterrent devices and maintain them as approved by the Executive Director.

9. **Intake System Design.** All intake systems used to supply water from Arcata Bay for maintenance cleaning and clam tray washing shall be designed with a screened intake with ~~mesh openings of no more than 3/32 inches and a maximum intake water velocity of 0.33 feet per second.~~ (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, 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.

SPECIAL CONDITIONS OF E-06-003-A5

1. **Title Transfer**. Within one year of the issuance of this permit, the applicant shall transfer title of 50 acres of its owned tidelands, as depicted in Exhibit 10, to the State Lands Commission, the Humboldt Bay Harbor, Recreation and Conservation District, or the City of Arcata. The conveyance document shall be submitted to the Executive Director for review and approval, and shall clearly state that the tidelands so granted shall be protected from development in perpetuity. The conveyance shall be made free of prior liens or encumbrances that the Executive Director and/or the grantee determine may affect the validity and effectiveness of the conveyance. If the applicant is unable to transfer title to one of the three entities listed, the applicant shall apply for an amendment to this permit from the Commission.

2. **Planting Location**. No activity authorized by this permit, except for oyster culture activities located at the plots identified on Exhibit 2 as EB 1-1, EB 1-2, EB 2-1, EB 2-3, EB 2-3 Cont., EB R&B, EB 4-3, EB 6-1, EB 6-2, and EB 6-3, as well as EB 7-2 as specified below, shall be sited in any known or historic eelgrass habitat within Coast's East Bay Management Area (as identified on Exhibit 2). Future plantings in plot EB 7-2 shall not exceed a total of 11.5 acres.

Prior to planting any oyster culture outside those areas actually in production as of the date of submittal of this permit application (January 31, 2006), the applicant shall submit to the Executive Director for review and approval a planting plan that identifies the nature (i.e, rack-and-bag or long-line) and the location (identified by plot name) of the proposed plantings.

3. **Herring Spawn**. During the months of December, January and February, Coast shall visually inspect beds prior to planting and/or harvesting, to determine if Pacific herring (*Clupea pallasi*) has spawned on eelgrass, culture materials, or substrate. Visual inspections shall be conducted in accordance with the survey protocols developed by the California Department of Fish and Wildlife (CDFW). In addition, at the beginning of the three month herring spawning period, Coast shall provide staff of the CDFW Eureka Marine Region office a schedule of planting and/or harvesting activities anticipated to occur during the

period. Further, Coast shall inform CDFW Eureka office staff with the proposed location of planned planting and/or harvesting activities no less than 48 hours prior to the activities.

If herring spawning has been recently ~~is~~ observed by Coast or CDFW staff on or in the immediate vicinity of planned planting and/or harvesting activities, Coast shall: 1) postpone ~~for two weeks~~ planting and/or harvesting activities on any culture beds in those areas for two weeks, or until CDFW staff confirm herring eggs have hatched ~~on those beds where spawning has occurred~~, and 2) notify the ~~California Department of Fish and Game ("DFG")~~ CDFW Eureka Marine Region office of the spawn within 24 hours. Coast shall keep records of when CDFW~~G~~ was notified of the spawning event, and those records shall be included with the annual report described below in **Special Condition No. 7**.

4. **Eelgrass Mitigation Funds**. The applicant shall pay to the California Coastal Conservancy the amount of one hundred thousand dollars ($100,000) for the purpose of defraying, in whole or in part, the cost of an anadromous fish habitat enhancement project or projects in the Humboldt Bay watershed. Payment shall be made in four phases: 1) prior to issuance of this permit, the applicant shall pay the Conservancy twenty-five thousand dollars ($25,000), and 2) three subsequent annual payments of twenty-five thousand dollars ($25,000) each shall be made on or before the anniversary of the first payment. The applicant shall prepare a check (or other appropriate vehicle) made out to "State Coastal Conservancy," and shall send that check to the Executive Director of the Coastal Commission for forwarding to the Conservancy.

5. **Feasibility Study**. The applicant shall conduct on areas within the applicant's 300-acre operational footprint that are at an elevation above +1.5 feet MLLW (i.e., at an elevation typically considered unsuitable for eelgrass growth) a study to evaluate the feasibility of culturing oysters on such lands in Humboldt Bay. Prior to planting any oyster culture outside those areas actually in production as of the date of submittal of this permit application (January 31, 2006), the applicant shall submit to the Executive Director for review and approval a methodology for the performance of such a study/evaluation. If no portion, or an insufficient portion (as determined by the study methodology), of the applicant's 300-acre operational footprint contains areas above +1.5 ft MLLW, the applicant shall within two years of the issuance of this permit apply for a coastal development permit to conduct such a study on other such land owned or leased by the applicant.

6. **Permit Term Limit.** This permit shall expire on August 11, 2017 ~~February 10, 2017~~.

7. **Annual Report**. By December 31 of each year, the applicant shall submit to the Executive Director an annual report describing the status of each bed (including harvest date and planting date) within the 300-acre operation footprint. The annual report shall also include information regarding the results of quarterly cleanup events carried out as described in **Special Condition 10**.

8. **Boat Transit**. During maintenance and harvesting of oysters, boat transit areas shall be limited to areas devoid of eelgrass as much as is practicable. To the extent practicable, the applicant's personnel shall use the same areas to moor their boats in order to minimize the amount of propeller scarring in eelgrass habitat.

9. Plot Abandonment or Fallow. WITHIN 30 DAYS OF THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, Coast shall remove all shellfish culture apparatus (including stakes, oysters, and ropes) from the GI 1-2 bed listed as "not planted" on the December 23, 2016, "Bed Status Report" submitted to Commission staff as well as all beds or portions of beds located outside of lands currently owned or leased by Coast. Within one week of completion of this removal work, Coast shall submit photographic documentation that all shellfish culture apparatus has been removed. Within 30 days of harvest on any plot that is being discontinued, abandoned, fallowed, or taken out of production for six months ~~one year~~ or more, the applicant shall remove all oyster culture apparatus from that plot, including but not limited to stakes, racks, baskets, floats, rope, ties, wires, tags and pallets. Coast may replant bed GI 1-2 at a future date once the existing culture apparatus at that location has been fully removed.

10. Marine Debris Reduction and Management. Coast shall carry out operations consistent with the following marine debris reduction and management practices:

A. **Storm Damage and Debris**. As soon as safely possible following storm or severe wind or weather events, Coast shall patrol all active mariculture areas for escaped or damaged mariculture equipment. All equipment that cannot be repaired and placed back into service shall be properly recycled or disposed of at an appropriate onshore facility. In addition, Coast shall retrieve or repair any escaped or damaged mariculture equipment that it encounters while conducting routine daily and/or monthly maintenance activities associated with shellfish culture (e.g. bed inspections, shellfish grading and sorting). If the escaped gear cannot be repaired and replaced on the shellfish bed, it shall be properly recycled or disposed of on land.

B. **Gear Marking.** Coast shall mark shellfish culture bags, baskets, and basket label tags in an easily identifiable manner with its company name or other identification information. Markings shall be securely attached and robust enough to remain attached and legible after an extended period in the marine environment (e.g. heat transfer, hot stamp, etching, etc.). Existing culture bags, baskets, and basket label tags currently in use in culture beds shall be marked or replaced with marked versions when replanted and all unmarked gear shall be replaced in this way within 24 months. In the event that shellfish culture gear or equipment becomes dislodged from culture beds, it shall be Coast's responsibility to retrieve the material from the shoreline, eelgrass beds, mudflat, or submerged bottom with minimal damage to the resources affected. Such material shall be removed and properly disposed of, recycled, or returned to use.

C. **Marine Debris Reduction Training.** Coast shall implement annual employee training regarding marine debris issues and how to identify loose culture gear and proper gear repair and removal methods. Particular focus shall be placed on management and maintenance practices to reduce the loss of any gear type consistently found during bay cleanup and inspection activities. During trainings, Coast employees shall be encouraged to consider and implement field and management practices that reduce the amount of small plastic gear (such as zip-ties, tags and fasteners) and non-biodegradable material (such as PVC stakes and nylon or polypropylene rope) used in its operations.

D. **Cleanup Events.** Coast shall conduct quarterly baywide cleanups in coordination with other interested parties or organizations, which shall include walking different portions of the bay and shorelines to pick up escaped shellfish gear and other trash (regardless of whether it is generated by the Project). The volume and type of shellfish gear collected and the cleanup location (marked on a map) and duration of cleanup activity shall be recorded and documented in the annual report submitted to the Executive Director of the Commission. If consistent discoveries of certain gear types are made during cleanup events by Coast or the public, Coast shall evaluate (and if feasible, implement use of) alternative gear types or practices that would reduce these consistent sources of debris.

E. **Ongoing Operations.** Coast shall not leave or temporarily store tools, loose gear, or construction materials on its owned or leased tidelands or surrounding areas. All aquaculture gear installed in active culture beds shall be kept neat and secure and maintained in functional condition. Coast shall carry out regular bed inspections and maintenance activities to help ensure that broken, collapsed, fallen, or buried gear is fixed or removed in a timely manner.

11. **Cultivation Bed Mapping and Marking.** WITHIN 30 DAYS OF THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, Coast shall submit for Executive Director review and approval, a Cultivation Bed Mapping and Marking Plan. This plan shall include a consistent, standardized method of marking the location of Coast's growing areas and culture beds in a manner that is obvious, identifiable, and understandable by boaters and recreational users not familiar with Coast's operation. Unless a more effective approach can be developed by Coast and approved by the Executive Director, the plan shall include the use of uniform marking stakes or posts that (1) remain visible and above water during maximum tidal heights; (2) are topped with reflective material; (3) identify the side of the stake on which the culture bed is located; and (4) are placed every 200-feet along the outer sides and at each corner of each of Coast's active culture beds. In addition, the plan shall include a method for Coast to develop, consistently update, and distribute digital and hard copy maps of Arcata Bay showing the location of its rafts and culture beds.

12. **Brant Hunting.** Except for emergency situations, activities to ensure the safety of its operations or operations required for regulatory compliance, such as marine debris cleanup response after storm events, Coast shall avoid operations in the area labeled as "Hunting Avoidance" in **Exhibit 7** from an hour before sunrise until sunset on days designated by the California Department of Fish and Wildlife as brant hunting days, including season opening and closing days (typically brant hunting is limited to Wednesdays, Saturdays, and Sundays between November 15 and December 15).

13. **Sand Island Protection.** Between the months of April and August, Coast shall carry out the minimum possible operations on the culture bed referred to in the December 23, 2016 "Annual Report for CDP E-06-003" submitted to the Executive Director as SI N k, SI-N, or Sand Island-North. Once the growth cycle for oysters on this culture bed is complete, the bed shall be harvested, not replanted, and all cultivation gear and equipment, including all stakes, posts, lines, ropes, tags, wires, and fasteners, shall be permanently removed.

14. **Longline Spacing.** WITHIN 30 DAYS OF THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, Coast shall submit, for Executive Director review and approval, a plan and schedule for the conversion, within 12 months, of all of its cultivation beds with 2.5-foot spacing throughout (including those culture bed referred to in the December 23, 2016 "Annual Report for CDP E-06-003" submitted to the Executive Director as BI N k, BI S k, BI W k, EB 2-3, EB 4-3, EB 7-2, MR 10, MR 11, MR 2, MR 5-1 k, MR 5-2, MR 8-2, and MR 9) to a configuration that includes a five foot wide channel between each group of five lines and a ten foot wide channel between the end of one 100-foot line and the beginning of the next line, as represented in the diagram included in **Exhibit 5**.

15. **Wildlife Disturbance.** During vessel transit, harvest, maintenance, inspection, and plating operations, Coast shall avoid intentionally approaching, chasing, flushing, or directly disturbing shorebirds, waterfowl, seabirds, or marine mammals.

16. **Cultural Resources Point of Contact**. Coast shall designate an authorized point of contact (Cultural Resources POC) to be used in the event any cultural or archaeological resource, human remains, or Native American grave goods are discovered during its aquaculture operations. WITHIN TWO WEEKS OF PERMIT ISSUANCE, Coast shall provide the name and contact information for this Cultural Resources POC to the Executive Director, staff of the Humboldt Bay Harbor, Recreation, and Harbor District (Harbor District), and the Tribal Historic Preservation Officers (THPOs) appointed by the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria and Wiyot Tribe.

17. **Cultural Resource Discovery Protocols**. In the event an archaeological resource is discovered during ground-disturbing activities, Coast shall immediately notify the THPOs appointed by the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria and Wiyot Tribe. As soon as feasible after such a discovery, Coast shall retain a qualified archaeologist with local experience to consult with Commission staff, the Harbor District, the three THPOs, Coast, and other applicable regulatory agencies to employ best practices for assessing the significance of the find, developing and implementing a mitigation plan if avoidance is not feasible, and reporting in accordance with this Special Condition and Harbor District Protocol. If no such discovery is made, no reporting is required. In addition:

A. Ground-disturbing activities shall be immediately stopped if potentially significant historic or archaeological materials are discovered. Examples include, but are not limited to, concentrations of historic artifacts (e.g., bottles, ceramics) or prehistoric artifacts (chipped chert or obsidian, arrow points, groundstone mortars and pestles), culturally altered ash-stained midden soils associated with pre-contact Native American habitation sites, concentrations of fire-altered rock and/or burned or charred organic materials, and historic structure remains such as stone-lined building foundations, wells or privy pits. Ground-disturbing aquaculture operations may continue in other areas outside the discovery locale.
B. As soon as feasible after a discovery, Coast shall establish (e.g., tape off or mark with stakes) an "exclusion zone" where unauthorized equipment and personnel are not permitted around the discovery area and a 100-foot buffer zone.

C. Coast shall secure (e.g., provide 24-hour surveillance) the discovery locale if directed to do so by the Harbor District or Executive Director, if either deems it necessary to avoid further disturbances.

D. Coast's plant manager (located at 25 Waterfront Drive in Eureka) or party who made the discovery and initiated these protocols shall be responsible for immediately contacting by telephone the parties listed below to report the find:
   a. Commission staff;
   b. The Harbor District's authorized point of contact; and
   c. Coast's Cultural Resources POC

E. Upon learning about a discovery, Coast's Cultural Resources POC shall be responsible for immediately contacting by telephone the POCs listed below to initiate the consultation process for its treatment and disposition:
   a. THPOs with Blue Lake Rancheria, Bear River Band and Wiyot Tribe; and
   b. Other applicable agencies involved in Project permitting (e.g., U.S. Army Corps of Engineers, etc.).

F. In cases where a known or suspected Native American burial or human remains are uncovered, Coast's Cultural Resources POC shall also immediately notify the Humboldt County Coroner (707-445-7242), along with the property owner of the discovery site. In addition, the protocols established through **Special Condition 18** shall be followed.

G. Ground-disturbing project operations at the find locality shall be suspended temporarily while the Executive Director, the Harbor District, the three THPOs, a consulting archaeologist and other applicable parties consult about appropriate treatment and disposition of the find. Based on this consultation, Coast shall, within three working days of discovery notification, prepare a Treatment Plan and submit it for review and approval by the Executive Director, the Harbor District, and the three THPOs. Where the Project can be modified to avoid disturbing the discovery site (e.g., through project redesign), the Treatment Plan shall consider this as a preferred option. Should human remains be encountered, the provisions of State laws shall apply and **Special Condition 18** shall be followed. The Treatment Plan shall reference appropriate laws and include provisions for analyses, reporting, and final disposition of data recovery documentation and any collected artifacts or other archaeological constituents. If feasible, the field phase of the Treatment Plan shall be accomplished within five days after its approval (with the understanding that circumstances may require longer periods for data recovery).

H. Any and all inadvertent discoveries shall be considered strictly confidential, with information about their location and nature being disclosed only to those with a need to know. The Commission's and Harbor District's authorized representatives shall be responsible for coordinating any requests by or contacts to the media about a discovery.

I. Coast shall immediately communicate these protocols to its field work force (including contractors, employees, officers and agents), and such communications shall be made and documented at safety briefings.

J. Ground-disturbing work at a discovery locale may not be resumed until authorized in writing by the Executive Director and Harbor District.

K. The plant manager or party who made the discovery and initiated these protocols, shall make written notes available to the Executive Director and Harbor District describing: the circumstances, date, time, location and nature of the discovery; date and time each point of contact was informed about the discovery; and when and how security measures were implemented.

L. Treatment Plans and corresponding Data Recovery Reports shall be authored by professionals who meet the Federal criteria for Principal Investigator Archaeologist and reference the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48 Fed. Reg. 44734-44737).

M. Final disposition of all collected archaeological materials shall be documented in a final Data Recovery report and its disposition determined in consultation with Tribal representatives.

N. Coast shall file Final Data Recovery Reports, along with updated confidential, standard California site record forms (DPR 523 series), at the Northwest Information Center of the California Historical Resources Information System, with report copies provided to the three identified THPOs.

18. Discovery of Remains. In the event human remains or Native American grave goods are discovered during ground-disturbing activities, work at the discovery locale shall be halted immediately, Commission staff, the Harbor District and County Coroner shall be contacted, and, consistent with State law, the following protocol shall be followed (in addition to the protocol described under **Special Condition 17**).

A. If human remains are encountered, they shall be treated with dignity and respect. Discovery of Native American remains is a very sensitive issue and serious concern of affiliated Native Americans. Information about such a discovery shall be held in confidence by all Project personnel on a need-to-know basis. The rights of Native Americans to practice ceremonial observances on sites, in labs and around artifacts shall be upheld.

B. Violators of Section 7050.5 of the California Health and Safety Code may be subject to prosecution to the full extent of applicable law (felony offense).

C. In addition, the provisions of California law (Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code) shall be followed:

a. The Coroner has two working days to examine the remains after being notified of the discovery. If the remains are Native American, the Coroner has 24 hours to notify the NAHC in Sacramento at (916) 653-4082.

b. The NAHC is responsible for identifying and immediately notifying the most likely descendant (MLD) of the deceased Native American.

c. Within 48 hours of their notification by the NAHC, the MLD shall be granted permission by the property owner of the discovery locale to inspect the discovery site if the MLD so chooses.

d. Within 48 hours of their notification by the NAHC, the MLD may recommend to the owner of the property (discovery site) the means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The recommendation may include the scientific removal and non-destructive or destructive analysis of human remains and items associated with Native American burials. Only those osteological analyses (if any) recommended by the MLD may be considered and carried out.

Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the property owner rejects the recommendation of the MLD and mediation between the parties by NAHC fails to provide measures acceptable to the property owner, the applicant shall cause the re-burial of the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance.

Appendix B: Substantive File Documents

Coastal Development Permits and Application Materials:

Project File for Coastal Development Permit number E-02-005-A6

Project File for Coastal Development Permit number E-06-003-A5

Project File for Coastal Development Permit number 9-15-1931

Revised Staff Report for Coastal Development Permit number 1-96-69

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E-02-005-A6 and E-06-003-A5 (Coast Seafoods Company)

Exhibit 1 – Location of Clam Cultivation Rafts

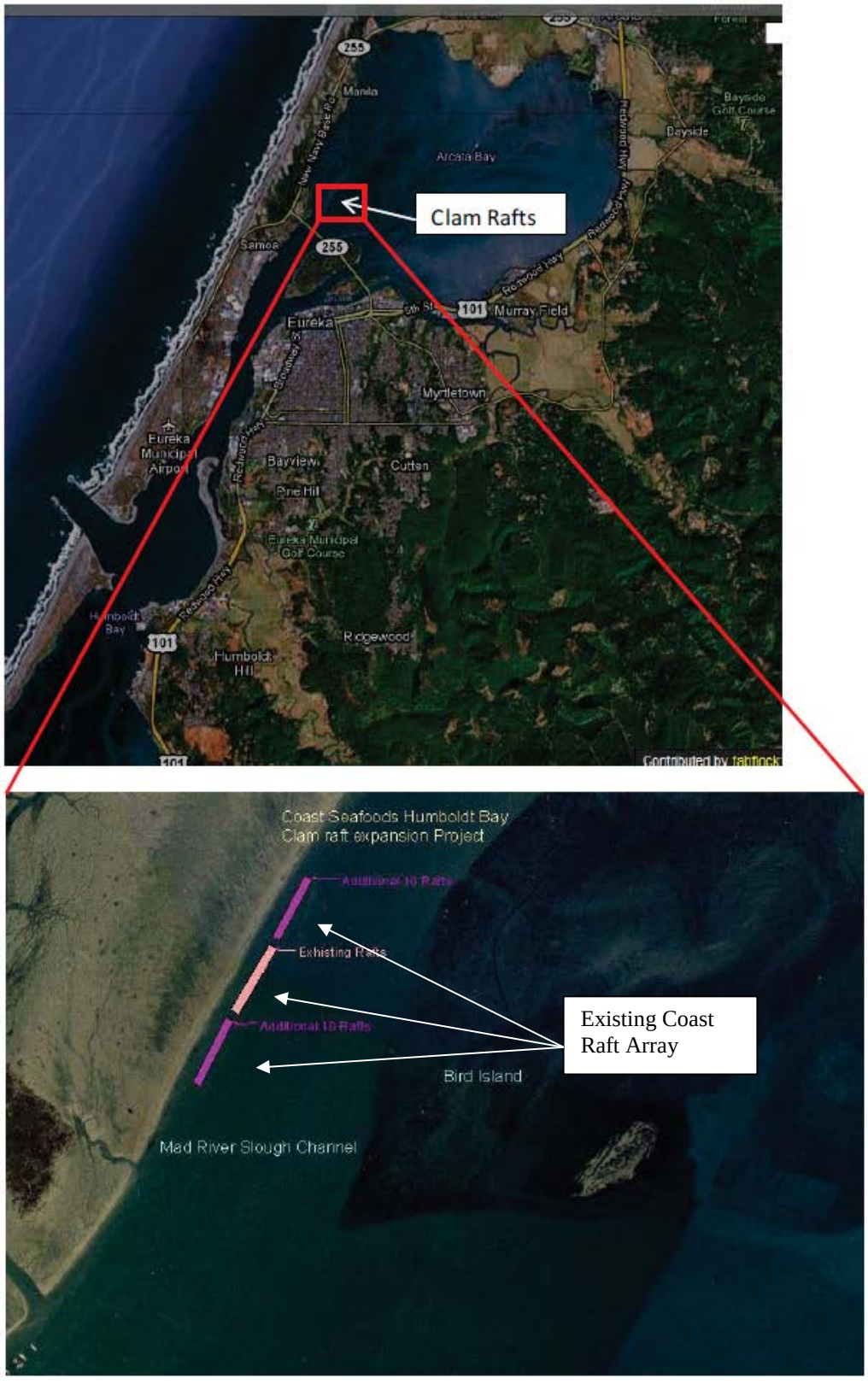

Exhibit 2 – Clam Cultivation Raft Design

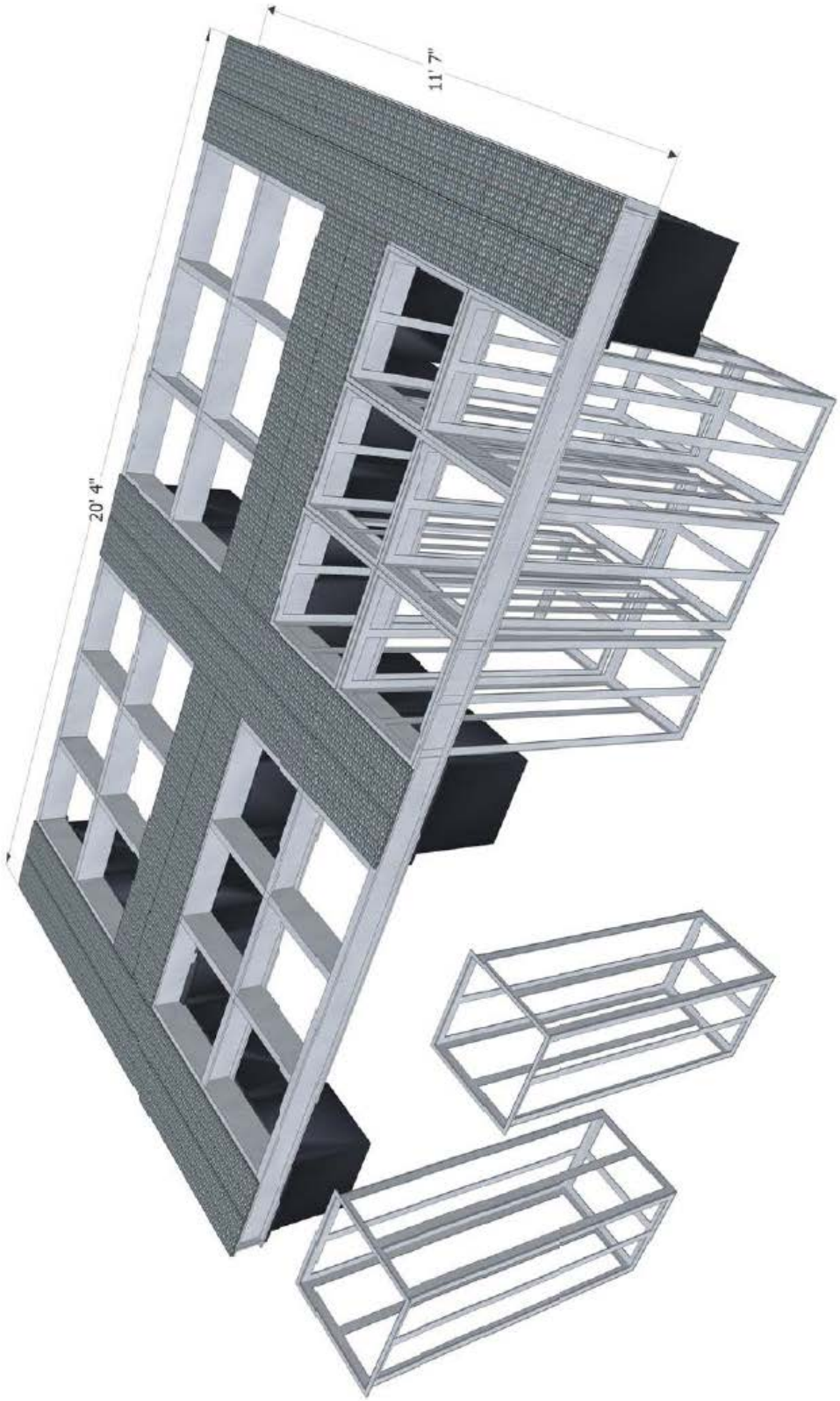

Exhibit 3 - Mooring System Diagram

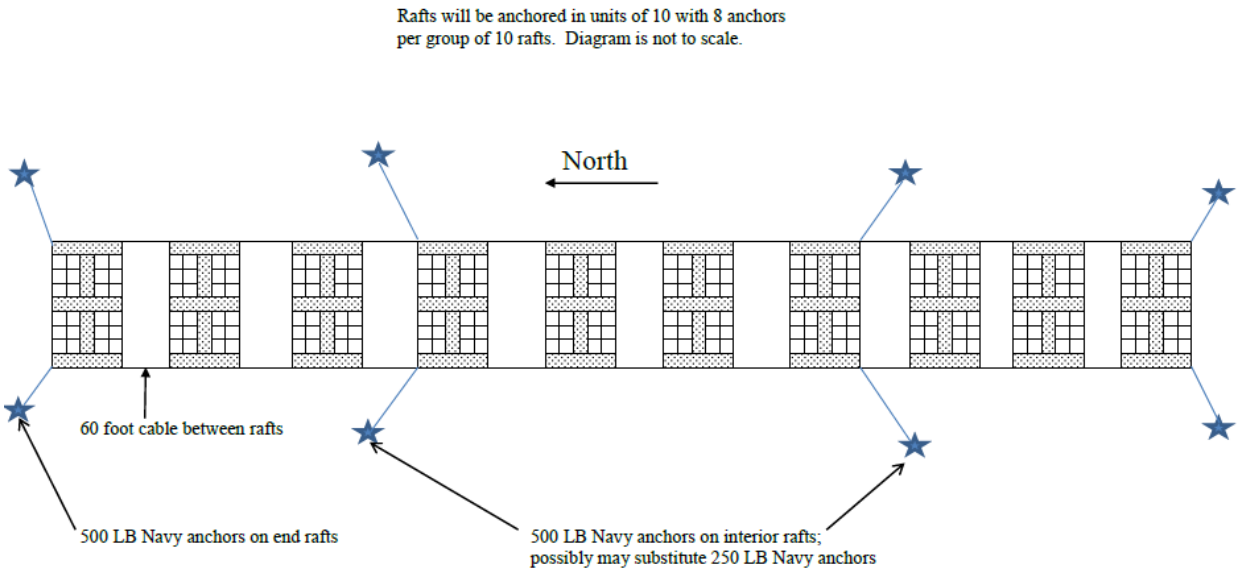

Exhibit 4 – Coast 300 Acre Oyster Cultivation Area

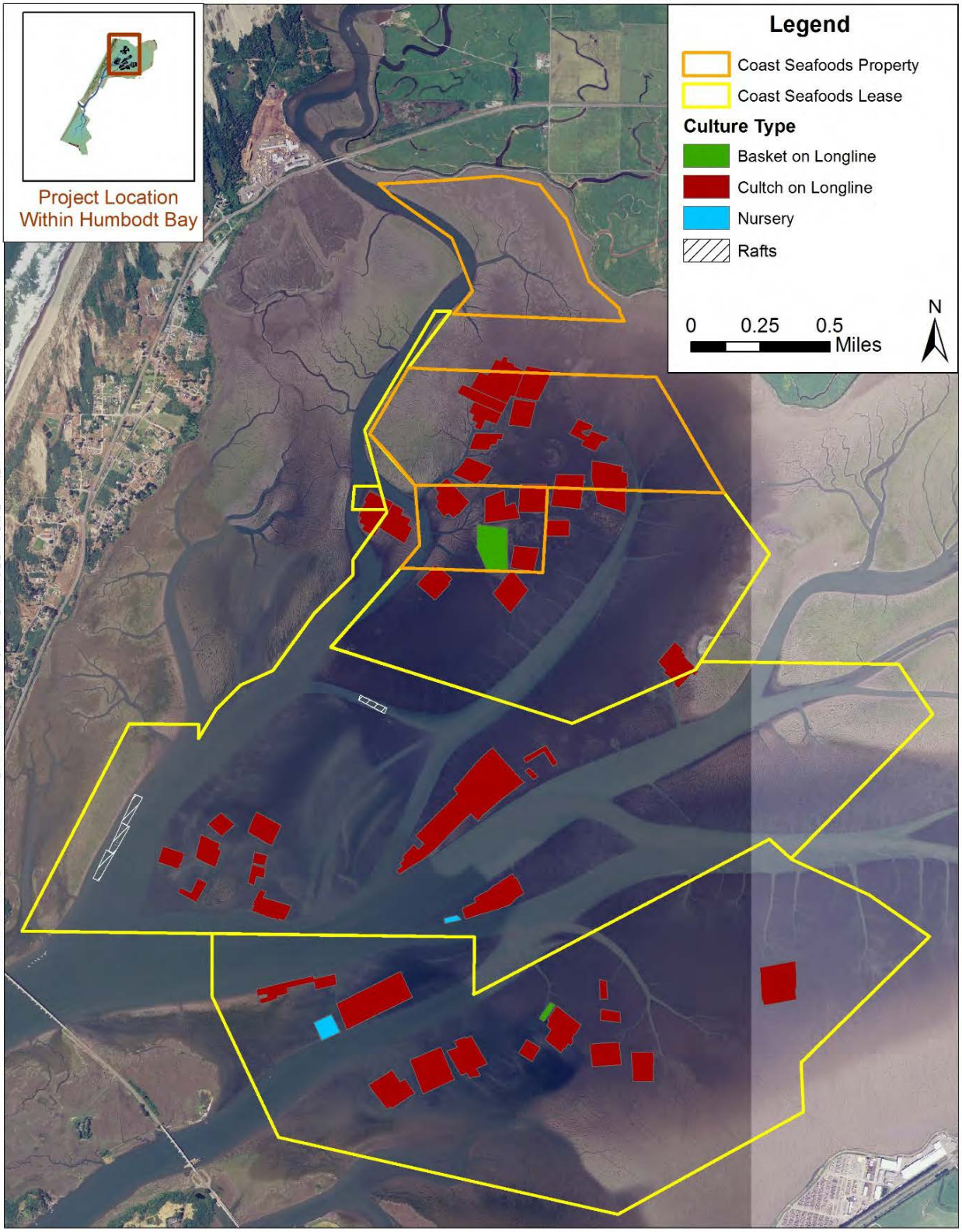

Exhibit 5 – Oyster Longline Cultivation System Design and Line Configuration

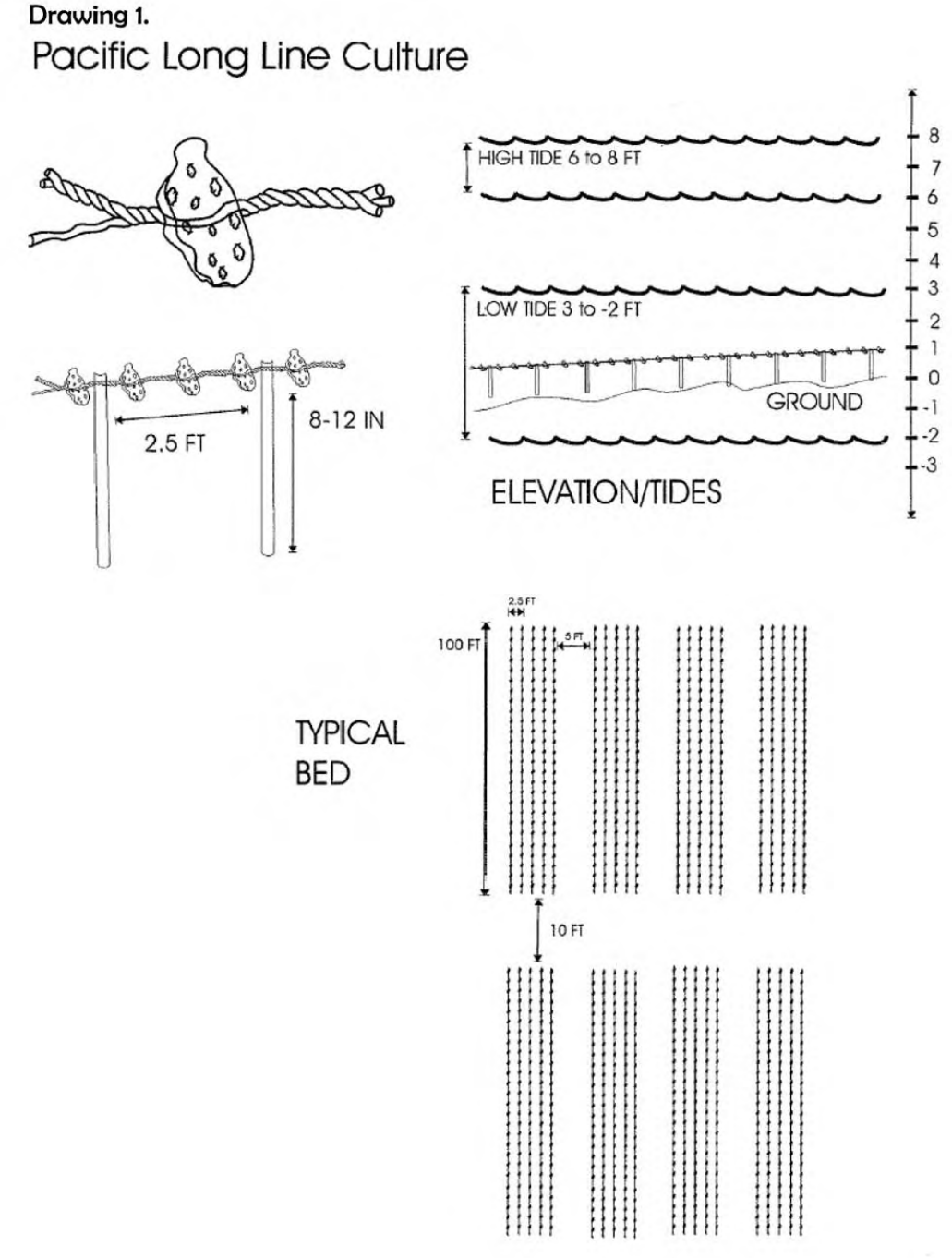

Exhibit 6 – Longlines-with-Baskets Cultivation System Design

Structure (Side View): Lines are held up by 2 inch PVC pipe driven into the mud every 10 feet. Anchors made of galvanized fence posts are driven at the ends of each line. The lines are attached to the anchors and tension is created by a fence tightener. The baskets can be clipped and unclipped from the lines.

Spacing (Top View): Lines are 100 feet long and there are 40 baskets on each line. Lines are in groups of 3, with a 3 foot space between each line and a 20 foot space between each group of 3 lines. The 20 foot space is used to access the baskets with a boat.

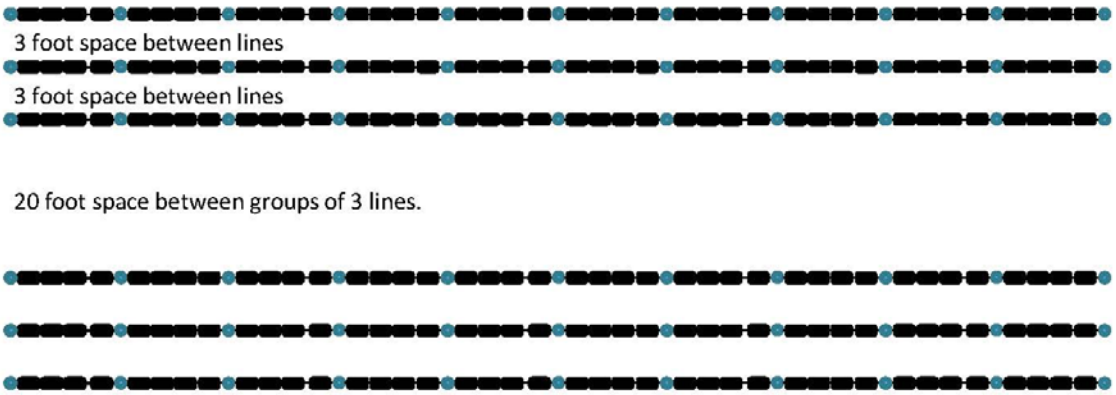

Exhibit 7 – Brant Hunting Season Area of Restricted Operations