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W11a

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STAFF REPORT: REGULAR CALENDAR

Application No.:	**1-21-0653**
Applicant:	**Humboldt Bay Harbor, Recreation, & Conservation District**
Agent:	Vanessa Blodgett, Planwest Partners
Location:	Western shore of Humboldt Bay on the Samoa Peninsula near Samoa at Redwood Marine Terminal II (RMT-II), 364 Vance Ave., with partial mitigation activities at the foot of South Bay Depot Rd., Fields Landing (APN 307-101-002), Humboldt County.
Project Description:	Improve two seawater intake systems and install new screens, pipelines, and other associated infrastructure to provide up to 11.88 million gallons per day (or 8.250 gallons per minute) of water from Humboldt Bay to support aquaculture facilities and other coastal-dependent uses on the RMT-II site, including the planned Nordic Aquafarms project, and provide offsite mitigation at several locations around Humboldt Bay.
Staff Recommendation:	Approval with Conditions

SUMMARY OF STAFF RECOMMENDATION

The Humboldt Bay Harbor, Recreation, and Conservation District ("Harbor District" or "District") is proposing a project that would refurbish two existing seawater intakes within Humboldt Bay and use those intakes to withdrawal Bay water for use by an aquaculture

facility and other potential coastal-dependent uses. The two intakes are within the Bay along the Samoa Peninsula and were formerly used by pulp mills that ended operations in approximately 2008.

The District's proposal involves withdrawing up to 11.8 million gallons of water per day ("MGD") from the Bay in three phases. The first phase, expected to start in 2027, would withdraw up to 5.05 MGD; the second phase, starting in 2032, would withdraw an additional 4.95 MGD; and the third phase starting in 2034, would withdraw an additional 1.88 MGD. The District plans to initially provide water to the proposed Nordic Aquafarm project, which has been approved pursuant to separate CDPs (permitted by Humboldt County in 2022 for the terrestrial components and by the Commission (under CDP 9-20-0488) in November of 2023 for the discharge components) and then provide water to potential additional users.

Along with the proposed seawater withdrawal, the District's proposal includes development in the form of refurbishing the intake structures, adding mesh screens to those intakes, installing water delivery pipelines on upland portions of the project site, and constructing other supporting infrastructure needed to convey seawater to various users on the project site.

The proposed project has the potential to affect several coastal resources through water quality impacts, effects on marine life, and placing fill in coastal waters. The proposal also raises the potential that the project site, which is designated for coastal-dependent uses, might be used for other types of uses. These are all addressed through recommended Special Conditions, as described below.

The project's primary coastal resource effect would result from its withdrawal of water from the Bay and the resulting loss of marine life within that water. Humboldt Bay provides highly productive habitats for a wide variety of marine species, including several special-status species such as the state-listed longfin smelt and several types of salmon. The District's proposed screening systems are designed to avoid or substantially reduce impacts to these listed species, as the screen mesh size and the intake water velocities are expected to essentially eliminate impingement, which occurs when larger marine organisms are trapped or injured on the screens due to the velocity of the water intake. The screening systems are designed to meet criteria established by the National Marine Fisheries Service ("NMFS") and the California Department of Fish and Wildlife ("CDFW") for protection of salmon and longfin smelt. However, the water intake would still result in entrainment of longfin smelt larvae (a sensitive marine species listed as threatened under the state Endangered Species Act) and other smaller marine organisms that would be pulled through the intake along with the water and killed within the intake system.

The District conducted an entrainment study and several analyses meant to identify the project's expected entrainment impacts. Staff's review of the study and analyses show that the loss of marine life productivity each year at the full 11.88 MGD water withdrawal rate would be equal to that produced in about 28.5 acres of various Humboldt Bay habitats. In addition, CDFW separately evaluated the project's adverse effects on

longfin smelt and is currently recommending that the loss due to entrainment of smelt larvae be addressed by the District creating or restoring 5.89 acres of highly productive habitat in the Bay. This would complement Commission staff's recommendation that the overall entrainment of the other species in the Bay be addressed with similar mitigation that would serve as habitat for longfin smelt and a variety of the other marine species.

To address these and other issues and to allow conformity to relevant Coastal Act policies, staff is recommending a number of Special Conditions. **Special Condition 1** would require the District to obtain any necessary approvals from CDFW and the Regional Water Quality Control Board prior to issuance of this CDP. **Special Condition 2** would require the District to provide documentation of approvals needed from the Corps of Engineers and NMFS prior to the start of project construction. **Special Condition 3** would require the District to submit final plans detailing the design of the intakes and project infrastructure and its implementation of several mitigation measures included as part of its project description and CEQA documentation. **Special Condition 4** would require the District to submit a Marine Life Mitigation Plan that includes detailed descriptions of measures to be implemented to fully compensate for the loss of marine life productivity resulting from the project's seawater withdrawals. **Special Condition 5** would require specific measures to be included as part of the District's proposed mitigation measure to remove derelict pilings from a location within Humboldt Bay. **Special Condition 6** would require the District to submit a Water Quality Protection Plan that identifies measures it will implement during construction and through a stormwater management plan to avoid and minimize potential water quality impacts in Humboldt Bay. **Special Condition 7** would require the District to submit a Noise Reduction Plan that ensures noise from the project's pumps do not exceed protective thresholds established by NMFS to prevent harm to marine life. **Special Condition 8** would require that any potential future users of the water supply provided by the project be reviewed and approved by the Executive Director as being coastal-dependent uses. **Special Condition 9** would require the District to implement several monitoring and reporting measures meant to avoid and reduce potential disturbance or impacts to Tribal cultural resources during project construction. **Special Condition 10** would provide a 30-year term of the CDP to ensure that future changes or increased hazards at the project site could be re-evaluated if the District wishes to continue operations for a longer period. **Special Condition 11** would provide that the District assumes liability for site hazards and indemnifies the Commission regarding those hazards. **Special Condition 12** would ensure that the District is responsible for any costs and attorney fees related to legal actions brought by third parties regarding this proposed project.

As described in the proposed Findings below and with the above-referenced Special Conditions, staff recommends the Commission **approve** the proposed project, as conditioned. The motion to implement this recommendation can be found on page 5.

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APPENDICES

EXHIBITS

I. Motion and Resolution

Motion

> I move that the Commission **approve** Coastal Development Permit Application No. 1-21-0653 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 permit 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** the Coastal Development Permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. 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. Standard Conditions

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid, and development shall not commence, until a copy of the permit, signed by the permittee 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 the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. Special Conditions

This permit is granted subject to the following special conditions:

1. **Other State Agency Authorizations**. PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT 1-21-0653, the Permittee shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, or authorizations for the approved project have been granted by the North Coast Regional Water Quality Control Board and the California Department of Fish and Wildlife, or evidence that no such authorizations are required for the project. The Permittee shall inform the Executive Director of any changes to the project required by the NCRWQCB and/or CDFW. Any such changes shall not be incorporated into the project until the Permittee obtains an amendment to this permit, unless the Executive Director determines that no amendment is legally required.

2. **Federal Agency Authorizations**. PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT 1-21-0653, the Permittee shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, authorizations, or consultations for the approved project have been granted by the U.S. Army Corps of Engineers and NOAA-Fisheries, or evidence that no such authorizations/consultations are required for the project. The Permittee shall inform the Executive Director of any changes to the project required by the Corps and/or NOAA-Fisheries. Any such changes shall not be incorporated into the project until the Permittee obtains an amendment to this permit, unless the Executive Director determines that no amendment is legally required.

3. **Final Plans for Water System Infrastructure Improvements**.

   A. NOT LESS THAN 30 DAYS PRIOR COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit for the review and written approval of the Executive Director Final Plans in a full hard copy and electronic set for the water system infrastructure improvements authorized by this CDP. The Final Plans shall be in substantial conformance with the preliminary plans submitted with the CDP application, except as required to be modified by the terms and conditions of this CDP. The Final Plans shall, at a minimum, include and provide for the following:

      1. Water Intake System, Screens, and Maintenance Plans. The final plans for the bay water intake systems at each dock, screens, pumps, and related infrastructure shall substantially conform with the preliminary plans included in the proposed Project Description (**Exhibits 2-4** and as modified by the April 5, 2024 Technical Memorandum prepared by GHD, attached as **Exhibit 8**) and

consistent with the special conditions of this CDP. Screens to be installed on the intake systems shall have a mesh size of no more than 1.0-millimeter and a through-screen water velocity of no more than 0.12 feet per second. The submitted final plan shall describe all cleaning and maintenance activities the Permittee will conduct on the screens and intake systems and the expected timing of those activities. The maintenance activities identified are to ensure that through-screen water velocities remain at or below 0.12 feet per second at all times.

2. Water Pipelines and Related Infrastructure. The final plans for the bay and industrial water pipelines, hydrants, and related infrastructure, including the proposed bridge over the stormwater feature, shall substantially conform with the preliminary plans included in the proposed Project Description and related plans (**Exhibits 2-3**) and consistent with the special conditions of this CDP.
3. Debris Disposal Plans. A final plan for the disposal of excess construction debris and materials including excess fill, vegetated spoils, construction debris, and waste material. The final plan shall include (i) a description of the anticipated excess fill, vegetated spoils, debris, and waste material expected, which shall identify any hazardous materials; (ii) a site plan showing all proposed locations for the temporary stockpiling of construction debris, soils and vegetative spoils, excess materials, and any other debris and waste associated with the authorized work at least 100 feet from coastal wetland and waters; and (iii) a schedule for removal of stockpiled materials from the construction site and identification of all authorized debris disposal sites that will be used for lawful disposal.
4. Construction Areas. Final plans shall specify, including depiction on maps and plans, all construction areas, staging areas, stockpiling areas, and construction access corridors in site plan view. All such areas within which construction activities, staging, and stockpiling are to take place shall be minimized in size to the maximum extent feasible in order to minimize impacts on coastal resources. Vehicle and equipment maintenance shall not occur within 100 feet of Humboldt Bay or wetlands or environmentally sensitive habitat area.
5. Water Quality Protection. The Final Plans shall demonstrate consistency with the final approved water quality protection measures required by **Special Condition 6**.
6. ESHA Protection. The Final Plans shall include appropriate measures and BMPs to ensure that development in areas adjacent to sensitive natural communities (willow thickets and wax myrtle scrub) will not encroach into and will be compatible with the continuance of those habitat areas. Appropriate measures and BMPs shall include those recommended by SHN in its July 19, 2022 letter, including but not limited to, using high visibility temporary construction fencing to protect adjacent ESHA from encroachment by construction equipment and personnel; seeding areas of disturbed soils following construction with a native seed mix composed of species and

genetic material appropriate for the area; using weed-free straw to cover exposed soils; installing weed-free fiber rolls, straw-wattles, coir logs, silt fences, and/or other effective devices along locations where water drains off the construction site; and storing hazardous materials a minimum of 100 feet from any wetland or ESHA.

7. Eelgrass Protection. The Final Plans shall include a plan showing that all authorized activities and associated structures or infrastructure around Red Tank Dock shall remain a minimum of 30-feet away from the outside edge of any eelgrass bed within or adjacent to the intake site. The Final Eelgrass Protection Plan shall include a map of all eelgrass in the immediate area and a 50-foot perimeter outside. The map shall be based on the results of an updated eelgrass survey carried out consistent with the timing and methodology guidelines of the National Marine Fisheries Service's California Eelgrass Management Policy and Implementing Guidelines (2014). Areas with depths greater than twice the minimum expected eelgrass growing depth in Humboldt Bay may be excluded from this survey requirement.
8. Other Mitigation Measures. The Final Plans shall include provisions demonstrating that work will be performed consistent with all applicable mitigation measures adopted under the Final Environmental Impact Report (FEIR) for the Samoa Peninsula Land-Based Aquaculture Project dated June 30, 2022 (SCH No. 2021040532), which are attached hereto as **Appendix B**, except as those measures may be modified or supplemented by the terms and conditions of this CDP.

B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is required.

4. Mitigation for Marine Life and Biological Productivity Impacts.

A. PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT 1-21-0653, the Permittee shall provide, for the review and written approval of the Executive Director, a Marine Life Mitigation Plan ("Plan") developed in consultation with the California Department of Fish and Wildlife ("CDFW"), the National Marine Fisheries Service, the Army Corps of Engineers, and the Regional Water Quality Control Board ("Regional Board"). The Plan shall describe the mitigation program the Permittee will implement to fully compensate for the expected **28.5 acres of annual Area of Production Foregone** due to entrainment of marine organisms, including larvae of fish species, various invertebrates, and most planktonic organisms resulting from the Project's intake of seawater and estuarine waters. **The plan shall include all necessary details, as described below, sufficient to implement the compensatory mitigation for no less than the impacts associated with Phase 1 extraction (i.e. 12.1 acres, representing 43% of total impacts)**, and shall additionally ensure consistency with the following:

1. Future phases: As corresponds to the remaining two phases planned for seawater extraction, detailed mitigation plans as required herein may be provided as they are developed but shall be required no less than 180 days prior to scheduled extraction increases, for Executive Director's review and approval. For impacts associated with the Phase 2 extraction estimated to commence in 2032, this shall apply to no less than the additional 11.9 acres (for a total of 24.0 acres), and for the Phase 3 extraction estimated to commence in 2034, to any remainder of the total 28.5 acres.
2. Mitigation activities and ratios: The following activities may qualify towards the 28.5-acre annual Area of Production Foregone mitigation requirement as described herein:
    a. Habitat creation and substantial restoration shall be credited at no more than 1:3 where provided primarily within unstructured habitats and 1:4 where provided primarily within structured habitats. Mitigation should generally be credited holistically, where the overall nature of work in a specific area is considered rather than an itemization of individual actions within that area (e.g., the sum of channelized areas created, materials removed, active revegetation, etc.) and relate to the significance of habitat improvement for affected resources, consistent with indicator species' habitat associations.
    b. Derelict piling removal mitigation shall be credited at no more than 1:1 for the above-ground surface area occupied by the material removed (i.e., this does not provide for the space surrounding or between individual pilings but only from the Bay floor directly occupied to the upmost extent of structure, representing that which would otherwise be available to marine organisms and/or contributes to shading of the seafloor). Under this CDP, the proposed piling removal at Fields Landing/Kramer Dock, as described in the Technical Memorandum from GHD to the Humboldt Bay Harbor District for *Offsite Mitigation Opportunities for APF* (dated 8/12/2023) may be authorized following finalization of details as consistent with this condition and shall be credited as provided in this condition. If other derelict piling removal is proposed, it shall be subject to the same requirements and crediting and would be considered per (g) below. Mitigation measures specified in **Special Condition 6** shall apply.
    c. Up to 15% of the total impact acreage (i.e. up to 4.275 acres) may be mitigated for via *Spartina densiflora* eradication where no other restoration activity is implemented (e.g., active revegetation), and *Spartina* constitutes at least 26% of the relative vegetation cover. Where relative cover is 26-60%, a 1:1.7 ratio may be credited. Where relative cover is 61-100% cover, a ratio of 1:3.2 may be credited. For any *Spartina* eradication, removal shall be sited where it is complete over a discrete area and the ongoing threat of reinvasion is manageable. The *Spartina* eradication site(s) shall be monitored and maintained for the life of the approved development with the financial support of a non-wasting endowment. *Spartina* eradication shall be undertaken pursuant to the conditions of

Coastal Development Permit 1-14-0249 issued to the Humboldt Bay Harbor District in June of 2015 and with mitigation measures in the Final Programmatic Environmental Impact Report adopted for the Humboldt Bay Regional Spartina Eradication Plan (dated March 21, 2013) including, but not limited to Mitigation Measures WQ-3, WQ-6, WQ-7, and HHM-2. The *Spartina* eradication mitigation authorized under this condition must be additional to the area of *Spartina* eradication approved under any of the prior approvals and must be separately authorized under a subsequent CDP.

d. All compensating mitigation other than *Spartina* eradication, which is addressed above, shall be maintained for no less than the number of years the subject intake is in operation.

e. Activities generally not considered appropriate for mitigation credit shall include deed restrictions, living shorelines, water quality enhancements such as stormwater treatment or the exclusion of cattle from creeks and riparian areas within the lower watershed, and the removal of marine debris other than derelict pilings, as discussed in (a) above from within the bay and surrounding estuaries, unless supported by a strong ecological rationale and approved by the Executive Director, and may require a permit amendment, if so determined by the Executive Director.

f. Any activities that would occur as part of other future development or would be impacted by such development, including the removal of derelict pilings at Fields Landing/Kramer Dock to support future barge landing as indicated in **Exhibit 5** (page 14 of 18), shall not be considered for compensatory mitigation credit.

g. Other than the Fields Landing/Kramer Dock derelict piling removal, all mitigation activities, including any *Spartina* removal and any restoration at Bay Street as preliminarily proposed in the Technical Memorandum from GHD to the Humboldt Bay Harbor District for *Offsite Mitigation Opportunities for APF* dated 10/12/2023 (**Exhibit 7**), shall require separate authorization, either as an amendment to this permit or as a new permit, as determined appropriate by the Executive Director.

3. Plan objectives: The Plan shall include clear statements of the overall mitigation goals and objectives consistent with the terms of this condition, including a summary of how the program of proposed activities will fully account for the required acreage to replace lost productivity, including to the benefit of the state listed threatened Longfin Smelt (*Spirinchus thaleichthys*), the prey bases for state and federally listed juvenile salmonids, and the mosaic of marine and estuarine ecosystems affected by the Project.

4. Mitigation site(s): The Plan shall identify one or more mitigation sites that are available to the Applicant for mitigation use that will provide creation or substantial restoration of at least 5.8 acres of estuarine and/or marine habitat in addition to other potential enhancements. The site(s) shall also include suitable buffers and other site controls to ensure the site(s) can fully support

the expected estuarine and/or marine habitat functions and values into the future. The site(s) shall be located within or adjacent to estuarine areas of Humboldt Bay.

5. Site characteristics and baseline assessment: For each site, the Plan shall describe the size, existing uses and habitat types, surrounding uses, locations and elevations of the proposed mitigation site(s) relative to other estuarine and/or marine resources, and shall note the presence of any listed or sensitive species on the site(s). The Plan shall also include a baseline assessment of the current physical and ecological conditions of the proposed mitigation site(s), and a description of historical conditions that can inform restoration design. Maps depicting the various resources presently on the ground shall be provided.
6. Creation/Restoration goals: For each site, the Plan shall include a description of the creation/restoration goals and objectives supported by a technical rationale. Goals may include as appropriate proposed changes to existing habitat types, hydrology, vegetation, and the presence or abundance of sensitive species and wildlife support functions. The regional landscape and habitat connectivity, sea level rise and other climatic variables, and future conditions affecting ecological processes at the site(s) shall also be considered and discussed as support for the restoration goals. Maps depicting the intended creation/restoration areas and features shall be provided.
7. Creation/restoration design: For each site, the Plan shall describe the proposed mitigation design, as informed by historical data, reference site(s), and/or other supporting technical rationales. This shall include: all proposed habitat types to be created or restored; any spatial or temporal phasing that may be necessary; site preparation, including any salvage of live (or dormant) flora and fauna, demolition or removal of existing development, invasive species abatement, grading or landform alteration needed to ensure the mitigation functions as proposed, and any soil amendment; feature installations intended to support specific resources or functions (e.g., side channels for tidal refuge); revegetation plans including planting palettes and design details, details on the origin of any source materials, and if any, irrigation plans; and buffers to be provided to protect all intended mitigation functions. The design shall include any proposed modifications to existing estuarine, marine, or other sensitive habitat at the site(s) and shall ensure there is no net loss of any such habitat due to the mitigation project. The Plan shall be supported by an analysis of coastal hazards at the site(s), including those resulting from projected sea level rise, and the Plan shall describe those hazards and the measures incorporated into the creation/restoration design to avoid, minimize, or respond to these hazards in a manner that will allow the type and amount of required habitat functions and values to be resilient.
8. Evidence of sufficient property interest to perform mitigation work: The final plan shall include evidence, for each proposed mitigation site, that the

permittee has obtained sufficient property interests in the site(s) to be able to perform the proposed mitigation and subsequent monitoring and maintenance of the mitigation areas as conditioned herein. Such evidence may include an option to buy, amended purchase agreement, or other similar legal instrument.

9. Site management and long-term maintenance: For each site, the Plan shall describe all management and maintenance measures necessary to implement and maintain the mitigation area(s) over the long-term. Where the mitigation implementation would be abbreviated in its duration such as with piling removal (e.g., at Fields Landing/Kramer Dock), long-term maintenance and site management may not be necessary.

10. Performance criteria: The Plan shall identify interim and final performance criteria (primarily quantitative in nature, whether fixed or relative measures) for evaluation of mitigation success at each site, specific for each type of habitat created or restored. Each performance criterion shall be supported by a clear technical rationale and the empirical basis for their selection shall be provided. The criteria shall address, as appropriate, performance standards for hydrology, habitat areas, vegetation, and wildlife. Methods for performance assessment shall be specified, including, as appropriate, statistical tests, minimum effect sizes, minimum statistical power, and the alpha levels at which tests will be conducted. Regression models or other multivariate analyses may be proposed, as appropriate.

11. Monitoring and reporting: For piling removal at Fields Landing/Kramer Dock, see **Special Condition 5**. For all other sites, the Plan shall identify proposed sampling and/or censusing methods for monitoring restoration performance relative to approved criteria and assessment methods. The initial monitoring phase shall be conducted at least annually for a minimum of five years. Individual year and cumulative monitoring results and assessment of performance criteria shall be included in an annual report submitted to the Executive Director, for review and approval. Upon achieving performance criteria for the minimum term approved, the Permittee may propose reduced monitoring and reporting requirements over the long term. Monitoring and reporting obligations shall extend for as many years as the seawater intakes are in operation.

12. Schedule: For each mitigation site, the Plan shall identify reasonably expected timelines for conducting the planning, environmental review, permitting, and construction of the creation/restoration site(s). The schedule is to provide that mitigation be constructed before marine life impacts of each phase of water withdrawal commences, to the maximum extent feasible. If it is not feasible to achieve this timeline, the Plan shall provide an explanation demonstrating good cause for the delay and a proposed strategy to provide appropriate remedial action for the productivity losses that would occur as a result of delayed mitigation implementation before any such impacts may occur. Any proposed delay in mitigation shall be submitted to the Executive

Director for review and approval and may also require an amendment to this permit to allow for adjustment to the mitigation ratio.

13. Legal protections: For each site, the Plan shall identify legal instruments – e.g., purchase, deed restrictions, conservation easements, etc. – that will be developed to ensure protection of the mitigation site(s) for the life of the approved development. Prior to execution and recordation of any legal instruments, the permittee shall submit the legal instruments to the Executive Director for review and approval to ensure that the legal instruments adequately protect the mitigation sites for the life of the approved development.

B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is required.

5. Mitigation Measures for Pile Removal Work.

A. Prior to undertaking any mitigation work involving the removal of piles at the proposed Fields Landing/Kramer Dock site, the permittee shall submit, for the review and written approval of the Executive Director, final site-specific mitigation plans consistent with the following requirements, at a minimum:

1. Final Calculation of Total Structural Surface Area to be Removed. A summary report including a map of the pilings and cross beams intended to be removed as compensatory mitigation for marine life impacts and calculations of the total surface area for all above-ground structure (i.e., this does not provide for the space surrounding or between individual pilings but only the Bay floor directly occupied and that would otherwise be available to marine organisms).

2. Site Constraints. Maps illustrating the bathymetric contours, a delineation of all work areas both in water and on land, known (including historic) eelgrass distributions within the planned work areas and out to no less than 10m beyond these work areas, and any wetlands in upland work areas including minimum buffers to ensure that these would be neither directly nor indirectly disturbed by removal work,

3. Methods and Timing. Specification of the methods for piling removal and a schedule for piling removal that avoids the eelgrass growing season to the extent feasible. If the eelgrass growing season cannot be avoided, provisions for mapping eelgrass within the work areas and out no less than 10m beyond within 60 days prior to the commencement of work, as consistent with the NMFS California Eelgrass Mitigation Policy (CEMP; 2014), shall be required. Barge and tug operations shall ensure a minimum 2-foot draft clearance above the seafloor and the vertical reach of any existing eelgrass to avoid scarring or direct impacts. .

4. Pile Removal Mitigation Measures. Pile removal work shall implement Mitigation Measure HWQ-3 from the Final Environmental Impact Report (FEIR) dated June 30, 2022 for the Samoa Peninsula Land-Based Aquaculture Project (SCH No. 2021040532) except as further modified by this condition.
5. Eelgrass Protection and Monitoring.
    a. Eelgrass protection and monitoring shall be implemented as consistent with the submitted *Eelgrass Protection Plan* provided to the District by SHN (dated April 15, 2022) except as further modified by this condition. The proposed pre-construction surveys that would rely on a combination of drone and ground-based work in and around pile removal work areas and which would be completed within 10 days prior of removal work shall clearly establish fixed photo points covering the entire work area and out no less than 10 meters (m) beyond this, occur during a low tide, and shall be of sufficient resolution to interpret the condition of all areas.
    b. Where feasible and working within 10 m of any existing eelgrass, the use of silt curtains shall be considered to minimize potential turbidity impacts. Entry to areas where eelgrass is present, including to remove piles, recover debris from piling removal, and to cut pilings that cannot be fully removed below the surface shall be limited to the minimum amount necessary to complete the work and shall occur via the least damaging means. Direct contact with eelgrass shall be avoided to the maximum extent feasible and where possible, buffers of no less than 5 m shall be used to insulate eelgrass from indirect impacts. Any activity occurring directly within eelgrass, or its 5-m buffer, shall be clearly documented, including with the date, activity, and proximity to eelgrass on a map.
    c. Mapping of historic and existing eelgrass distributions shall be provided as described above and shall be used to help compare against post-construction conditions, to confirm that eelgrass and it surrounding habitat have not been adversely affected. Post-construction eelgrass surveys consistent with the pre-construction surveys described above shall be completed over the same areas, with the same methods and rigor, and shall document any evidence of disturbance that may be attributable to the piling removal work and shall be provided for review and approval by the Executive Director within 10 days of the completed piling removal.
    d. If adverse effects are determined to have occurred, the District shall be required to complete a full survey consistent with CEMP within 30 days post-removal and further consult with NMFS, CDFW, and the Commission to evaluate whether additional mitigating actions shall be required to compensate for any losses that would be sustained through the following growing season. If sustained losses are determined to be

likely, the District shall prepare a plan to remediate these, which may include longer-term monitoring of the area where piles were removed to document expansion of eelgrass into the recovered area and shall submit the plan for an amendment to this CDP.

6. Reporting Requirements for Pile Removal Work. Within 60 days of the conclusion of pile removal, a final report shall be submitted to the Executive Director, for review and approval. The report shall include all before and after imagery per subpart (A)(3) above; documentation of the final number and diameters of piles removed, their locations, and indication of any instances where individual piles were not fully removed but instead cut beneath the sediment surface and at what depth; details on any adaptive actions that were necessarily taken; and documentation of all locations where debris was taken for legal disposal at a licensed facility capable of receiving the debris,

B. The permittee shall undertake mitigation work in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is required.

6. Final Water Quality Protection Plans for Water System Infrastructure Improvements. The permittee shall adhere to a suite of water quality protection standards, measures, and plans during construction of the water intake project in compliance with final mitigation measures required by Humboldt County in its approval of the final Environmental Impact Report for the Samoa Peninsula Land-Based Aquaculture Project (FEIR approved in 2022), including, but not limited to, Mitigation Measures GEO-2, HWQ-1, HWQ-2, HAZ-1, and AIR-2, except as modified or supplemented herein. Final water quality protection requirements may be integrated into and implemented under a final approved construction Stormwater Pollution Prevention Plan (SWPPP) and/or General Construction Stormwater Permit as applicable, but in any case, final measures shall include the minimum provisions outlined below. Submittal of a final SWPPP and/or General Construction Stormwater Permit shall be accompanied by written confirmation by the applicant that the plan includes all mitigation measures required in the FEIR and complies with all terms and conditions of this CDP, including the requirements listed below.

A. **AT LEAST ONE MONTH PRIOR TO COMMENCEMENT OF WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS AUTHORIZED BY THIS PERMIT**, the permittee shall submit, for the review and written approval of the Executive Director, final water quality protection measures for construction and site operations that identify a suite of appropriate Best Management Practices (BMPs) and other measures and plans to prevent the entry of stormwater runoff into Humboldt Bay from the construction area(s) during construction; to prevent the entrainment of excavated contaminated materials leaving the site; and to

prevent the entry of polluted stormwater runoff into coastal waters during the transportation and storage of excavated materials.

1. BMPs for Water Quality Protection. The following BMPs and measures, at a minimum, shall be utilized:

   (a) Construction activities shall be scheduled and sequenced to minimize the areal extent and duration of site disturbance at any time;

   (b) Appropriate BMPs from the current California Stormwater BMP Handbook for Construction, including, but not limited to, EC-1: Scheduling; EC-2: Preservation of Existing Vegetation; NS-2: Dewatering Operations; NS-9: Vehicle Equipment and Fueling; NS-10: Vehicle & Equipment Maintenance; WM-2: Material Use; and WM-4: Spill Prevention and Control;

   (c) Silt fences shall be deployed in areas that are not fully covered in vegetation to prevent any sediment from flowing into Humboldt Bay. Required silt fence and erosion control locations and specifications for installation shall be included in the final construction plan set. If the silt fences are not adequately containing sediment, construction activity shall cease until remedial measures are implemented that prevents sediment from entering the waters east of the construction area;

   (d) Construction debris shall not be placed or stored within 100 feet of Humboldt Bay or wetlands;

   (e) Vehicle and equipment maintenance shall not occur within 100 feet of Humboldt Bay or wetlands, and non-essential work vehicles and equipment shall be parked at least 100 feet away from the Humboldt Bay or wetlands;

   (f) Sufficient erosion control supplies (plastic-free and weed-free fiber rolls, straw-wattles, coir logs, silt fences, etc.) shall be maintained on-site at all times, available for prompt use in areas susceptible to erosion during rain events;

   (g) Disturbance of existing vegetation shall only occur in areas approved for development;

   (h) BMPs shall be installed prior to the onset of any storm predicted to receive 0.5-inch or more of rain over 24 hours;

   (i) Plastic-free and weed-free fiber rolls, straw-wattles, coir logs, silt fences, or other effective devices shall be installed along locations where water drains off the construction site;

   (j) Wind erosion or dust control procedures shall be implemented as necessary to prevent or alleviate dust nuisance generated by construction activities;

   (k) All erosion and sediment control measures shall be effectively maintained until disturbed areas are stabilized;

(l) Hazardous materials shall be stored in areas protected from rain, provide secondary containment and must be a minimum of 100 feet from any wetland or Environmentally Sensitive Habitat Area;

(m) The following hazardous materials handling, storage, and spill response practices shall be implemented to reduce the possibility of adverse impacts from use or accidental spills or releases of contaminants:

i. Conduct all refueling and servicing of equipment more than 100 feet from any wetland or Environmentally Sensitive Habitat Area with absorbent material or drip pans underneath to contain spilled fuel. Collect any fluid drained from machinery during servicing in leak-proof containers and deliver to an appropriate disposal or recycling facility; and

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

2. Dewatering Plan. A dewatering plan shall be included that specifies measures for handling, storage, testing, treatment, monitoring, and discharge of groundwater in the event that groundwater is encountered during construction. Sampling and testing of groundwater shall conform to the final approved SAP and requirements of Mitigation Measure HAZ-1 requiring implementation of recommendations of the Interim Measures Work Plan (SHN 2020). The dewatering plan shall specify that any necessary dewatering shall provide for the pumping and storage of groundwater into Baker tanks or similar appropriate storage for testing and characterization consistent with the final approved Sampling and Analysis Plan prior to disposal. The dewatering plan shall further specify that water sourced from dewatering shall not be discharged to on-site wetlands or to Humboldt Bay.

3. Sampling and Analysis Plan (SAP). A SAP shall be prepared and submitted for the Executive Director's review and approval to address characterization of excavated soils, assessment of final in-place conditions, and testing of materials for reuse or offsite disposal. The SAP shall be the primary guide used to determine suitability of material for reuse. The use of Incremental Sampling Methodology (ISM) for characterization of soils is the preferred approach to assess suitability of reuse. The SAP shall contain the ISM program to evaluate the chemical quality of the material. The SAP shall comply with the requirements of Mitigation Measure HAZ-1 with respect to Health and Safety procedures, handling of excavation of soils, field screening of debris and excavated soils, and other applicable requirements outlined in MM HAZ-1.

B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plan shall occur

without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is required.

7. Noise Reduction Plan.

A. PRIOR TO COMMENCEMENT OF EXTRACTION OF BAY WATER, the Permittee shall provide for the review and written approval by the Executive Director a Noise Reduction Plan that provides an analysis of the in-water sound levels expected from the project pumps and describes the measures the District will implement to ensure those sounds do not exceed the greater of 120 decibels or pre-project ambient sound levels within the Bay waters closest to the pump locations on the docks.

B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is required.

8. Submittal of New Tenant Water Use Plan. Prior to providing water to any proposed water users, the Permittee shall submit documentation for the Executive Director's review and approval that the water to be allocated will be used for a coastal-dependent use consistent with Coastal Act section 30101 and with principal uses allowed on MC designated/zoned lands under the Humboldt County certified LCP. Plans of Operation, plot plans, and proposed leases for each new tenant/lessee shall be submitted for conformance review to the Executive Director. In the event of a disagreement as to whether the use is coastal-dependent, this determination would be resolved by the Commission.

9. Protection of Archaeological and Tribal Cultural Resources. The Permittee shall undertake development in compliance with the mitigation measures included in the Final Environmental Impact Report dated June 30, 2022 prepared by Humboldt County for the Samoa Peninsula Land-Based Aquaculture Project (SCH No. 2021040532), including, but not limited to Mitigation Measures CR-1, CR-2, and CR-3 (shown in **Appendix B** attached to the staff report for CDP 1-21-0653), as well as with the following additional measures:

A. If an area of tribal cultural and/or archaeological resources is discovered during ground-disturbing activities, all construction shall cease, and the permittee shall immediately notify and retain a tribal cultural resource specialist and, if needed, at the recommendation of the tribal cultural specialist, a qualified archaeologist to analyze the significance of the find in consultation with the Native American Tribes listed on the NAHC list. A qualified Archaeologist means qualified at a minimum by the California Office of Historic Preservation (OHP) standards. The tribal cultural resource specialist and archaeologist, if needed, shall immediately notify the Tribes on the NAHC list. Significance testing may be carried out only if acceptable to the affected Native American Tribe(s), in accordance with a Significance Testing Plan. An "exclusion zone" where unauthorized equipment and personnel are not permitted shall be established

(e.g., taped off) around the discovery area that includes a reasonable buffer zone recommended by the monitor(s). Project activities may continue outside of the exclusion zone.

B. Should human remains be discovered on-site during the course of the project, immediately after such discovery, the on-site archaeologist and/or Native American monitor shall notify the county coroner within 24 hours of such discovery, and all construction activities shall be temporarily halted until the remains can be identified. An "exclusion zone" may be established around the discovery area. If the county coroner determines that the human remains are those of a Native American, the coroner shall contact the NAHC within 24 hours, pursuant to Health and Safety Code Section 7050.5. The NAHC shall deem the Native American most likely descendant (MLD) to be invited to participate in the identification process pursuant to Public Resources Code Section 5097.98. The landowner/permittee shall comply with the requirements of Section 5097.98 and work with the MLD person(s) to preserve the remains in place, move the remains elsewhere onsite, relinquish the remains to the descendants for treatment, or determine other culturally appropriate treatment. Within five (5) calendar days of notification to NAHC, the permittee/ landowner shall notify the Coastal Commission's Executive Director of the discovery of human remains and identify any changes to the proposed development or mitigation measures that may be needed related to the inadvertent discovery. The Executive Director shall maintain confidentiality regarding the presence of human remains on the project site. The Executive Director shall determine whether the identified changes are de minimis in nature and scope.

C. A permittee seeking to recommence project activities within an exclusion zone following discovery of tribal cultural and/or archaeological resources (excluding the discovery of human remains, which shall follow Section 5097.98 as noted in (B) above) shall submit a Supplementary Archaeological Plan (SAP) prepared by the project archaeologist in consultation with the Native American Tribes listed on the NAHC list. The SAP shall be submitted for the review and written approval of the Executive Director. If the Executive Director approves the SAP and determines that the SAP's recommended changes to the proposed development or mitigation measures are de minimis in nature and scope, construction may recommence after this determination is made by the Executive Director in writing. If the Executive Director approves the SAP but determines that the changes therein are not de minimis, construction may not recommence until after an amendment to this permit is approved by the Commission.

10. **Length of Development Authorization.** Development authorized by this permit is authorized (1) until May 8, 2058 (i.e., 30 years from the projected date of completion of construction of water system infrastructure authorized by this CDP), except that the Executive Director has authority to extend authorization up to 5 years for good cause and any further extensions to the authorization period require approval by the Commission pursuant to an amendment to this CDP; (2) until the County or any government agency with legal jurisdiction has issued a final order,

not overturned through any appeal or writ proceedings, determining that the authorized development is currently and permanently unsafe for use due to damage or destruction from waves, flooding, tsunami run-up, liquefaction, or other hazards related to coastal processes or seismic hazards, and that there are no feasible measures that could make the development suitable for use; or (3) until removal is required pursuant to LCP policies for sea level rise adaptation planning. The permittee shall obtain a CDP for removal of approved development unless the Executive Director determines that no coastal development permit is legally required.

11. **Assumption of Risk, Waiver of Liability, and Indemnity Agreement.** By acceptance of this permit, the Permittee acknowledges and agrees (A) that the site may be subject to hazards from tsunamis, storms, flooding, erosion, earth movement, and other natural hazards, which may worsen with climate change and sea level rise; (B) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (C) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (D) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

12. **Liability for Costs and Attorneys' Fees.** By acceptance of this permit, the Applicant/Permittee agrees to reimburse the Coastal Commission in full for all Coastal Commission costs and attorneys' fees that the Coastal Commission may be required by a court to pay that the Coastal Commission incurs in connection with the defense of any action brought by a party other than the Applicant/ Permittee against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this permit. The Coastal Commission retains complete authority to conduct and direct the defense of any such action against the Coastal Commission.

IV. Findings and Declarations:

A. Project Description

The Humboldt Bay Harbor, Recreation, and Conservation District (Harbor District) proposes to extract seawater from Humboldt Bay to support coastal-dependent uses on the property known as Redwood Marine Terminal II (RMT-II) (**Exhibit 1**). The property is a former pulp mill that includes two formerly used water intake systems (referred to as "sea chests") at two existing docks – the main RMT-II dock and a separate intake system on a smaller dock approximately 2,600 feet to the north known as Red Tank dock. The existing seawater extraction infrastructure at the two docks, originally installed in the 1960s, has not been used since at least 2008 when the pulp mill ceased operations.

The project proposes to reuse, improve, and expand the two systems to support a currently anticipated tenant, Nordic Aquafarms,[1] and other potential tenants operating in the Harbor District's planned "aquaculture business park" on the property. Proposed improvements include modernizing the screening systems, improving the sea chest intake infrastructure, and installing new water piping on docks and along the upland portion of the property to connect the seawater extraction system to permitted aquaculture tenants operating on the property. Project details are included in **Exhibits 2-5** and discussed briefly below.

Seawater Intake System Improvements

The existing intake structures have been in place for several decades and consist of deteriorated wood and concrete. The Harbor District proposes to repair the structures by sealing cracks and installing new intake screening, pumps, and connecting pipeline infrastructure. The RMT-II dock seawater intake infrastructure is approximately 16.5 feet by 8.25 feet by 8.5 feet deep. The Red Tank dock seawater extraction infrastructure is approximately 6 feet by 9.5 feet by 16 feet deep. Proposed pumps at RMT-II dock would be 100-125 horsepower and pumps at the Red Tank dock would be 75-100 hp. The two intakes would be operated and managed as a single system with both feeding into a common manifold and distribution system. The pumps would operate continuously except during maintenance and cleaning activities. Proposed intake screens would meet the requirements established by NMFS for water intakes to prevent impingement or entrainment of juvenile salmonids and would meet CDFW requirements for minimizing impacts to longfin smelt. However, the proposed use of the intakes would nonetheless result in substantial adverse impacts to other types of marine life, as described in Finding IV-F below.

Seawater intake volumes

The District proposes to use the two intakes to withdraw up to 11.88 million gallons per day ("MGD"), or 8,250 gallons per minute ("GPM") of water from Humboldt Bay. The District anticipates conducting this withdrawal in three phases, as shown below.

Table 1. Proposed water withdrawal volumes by operational phase.

Phase # and Estimated Year of Operation	Volume of each individual phase (MGD)	Cumulative intake volumes (MGD)	% of total
Phase 1 (2027)	5.05	5.05	43%
Phase 2 (2032)	4.95	10.0	84%
Phase 3 (2034)	1.88	11.88	100%

The District would provide specific volumes of water to tenants on the site for use in aquaculture operations, including to the County-permitted Nordic Aquafarms recirculating aquaculture system (RAS) facility (described below) and other potential aquaculture tenants on the RMT-II property as well as shellfish and seaweed culture operations that may be permitted in the future to use bay water from the proposed

[1] Information on the Nordic Aquafarms project is available from Humboldt County's website: https://humboldtgov.org/3218/Nordic-Aquafarms-Project.

improved intake system. As discussed further in Finding IV-H below, pursuant to **Special Condition 8**, use of this water by tenants would be subject to the Executive Director's determination that the water is for a coastal-dependent use.

Waterline Infrastructure Improvements

The District would also install new water distribution infrastructure, including the installation via trenching (in trenches up to 4,650 feet long, 19 feet wide, and 5 feet deep) of pipelines and associated hydrants and manifolds extending from and between the two docks. There would be an 18-inch to 36-inch-diameter seawater transmission pipeline and a 12-inch-diameter industrial (fresh)water pipeline. The industrial water pipeline would connect to existing industrial water pipelines on and around the property that tie into the Humboldt Bay Municipal Water District (HBMWD) transmission pipeline, which historically served the pulp mill's industrial operations with 30 MGD of untreated freshwater sourced from the Mad River (~10 miles to the northeast) that will now be used to provide 2.5 MGD of freshwater sourced from the Mad River to be used for fire suppression, cooling, etc.

District Proposed Offsite Mitigation

Although the proposed intake improvements will help avoid or reduce some impacts to marine life, the District's proposed seawater withdrawals will nonetheless result in a substantial loss of marine life and biological productivity, including impacts to state-listed longfin smelt (*Spirinchus thaleichthys*). To mitigate for the unavoidable entrainment of marine organisms and impacts to biological productivity that would occur due to the operation of the two seawater intakes, and to allow for conformity with mitigation-related provisions of the Coastal Act, the District has proposed possible offsite mitigation at several locations (**Exhibit 7**). The proposed mitigation activities include removal of derelict pilings from a former shipping pier in Fields Landing (APN 307-101-002), removal of an invasive salt marsh species (*Spartina densiflora*) from several sites in the Bay (consistent with the conditions and mitigation measures required under an existing CDP held by the District, CDP 1-14-0249, approved by the Commission in June of 2015),[2] and habitat restoration and enhancement at a site across the Bay in Eureka (APN 002-161-001; see **Exhibit 7**). These impacts, the adequacy of the proposed mitigation, and the additional mitigation needed are more fully described in Section IV-F of these Findings.

B. Project Location

The water intake and water system improvement project site is located along the western shore of Humboldt Bay, on the eastern shore of the Samoa Peninsula, east of New Navy Base Road, at 364 Vance Avenue near Samoa (**Exhibit 1**). The site is due west, across Humboldt Bay, from the City of Eureka and less than a mile south of the unincorporated town of Samoa. The subject ~76-acre property (APNs 401-112-021, -011 & -024 and APN 401-031-040), referred to as Redwood Marine Terminal II

[2] The Commission's adopted findings and conditions of approval for CDP 1-14-0249 are accessible from the Commission's website: https://documents.coastal.ca.gov/reports/2015/6/f12a-6-2015.pdf.

(hereafter RMT-II), is currently owned/managed by the Harbor District. The District is permitted (under several CDPs issued by the Commission and the County) to operate various coastal-dependent and other non-coastal-dependent interim uses on the property.[3]

The subject property historically supported heavy industrial timber operations, including, since the early 1960s, operation of a pulp mill facility. The pulp mill permanently closed approximately 15 years ago, and the Harbor District has led decommissioning and demolition activities since 2013. The parcel is an active Brownfield site (Regional Water Quality Control Board case no. 1NHU892) that received grant funding from the U.S. Environmental Protection Agency (EPA) for cleanup and assessment activities.

The property is planned and zoned for coastal-dependent industrial (CDI) uses under the Humboldt County certified LCP (Humboldt Bay Area Plan and Coastal Zoning Regulations). The former pulp mill infrastructure has been partially demolished, but many structures remain on site, including a 12-story Reboiler Building (the tallest building on the coast between San Francisco and Portland, Oregon), a machine building, an approximately 270-foot-tall smokestack, and other smaller structures. Most existing onsite structures will be removed/demolished as part of the Brownfield redevelopment phase of the County-approved Nordic Aquafarms project.

The site of the proposed piling removal to mitigate in part for entrainment impacts from the proposed seawater extraction is an existing former shipping pier in the unincorporated community of Fields Landing at the foot of South Bay Depot Road on the eastern shore of Humboldt Bay approximately 5.5 miles south of the subject site and 2 miles south of the City of Eureka (APN 307-101-002) (**Exhibit 1**). The shipping pier was damaged by severe storm events during the winter of 2005-2006 and was subsequently dismantled, except for the remaining piles and crossbeams now proposed for removal.[4] The site and surrounding area are planned and zoned for CDI uses under the County's certified LCP. Current uses adjacent to the site include the Harbor District's boat repair yard where ship and barge loading and unloading, boat storage, and boat repair activities occur.

C. Standard of Review

The areas that are the subject of this CDP application are located entirely in the Commission's retained permit jurisdiction. The County of Humboldt has a certified Local Coastal Program (LCP), but the project sites are within tidelands, submerged lands, and

[3] Commission issued CDPs include but are not limited to Taylor Mariculture's seed settling facility, shellfish nursery rafts, and floating upwelling systems (FLUPSYs) permitted in November of 2012 under CDP E-11-029, Coast Seafood Company's onshore shellfish hatchery permitted in June of 2016 under CDP 9-16-0033, and the Harbor District's pre-permitting of 3 acres of nursery rafts, FLUPSYs, and macroalgae cultivation longlines in November of 2016 under CDP No. 9-16-0204. County issued CDPs include but are not limited to the Nordic Aquafarms project permitted in 2022 under CDP No. PLN-2020-16698 (and which was the subject of Appeal No. A-1-HUM-22-0063).

[4] The shipping pier demolition activities were authorized under Emergency Permit No. 1-06-001-G issued in January of 2006 and follow-up permit CDP No. 1-07-009 approved September 7, 2007.

an area shown on State Lands Commission maps over which the State retains a public trust interest. Therefore, consistent with Public Resources Code section 30519(b), the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

D. Related Permits

The proposed project is related to at least two other CDPs that have recently been considered by the Commission. The first is a CDP for the Nordic Aquafarms Project that was approved by Humboldt County in 2022 and the second is a CDP approved by the Commission (CDP 9-20-0488) in November of 2023 for the discharge of tertiary treated wastewater from the County-approved Nordic facility. The County's CDP was appealed to the Commission (Appeal No. A-1-HUM-22-0063), but in December of 2023 the Commission found that the appeal did not present a substantial issue with respect to the grounds on which the appeal was filed under section 30603 of the Coastal Act.[5] The Commission's approval of CDP 9-20-0488 authorizes the discharge up to 10.3 million gallons per day of treated wastewater effluent from the Nordic facility via the existing outfall pipe that terminates 1.5 miles offshore of Samoa.[6]

E. Other Agency Approvals & Consultations

The Commission's regulations require applicants to provide evidence of other state and local permits required for a project. The proposed project requires several local, state, and federal permits, discussed below. Commission staff coordinated closely with other agency staff regarding their respective permits, consultations, and requirements throughout the review of this CDP application.

- Humboldt Bay Harbor, Recreation, and Conservation District (Harbor District): The Harbor District is a county-wide district established by the legislature in 1970 with permit jurisdiction over the tidelands and submerged lands of Humboldt Bay. The Harbor District is both landowner/manager of the project site and a responsible permitting authority. In 2019, the Harbor District issued a 30-year lease (with two automatic 10-year renewals)[7] for the Nordic Aquafarms project to use 33 acres of the project site plus use of the dock, ocean outfall, sea chest for the bay water extraction proposed under this CDP, and other infrastructure. In addition, on June 8, 2023, the Harbor District approved a permit (Permit No. 2022-002) for the seawater extraction and Fields Landing piling removal components of the development proposed under this CDP.

[5] The Commission's adopted findings on the appeal are found on the Commission's website: https://documents.coastal.ca.gov/reports/2023/12/W11a/W11a-12-2023-report.pdf.

[6] The Commission's adopted findings and conditions of approval for CDP 9-20-0488 are found on the Commission's website: https://documents.coastal.ca.gov/reports/2023/11/Th9b/th9b-11-2023-report.pdf.

[7] Lease summary available from the Harbor District's website: http://humboldtbay.org/sites/humboldtbay2.org/files/RMT%20II%20Aquaculture%20Term%20Sheet%202-11-19.pdf.

- North Coast Regional Water Quality Control Board: The Regional Water Board has regulatory jurisdiction over the project pursuant to the Clean Water Act and California Water Code. The Regional Water Board adopted Waste Discharge Requirements (WDRs) for the project on October 5, 2023 (Order No. R1-2023-0019 / NPDES No. CA1000003 / WDID No. 1B20161NHUM) as part of the WDRs applicable to the Nordic Aquafarms project described above.[8] The Regional Board also is processing a CWA sec. 401 permit for the project. **Special Condition 1** requires submittal of this permit prior to permit issuance.

- California Department of Fish and Wildlife (CDFW): The project requires an Incidental Take Permit from CDFW pursuant to the California Endangered Species Act for projected incidental take of state listed threatened Longfin Smelt (*Spirinchus thaleichthys*) and Coho Salmon (*Oncorhynchus kisutch*). Commission staff has coordinated closely with CDFW staff on the proposed mitigation and final mitigation plan requirements as discussed in these findings. A permit for the project has not yet been approved by CDFW. **Special Condition 1** requires submittal of this permit prior to permit issuance.

- U.S. Army Corps of Engineers (Corps): The Corps has regulatory jurisdiction over the project under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 1344). Section 10 of the Rivers and Harbors Act regulates structures or work in navigable waters of the United States. Pursuant to Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), any applicant for a required federal permit to conduct an activity affecting any land or water use or natural resources in the coastal zone must obtain the Commission's concurrence in a certification to the permitting agency that the project will be conducted consistent with California's approved coastal management program. The subject CDP (1-21-0653) will serve as Commission review of the project under the CZMA. **Special Condition 2** requires submittal of the Corps' permit prior to commencement of construction.

- NOAA-Fisheries (National Marine Fisheries Service/NMFS): Under the Corps' permit process, NMFS is engaged in consultations pursuant to the Endangered Species Act (ESA) Section 7 consultation process and the Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) consultation process. NOAA-Fisheries also implements the Marine Mammal Protection Act. Federally listed species of concern include three species of salmonids. NMFS is in the process of drafting its Biological Opinion (BO) evaluating the impacts associated with the reduction in biological productivity within the bay associated with the seawater extraction, and whether such impacts will have significant adverse effects to the prey resources of salmonid

[8] See file and factsheet at the Regional Board's website: https://www.waterboards.ca.gov/northcoast/board_decisions/adopted_orders/pdf/2023/R1-2023-0019.pdf and https://www.waterboards.ca.gov/northcoast/board_decisions/adopted_orders/pdf/2023/R1-2023-0019_FS.pdf.

EFH within Humboldt Bay. **Special Condition 2** requires submittal of the final NMFS consultation prior to commencement of construction.

Pursuant to **Special Conditions 1 and 2**, the applicant is required to inform the Executive Director of any changes to the project required by any other authorizations. Any such changes would not be incorporated into the project until the applicant obtains an amendment to this CDP, unless the Executive Director determines that no amendment is legally required.

F. Marine Resources and Water Quality

Section 30230 of the Coastal Act states as follows:

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

Section 30231 of the Coastal Act states as follows:

> *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.*

Section 30232 of the Coastal Act states as follows:

> *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

The Harbor District will extract seawater from Humboldt Bay and meter it to tenants on the site for use in onshore commercial fishery and aquaculture operations, including to the County-permitted Nordic Aquafarms recirculating aquaculture system facility (described above) and other coastal-dependent uses on the RMT-II property. The proposed withdrawal of seawater will adversely affect marine resources, biological productivity, special status species, and water quality of coastal waters in Humboldt Bay due to the intake pulling in and entraining marine organisms. Although the District will be using what are essentially “state of the art” screens on the intakes, the marine life

drawn in to the intake each year would represent a loss of productivity equal to that produced annually in about 28.5 acres of Humboldt Bay's estuarine habitats. In addition to impacts from the intake operations, construction of the screened intake and pipeline infrastructure has the potential to adversely affect marine resources and water quality through the discharge of pollutants, disturbance of habitat, noise, and other construction-related effects. These overall adverse impacts are being avoided and minimized to some degree through project design measures, with the remaining impacts addressed through the mitigation measures described herein and in **Special Condition 4**.

Marine Resources of Humboldt Bay

Humboldt Bay is the second largest estuary in California. Its approximately 10,000 acres provide a rich diversity of productive natural habitats, including tidal marshes, sloughs, intertidal mudflats, eelgrass beds, and deepwater estuarine habitats along with the estuarine water itself, which is also considered habitat. The Bay's diverse habitats support over 120 species of fish, 250 species of marine birds, 550 species of marine invertebrates, 80 species of algae, and numerous resident and visiting marine mammals.[9] In addition, the relatively high quality of the bay water (in terms of lack of pollutant loads) allows for its use by a number of permitted aquaculture operations, a priority use under the Coastal Act.[10]

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

Another sensitive species that inhabits Humboldt Bay is longfin smelt (*Spirinchus thaleichthys*), which is listed as a threatened species under the CESA. Longfin smelt generally spawn in freshwater and move downstream to estuarine conditions to grow. Although once among the most abundant fish species in Humboldt Bay, present in

[9] Humboldt Bay Harbor, Recreation, & Conservation District, 2015.

[10] E.g., the Commission has approved permits for (as mentioned above) the Taylor Mariculture seed settling facility, shellfish nursery rafts, and FLUPSYs permitted in November of 2012 under CDP No. E-11-029, the Coast Seafoods onshore shellfish hatchery permitted in June of 2016 under CDP No. 9-16-0033, and the Harbor District's pre-permitting of 3 acres of nursery rafts, FLUPSYs, and macroalgae cultivation longlines in November of 2016 under CDP No. 9-16-0204. In addition, the Commission has permitted the Hog Island Oyster Company shellfish facility in the Fairhaven area south of the subject site permitted in March of 2014 under CDP No. 9-13-0500.

larval, juvenile, and adult life stages, by 1996 longfin smelt were considered to be extinct in the bay (Eldridge and Bryan 1972, USFWS 1996). In recent years, however, longfin smelt have been observed in Humboldt Bay and are thought to be present year-round (see Cole 2004, Pinnix et al 2005; CDFW 2009, Merz et al. 2012). Surveys conducted by CDFW biologists during the winter of 2015-2016 have confirmed that that longfin smelt are still present in at least three tributaries to Humboldt Bay (Freshwater Slough, Elk River and Salmon Creek), and are spawning in at least two of the three (R. Garwood, CDFW, pers. comm.). Adult, juvenile and larval longfin smelt have the potential to occur in the North Channel near the project's seawater intakes and the intakes are expected to entrain a number of longfin smelt larvae, as described below.

Along with these listed species, there are several other species in the Bay considered important to commercial and recreational fishing, as well as a myriad of other species, all of which constitute the Bay's biological community and contribute to the Bay's substantial biological productivity. This overall biological community is considered a component of the public trust resources within the Bay and is protected through provisions of the state's Ocean Plan and Section 13142.5(b) of the state's Water Code, which requires protection of all forms of marine life from entrainment.[11] Additionally, for purposes of the Commission's federal consistency review for this proposed project, the Ocean Plan requirements are enforceable policies of the California Coastal Management Program and are therefore relevant to the Commission's consideration of this project's impacts and necessary mitigation.[12]

Adverse Impacts Resulting from Seawater Extraction

Withdrawing seawater through intakes in the water column can result in the loss of marine life due to impingement and entrainment. Depending on the volumes withdrawn, the types of screens used, and the velocities of the water withdrawals, the effects of this marine life loss can be substantial and can result in a significant loss of marine life productivity in the surrounding water body.

Impingement occurs when fish or other organisms are killed or injured by being caught on or trapped against an intake's screening system. The amount of impingement at an intake is largely related to the velocity of the water being pulled into the intake, with most fish being able to swim away and avoid being impinged when velocities are 0.5 feet per second or less. Entrainment occurs when small organisms, such as fish eggs, fish larvae, and other planktonic organisms are pulled through an intake's screen and killed when exposed to stressors within the intake system such as high pressure, turbulence, or exposure to chemicals or filters. Entrainment rates from an intake are

[11] Section 13142.5(b) of the Water Code states: "For each new or expanded coastal powerplant or other industrial installation using seawater for cooling, heating, or industrial processing, the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life."

[12] Section 307(f) of the federal Coastal Zone Management Act (16 USC § 1456(f)) incorporates all federal Clean Water Act-based requirements into the California Coastal Management Program (CCMP). For purposes of this proposed project, this includes relevant provisions of the California Ocean Plan and California Water Code Section 13142.5

related primarily to the number and types of organisms present within the source water, their life stages,[13] and the volume of water being pulled into the intake. Small mesh screens on an intake help reduce entrainment of some of the larger planktonic organisms but generally provide just a modest reduction in overall entrainment, as the vast majority of plankton are smaller than the smallest screen mesh sizes that can be used on an intake without fouling or clogging.

Measures Proposed to Reduce Adverse Impacts from Seawater Extraction

As described above, the Harbor District has included as part of its project some features – including a phased increase in water withdrawals, low intake velocities, and small mesh screens – that will significantly reduce impingement of salmonids and will reduce impingement and entrainment of longfin smelt. However, those features will just slightly reduce the overall entrainment rate of other marine organisms, including larvae of other fish species, various invertebrates, and most planktonic organisms, all of which contribute to the Bay's productive marine environment. Even with these measures the proposed project is expected to result in an annual loss of marine life productivity in Humboldt Bay equal to that produced in about 28.5 acres of the Bay's habitats (**Exhibits 8 and 9**). This impact is known as the Area of Production Foregone ("APF"), which represents the number of acres of habitat types within the Bay that would be needed to replace the amount of productivity lost each year due to marine organisms being pulled into the intakes. The method for determining APF and the amount of compensatory mitigation needed to address this loss of biological productivity are described below, following descriptions of the District's proposed measures to reduce impingement and entrainment:

- Phased water use: The District expects to use and increase its intake of seawater in phases, as illustrated in the table below. Because the rate of entrainment is roughly proportional to the volume of water withdrawals, the District's initial water withdrawal volume during the first several years of intake operations will have substantially less of an impact on Humboldt Bay productivity losses than the second and third phases.

Table 2: Phased water withdrawal volumes and associated APF.

Phase & Estimated Year of Operation	Volume of each individual phase (MGD)	Cumulative intake volumes (MGD)	% of total	Cumulative APF (% of 28.5 APF)
Phase 1 (2027)	5.05	5.05	43%	12.1 acres
Phase 2 (2032)	4.95	10.0	84%	24.0 acres
Phase 3 (2034)	1.88	11.88	100%	28.5 acres

[13] Some planktonic organisms, such as fish larvae and eggs, are subject to entrainment only during their early life stages while other organisms that do not grow past a certain size are subject to entrainment during their entire life cycle.

- Intake velocities and screen design: As noted above, impingement rates are primarily related to intake velocities – i.e., the lower the velocity at the intake screen, the less impingement occurs. Most fish are able to swim away from an intake velocity of 0.5 feet per second, which is the maximum velocity allowed in the state's Ocean Plan and is meant to be generally protective of a wide range of species.[14] The District has included in its proposed intake design an even lower and more protective velocity – i.e., no more than 0.12 feet per second – pursuant to the criteria CDFW have established to minimize impingement of longfin smelt, which is a relatively weak swimmer compared to other fish species. This velocity is also lower and more protective than the criteria NMFS have established for salmonids – i.e., no more than 0.4 feet per second for self-cleaning screens and no more than 0.2 feet per second for screens without self-cleaning capacity.[15]

  The District has also proposed installing cylindrical wedgewire screens with either a 1.0-millimeter or 0.5-millimeter mesh. These screens would also be consistent with Ocean Plan provisions that specify a maximum mesh size of 1.0 millimeters. This is more protective than the criterion established by NMFS for reducing salmonid impingement and entrainment, which is roughly 3/32-inch or about 2.4 millimeters.[16]

  The District has committed in its project description to use an intake and screen system designed to meet both NMFS and CDFW criteria for reducing entrainment and impingement of most adult and juvenile fish, including salmonids and longfin smelt. Specifically, the District would install intake screens with a mesh size of no more than 1.0 millimeter and would operate the intake so that velocities at the screens do not exceed 0.12 feet per second.[17] **Special Condition 3-A(1)** ensures that the District will install screens with mesh sizes of 1.0 millimeters or less and

[14] The Commission has often used as the basis for its entrainment analyses the extensive review of entrainment studies the State Water Board conducted as part of establishing Ocean Plan requirements for seawater desalination intakes. The Board's review was, in turn, based largely on the large number of studies done for seawater intakes at coastal power plants. A key consideration in these analyses is that the fundamental intake methods and effects are similar for any type of open or screened intake used by power plants, desalination facilities, aquaculture, or other users that take in seawater from the water column.

[15] Self-cleaning screens reduce the amount of fouling on a screen face, which helps ensure the velocity of water through the screens remains relatively constant.

[16] The NMFS standard doesn't specify a particular size but is based on the relationship between the rate of water intake and the total square footage of the screen area – i.e., for each cubic foot per second of water withdrawal, the screen size must increase so that the maximum allowable velocity is not exceeded.

[17] The District is currently considering installation of screens with an automatic cleaning system. During operations, the screens would be automatically cleaned with an air burst or self-cleaning brush system. As needed, the screens could be lifted out of the water for periodic inspection, maintenance, and repair. Once on the dock, any additional required cleaning of the screens would be completed with a pressure washer and/or brushes.

that it maintains its intakes so that through-screen velocities remain below 0.12 feet per second.

Analysis of Remaining Impacts from Seawater Extraction

Even with these protective criteria applicable to salmonids and longfin smelt, the screened intake systems would still result in a substantial loss of other marine organisms and of biological productivity in Humboldt Bay. While the screening and intake standards discussed above would protect against the impingement of larger, mobile organisms, including adult and juvenile fish, they would only slightly reduce the overall rate of entrainment, as most of the marine organisms susceptible to entrainment are small enough to be drawn through screen mesh sizes of 1.0-mm, 0.5-mm, or less, as the vast majority of planktonic organisms are measured in microns, or one one-thousandth of a millimeter. Once drawn into the intake, the combined effects of mechanical stress, heating, filtration and other stressors are considered to cause essentially 100% mortality of all entrained organisms. These organisms include fish eggs and larvae, invertebrates, and other zooplankton and phytoplankton in the water column, all of which form the foundation of estuarine and marine food webs. As noted above, these are considered part of the State's public trust resources in the bay and are protected by provisions of both the Coastal Act and the Ocean Plan requiring minimization of entrainment and protection of all forms of marine life.[18]

To avoid or reduce these types of impacts from seawater intakes, the Coastal Act requires applicants to first evaluate whether there are feasible alternative methods to reduce entrainment, such as through the use of subsurface intakes that draw in water from beneath the seafloor or beach, or through selecting alternative locations where the productivity losses may be lessened. For this project, subsurface intakes are not considered feasible, because the substrates in nearby areas of Humboldt Bay are largely fine silts and muds, which do not provide the necessary level of permeability and transmissivity to provide sufficient water flows. Known alternative locations near the proposed project site have similar characteristics that would similarly make those locations infeasible for subsurface intake structures (see further discussion in Finding IV-G of alternatives to the baywater intakes that were considered but determined to be infeasible).

Where surface water intakes are used because subsurface options are infeasible, the Commission generally addresses the loss of marine life productivity that occurs due to entrainment by first ensuring that the intake screens are appropriately designed to

[18] Coastal Act regulations define public trust lands as "all lands subject to the Common Law Public Trust for commerce, navigation, fisheries, recreation, and other public purposes." Public trust lands include "tidelands, submerged lands, the beds of navigable lakes and rivers, and historic tidelands and submerged lands that are presently filled or reclaimed, and which were subject to the Public Trust at any time." In the common law, the doctrine traditionally protects in-water uses such as fishing and navigation, but has been extended to protect the environment, and associated resources that affect trust lands, such as non-navigable tributaries supplying water to a lake, and groundwater resources that impact navigable waters. The Commission's Public Trust Guiding Principles and Action Plan adopted in May 2023 is available from the Commission's website: https://www.coastal.ca.gov/public-trust/.

reduce impingement and entrainment effects to the extent feasible, as described above, and then by requiring mitigation that makes up for the annual loss of productivity resulting from the level of entrainment remaining after screens are installed.

The scale and type of entrainment effects are based largely on the productivity of the water body and the volume of water being withdrawn. To determine the type and extent of entrainment effects, an applicant is generally required to conduct an entrainment study. The Commission generally requires these studies for proposed seawater withdrawals above a certain volume – generally around one million gallons per day – or within more productive waterbodies.[19] With the District's proposed withdrawal of up to 11 mgd from Humboldt Bay, an entrainment study was appropriate, and the District conducted the study in 2022 (**Exhibit 10**).

Over the past several decades, the Commission and other state agencies have used studies that rely on the "Empirical Transport Model" ("ETM") to identify the proportion of organisms within a source water body that are lost to entrainment. Those identified losses are then used to calculate an "Area of Production Foregone" ("APF"), which represents the overall area of habitats within the source water body that would be needed to produce an equivalent amount and type of key species of fish larvae and invertebrates lost through entrainment.[20] This approach includes developing a site-specific design that identifies the extent of the source water body, which is the area of estuary or nearshore waters within which marine life could be entrained by an intake, and characterizing the biological community within that area. The study design then determines appropriate sampling locations and a schedule to allow adequate identification of the type and scale of marine life expected to be entrained, and then calculating and modeling the proportion of productivity loss in the water body resulting from the use of seawater. These results are then used to determine the necessary type and amount of compensatory mitigation needed to address the impact. For example, if the source water area for a particular species or group of species covers 10,000 acres and the intake pulls in 1% of the larvae within that area, the APF would be 1% of 10,000 acres, or 100 acres. In most cases, separate APFs are calculated for the half dozen or so most prevalent or most ecologically or commercially important species in the source

[19] For several previous projects in Humboldt Bay, the Commission did not require or rely on entrainment studies, as the withdrawal volumes were relatively modest, and the impacts could be estimated without the full calculations provided by the study. These include the Taylor Mariculture shellfish facility (CDP No. E-11-029) with a withdrawal of 164,000 gallons per day, the Hog Island Oyster Company shellfish facility (CDP No. 9-13-0500) with a 101,000 gallon per day withdrawal rate, and the Harbor District/Hag Fish Inc. hagfish holding facility (CDP No. 1-15-0604) with a withdrawal of about 192,000 gallons per day. Combined, these facilities withdraw less than 4% of the 11.8 million gallon per day volume proposed for the District's project.

[20] A more detailed review of the methods and assumptions of the Empirical Transport Model, which underlies the APF approach, can be found in the staff reports to CDP Nos. E-06-013 (Poseidon Resources) and consistency certification CC-079-06 (BHP Billiton LNG International).

water. Those species serve as "surrogates" for the dozens or hundreds of other species that may be entrained in the same intake.[21]

The average of those individual APFs at the 95% confidence level identifies how many acres of habitat similar to the habitat types within the source water body would be needed to replace productivity lost due to entrainment. In some cases, such as with this project where one of the entrained species – longfin smelt – is listed as threatened or endangered, the individual APF for that species can be used to determine the type and amount of habitat needed to mitigate for the losses of just that species. The adverse effects on longfin smelt and the mitigation needed to address those effects were calculated separately by CDFW, as described below, to address the requirements of the District's Incidental Take Permit it must obtain from CDFW.

The District's site-specific entrainment study was used to develop APFs for seven species in Humboldt Bay, as shown below in Table 3. The study showed that the District's proposed 11.88 million gallon per day intake volume would result in an annual loss of productivity equal to that provided by 28.8 acres of Humboldt Bay habitats.

Table 3: Partial summary results of entrainment study (from Table 5-9 of May 2023 Intake Assessment by Tenera Environmental, **Exhibit 10**). Sampling in Humboldt Bay occurred from January–December 2022. APF estimates calculated based on an estimate of the surface area of Humboldt Bay at mean sea level of 15,098 acres.

	APF Estimates (Acres)		
Taxa	**RMT II Intake**	**RTD Intake**	**Total**
Arrow Goby	45.4	11.3	56.7
Bay Goby	11.5	6.1	17.6
Whitebait Smelt	4.9	2.1	7.0
Pacific Herring	3.2	1.5	4.7
Pacific Tomcod	11.4	1.3	12.7
Surf Smelt	8.1	3.7	11.8
Pacific Staghorn Sculpin	9.6	4.9	15.5
95th Percentile APF Estimates	**22.4**	**6.6**	**28.8**

The District additionally developed an APF for longfin smelt, pursuant to guidance by CDFW and to allow for any mitigation needed specifically for this listed species could be provided. CDFW used a modified calculation method to determine expected entrainment and needed mitigation for the longfin smelt. It concluded that mitigating the

[21] This approach of using "surrogates" is necessary in California's waters for several reasons – we do not have sufficient information about the life history and morphological changes for most species subject to entrainment, we are not yet able to identify many of these species at their early life stages, and it is impractical to identify and conduct entrainment calculations for the dozens or hundreds of species that may be sampled during a study. However, by having a set of surrogate species with different morphological characteristics and from different habitats within the source water, the assumption is that mitigation provided to make up for the loss of these surrogate species will also provide mitigation for many of the other species.

intake system's estimated annual entrainment of 15,881 longfin smelt larvae would require 5.89 acres of highly productive mitigation habitat.[22] As noted below, all or most of this habitat designed specifically for longfin smelt might also serve as appropriate mitigation for the seven species listed above.

In several technical memos, the District proposed that the 28.8-acre APF should be reduced to account for various characteristics of its intake system and of the species subject to entrainment, including a smaller screen mesh size and the hydrodynamics of the intake system. As described below, however, the Commission finds that only a slight reduction is appropriate, and the majority of proposed entrainment reductions cannot be adequately supported by available data and studies.[23]

- Intake Screen Mesh Size. Regarding the intake's mesh size, the State Water Board has determined that adding a 1.0-mm or smaller mesh screen on an open water intake such as that proposed by the District provides just a slight reduction in entrainment. The State Water Board's analyses conducted as part of its adoption of the Ocean Plan amendment for seawater desalination established that seawater intakes using a screen with a mesh no larger than 1.0 mm would be credited with a one percent reduction in their APF.[24] This modest reduction is largely due to the vast majority of planktonic organisms subject to entrainment are much smaller than that mesh size, with most measured in microns, which are 1/1000th of a millimeter. Although this Ocean Plan provision applies to desalination facilities, the studies reviewed by the State Water Board that served as the basis for this determination covered a wider range of intakes, including the type being proposed by the District. Applying this one percent reduction to the District's 28.8-acre APF results in an APF of **28.5 acres**.

  The District contends that installing a 0.5-mm screen mesh on its intake would result in an additional and substantial reduction in entrainment. This was based on the District's evaluation of how it might reduce entrainment of longfin smelt, pursuant to concerns raised by CDFW about the intake's adverse effects of that specific listed species. The District evaluated the characteristics of longfin smelt, primarily the length and head capsule size of the longfin smelt larvae and young

[22] See March 27, 2024 letter from CDFW to the District regarding the District's Incidental Take Permit application.

[23] Additionally, in several instances, the District has contended the entrainment impacts should be considered relatively minimal because those impacts would not cause population-level effects on the entrained species – i.e., the impact should be seen as minor since the number of organisms of the various species lost due to entrainment represent just a small proportion of the overall populations of those species. However, this does not reflect the productivity-based standard used by California resource agencies to determine entrainment impacts, which identifies the amount of lost marine life productivity resulting from a project's entrainment (as measured by APF). The agencies determined previously that population-type analyses, such as Fecundity Hindcasting ("FH") and Adult Equivalent Loss ("AEL") are not appropriate for California's coastal waters, as those methods required greater understanding of our species' population dynamics than is currently available.

[24] Ocean Plan and supporting documents available at: https://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/

fish that might be subject to entrainment. The District proposed, and CDFW concurred, that using a 0.5-mm mesh instead of a 1.0-mm mesh would result in a 41% reduction in longfin smelt entrainment.

The District then proposed that the same approach be used to calculate a similar reduction in its overall entrainment rate. It measured lengths and head capsule sizes of the seven species used to calculate the intakes' overall APF and concluded that using a 0.5-mm screen would provide a 74.8% reduction in the APF, which would reduce it from the original 28.8 acres to about 7.8 acres.[25] However, in reviewing the District's evaluation and again relying in part on prior studies and reviews by the State Water Board, there is a lack of support for this proposed overall reduction. While the 41% reduction may be appropriate to apply at the District's intakes for longfin smelt, the State Water Board's analysis of relevant studies, which included some cited by the District, cautioned against applying results from one species to other species, due to the often-substantial differences in the species' morphology and behavior that could affect the degree to which individual species at different life stages are subject to entrainment. The Board also observed that the various studies had sometimes inconsistent or contradictory results. Most, too, were conducted in laboratory settings or at locations with species other than those present in Humboldt Bay.[26] Without site- and species-specific data from the District's intakes, the Commission finds that the proposed reduction is not adequately supported for species other than the longfin smelt.

- Intake System Hydrodynamics. Regarding the hydrodynamic characteristics of the intake and screen systems, the District notes that the design and alignment of its proposed system will be parallel to the main tidal currents in the Samoa Channel and would reduce entrainment by creating a "bow wave" effect that will move some entrainable organisms away from the screens. It noted, too, that its intake through-screen velocities will almost always be lower than the velocities of the water currents moving past the screen, so some organisms moving along the screen would be susceptible to entrainment for much shorter periods than they might otherwise be. Again though, while these screen features may lead to a reduced entrainment rate for some species, it is difficult to quantify, especially with the lack of site-specific data and with the fundamental issue of entrainment being primarily a product of the intake volume. The Commission therefore finds that this currently proposed reduction is not adequately supported. That said, the District could conduct a future study to identify whether the intake hydrodynamics result in reduced entrainment and therefore a reduced mitigation requirement; however, the design and effort needed for such a study to provide conclusive results may be substantial.

[25] See Tenera technical memorandum, Head Capsule Analysis for Determining Probability of Entrainment at Intakes Using Wedgewire Screen, March 29, 2024.

[26] We note, too, that some of the same studies cited by the District were those cited by the State Water Board in reaching its conclusion.

Importantly, even if a 0.5-mm mesh screen and the screen hydrodynamics provide some reduced entrainment of the seven species used to calculate the APF shown in Table 3 above, those species still are meant to serve as surrogates for the dozens or hundreds of other species subject to entrainment and that are smaller than the mesh size. As noted above, entrainment is largely a function of the volume of water being drawn into an intake. The APF is fundamentally meant to provide a measure of the overall lost marine life productivity and of habitat areas needed to mitigate that loss, not to determine a mesh size. For this proposed project, the primary measure for calculating reduced entrainment and a reduced APF is the District's proposal to phase its water withdrawals, with the first several years of intake operation at 5.05 MGD during Phase 1 resulting in about 43% of the APF of the full 28.5-acre APF that would occur with full Phase 3 withdrawals at 11.88 MGD. This difference can be reflected in the types and amounts of mitigation needed for the proposed project, as described below.

Mitigation Required for Entrainment and Biological Productivity Impacts

The Commission's approach for determining the amount and type of mitigation needed for entrainment-related impacts has been similar to determining what mitigation is necessary to address other types of impacts that result in the loss of marine habitat. These other types of impacts – for instance, placing fill in marine or estuarine waters – often result in the direct loss of benthic habitat or of productive areas of eelgrass or kelp. Although entrainment also involves the loss of habitat in the form of seawater, the primary aim of the mitigation is to address the loss of marine life productivity that results from the loss of marine organisms in the entrained water. Because calculating entrainment impacts generally involves determining the loss of organisms that originated in a variety of habitats – e.g., mudflats, eelgrass, open water, etc. - a well-crafted mitigation approach can involve creating or restoring a much more productive area of habitat than the "average" productivity of those habitats. This can result in the mitigation needed to fully compensate for the entrainment losses being smaller, but more productive, than the acreage referenced in an APF.

Additionally, and as noted above, the mitigation necessary to address this project's impacts to longfin smelt may also be suitable mitigation for all or many of the other entrained species, such as the seven surrogate species above and the many other species they represent. For instance, creating or restoring a productive intertidal habitat that is beneficial to longfin smelt would also be expected to benefit a wide variety of marine life.

<u>District Proposed Mitigation Activities</u>

The District has proposed several mitigation actions to address the project's expected adverse entrainment-related impacts on marine life in Humboldt Bay and state-listed longfin smelt in particular. As described below, these proposed actions are not sufficient to adequately mitigate these impacts. The Commission is therefore requiring additional mitigation through **Special Condition 4**.

1. Piling Removal in Fields Landing

To partially mitigate the adverse impacts described above, the District has proposed the removal of derelict pilings at the site of a former shipping pier (called Kramer Dock) on the eastern shoreline of Humboldt Bay in Fields Landing (APN 307-101-002) (**Exhibit 1**). The proposed pile removal mitigation efforts would result in the removal and disposal of up to 1,139 structures (988 piles and 151 cross beams) for a total estimated volume of 23,650 ft^3 and weight of 308 tons (**Exhibit 5**). The piling removal is intended to remove creosote-treated debris from the Bay and thereby increase the area of habitat on the underlying substrate for colonization by marine life, including, potentially, adjacent eelgrass plants. Other purported benefits of piling removal include reduced substrate for introduced species; reduced shading of the bottom and water column; reduced restrictions to flow and sediment movement; reduced navigational hazards; and improved aesthetics.

In general, removal of derelict structures such as these pilings, from intertidal habitats of the bay is consistent with the directives of sections 30230 and 30231 of the Coastal Act that direct the restoration where feasible of marine resources and the quality of coastal waters and estuaries for all species of marine organisms and for the protection of human health. The District asserts that this mitigation is appropriate to mitigate for marine resource entrainment and biological productivity impacts because it would remove a source of ongoing leaching of toxic pollutants from the bay, as the pilings are believed to have been treated with creosote, which is derived from coal tars made up of polycyclic aromatic hydrocarbon (PAH) compounds. Research has shown that even very low levels of PAH's can adversely affect various species of fish embryos and potentially adult populations.

The total area from which the pilings would be removed is about 2.69 acres, though only a small proportion of that area is actually occupied by the pilings. The District proposes a 1:4 mitigation ratio for this effort (4 acres of credit for each acre of habitat restored), which it asserts would compensate for 10.76 acres of the calculated 28.5-acre APF (**Exhibit 7**).

While the Commission generally supports the removal of derelict structures from coastal waters and estuaries, the use of this activity as mitigation for entrainment and biological productivity impacts related to the seawater intakes is appropriate only in so far as it directly creates or restores new areas of marine habitat currently occupied by the structures (i.e., the area of bay floor and the water column that would otherwise be available to marine organisms).

For several reasons, the limited benefits expected from piling removal in this instance do not warrant the District's proposed mitigation ratio. First, the District appears to have based part of its proposed ratio on the provision of non-ecological benefits such as the removal of navigational hazards and improved aesthetics; however, mitigation credits provided should be consistent with the impacts for which they are meant to compensate. Therefore, while non-ecological benefits may be attractive, they are not appropriate to include when calculating credits meant to mitigate for losses of biological productivity. Second, the pilings have been in the water for several decades and it's

likely that most of the leaching of creosote into the water column has occurred.[27] Additionally, the District proposes to just remove the pilings and does not address the likelihood that the leached creosote from the pilings has entered the surrounding sediments and benthic habitat. Creosote consists of up to several hundred different compounds, many of which are persistent in marine sediments and remain bioavailable to a variety of organisms. While removing the pilings would have the benefit of opening up an area of the overlying intertidal water column, it may also create a situation where marine life settling in the opened area of substrate would be exposed to harmful levels of contaminants.[28] Other potential benefits to the hydrodynamics in this shallow intertidal area and its possible future colonization by eelgrass are speculative and remain to be substantiated, particularly given the quality of substrate(s) and with the adjacent shoreline fixed by a retaining wall. Further, the District stated that it intends in the future to use at least some of the site from which pilings would be removed as a new barge landing site, which could severely reduce any mitigation benefits resulting from piling removal. Finally, in the past, the Commission has consistently credited debris removal (including pilings with creosote) at no more than a 1:1 ratio based on the benthic footprint occupied by the material removed (i.e., this does not provide for the space surrounding or between individual pilings but only from the seafloor directly occupied, representing that which would otherwise be available to marine organisms).[29] However, in this case where mitigation is required for lost productivity, it would be appropriate to also consider the water column that derelict structures occupy. Based on the *Pile and Cross Beam Removal Quantities* technical memo provided by GHD to the District (dated April 5, 2022), the typical pile has a 12-inch diameter and extends approximately 9.3 feet above ground, and the calculated surface area of material (piles and cross beams) exposed to the average daily water column at the proposed mitigation site totals 30,660 square feet while an additional 3,790 square feet sit above that but would be subject to precipitation and periodic wave exposure, at which points leached material may wash down into the Bay waters and otherwise contribute to benthic shading. Below ground, the piles are believed to extend approximately 20 feet but because this portion is not guaranteed to be fully removed and productivity is primarily limited to the first several inches of substrate, this portion is excluded from further mitigation consideration. In total, the Kramer Dock mitigation site would be able to provide 34,450 square feet (0.79 acres) of mitigation credit for lost productivity.

Thus, to the extent this activity is undertaken as mitigation for entrainment and biological productivity impacts, the final Mitigation Plan for marine life and biological productivity impacts required by **Special Condition 4** directs that the piling removal

[27] Creosote from treated pilings tends to leach into the water column at a relatively high rate initially with the rate decaying over time. See, for example, Werme et. al, Removal of Creosote-Treated Pilings and Structures From San Francisco Bay, prepared for the San Francisco Estuary Institute, 2010, and Parametrix, Creosote Release from Cut/Broken Piles, Asarco Smelter Site, prepared for Washington Department of Natural Resources, 2011.

[28] Commission staff requested that the District conduct sampling to determine whether the nearby sediments were contaminated, though the District declined to conduct that sampling.

[29] For example, see: Humboldt Bay Harbor, Recreation, and Conservation District (CDP 9-16-024); Sierra Pacific Industries (CDP 1-17-0269); and MCL Marine Corp. (CDP 5-18-0119).

mitigation work at the former Kramer Dock shall be credited at a ratio of no more than 1:1 for the above-ground surface area directly occupied by the material removed.

Special Condition 5 requires submittal of a final site-specific mitigation plan for the pile removal work that includes provisions for implementing appropriate mitigation measures to protect water quality and eelgrass during pile removal work (discussed in more detail below).

2. Spartina Removal

The District has also proposed conducting removal of an invasive species both at a tidal marsh site in Eureka at the end of Bay Street as well as, potentially, other locations around Humboldt Bay (consistent with the terms and conditions of an existing CDP held by the District, CDP 1-14-0249, approved by the Commission in June of 2015). Dense-flowered cordgrass (*Spartina densiflora*) is an invasive salt marsh grass native to Chile introduced to Humboldt Bay during the lumber trade over a century ago. The species has proliferated and now dominates over 90% of the salt marsh habitat within the Bay. The invasive species displaces native indigenous plants, alters and reduces habitat for marine species, displaces foraging habitat for shorebirds, and decreases estuarine productivity.

Saltmarsh has high primary productivity which forms the base of estuarine food webs and is important for nutrient regeneration, recycling, and export. Saltmarsh also provides nursery habitat for many invertebrates and fishes, serves as critical roosting and foraging habitat for many migrating and overwintering bird species, and can support several species of rare plants. The area of saltmarsh in Humboldt Bay has also been substantially reduced over the past decades. In 1854, the Bay covered about 25,800 acres, which included about 10,500 acres of intertidal saltmarsh. With much of that area having been diked and converted to agricultural uses, the remaining saltmarsh acreage is something less than about 2000 acres, representing more than a 90% loss of past saltmarsh cover. The U.S. Fish & Wildlife Service estimates that nearly 1,700 acres of saltmarsh are infested with *Spartina densiflora*. In short, *Spartina* is present in virtually all remaining occurrences of saltmarsh within the Humboldt Bay Region.

Spartina densiflora profoundly alters estuarine habitats by increasing sedimentation, displacing native plant species, and disrupting habitats for fish and wildlife species. Where *Spartina* is present, it generally increases over time, and when abundant, the native estuarine habitat essentially disappears. The impact of *Spartina* is so profound and complete that the removal of the plant goes beyond the typical removal of non-native species through weeding or site enhancement. Unless *Spartina* is removed, remaining native habitat will be lost. The removal of *Spartina*, if properly monitored and maintained, results in the return of native salt marsh habitat. However, for the *Spartina* removal to provide meaningful mitigation, its removal must encompass a contiguous area, and the removal must include long-term monitoring, maintenance, and funding provisions to ensure the success of the removal, prevent the reemergence of *Spartina* in the restoration area, enable the restoration of native salt marsh habitat, and reduce the spread of *Spartina* in the bay over time.

The District has proposed conducting *Spartina* removal consistent with the conditions of its existing CDP 1-14-0249, which granted multi-year authorization to the District to coordinate and implement the Humboldt Bay Regional Spartina Eradication Plan in cooperation with other agencies and cooperating landowners. The CDP authorized the District to implement this Plan across the Humboldt Bay region within approximately 1,400 acres of tidal marsh habitats associated with Humboldt Bay and in the nearby estuaries of the Eel River and Mad River. The regional plan relies on site-specific Spartina Removal Plans for the proposed primary *Spartina* removal work in the area consistent with the CDP conditions and with the mitigation measures in the Final Programmatic Environmental Impact Report adopted for the Humboldt Bay Regional Spartina Eradication Plan (dated March 21, 2013).

The District proposes a 1:3 mitigation ratio for any *Spartina* eradication effort (3 acres of credit for each acre of habitat restored) at its Bay Street mitigation site (discussed below) and various other unidentified salt marsh sites around the bay (**Exhibit 7**). However, the Commission has found in the past that mitigation ratios should vary proportionally with the density of *Spartina* given the more serious ecological consequences of infestations with dense cover. A 2010 mapping effort by the USFWS estimated *Spartina* cover via aerial imagery and established three classes of density – High (60-100% cover), Medium (26-60% Cover), and Low (1-25% cover) – and the District's description of the proposed Bay Street mitigation site references the same study, citing the presence of Medium and High cover classes at that location.[30] In 2019 and again in 2022, the Commission authorized 1 acre of mitigation credit for the successful eradication of *Spartina* from 1.24 acres of high-cover areas, 2.33 acres of medium-cover areas, or 7.69 acres of low-cover areas.[31] In this instance, where mitigation ratios aim to further reflect differences in productivity between the Area of Production Foregone at the Project's source waters and adjacent, relatively more productive ecosystems such as saltmarsh, these preceding ratios for *Spartina* can serve as a foundation from which to extend calculations. As discussed below, the relative productivity increase (or 'lift') estimated between an acre of Project source water and an acre of biogenically-structured habitat such as saltmarsh is four-fold. If 1 acre of saltmarsh restoration provides the productivity equivalent of 4 acres of APF, and successful eradication of 1.24 acres of high-cover *Spartina* provides an equivalent of 1 acre of saltmarsh restoration, it follows that 1 acre of high-cover *Spartina* eradication provides an equivalent of 3.2 acres of APF:

[30] (1) Grazul, Z. and P. Rowland. 2010. The Distribution of *Spartina densiflora* in Humboldt Bay National Wildlife Refuge: Baseline Mapping, 2010. California State Coastal Conservancy. Grant No. 07-196. (2) Grazul, Z. and P. Rowland. 2011. The Distribution of *Spartina densiflora* in the Humboldt Bay Region: Baseline Mapping. U.S. Fish & Wildlife Service, Arcata, CA.

[31] December 10, 2018 memorandum from John D. Dixon, PhD, Ecologist to Melissa Kraemer, North Coast District Supervisor regarding Mitigation for Wetland Impacts along the Eureka-Arcata Highway 101 Corridor (attached as Exhibit 39 to the staff report for CDP 1-18-1078 available from the Commission's website: https://documents.coastal.ca.gov/reports/2019/8/W11a/W11a-8-2018-exhibits.pdf.

$$\frac{\text{4 ac APF}}{\text{1 ac saltmarsh restoration}} \times \frac{\text{1 ac saltmarsh restoration}}{\text{1.24 ac high-cover } \textit{Spartina} \text{ eradication}} \cong \frac{\text{3.2 ac APF}}{\text{1 ac high-cover } \textit{Spartina} \text{ eradication}}$$

This represents the estimated productivity lift, which results in a mitigation credit of 1:3.2. Similarly, 1 acre of medium-cover *Spartina* eradication would provide an estimated 1.7 acres of lift, or 1 acre of low-cover *Spartina* eradication would provide an estimate 0.5 acres of lift, with the lift in this case representing the amount of mitigation credit that would be provided to reduce the 28.5-acre APF. Because the Commission aims to prioritize areas where infestations are the most ecologically-damaging, any *Spartina*-focused mitigation for the District's Project is required to occur within areas characterized by medium or high-cover and would be credited at ratios of 1:3.2 or 1:1.7 for high and moderate cover classes, respectively. Even with these ecological benefits, the total amount of credit for *Spartina* eradication absent other associated mitigating actions (e.g., active revegetation) to be provided as part of overall mitigation for this project should account for no more than 15% of the mitigation needed for the total APF (i.e., about 4.275 acres) since the mitigation needed to adequately compensate for the APF is best represented by a variety of different habitat types.

Special Condition 4 requires the District to site any *Spartina* eradication efforts where they would be complete over a discrete area and where the ongoing threat of reinvasion is manageable. It caps the allowable APF acreage credited through *Spartina* eradication alone at 15% absent further consideration by the Executive Director with good cause, and sets crediting ratios based on the existing density class of *Spartina* cover. To ensure that the ecological benefits of *Spartina* removal are fully realized, eradication must also be sustained into the future. The authorized *Spartina* eradication mitigation must also be additional to the area of *Spartina* eradication approved under any of the prior approvals to ensure that the removal is not otherwise required by other projects and directly mitigates the impacts from the proposed project. Unless *Spartina densiflora* is completely eradicated from the Humboldt Bay region, this means monitoring and maintenance removal will need to continue for the life of the approved development. **Special Condition 4** therefore requires that a non-wasting endowment be established to fund those activities for the life of the approved development.

3. *Tidal Restoration and Enhancement Activities*

A third mitigation concept proposed by the District involves two parcels at the foot of Bay Street in Eureka, owned by the District, that consist of tideland habitats connected to Eureka Slough, which is connected to Humboldt Bay. Potential habitat restoration and enhancement activities proposed at this site, which could be permitted in the future subject to separate CDP authorization, include constructing new intertidal slough channels with tidal ponds and salt marsh pannes, filling historical drainage ditches, and removing invasive *Spartina* across approximately 3.7 acres. These activities would result in approximately 2,820 square feet of new salt marsh creation, 1,082 square feet of backfilling and/or removing existing human-made drainage ditches, creation of ~10,400 square feet of new tidal channels, creation of 6,200 square feet of tidal ponds and salt marsh pannes, and removal of 30 square feet of piles. The District has been

coordinating closely with CDFW on the development of mitigation plans for this site, because the anticipated restored and enhanced tidal habitats have the potential to provide rearing habitat for longfin smelt, which have been documented as being present in the nearby associated Eureka Slough. The District has also proposed an assortment of crediting ratios be applied to the several specific mitigation activities that would be needed to restore and enhance the site, ranging from 1:0.5 to 1:10. These include, for example, a suggested credit if the District included a deed restriction on the site. However, the Commission typically requires deed restrictions or similar legal protections for habitat mitigation sites as part of an overall mitigation package in order to assure the mitigated resources can be sustained into the future rather than crediting it separately. Moreover, the Commission generally takes a more holistic approach to crediting mitigation, with calculations being based on the overall acreage to which a particular mitigation strategy is applied (i.e. creation, substantial restoration, enhancement, or preservation). Using their proposed crediting approach, the District estimates that they should receive 18.01 acres of credit for the proposed concept at the Bay Street parcels.

Though the District's proposal remains conceptual at this stage and there are a variety of questions and details yet to be sorted through, this mitigation element appears to be feasible and able to provide what would be considered appropriate mitigation to compensate for part of the lost productivity represented by the APF; however, concerns with the site's existing infrastructure and rights-of-way on the site may limit the extent of restoration that could occur. For example, there are an abandoned sewer line in the road right-of-way, an operational sewer gravity main bisecting one parcel, and an electrical right-of-way crossing overhead, any of which may limit what might be possible to implement at the site, including due to ongoing disturbance during maintenance or repair activities for these infrastructure facilities. Also, significant upland portions of the parcels along Bay Street appear to be excluded from restoration plans presently, and it is unclear whether any habitat improvements would be proposed in those areas or if they would be left in their existing condition. Nonetheless, the Commission can at this point provide a rough estimate of mitigation opportunity at the Bay Street parcels. For the portion of the project that would involve major restoration activities such as the creation of new salt marsh, tidal channels, ponds, and pannes, and the removal of drainage ditches (though not *Spartina* removal), the Commission could apply up to a 1:4 ratio, as this would represent a significant improvement within a primarily biogenically structured habitat type (i.e. saltmarsh). The rationale supporting a 1:4 ratio is discussed further below. For the portion of work that would be limited to treatment of *Spartina*, which is presently estimated as approximately 2.5 acres of moderate cover and 1.2 acres of the high cover classes (26-60% and 60-100%, respectively), the corresponding ratios of 1:1.7 and 1:1.32 would apply and would total less than the 15% *Spartina* only treatment threshold of 4.275 acres. Using this framework, and depending on the final plan, the Commission estimates that 7-11 acres of credit towards the total 28.5-acre mitigation requirement could be available at Bay Street. This acreage and credit could also include the mitigation being developed by the District to address CDFW requirements for longfin smelt, since it would benefit a variety of species included in the APF calculation as well as the smelt. However, the conceptual nature of the current proposal does not provide sufficient detail for the Commission to make a final determination of mitigation credit. That would be determined as part of the review under

Special Condition 4 that requires the District to obtain an amendment to this permit and/or separate CDP authorization to implement this proposed mitigation element.

4. Other Proposed Mitigation Activities

The District has proposed several additional potential mitigation actions, as identified in **Exhibit 7**. Additional mitigation activities, like the Bay Street activities, would require an amendment to this permit and/or separate CDP authorization from the Commission and/or the applicable local government pursuant to a certified LCP once mitigation details and impact analyses are completed. The only proposed mitigation activities for which environmental review (pursuant to CEQA) has been completed to date is the piling removal in Fields Landing proposed under this CDP and *Spartina* removal work at various sites in the Humboldt Bay region (permitted under CDP 1-14-0249). Several of the proposed mitigation actions could be appropriate for replacing lost productivity from the Humboldt Bay, including the creation and restoration of aquatic habitats, restoration of marsh features and the reclamation or reconnection of historic plains, *Spartina* eradication, and dock piling removal; however, other actions likely would not. For example, a deed restriction does not itself replace productivity lost from an ecosystem but is an instrument by which the Commission assures the long-term protection of mitigated resources that do. And while the creation of a living shoreline may provide ecological benefits, the primary design goal is generally to protect what lies inshore and ultimately, its management will necessarily prioritize those protection services over ecological resources, thus potentially compromising the ecological value as compared to efforts where habitat is the foremost priority. The use of living shorelines as compensation for ecological impacts is potentially further at odds with mitigation goals, including the long-term management and protection of mitigated resources. Proposed mitigation actions to improve water quality in Humboldt Bay are also considered generally inappropriate as mitigation for the loss of living marine resources, including both the proposed treatment of stormwater and exclusion of cattle from upstream riparian areas, because while these actions may eventually benefit some living resources in the bay, their translation to productivity is not readily quantifiable and the jurisdiction or ability for the District to implement these and sustain delivery of benefits into the future is unassured, if not questionable. **Special Condition 4** responds to the menu of the District's proposed productivity mitigation activities by providing a framework for what may or may not be generally considered appropriate compensation for the Project's Area of Production Foregone, the maximum crediting ratios that could be applied upon consideration of specific details, and the required plan components necessary for review along with other details. **Special Condition 4** also acknowledges that not all mitigation opportunities may be knowable presently and leaves room for the Executive Director to consider additional proposals that may be appropriate, and to determine whether these would fit within the scope of options already contemplated or whether they would necessarily be brought back to the Commission for further discussion and authorization.

5. Timing of Mitigation Activities

The District proposes to undertake mitigation in concert with its phasing of water withdrawals so that mitigation would be in place before water withdrawals occur. Table

4 shows the three phases of expected water withdrawals and the cumulative APF for the phases:

Table 4. Proposed Phased Mitigation

Phase # and Estimated Year of Operation	Volume of each individual phase (MGD)	Cumulative intake volumes (MGD)	% of total	APF (cumulative acres)	Estimated Year of Mitigation
Phase 1 (2027)	5.05	5.05	43%	12.24	2025
Phase 2 (2032)	4.95	10.0	84%	24.24	2025
Phase 3 (2034)	1.88	11.88	100%	28.80	2033

With the maximum intake volume not anticipated to occur until 2034, and because the District expects mitigation to be in place and functional before then, it proposes that the availability of the habitat created or enhanced through advanced mitigation prior to the project impacts should be credited as follows:

> *To account for this habitat benefit, the Harbor District proposes a credit for advanced mitigation. The established lifespan of the project is 30 years. The initial approach to estimating a reasonable credit for advanced mitigation divided the life of the project over the ten-year period for mitigation establishment, resulting in a 3% annual credit. However, multiplying 3% by ten years would result in a credit of 30%, which is recognized to be too high to be acceptable.*
>
> *Thus, the Harbor District proposes a 0.05-acre credit for each year mitigation is in place prior to the withdrawal of Phase 3 volumes, up to a ten-year maximum. Thus, for example, if the Harbor District completes all mitigation project(s) in the year 2025 to address impacts associated withdrawal of the full 11.88 MGD volume, mitigation would be in place nine years prior to the full impact. The full APF mitigation requirement would be reduced by a total of 0.45 acres (0.05 acres x nine years of advanced mitigation).*

However, as previously discussed, most of the currently proposed mitigation is not sufficiently detailed and will require additional approvals through amended or new CDPs, so the timing and the amount of advance mitigation that may be in place at each phase is uncertain. Importantly, the APF represents an annual loss of productivity, so any delays in mitigation success could result in less than adequate mitigation for an unknown period. With the District needing to return with more detailed plans as part of additional authorizations, appropriate mitigation ratios could be determined at that time, including any that are expected to provide some amount of mitigation in advance of expected impacts.

Additional Mitigation Needed to Compensate for Marine Life Impacts

As referred to above, the District's proposed crediting ratios and calculations differ from the Commission's typical approach and are structured by a calculus of line items with ratios varying from 1:0.5 to 1:10, depending on the specific activity that would be implemented. The general complexity of tracking activities in such a way compounds further on the already complex nature of addressing compensatory mitigation across multiple sites and ecosystems. For the sake of simplifying as well as recognizing that benefits to an ecosystem are often more than the sum of individual parts, the Commission finds it appropriate to apply a more holistic approach to calculating mitigation credits. Mitigation calculations should be based on any of several overarching mitigation strategies across a contiguous area of some ecologically significant scale with appropriate ratios applied accordingly. A 2020 technical memo from one of the Commission's ecologists describes four strategies that have been consistently articulated as creation, substantial restoration, enhancement, and preservation, and provides an accompanying framework of ratios based on the expected level of improvements (or 'functional lift') from each.[32] To summarize, creation is where habitat is developed at locations it has not historically existed, and thus contributes to a new or expanded footprint relative to existing habitat. Substantial restoration applies to areas where habitat exists in a degraded state due to stress imposed by any number of drivers and the general aim is to alleviate the system from any such stressors and actively facilitate the return of a full suite of self-sustaining ecological functions. The Commission has typically expected creation and/or substantial restoration when compensatory mitigation is needed to mitigate for habitat impacts, and most often, the applied ratios have been 3:1 (acres required:acres impacted) for ESHA or 4:1 for wetlands. At times, the Commission has accepted enhancement, usually at a ratio of twice the amount expected for creation or substantial restoration -- i.e. 6:1 for ESHA and 8:1 for wetlands. Enhancement involves the improvement of some limited ecological functions as opposed to the recovery of the full suite and often takes the form of invasive vegetation eradication from a site without subsequent active revegetation efforts. The final mitigation strategy is preservation, which represents a passive management approach where no active improvement is made but an area is simply placed under some form of permanent protection from development without assurance of habitat improvement or maintenance. Preservation has been required at triple the ratio of creation or substantial restoration -- i.e. 9:1 for ESHA and 12:1 for wetlands.

Mitigation ratios are usually written with the first figure representing the mitigation acreage required and the second the acreage impacted – e.g., a 4:1 ratio for wetlands means four acres of habitat restoration are required for each acre impacted. This is the same for ratios developed for entrainment and APF purposes; however, the ratio generally recognizes that the acreage of mitigation provided is as productive or more productive than the area of source waters represented by the APF. For example, a 1:4

[32] See Exhibit 24 to the staff report for CDP 2-20-0282 for the Caltrans Gleason Beach Highway 1 Realignment Project – Memorandum from Commission staff Senior Ecologist Dr. Lauren Garske-Garcia, PhD, dated October 8, 2020 regarding Impact Definitions and Mitigation Framework for Gleason's Beach Highway 1 Realignment accessible from the Commission's website: https://documents.coastal.ca.gov/reports/2020/11/F10a/F10a-11-2020-exhibits.pdf.

ratio means that every acre of mitigation is expected to be four times more productive than an acre of source water, with less area needed overall to provide an equivalent amount of production to the system. Past Commission decisions have used a range of ratios in determining how much mitigation different projects needed to provide, based largely on the amount of productivity and ecological benefits expected from different types of mitigation – for example, to address the entrainment impacts of the Poseidon Carlsbad desalination facility (CDP #9-14-0731), the Commission used ratios of 1:1 and 1:4 for several different types of mitigation, based largely on their expected levels of productivity. This approach is similar to the state's Ocean Plan, which recognizes that different types of mitigation provide different levels of productivity and allows for mitigation ratios of between 1:1 and 1:10 when addressing entrainment impacts. Recent application of the Ocean Plan requirements by the Santa Ana Regional Water Quality Control Board resulted in ratios of 1:4.5 for wetland restoration and 1:5.8 for artificial reef creation, reflecting their relatively high productivity rates compared to that of the open coastal waters where entrainment would occur.[33]

As noted previously, the District has proposed ratios at the maximum 1:10 for estuarine source waters, which is substantially more than has been calculated or approved in past authorizations. Nonetheless, the Commission acknowledges that there would be some increase in productivity where mitigation is implemented in certain habitats around Humboldt Bay. As quantifying productivity can be a complex exercise and challenging to extrapolate from one habitat or location to another, determining the relative lift between systems with precision is effectively infeasible for this analysis. However, published meta-analyses from the scientific literature suggest the presence of productivity hierarchies in coastal waters where biogenically-structured habitats such as seagrass beds and salt marshes significantly exceed the productivity of unstructured habitats such as mudflats or sandy bottoms.[34] The value of biogenic structure and its role in supporting increased productivity extends beyond the physical complexity that it introduces to create microhabitats for organisms and includes primary production (i.e. photosynthesis), which in turn supports higher trophic levels within a food web.

Provided the assortment of above precedent, regulatory standards, and technical literature, the Commission finds it appropriate to recognize a mitigation crediting framework that characterizes the habitats in which mitigation might occur as biogenically structured or unstructured and establishes maximum crediting ratios reflecting differences in their productivity as 1:4 and 1:3, respectively. By setting a

[33] The Santa Ana Regional Water Quality Control Board applied the Ocean Plan requirements in its 2022 mitigation calculations for the proposed Poseidon Huntington Beach desalination facility and determined that the expected entrainment impacts could be addressed with mitigation provided in the form of wetland restoration at a ratio of 1:4.5 and mitigation in the form of artificial reefs at a ratio of 1:5.8. These ratios were meant to reflect the different productivity expected from the two types of mitigation.

[34] For example, see: Minello TJ, Able KW, Weinstein MP, Hays CG. 2003. *Salt marshes as nurseries for nekton: testing hypotheses on density, growth and survival through meta-analysis*. Marine Ecology Progress Series, 246, 39–59. doi:10.3354/meps246039; Lefcheck JS, Hughes BB, Johnson AJ, Pfirrmann BW, Rasher DB, Smyth AR, Williams BL, Beck MW, Orth RJ. *Are coastal habitats important nurseries? A meta-analysis*. Conservation Letters. 2019 Jul;12(4):e12645. doi.org/10.1111/conl.12645.

maximum, the Commission is assured that no less than 7.125 acres of compensatory mitigation will be provided for the Project's 28.5-acre APF while providing some flexibility to address nuances that may arise within specific mitigation proposals. With allowances for enhancement activities such as derelict piling removal and *Spartina* eradication, the minimum area of mitigation to be provided as habitat creation or substantial restoration would be approximately 5.8 acres. **Special Condition 4** formalizes this framework. It also specifies that the duration of any mitigation other than *Spartina* eradication, which is expected to be permanently managed, is required for as many years as the project is in operation (i.e. 30 years under the terms of this CDP), as well as clarifies guidance on what would be considered appropriate mitigation actions, what would necessitate additional CDP authorizations, and details the required contents of the Marine Life Mitigation Plan to be submitted for review and approval.

Potential Impacts Associated with Offsite Mitigation Activities

As previously discussed, the proposed offsite mitigation work at the former shipping pier in Fields Landing will consist of the proposed removal of up to 988 derelict piles and 151 cross beam supports attached to the piles. The final CEQA document adopted by the County for the project evaluated the environmental effects of the proposed pile removal mitigation work as well as the potential effects of any proposed *Spartina* removal work. For the latter, the final CEQA document adopted by the County references mitigation measures to protect water quality in the final Programmatic Environmental Impact Report for the "Humboldt Bay Regional Invasive Spartina Control and Native Salt Marsh Restoration Project" adopted in 2013.[35]

Potential impacts and identified mitigation measures appropriate to minimize or avoid significant adverse environmental impacts are described (in part) as follows (emphasis added) and in **Appendix B**:

- From the County's EIR section 3.9.6 (impact HWQ-a):

> *Removal of piles and Spartina would occur in and near wetted environments in tidal settings and has the potential to impact water quality primarily increases in turbidity due to ground disturbance. Removed Spartina may accumulate along the shoreline due to tidal action and contribute to diminished dissolved oxygen, which can also be detrimental to water quality. Absent mitigation, these impacts would be potentially significant.*
>
> *Potential impacts and mitigation measures for the removal of Spartina were evaluated in the 2013 Spartina PEIR (H.T. Harvey & Associates and GHD 2013). Specific removal methods to be applied to Spartina include manual removal via a marsh master, weed-whacker, or similar machinery; herbicide application and water impoundment to create prolonged inundation are not proposed as a manner of treatment. The location of the Spartina removal would be located*

[35] The final approved CEQA document (SCH #2011012015) prepared by H.T. Harvey & Associates and GHD in 2013 is posted on the District's website: https://humboldtbay.org/sites/humboldtbay2.org/files/Spartina%20Eradication%20Plan%20Final%20EIR%20-%202013.pdf

> *within the management area covered under the Spartina PEIR, and erosion control-related impact analysis of invasive plant removal as analyzed in the Spartina PEIR are incorporated by reference and summarized below…*
>
> *…Mitigation Measure HWQ-3 has been incorporated into the Project to reduce the effects to water quality from pile removal to a less than significant level... Mitigation Measures from the 2013 Spartina PEIR, specifically Mitigation Measure WQ-3, Mitigation Measure WQ-6, Mitigation Measure WQ-7, and Mitigation Measure HHM-2 have also been incorporated into the Project to reduce potentially significant impacts related to accidental fuel and petroleum spills, ground disturbance, and wracking to a less than significant level…*

The mitigation measures referenced above as appropriate to minimize or avoid potential water quality impacts related to pile removal and *Spartina* removal mitigation work include measures requiring (1) removing piles during a tide of sufficient elevation to float the barge and tug boat adjacent to the piles being removed without scarring the mudflats or injuring eelgrass; (2) using a floating containment boom around piles to be removed to collect any debris; (3) ensuring leak-free equipment; (4) removing piles slowly to minimize sediment disturbance; (5) off-site equipment refueling; (6) use of biodiesel rather than petroleum diesel in heavy equipment; and (7) having emergency spill-kits on hand to clean up any accidental spills. The full suite of BMPs and mitigation measure requirements are included in **Appendix B**.

To ensure that the above mitigation measures determined to be necessary to protect water quality are implemented during pile removal and *Spartina* removal mitigation work, the Commission imposes **Special Conditions 4-A(2)(c)** (related to *Spartina* removal work) **and 5** (related to pile removal work). **Special Condition 5** also provides further specification necessary to protect existing eelgrass in and around the pile removal work areas during the removal process, including through the requirement of mapping eelgrass resources to facilitate avoidance, mitigation measures for when work necessarily occurs during the eelgrass growing season, documentation of eelgrass condition before and after pile removal, and steps towards remediation in the case that any adverse effects might occur.

Other Potential Impacts of the Project on Marine Resources & Water Quality

Potential Noise Impacts Associated with Intake Pumps

The project would also result in underwater noise generated by the intake pumps, which would be located on the two docks near the intake structures. As described below, noise levels from the project's pumps could exceed thresholds identified by NMFS as causing harm or behavioral changes to a number of marine species of concern. As described below, however, **Special Condition 7** would require the District to ensure that these levels are reduced to be fully protective of these species.

As background, excessive levels of underwater noise can affect a number of marine species, often at a significant distance from the source of the sound. For purposes of identifying and avoiding impacts to marine life, sound is generally characterized by two

of its several constituents – its energy level or "loudness," as measured in decibels, and its frequency or frequencies, as measured in Hertz.

There is substantial variation among species in how they are affected by the "loudness" of sound and how they exhibit those effects. Some species will leave or avoid an area where sounds are at relatively low decibel levels, while others are more tolerant of louder sounds. Species also differ in their ability to hear or be affected by different frequencies. For example, some marine mammals are sensitive to just lower frequency sounds, while others react to mid- or high frequencies. Further, some species can become accustomed to a certain type or level of noise in a particular area that might otherwise cause an impact or a behavioral change.

Effects on different species can also vary based on the source of the sound. Categories of underwater noise sources include:

- Impulsive: these sources emit noise consisting of high peak sound pressure but usually transient and brief. Examples include impact pile driving, seismic air-guns, and explosives.
- Non-impulsive: these include different types of sound generated by a variety of sources but do not have the high peak sound pressure of impulsive sources. Examples include drilling and some sonar systems.
- Intermittent: these sources emit bursts of sound at regular or irregular intervals. Examples include impact pile driving, certain types of geophysical survey equipment, or the "pings" emitted by sonar equipment.
- Continuous: these sources emit noise with a relatively constant sound pressure level that remains above the ambient sound levels in the water column for long periods of time. Examples include drilling, underwater engines, or pumps.

Exhibit 9 provides a summary of the range of noise thresholds established by NMFS for a variety of species. For purposes of this project, the primary noise emissions of concern would be the continuous noise generated by the intake system pumps. As detailed in the Regional Board's Fact Sheet for the project's NPDES permit, the pumps are expected to generate up to 140 dBa at a distance of one meter and up to 120 dBa at 45 meters (about 150 feet) distance. As noted in the NMFS summary document referenced above, the behavioral disturbance threshold is 120 dB.

To avoid and minimize potential adverse impacts resulting from these project sounds, **Special Condition 7** requires that the District submit a Noise Reduction Plan for review and approval by the Executive Director that provides an analysis of the sound levels expected from the project pumps and describes the measures the District will implement to ensure those sounds do not exceed the greater of 120 decibels or pre-project ambient sound levels in the water column. Measures available to reduce sound levels include improving insulation around the pumps, relocating the pumps further from the open water column, and others. Additional concerns regarding potential impacts are that sound travels faster in water than it does in air – about four times faster – due to water being much denser than air, and that sound can also travel farther in water than it does

in air, though this varies depending on water temperatures and pressures. Special Condition 7 avoids the potential of these more distant effects on marine life since it requires the necessary thresholds to be met in the water column closest to the pumps.

Potential Water Quality Impacts Associated with Construction

As described in the project description finding above, new water distribution infrastructure will be developed, including the installation via trenching (in trenches up to 4,650 feet long, 19 feet wide, and 5 feet deep) of pipelines and associated hydrants and manifolds extending from and between the two docks. There will be an 18-inch to 36-inch-diameter seawater transmission pipeline and a 12-inch-diameter industrial (fresh)water pipeline. The industrial water pipeline will connect to existing industrial water pipelines on and around the property that tie into the HBMWD transmission pipeline. The water lines will cross an existing drainage swale ("stormwater feature") that drains stormwater runoff from the property to Humboldt Bay. The swale is connected to the bay through a culvert that passes through a small earthen berm. There is a small metal pedestrian bridge crossing on the landward side of the berm. This small crossing is degraded and would be removed. There is also a larger metal pedestrian bridge, which would be replaced with a prefabricated 80-foot-long one-lane vehicle bridge. Bridge installation would require several small footings in areas of existing asphalt. The proposed bridge originally was permitted by the Commission as part of the Taylor Mariculture permit approved in November 2012 under CDP No. E-11-029.[36] However, under an amendment to that CDP approved in February of 2014, the project was modified to, among other project changes, use existing access roads in place of the development of new vehicular access routes and installation of the 80-foot long access bridge.[37]

As discussed above in Finding IV-D (Related Permits), the proposed project is related to the Nordic Aquafarms Project, which was approved by Humboldt County in 2022. The County's approval included adoption of an EIR for the project in compliance with CEQA (see also Finding IV-N). The final CEQA document evaluated the environmental effects of the development proposed by the Harbor District under this CDP and identified several mitigation measures appropriate to minimize or avoid significant adverse environmental impacts, including measures to minimize or avoid potential water quality impacts related to pipeline installation work.

Potential impacts and identified mitigation measures are described (in part) as follows (emphasis added):

- From EIR section 3.6.6 (impact GEO-b):

  > *Implementation of the Humboldt Bay Water Intake component would require trenching, and operation of heavy machinery. Consequently, construction of this component would disturb soil and, therefore, have the potential to cause erosion.*

[36] See staff report for CDP E-11-029, page 8: https://documents.coastal.ca.gov/reports/2012/11/W13a-11-2012.pdf

[37] See immaterial amendment included in the February 2014 Deputy Director's Report: https://documents.coastal.ca.gov/reports/2014/2/W7-2-2014.pdf.

Erosion and sediment control provisions prescribed in the Humboldt County Code and the CBC would be required as part of the Project. Construction BMPs would be implemented as Mitigation Measure GEO-2, to ensure potential water quality impacts are at a less than significant level during and post construction. A construction SWPPP would also be prepared for the Project as detailed in Mitigation Measure HWQ-1 (see Section 3.9 Hydrology and Water Quality). Therefore, the potential soil erosion impact from construction would be less than significant with the implementation of Mitigation Measure GEO-2 and HWQ-1.

- From EIR section 3.9.6 (impact HWQ-a):

  Trenching would be located in upland surfaces, away from the Humboldt Bay shoreline and any tidally active surfaces, preventing potential water quality impacts to Humboldt Bay. The Harbor District would utilize erosion control materials (e.g., silt fencing) to isolate the Humboldt Bay shoreline from the area of ground disturbance during construction as a standard permit condition required by jurisdictional permitting agencies. To ensure any potential construction-related impacts to water quality are less than significant, the Project would be required to obtain a General Construction Stormwater Discharge SWPPP (see Mitigation Measure HWQ-1). SWPPP requirements would minimize and avoid water quality impacts to Humboldt Bay from construction-generated erosion and stormwater by establishing erosion control measures during construction (e.g., silt fences), minimization of vegetation removal, and avoidance of work during heavy rainfall.

  During trenching, any water sourced from dewatering activities would be pumped into Baker tanks or equivalent for sampling and chemical characterization (SHN 2021). Water sourced from trench dewatering would not be discharged to on-site wetlands or Humboldt Bay…

  The Harbor District would also be required to obtain a General Construction Stormwater Discharge permit for the Humboldt Bay Water Intakes (separate from the SWPPP required of NAFC for the Terrestrial Development). Similarly, the Harbor District would be required to obtain and following permits from the U.S. Army Corps of Engineers (USACE), NCRWQCB, the California Coastal Commission (CCC), and the California Department of Fish and Wildlife (CDFW). Permit requirements would include standard provisions to protect water quality, consistent with the Clean Water Act, California Coastal Act, and California Fish and Game Code. The Harbor District would employ BMPs and avoidance and minimization measures to limit and isolate in-water sediment disturbance or accidental spills during construction. Therefore, with the incorporation of Mitigation Measure HWQ-2, potential impact from construction would be less than significant.

- From EIR section 3.9.6 (impact HWQ-b):

  Trenching required for the water pipeline would not require deep excavation and thus would be highly unlikely to encounter groundwater. Trenches would have a

maximum depth of approximately 5 to 6 ½ feet, which is shallower than the depth to groundwater measured at the nearby Project Site of 12 feet (SHN 2021). In the event groundwater is encountered during construction, water sourced from dewatering activities would be pumped into Baker tanks or equivalent for sampling and chemical characterization (SHN 2021). Water sourced from dewatering would not be illegally discharged to wetlands or Humboldt Bay to cause polluted runoff. Operational use of the Humboldt Bay Water Intakes would not involve groundwater resources. No construction or operational-related impact would result.

- From EIR section 3.9.6 (impact HWQ-c.i):

  The area of ground disturbance required for trenching of the water pipeline is generally flat, parallel to the Humboldt Bay shoreline. The trench would cross one small drainage just south of the Red Tank dock; however, the drainage would not be altered. The existing drainage pattern on the Project Site is based on infiltration into the ground where no pervious surfaces exist. Following installation of the water pipeline, the ground surface would be returned to existing grade; a change in slope or topography would not result. The existing drainage pattern would not be altered.

  During construction, Mitigation Measure GEO-2 and HWQ-2 would be implemented and implementation of erosion control BMPs to avoid sediment inputs related to construction and ground disturbance. Following construction, no off-site stormwater discharge is anticipated to occur at the Project Site. Any potential construction-related impact would be less than significant, and no operational impact would result.

- From EIR section 3.9.6 (impacts HWQ-c.ii and c.iii):

  The trenching alignment is primarily paved, under existing conditions. A change in grade or topography would not result from the waterline trenching. As discussed above, repaving the trenching alignment at the close of construction would not result in a considerable area of new impervious surface or result in polluted runoff…

- From EIR section 3.8.6 (impact HAZ-a):

  Construction of the Humboldt Bay Water Intake component would include the transport and use of common hazardous materials inherent to the construction process, including petroleum products for construction equipment and vehicles, paints, concrete curing compounds, and solvents for construction of the proposed seawater intake improvements. These materials are commonly used during construction, are not acutely hazardous, and would be used in relatively small quantities.

  Construction may result in the requirement for off-site transport of contaminated soil and/or groundwater to an appropriate waste disposal facility…

Project construction would be required to implement stormwater BMPs during construction in accordance with the SWRCB General Construction Stormwater Permit. Best management practices addressing materials management would be required, including proper material delivery and storage, spill prevention and control, and management of concrete and other wastes. In addition, the Interim Measures Work Plan would be implemented during construction for this project component.

- From EIR section 3.8.6 (impact HAZ-b):

  The Humboldt Bay Water Intakes component would modernize the operation of the two intake structures, as well as install sea water and industrial freshwater distribution pipelines. During construction, this component would require the use of heavy machinery to perform construction-related tasks including grading, excavation, trenching, compaction, and transportation of materials. There is always the possibility when equipment is operating that an accident could occur and petroleum products could be accidentally released onto the soil. Equipment on-site during construction would be required to have emergency spill cleanup kits immediately accessible in the case of any petroleum product spills. Equipment would not be refueled near any one-parameter wetlands nor Humboldt Bay. If equipment must be washed, it would be washed off-site at an appropriate facility. This component would also partially overlap with the AOIs listed in the Interim Work Plan document, therefore there is potential for the construction phase to encounter hazardous substances. Adherence to Mitigation Measure AIR-2, GEO-2, HWQ-1…, and HAZ-1, which include Construction BMPs, implementation of a SWPPP, and implementation of recommendations from the Interim Measures Work Plan, would further negate the potential for accidental releases of hazardous materials during construction.

The mitigation measures referenced above as appropriate to minimize or avoid potential water quality impacts related to pipeline installation work include measures requiring various construction BMPs for erosion, runoff, and sediment control and various measures to address historic soil and groundwater contaminants remaining at the Project Site from historic use. The full suite of BMPs and mitigation measure requirements are included in **Appendix B**.

To ensure that the above mitigation measures determined to be necessary to protect water quality are implemented during construction of the development authorized under this CDP, the Commission imposes **Special Condition 6**. This condition requires adherence to the suite of water quality protection standards, measures, and plans during construction in compliance with final mitigation measures summarized above required by Humboldt County in its approval of the FEIR for the larger project. The condition requires submittal of final water quality protection requirements prior to commencement of construction that identify BMPs and other measures and plans to be used to prevent the entry of stormwater runoff into Humboldt Bay during construction; to prevent the entrainment of excavated contaminated materials leaving the site; and to

prevent the entry of polluted stormwater runoff into coastal waters during the transportation and storage of excavated materials.

Potential Impacts to Adjacent Eelgrass Beds During Construction

The water depths at the proposed intake sites are -4.5 m MLLW at the RMT-2 dock and -1.8 m MLLW at the Red Tank dock. The depth of the RMT-2 intake prohibits growth of eelgrass, but the depth at Red Tank dock is only slightly greater than the maximum growing depth that eelgrass is known to grow (-1.3 m MLLW according to Gilkerson 2008). The intake at Red Tank is within the area evaluated under the CDP 9-16-0204 approved by the Commission in November of 2016 for the subtidal mariculture pre-permitting project.[38] An associated EIR (SCH #2013062068) was certified by the District, which included eelgrass surveys and impact analysis. An active mariculture lease with a site-specific eelgrass protection plan includes the area where the Red Tank intake is proposed to be located. Condition 8 of CDP 9-16-0204 requires:

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

To protect eelgrass beds growing near Red Tank dock from potential impacts that could occur during construction, **Special Condition 3-A(7)** imposes these same requirements.

At the Fields Landing pile removal site, eelgrass grows within and immediately adjacent to the pile removal work area. The District submitted a Mitigation Work Plan (**Exhibit 5**) that proposes to remove piles both from shore and/or from a barge. A crane with a boom carrying a vibratory hammer and timber clamp will be used to remove the piles. The crane will either be on a barge or on shore. Piles located closer to shore would likely be removed using equipment on land during low tidal periods, whereas piles further offshore would likely require removal with equipment operating from a barge. The barge to be used is approximately 80 feet x 100 feet with a 4-foot draft and moved with a small tugboat. Piles that break off above the bottom will be reattached to the vibratory hammer and removed. If a pile cannot be fully extracted, it will be cut off 1 foot

[38] The staff report for CDP 9-16-0204is available from the Commission's website: https://documents.coastal.ca.gov/reports/2016/11/f8a-11-2016.pdf

below the mudline using a saw. Piles to be removed will be disposed of at an appropriate facility capable of receiving the materials.

Mitigation measure HWQ-3, discussed above, includes measures to protect eelgrass in the surrounding area in addition to protecting water quality. These include, but are not limited to, restricting the barge from anchoring to avoid direct eelgrass impacts and removing piles at a sufficient tide to float the barge without scarring the mudflats or injuring eelgrass. These and other eelgrass protection requirements are required to be implemented under **Special Condition 5-A(5)**.

The Harbor District proposes to monitor eelgrass in the pile removal areas using photo documentation before and after pile removal efforts with a combination of drone and ground-based photo points at low tide approximately one week before pile removal and again in the same photo point locations approximately one week after pile removal. A minimum of 10 before and after photos from the same location will be taken of eelgrass populations within the action area to document the success of the Eelgrass Protection Plan and the avoidance of impacts to eelgrass. **Special Condition 5-A(5)(d)** requires that if adverse effects are determined to have occurred, the District shall be required to complete a full eelgrass survey to evaluate whether additional mitigating actions shall be required to compensate for any losses that would be sustained through the following growing season. If sustained losses are determined to be likely, the District shall prepare a plan to remediate these, which may include longer-term monitoring of the area where piles were removed to document expansion of eelgrass into the recovered area and shall submit the plan for an amendment to this CDP.

Conclusion

For all of the reasons set forth above, the Commission finds that the project, as proposed and conditioned will maintain water quality and marine resources, and will protect public trust resources, consistent with sections 30230, 30231, and 30232 of the Coastal Act.

G. Fill of Coastal Waters

Coastal Act section 30233 states, in relevant part, as follows:

> *(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> > *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities...*
>
> *(b) Dredging and spoils shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation...*

> *(c) In addition to the other provision of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary...*

Section 30108.2 of the Coastal Act defines "fill" as "earth or any other substance or material, including pilings placed for the purposes of erecting structures thereon, placed in a submerged area." This proposed project involves placing fill in the form of improvements to the existing in-water intakes, including the new wedgewire screen systems, pumps, and associated infrastructure.

As stated in section 30233, fill proposed to be placed in coastal waters is subject to a three-part test: 1) is the fill for an allowable use; 2) are there any less environmentally damaging feasible alternatives; and 3) will the fill be mitigated to the extent feasible to minimize environmental impacts. Fill proposed to be placed within estuaries such as Humboldt Bay is subject to an additional test: will the fill maintain or enhance the functional capability of the estuary. These tests are evaluated below.

Allowable Use

The first test set forth above is that any proposed filling, diking, or dredging in wetlands must be for one or more allowable uses identified in section 30233, which includes "coastal-dependent industrial facilities." The immediate purpose of this proposed fill is to provide seawater to support the proposed Nordic aquaculture facility, which is considered a coastal-dependent use. Potential future facilities would be subject to review and approval by the Executive Director, pursuant to **Special Condition 8**, to ensure that they too are coastal-dependent facilities. The Commission therefore finds that the proposed fill meets this first test of section 30233.

Alternatives Analysis

The second test requires the Commission to find that there are no feasible and less environmentally damaging alternatives to placing the fill. Coastal Act section 30108 defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors."

The District's selection of the two existing intakes was intended in part to achieve the proposed project purpose with the smallest and least disruptive footprint of in-water fill. The two intakes are in a relatively less productive part of Humboldt Bay and away from sensitive habitat areas. Using the existing intakes also avoids new and more disruptive construction elsewhere along the Bay shoreline. Additionally, and as noted in the Findings above on marine life impacts, subsurface intakes would reduce project impacts but are not feasible along the Bay shoreline due to the substrates not allowing for sufficient water flow. It is also possible that constructing new subsurface intakes would result in the need to place more fill in coastal waters than is proposed in the current project. As evaluated in the FEIR adopted for the project (section 4.3.3), consideration also was given to alternatives involving developing a slant well (or a number of slant wells), developing seawater wells in the bay (wells drilled beneath the seafloor of the

bay and brought to the project site via piping), and sourcing oceanic seawater. For various reasons, none of these alternatives are feasible less environmentally damaging alternatives to the proposed project as conditioned. In the case of the slant well alternative, approximately 40 slant wells would be required to achieve an equivalent volume of water proposed and given the historic soil and potential for groundwater contamination on the site, any risk associated with a large-scale ground filtered water production system would be deemed too great for a food production system (such as the Nordic project that much of the extracted seawater is proposed to serve). In the case of the bay seawater wells, substantial in-water construction would be involved, more than one well would be required to meet the water requirements of the project, and additional ground disturbance would be required for drilling for new water sources. In the case of the oceanic seawater intake alternative, substantial in-water construction would be required, and construction could result in impacts to habitat and aquatic species in the ocean. Additional analysis is included in section 4.3.3 of the FEIR for the Nordic project. The Commission therefore finds that the proposed intake method meets this second test of section 30233.

Feasible Mitigation Measures to Minimize Adverse Environmental Effects

The third test requires that feasible mitigation measures be provided to minimize the fill's adverse environmental effects. As required pursuant to **Special Conditions 5 through 7**, the project will minimize impacts by implementing detailed and protective measures during construction and operation meant to protect water quality and marine life, and **Special Conditions 4** provide that any remaining impacts to the Bay's biological resources will be mitigated through any of several mitigation projects designed to fully compensate for the expected impacts. With those Special Conditions, the Commission finds that the project meets the third test of section 30233.

Maintenance & Enhancement of Biological Productivity & Functional Capacity

The fourth test is that the proposed filling of estuaries must be done in a manner that maintains or enhances the functional capacity of the estuary. While the fill proposed by the District will result in withdrawal of estuarine water and will reduce the productivity of the bay's marine life, as described above in Section IV-F of these Findings, part of the fill – i.e., the intake screen systems – will help avoid and minimize some of the resulting impacts, while the mitigation proposed by the District and as required pursuant to **Special Conditions 1-7** will allow for the maintenance of the bay's productivity and functional capacity. The Commission therefore finds that the proposed project meets this fourth test of section 30233.

Conclusion

For all of the reasons set forth above, the Commission finds that the project, as proposed and conditioned, is an allowable use, that there is no feasible less environmentally damaging alternative, that feasible mitigation will be provided to minimize all significant adverse impacts associated with the dredging and filling of coastal wetlands, that wetland habitat values will be maintained or enhanced, and that coastal water quality will be protected. Therefore, the proposed development, as conditioned, is consistent with section 30233 of the Coastal Act.

H. Protection of Coastal Dependent Priority Uses

Section 30222.5 of the Coastal Act states, in applicable part:

> *Oceanfront land that is suitable for coastal dependent aquaculture shall be protected for that use, and proposals for aquaculture facilities located on those sites shall be given priority, except over other coastal dependent developments or uses.*

Section 30255 of the Coastal Act states:

> *Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.*

Section 30101 of the Coastal Act defines "coastal-dependent development or use" as:

> *…any development or use which requires a site on, or adjacent to, the sea to be able to function at all.*

In addition, though not the standard of review Humboldt County's certified Land Use Plan for the subject site (Humboldt Bay Area Plan) describes the purpose and principal uses of lands designated for coastal-dependent industrial uses (MC), which the subject site is, as follows (emphasis added):

> *MC: INDUSTRIAL/COASTAL-DEPENDENT*
>
> *PURPOSE: to protect and reserve parcels on or near the sea for industrial uses dependent on, or related to, the harbor.*
>
> *PRINCIPAL USE: any coastal-dependent industrial use that requires access to a maintained navigable channel in order to function, including, but not limited to: public docks, water-borne carrier import and export operations, ship building and boat repair, commercial fishing facilities, including berthing and fish receiving, and fish processing when product is for human consumption (fish waste processing and fish processing of products for other than human consumption are considered coastal-related uses) marine oil terminals, OCS service or supply bases, ocean intake, outfall or discharge pipelines and pipelines serving offshore facilities, aquaculture and aquaculture support facilities.*

As cited above, the Coastal Act prioritizes protection of certain priority uses over other competing uses without priority. The Coastal Act provides that coastal-dependent developments, including coastal-dependent industry (CDI), coastal-related developments, and coastal recreation uses, shall have priority over other developments on or near the shoreline. Generally, these priority land uses include uses that by their

nature must be located on the coast to function, such as ports and commercial fishing facilities, and uses that encourage the public's use of the coast, such as various kinds of visitor-serving recreational facilities. Coastal-dependent industrial facilities are encouraged to locate or expand within existing sites, and CDI is given priority over visitor-serving commercial recreational facilities that enhance public opportunities for coastal recreation. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support. Coastal-related developments may include facilities that support commercial fishing and aquaculture (e.g., storage and work areas, berthing and fish receiving, areas for fish processing for human consumption, and aquaculture support facilities).

As proposed, the Harbor District will extract seawater from Humboldt Bay and meter it to tenants on the site for use in onshore aquaculture operations, including to the County-permitted Nordic Aquafarms facility and other coastal-dependent uses on the RMT-II property. To ensure that extracted bay water only is used for coastal-dependent uses, the Commission attaches **Special Condition 8**. This condition requires the District to submit evidence for the Executive Director's review and approval prior to providing water to any proposed water users that the water to be allocated will be used for a coastal-dependent use consistent with Coastal Act section 30101 and with principal uses allowed on MC designated/zoned lands under the Humboldt County certified LCP. Plans of Operation, plot plans, and proposed leases for each new tenant/lessee shall be submitted for conformance review to the Executive Director.

I. Archaeological/Tribal Cultural Resources

Section 30244 of the Coastal Act states as follows:

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

Background & Other Agency Consultation Efforts

The project area lies within the traditional territory of the Wiyot Tribe. At the time that Euro-Americans first made contact in this region, the Wiyot lived almost exclusively in villages along the protected shores of Humboldt Bay and near the mouths of the Eel and Mad Rivers. Three federally recognized Tribes in the region – the Wiyot Tribe, the Blue Lake Rancheria, and the Bear River Band of the Rohnerville Rancheria – include citizens of Wiyot ancestry that are culturally affiliated with the greater Humboldt Bay region Wiyot ethnographic area as mapped by the Tribes.

As the lead agency for the Samoa Peninsula Land-Based Aquaculture Project (proposed by Nordic Aquafarms or "NAFC" as cited below), Humboldt County evaluated the potential impacts of the project, including the development proposed under this CDP application, on cultural resources. As part of that effort, an Archeological and Historical Resource Investigation Report and Addendum was prepared by the archaeology firm Roscoe and Associates (2020, 2021). During the cultural investigation, outreach to tribes was conducted, and extensive communication with tribal representatives from all

three Wiyot area tribes occurred throughout 2020 and 2021, including multiple site visits. Correspondence from the three tribes resulted in a request from tribal representatives that an agreement be implemented to provide cultural monitoring during construction. The adopted FEIR concludes (in part) the following with respect to potential impacts to cultural resources and (DEIR page 3.4-16-18):[39]

> *While no direct evidence of Wiyot habitation or use was encountered, much of the Terrestrial Development Site remains capped by cement. Most of the site was levelled/filled in the 1960s. In order to provide protection for archaeological resources that may be inadvertently discovered during the course of construction, Mitigation Measure CR-1 and Mitigation Measure CR-2 would be implemented to provide cultural resource monitors during construction and establish protocols for inadvertent archaeological discovery. With the implementation of Mitigation Measure CR-1 and Mitigation Measure CR-2, the potential impact would be less than significant.*

And, with respect to inadvertent discovery of human remains, including those interred outside of formal cemeteries:

> *While the cultural resource investigation did not determine archaeological resources were likely to be present (Roscoe and Associates 2020), inadvertent discovery of human remains may still occur. In the event human remains are encountered during construction, Mitigation Measure CR-3 would be implemented to ensure any potential impact would be less than significant.*

The three mitigation measures cited above that are required to be implemented as part of the evaluated Nordic project, including this proposed project, require (1) the applicant to retain a qualified cultural resource monitor who is approved by the Wiyot Tribe, Bear River Band of the Rohnerville Rancheria, and the Blue Lake Rancheria to monitor ground disturbing activities related to this Project in areas the Tribes deem culturally sensitive; and (2) inadvertent discovery protocols for the discovery of cultural resources or human remains. The full mitigation measure requirements are included in **Appendix B**.

The Commission therefore attaches **Special Condition 9** requiring the Harbor District to coordinate with the Wiyot Tribe, Bear River Band of the Rohnerville Rancheria, and the Blue Lake Rancheria to (1) retain a qualified cultural resource monitor approved by the three tribes to monitor ground disturbing activities and (2) to implement appropriate inadvertent discovery protocols should unknown cultural resources or human remains be discovered during ground disturbing activities.

Although the DEIR imposed the three mitigation measures described above to protect archaeological and tribal cultural resources, the tribes submitted additional comments on the DEIR raising certain concerns with the larger Nordic Aquafarms project – some of which pertain to the Harbor District's project that is the subject of this CDP

[39] See https://humboldtgov.org/DocumentCenter/View/102301/34-Cultural-Resources-PDF.

application. Generally, those comments convey (1) support by all three tribes for the cleanup and remediation aspects of the project (Brownfield cleanup components of the project were covered under the CDP approved by the County for the Nordic Aquafarms project); (2) support by the Wiyot Tribe for the removal of creosote-soaked pilings from Fields Landing (proposed mitigation aspect of this project); (3) concerns raised by all three tribes related to the water quality impacts associated with the ocean discharge component of the project (which are being separately evaluated by the Commission under pending CDP application 9-20-0488); and (4) concern by the Wiyot Tribe related to impacts to culturally important species, including longfin smelt; the need to consider alternatives to minimize impacts, such as "seasonal or diurnal decreases in water diversions coinciding with the presence of vulnerable larval fishes"; and the need to provide appropriate compensatory mitigation for impacts to longfin smelt.

Responses to the tribes' comments were provided in the FEIR, and those comments that relate to the subject CDP application (versus elements of the Nordic project related to the ocean discharge or the land-based aquaculture facility) include the Wiyot Tribe's concerns summarized in #4 above. With respect to the Wiyot Tribe's suggestion that alternative sources of water be considered, as discussed in Finding IV-G above, other alternatives were considered, including developing a slant well (or a number of slant wells), developing seawater wells in the bay (wells drilled beneath the seafloor of the bay and brought to the project site via piping), and sourcing oceanic seawater. As previously discussed, none of these alternatives are feasible less environmentally damaging alternatives to the proposed project as conditioned.

With respect to the Wiyot Tribe's concerns regarding project impacts on longfin smelt and the Tribe's concern that pile removal alone is inadequate mitigation for impacts to longfin smelt, as discussed in Finding IV-F above, the Commission agrees, and through its imposition of **Special Condition 4**, appropriate mitigation for the species will be required.

Commission Outreach to Tribes

Pursuant to the Commission's adopted Tribal Consultation Policy, Commission staff conducted outreach to area tribes for feedback on the Harbor District's proposed CDP application 1-21-0653. Commission staff emailed and mailed letters to tribes pursuant to an updated Native American Heritage Commission (NAHC) contact list on July 5, 2023. With the outreach, Commission staff summarized the previous outreach efforts and conducted by the County and mitigation measures required pursuant to the County's FEIR (to be incorporated into conditions of approval of this CDP).

In response to the Commission's outreach to tribes, representatives of the Wiyot Tribe requested to meet. Commission staff met with Wiyot Tribal representatives on September 18, 2023 and provided information and answered questions above the Harbor District's project, including its proposed offsite mitigation activities. The Wiyot Tribe raised concerns about conducting mitigation activities at some of the potential offsite mitigation sites due to known sensitive resources in the vicinity. As previously noted, aside from piling removal at the Fields Landing dock and *Spartina* removal at

various sites around Humboldt Bay, additional CDP authorization is required for future mitigation work at sites with potential sensitive cultural resources.

Through the CEQA review process and CDP review process for the future mitigation project(s), additional tribal outreach and consultation will be undertaken by the District and the by the Commission respectively with area tribes. Through those consultations, potential impacts and appropriate mitigation measures will be identified to protect archaeological and tribal cultural resources consistent with Coastal Act section 30244.

In conclusion, based on the findings of cultural research by Roscoe and Associates, the tribal consultation and outreach performed by the County and the Commission, and the cultural resource protection protocols that will be implemented by the Harbor District as part of the project as required by **Special Conditions 4 and 9**, the Commission finds that the proposed project, as conditioned, includes reasonable mitigation measures to protect archaeological and tribal cultural resources consistent with Coastal Act section 30244.

J. Coastal Hazards

Section 30253 of the Coastal Act states, in applicable part, as follows:

> *New development shall do all of the following:*
>
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs…*

Section 30270 of the Coastal Act states as follows:

> *The commission shall take into account the effects of sea level rise in coastal resources planning and management policies and activities in order to identify, assess, and, to the extent feasible, avoid and mitigate the adverse effects of sea level rise.*

The project involves in part the construction of new water system infrastructure in an area subject to a number of coastal hazards, as discussed below.

Seismic Risks

Northwestern California is one of the most seismically active regions in the continental United States. The Gorda plate is being actively subducted beneath the North American plate north of Cape Mendocino, along the southern part of what is commonly referred to as the Cascadia Subduction Zone (“CSZ”). There are several active faults in the region generally capable of generating large-magnitude earthquakes, including megathrust

earthquakes of magnitudes as much as 9.2 along the CSZ. The active faults in the region include, but are not limited to, Little Salmon (~3.5 miles to the south), Fickle Hill, Mad River, and the CSZ (~34 miles to the west). Potential impacts associated with these hazards include, but are not limited to, displacement of the ground surface (surface fault rupture), strong ground shaking, liquefaction, and lateral spreading.

The surface fault rupture hazard was analyzed in the adopted FEIR for the project (section 3.6) and determined to be negligible. The site is not within an Alquist-Priolo Fault Hazard Zone associated with the Little Salmon fault or any other active fault, and no known active or recently inactive fault crosses the Humboldt Bay Intake structures and pipeline alignment. With respect to liquefaction hazards, the adopted FEIR concluded that seismically induced liquefaction hazards are present, with the potential for approximately 3.5 inches of vertical ground surface displacement (post-liquefaction settlement) and up to 0.5-foot of lateral spreading (see DEIR section 3.6). However, the analysis concludes that the design of the pipelines would ensure they are resilient to geologic hazards. Design components would include use of High-Density Polyethylene (HDPE) for the pipe material and flexible joints to allow for movement should liquefaction occur. During operation, the pipeline would contain Humboldt Bay water and freshwater (associated with the fire suppression piping) only, and should a pipeline rupture from a liquefaction event, there would be no significant impact to the environment.

Tsunami Risks

The subject area is located within the mapped tsunami inundation area[40] and is at risk of tsunami inundation from waves generated from a variety of local and distant sources. Based on available inundation modeling, the area is not at risk of inundation by smaller tsunamis but would be inundated by more infrequent and extreme events, such as a CSZ event.[41] In the Humboldt Bay area, the time window between tsunami generation from a CSZ-generated tsunami and local inundation could be on the order of a few minutes. In the case of a locally generated tsunami, the only warning people in the area would receive would be strong, long-lasting earthquake shaking occurring 10 to 15 minutes before inundation by the tsunami. As a result, there would be very little time for evacuation between the time the shaking stops and the associated tsunami waves inundate the area.

Minimizing risks to life and property from tsunami hazards in the Samoa area involves the ability for people to access on foot dunes or other landforms high enough to serve as a safe evacuation refuge during a tsunami. Samoa is recognized as a “tsunami

[40] Based on current maps published by the California Geological Survey: https://www.conservation.ca.gov/cgs/tsunami/maps/humboldt.

[41] A CSZ event (magnitude 8.0 or greater) has an approximately ~270-year to 500-year average return period. Evidence suggests the last major CSZ quake occurred in January 1700 (~magnitude 9.0).

ready" community[42] through years of evacuation planning, education, and evacuation drills led in part by the County, the National Weather Service, and Cal Poly Humboldt's Redwood Coast Tsunami Work Group.[43]

If a subsurface pipeline were to break from the force of a tsunami, only water would be released to the environment. However, given the waterlines would be located subsurface, it is unlikely the pipes would be dislodged and released into Humboldt Bay. While the sea chests would not be designed to withstand the maximum credible tsunami event and would likely be destroyed during a significant tsunami event that overtops the Samoa peninsula, the discharge of sea chest debris into Humboldt Bay would be insignificant, given the project would not be enlarging or expanding the size or potential volume of debris beyond existing conditions.

Other Flood Risks

The waterline and water intakes are located within the FEMA 100-year flood zone (Humboldt County 2021). However, the infrastructure would contain only untreated sea water from Humboldt Bay. Thus, if the subsurface pipelines were to break as a result of a large flood event, only bay water would be released to the environment. In addition, development of the pipelines and the water intakes in Humboldt Bay will not increase the rate of surface runoff. The trenching alignment for the pipelines is primarily paved under existing conditions, and thus, repaving disturbed areas at the close of construction will not result in a considerable area of new impervious surface or increase the rate of surface runoff. Given the water pipelines will be located subsurface, the infrastructure will not pose a flood hazard, even if a 100-year flood event were to occur. Similarly, development of the intake systems will not increase flood hazard risks compared to existing conditions.

Sea Level Rise

Flood risks are expected to worsen and be exacerbated by projected sea level rise (SLR) in the coming decades. The State of California has undertaken significant research to understand how much SLR to expect over this century and to anticipate the likely impacts of such SLR. In 2017, a working group of the Ocean Protection Council's (OPC) Science Advisory Team released Rising Seas in California: An Update on Sea-Level Rise Science. This report synthesized recent evolving research on SLR science, including a discussion of probabilistic SLR projections as well as the potential for rapid ice loss leading to extreme SLR. This science synthesis was integrated into the OPC's State of California Sea-Level Rise Guidance 2018 Update (State SLR Guidance). This guidance document provides statewide recommendations for state agencies and other stakeholders to follow when analyzing SLR in association with projects. Notably, the guidance provides a set of regional projections recommended for use when assessing potential SLR vulnerabilities for a project. In January 2024, OPC released a Draft

[42] A program of the National Weather Service: https://www.tsunami.noaa.gov/tsunamiready%C2%AE#:~:text=TsunamiReady%C2%AE%20is%20a%20voluntary,community%20leaders%20and%20the%20public.

[43] See https://rctwg.humboldt.edu/sites/default/files/brochure_samoa.pdf

Update to the State SLR Guidance.[44] This Draft Update reflects the previous five years of scientific research on SLR projections, including the IPCC's *Sixth Assessment Report* (2021)[45] and NOAA's national report, *Global and National Sea Level Rise Scenarios for the United States* (Sweet *et al*., 2022).[46]

The 2018 and Draft 2024 State SLR Guidance both provide SLR projections for 12 tide gauges in the state and recommend using the projections for the gauge closest to the project site. In this case, the North Spit tide gauge at Humboldt Bay is the applicable gauge. The applicant states that the design life of the proposed development is 30 years. The amount of SLR projected at the North Spit tide gauge under the adopted 2018 State SLR Guidance for the year 2060 ranges from 1.9 feet (under the "low-risk aversion" scenario) to 3.1 feet (under the "medium-high risk aversion" scenario) to 4.3 feet (under the "extreme risk aversion" scenario). Under the Draft 2024 State SLR Guidance, which uses science from the previous five years, the amount of SLR anticipated at the North Spit tide gauge for the year 2060 is 1.5 feet under the intermediate scenario, 2 feet under the intermediate-high scenario, and 2.4 feet under the high scenario.[47]

The Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment indicates that large portions of the Samoa Peninsula shoreline are highly or moderately vulnerable to sea level rise.[48] The Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment also states that even with 4.9 feet of SLR, the commercial aquaculture facilities at Redwood Terminal 2 property would not be inundated. However, the project also proposes development near the shoreline and further upland. According to maps showing the pipeline alignment relative to the shoreline (**Exhibit 6**) and comparing the proposed maps/alignment with topographic elevations available for the site, portions of the proposed pipeline trench will be dug in an area that is approximately 2.87 feet above current mean higher high water (MHHW). Assuming no shoreline protective devices exist and there are no further changes to the shoreline, portions of the shoreline project area are thus likely be vulnerable to flooding from daily high tides with approximately 3 feet of SLR and will be vulnerable to temporary flooding at lower amounts of SLR, such as during monthly maximum tides (i.e., flooding ~12 times per year) and from King Tides (flooding ~4 times per year). The applicant did not conduct a site specific SLR study and only provided information relating to SLR impacts of the project over

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[44] See https://opc.ca.gov/wp-content/uploads/2024/01/SLR-Guidance-DRAFT-Jan-2024-508.pdf.

[45] See https://www.ipcc.ch/report/ar6/wg1/.

[46] See https://aambpublicoceanservice.blob.core.windows.net/oceanserviceprod/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf.

[47] The Draft 2024 State SLR Guidance uses five sea level rise scenarios from NOAA's *Global and Regional Sea Level Rise Scenarios for the United States* (Sweet *et al*., 2022), with further downscaling to reflect regional and local influences on sea level rise in California. These scenarios hypothetical trajectories of future sea level rise spanning the scientifically plausible range defined by the IPCC in AR6.

[48] See https://humboldtgov.org/DocumentCenter/View/62872/Humboldt-Bay-Area-Plan-Sea-Level-Rise-Vulnerability-Assessment-Report-PDF?bidId=.

approximately the next 30 years. The County, in its consideration of the water intakes component of the Nordic Aquafarms project in the FEIR, evaluated potential SLR related impacts and summarized the risks and impacts as follows (Impact HWQ-c, iii):

> *The design life of the Project is 30 years. Assuming the Project is fully constructed by 2028, forecasting of the effects of sea level rise over the design life of the project requires forecasting until approximately 2063. The year 2063 is best approximated by the Ocean Protection Council (OPC) 2060 SLR rise projections. Based on 2018 OPC guidance, the middle range (0.5% probability) estimate for 2060 SLR is predicted to be 3.1 feet (OPC 2018)…*
>
> *…*
>
> *The Humboldt Bay Water Intakes component of the Project was evaluated for potential impacts related to SLR. Based on 2018 OPC guidance, the middle range (0.5% probability) estimate for 2060 SLR is predicted to be approximately three feet (OPC 2018), which best approximates the 30-year design life of the Project. The water intake structures would benefit from SLR, as the tidal inundation period for the would be larger. The point of connectivity on the RMT II and Red Tank docks would be above the three-foot SLR elevation and thus unaffected by 2060 SLR projections. Conservatively, even if the predominantly subsurface terrestrial water pipeline parallel to the Humboldt Bay shoreline were to experience periodic inundation due to SLR, a potential hydrology or environmental impact would not result. Any potential impact would be less than significant.*

Although the SLR evaluation concludes that the proposed new waterline infrastructure would be above the 3-foot SLR elevation and thus unaffected during the project's 30-year design life, sea levels will continue to rise beyond 2060, and it's unclear how the rising water levels may impact the authorized infrastructure. For example, if the shoreline were to experience periodic inundation due to SLR, such shoreline overtopping/inundation also could lead to shoreline erosion and retreat from the intensified wave action. Such erosion/retreat could expose or threaten the stability of the water pipeline infrastructure that could lead to a desire to armor the shoreline to protect it. Additionally, the County's analysis only considers periodic flooding of the subsurface pipelines due to SLR and does not consider permanent or daily inundation which are likely to occur in the future with higher amounts of SLR at some places along the proposed pipeline.

When asked about the resiliency and adaptive capacity of the proposed development during the CDP application review process, the District's response materials stated in part:

> *The District anticipates that SLR protection will be provided incrementally by site improvements for the upcoming offshore wind port project. To service the offshore wind industry, the District anticipates substantial site improvements to occur well within the design life of the intake system project. These anticipate improvements will negate any potential erosion-related impacts of sea level rise…*

…A primary design objective of the project is to prepare the site for tsunamis and SLR. Preliminary designs currently include raising the portions of the Redwood Marine Terminal site which are currently below the projected 2100 SLR level using the "bathtub model" to an elevation of at least 17 feet. The proposed 17-foot elevation is well above 2100 SLR estimates. The SLR projections are one of the drivers of establishing the dock/terminal elevation. Because the operation of heavy lift marine docks and terminals requires that the tarmac (upland yard areas) be level with the dock/terminal elevation, it is not feasible to have the tarmac at a lower elevation than the dock/terminal…

Also note that the water line infrastructure will consist of a pressurized, closed system that would not be impacted by periodic tidal inundation…All infrastructure associated with the site will be maintained as needed throughout the life of the project. Sea Level Rise adaptation measures will be continually evaluated to protect existing and future permitted infrastructure in the project area.…

…Additionally, lands in close proximity to the federal navigation channel makes it critical for future coastal dependent industrial uses. Hence, the District is developing plans to protect the site from sea level rise and associated erosion. Specifically, the District is currently developing plans to develop a multi-purpose marine terminal at the site that incorporates sea level rise protection components. During the next year, the District will be in consultation with California Coastal Commission and other agency staff to identify appropriate sea level rise adaptation measures. These measures will likely include the beneficial use of dredged material to raise site elevations. The water lines are designed so that they may be easily modified (e.g., raised) as part of future development that will protect the lines and other infrastructure from sea level rise and erosion.

Accordingly, consistent with the District's stated design life for the project and their stated plans for SLR adaptation planning of the project site in conjunction with redevelopment of portions of the site and adjacent areas as a heavy lift marine terminal to support offshore wind development, **Special Condition 10** limits the authorization period for the proposed development to 30 years. Although the proposed development is unlikely to be significantly impacted by SLR during this 30-year period, the authorized development could be significantly impacted in the future with higher amounts of SLR. Because the applicant did not provide sufficient information for an analysis of the potential SLR impacts further into the future, this limited term authorization will require the applicant to conduct an analysis of future SLR impacts, and potentially adaptation planning, if it intends to retain the proposed development beyond this authorization period. This limited term authorization will also encourage the District and County (who is working on a comprehensive LCP updated funded in part through the Commission's LCP grant program) to consider the proposed development in their SLR adaptation planning for this area if they plan for the development to exist longer term.

Because the applicant is electing to undertake new development in an inherently hazardous area subject to the various hazard risks discussed above, the Commission attaches **Special Condition 11**. This condition requires the applicant to assume the

risks of hazards on the property and waive any claim of liability on the part of the Commission. Through this condition, the applicant is notified that the Commission is not liable for damage as a result of approving the permit for development. The condition also requires the applicant to indemnify the Commission in the event that a third party brings an action against the Commission as a result of the failure of the permitted development to withstand hazards.

Therefore, the Commission finds that the proposed project as conditioned minimizes hazard risks and plans for SLR consistent with sections 30253 and 30270 of the Coastal Act.

K. Environmentally Sensitive Habitat Areas (ESHA)

Section 30240 of the Coastal Act states as follows:

> *(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.*

Section 30107.5 of the Coastal Act defines ESHA 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 District's consultant, SHN, completed biological studies for the terrestrial portions of the project site where water pipelines are proposed to be installed (**Exhibit 6**). As previously discussed, new water distribution infrastructure will be installed in upland portions of the property via trenching in trenches up to 4,650 feet long, 19 feet wide, and 5 feet deep (**Exhibits 2-3**). The majority of the pipeline alignment will be sited within asphalt and concrete paved vacant industrial land. In some areas, cracks in pavement or old foundations support vegetation typically dominated by invasive species such as pampas grass (*Cortaderia jubata*). As such, the majority of the pipeline installation area and construction-related work areas will not result in impacts to sensitive species or environmentally sensitive habitats.

Two isolated patches of coastal willow thickets (*Salix hookeriana* Shrubland Alliance) were delineated adjacent to the proposed water intake piping alignment (see maps, **Exhibit 6**). The willow thickets consist of a mix of willows and wax myrtle, and in some areas were identified as wax myrtle scrub (*Morella californica* Shrubland Alliance). Both thickets were documented as closely associated with industrial stormwater features,

concrete low spots with drainage inlets, and debris and soil spoil piles. The southernmost willow thicket is restricted to an excavated swale constructed for stormwater conveyance from surrounding industrial lands. The northern willow thicket in the northern portion of the alignment occurs within the footprint of former milling facilities and has developed in the years since closure. Nevertheless, these alliances are classified as sensitive natural communities. Based on the rarity status of the communities, they meet the definition of ESHA under the Coastal Act.

As proposed, the alignment of the proposed pipeline trench will avoid impacts to these sensitive natural communities. Where the pipeline is proposed to cross the stormwater feature near the southern willow thicket, the alignment avoids vegetated areas and instead crosses at a point that contains existing infrastructure (weir, pedestrian bridge, and retaining walls) and that lacks willow cover. The crossing location is approximately 35 feet wide, and the proposed bridge and pipeline will be positioned above the swale feature and at least 75 feet from the delineated sensitive natural community. There will be no major vegetation removal required, and the 50-foot-long by 20-foot-wide bridge will fully span the stormwater drainage feature. Where the pipeline will cross near the northern willow thicket, the proposed pipeline will be sited within the footprint of an existing asphalt road that exists 10 feet east of the willow thicket. No tree removal or disturbance of soil within the coast willow thicket will occur as a result of the proposed pipeline installation work.

The SHN report recommends several measures and BMPs to be implemented to ensure protection of adjacent ESHA (**Exhibit 6**), including, but not limited to, the following:

- Install high visibility temporary construction fencing along the edge of the (northern) willow thicket ESHA where it is adjacent to the proposed pipeline;
- Following construction, disturbed soils should be graded to pre-project conditions and seeded with a native herbaceous seed mix in areas where soils are not gravel or asphalt;
- Use weed-free straw to cover exposed soils;
- Install weed-free fiber rolls, straw-wattles, coir logs, silt fences, or other effective devices along locations where water drains off the construction site;
- Hazardous materials shall be stored in areas protected from rain, provide secondary containment and must be a minimum of 100 feet from any wetland or ESHA.

Thus, the Commission attaches **Special Condition 3-A(6)** to ensure that the recommended measures to protect ESHA will be implemented as part of the project. As conditioned, the Commission finds that the proposed development to be sited in areas adjacent to sensitive willow and/or myrtle ESHA will be compatible with the continuance of those habitat areas, consistent with Coastal Act section 30240.

L. Public Access and Recreation

Section 30210 of the Coastal Act requires that maximum public access shall be provided consistent with public safety needs and the need to protect natural resource areas from overuse. Section 30211 of the Coastal Act requires that development not interfere with the public's right to access gained by use or legislative authorization. Section 30212 of the Coastal Act requires that access from the nearest public roadway to the shoreline be provided in new development projects, except where it is inconsistent with public safety, military security, or protection of fragile coastal resources, or where adequate access exists nearby. Section 30214 of the Coastal Act provides that the public access policies of the Coastal Act shall be implemented in a manner that takes into account the capacity of the site and the fragility of natural resources in the area. Section 30220 of the Coastal Act provides that coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses. In applying sections 30210, 30211, 30212, 30214 and 30220cited above, the Commission is limited by the need to show that any denial of a permit application based on these sections or any decision to impose conditions requiring public access on the granting of a permit is necessary to avoid or offset a project's adverse impact on existing or potential access.

The subject property, though owned by a public agency (the Harbor District), is an industrial site that does not support public access facilities. As proposed, the project will not have an adverse impact on public access to the bay or to nearby recreational facilities. The nearest public access and recreation points are public recreational lands in the town of Samoa approximately one-half mile to the north. There's also a beach access point less than a half-mile to the west, across New Navy Base Road. In Fields Landing, there's a public road (South Bay Depot Road) that extends to the bay near the mitigation site, and the public may access the shoreline on foot at this location, although the site is immediately adjacent to an active industrial site (the District's boat repair yard). The project will not adversely affect the public's use of the bay for recreational use, because new in-water infrastructure will be confined to areas of existing in-water infrastructure and will not affect navigational access.

As proposed, no construction activities will occur in any public parking areas or recreational areas. In addition, any construction located adjacent to a public access site, such as the piling removal work in Fields Landing or Spartina removal work at various sites around Humboldt Bay, will be short-term and temporary. The Commission thus finds that the proposed project will not have any significant adverse effects on public access and is consistent with the requirements of Coastal Act sections 30210 through 30214.

M. Reimbursement of Costs and Fees

Coastal Act section 30620(c)(1) authorizes the Commission to require applicants to reimburse the Commission for expenses incurred in processing CDP applications. See also 14 C.C.R. § 13055(g). Thus, the Commission is authorized to require reimbursement for expenses incurred in defending its action on the pending CDP

application. Therefore, consistent with section 30620(c), the Commission imposes **Special Condition 12 (Liability for Costs and Attorneys' Fees)** requiring reimbursement of specified costs and attorneys' fees the Commission incurs in connection with the defense of any action brought by a party other than the applicant/Permittee challenging the approval or issuance of this permit.

N. California Environmental Quality Act (CEQA)

Humboldt County, acting as the lead agency for the Samoa Peninsula Land-Based Aquaculture Project, completed an Environmental Impact Report (EIR) in compliance with the California Environmental Quality Act (CEQA). The EIR considered impacts and alternatives related to the seawater extraction and related development that is the subject of Commission CDP 1-21-0653. The DEIR was prepared and circulated for a 60-day public review and comment period from December 20, 2021 to February 18, 2022 (State Clearinghouse #2021040532). The DEIR identified no significant adverse cumulative impacts associated with the project. A Final EIR (FEIR) was prepared, addressed all comments received, and was initially made available for review on July 1, 2022. The FEIR was certified by the Humboldt County Planning Commission on August 4, 2022 and, on appeal, the County Board of Supervisors affirmed the Planning Commission's decision on September 28, 2022. Links to the DEIR and the FEIR are posted on the County's website.[49]

The Commission's regulatory program for reviewing and granting CDPs has been certified by the Resources Secretary to be the functional equivalent of environmental review under CEQA. (14 CCR § 15251(c)). Section 13096 of Title 14 of the Commission's regulations requires Commission approval of CDP applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirement of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits approval of a proposed development if there are any feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. All public comments received to date related to the proposed project that raise significant environmental points have been addressed in the staff report. As discussed above, the proposed project has been conditioned to be consistent with the policies of the Coastal Act. As specifically discussed in these above findings, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. As conditioned, there are no other feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impacts 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, has no remaining significant

[49] See https://humboldtgov.org/3218/Nordic-Aquafarms-Project.

environmental effects, either individual or cumulative, and complies with the applicable requirements of the Coastal Act to conform to CEQA.