

Ventura Shellfish Enterprise:

Implementing an Integrative Model for New Shellfish Aquaculture Permitting and Production in Federal Waters Proximate to Ventura, California

Final California Sea Grant Report
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Acknowledgements

The Ventura Shellfish Enterprise project was an initiative proposed by the Ventura Port District to permit mussel farming in federal waters of the Santa Barbara Channel northwest of Ventura Harbor. Ventura Shellfish Enterprise project volunteers and consultants were crucial in the development of this project. Ventura Port District would like to acknowledge all the dedication and commitment shown by project volunteers: Coastal Marine Biolabs, The Cultured Abalone Farm, and Ashworth Leininger Group; as well as our project consultants: K&L Gates, Scott Lindell (Woods Hole Oceanographic Institution), Blake Stok (Aquaculture Consultant), Dudek, Kelson Marine Co., Illuminas Consulting, and COWI. Ventura Port District would like to give special recognition to the participation of National Oceanic and Atmospheric Administration (NOAA) throughout the development of the project.

Introduction

In 2015 the Ventura Port District (Port District) was awarded a National Oceanic and Atmospheric Administration (NOAA) 2015 and 2018 California Sea Grant sub-awards to support pursuance of the Ventura Shellfish Enterprise Project (Project), a multi-party initiative to permit twenty 100-acre farms for growing mussels in open federal waters of the Santa Barbara Channel northwest of Ventura Harbor.

On September 28, 2018 the Board of Port Commissioners (Board) authorized the General Manager of the Port District to prepare and submit all required permit applications to local, state and federal agencies as required for the Project, as well as prepare all necessary Project surveys, studies, reports and federal environmental review documents. The Port District submitted applications to the U.S. Army Corps of Engineers (Corps) and California Coastal Commission (CCC); along with a biological assessment, other required studies, and responses to questions from the agencies. The Port District subsequently engaged in discussions with environmental Non-Government Organizations (NGOs), state, and federal agencies regarding the Project and Project siting.

Due to various considerations discussed in this report, on March 17, 2021, the Board approved of several actions which included (1) providing support for the establishment of a Southern California Aquaculture Opportunity Area (AOA) and (2) formally withdrawing applications for the Project from the Corps and CCC on August 31, 2021. As part of these actions, the Port District provided all studies, reports, and data gathered as part of the Project to NOAA and completed all tasks required for completion of the Sea Grant by August 31, 2021. The Port District continues to seek opportunities to collaborate with the aquaculture industry to establish sustainable aquaculture farms that can land product in Ventura Harbor; and vigorously advocates for the establishment of sustainable aquaculture farms in the Santa Barbara Channel proximate to the Ventura Harbor.

This NOAA Aquaculture Final Report (Final Report) for the project R/AQ-141: *Ventura Shellfish Enterprise: Implementing an Integrative Model for New Shellfish Aquaculture Permitting and Production in Federal Waters Proximate to Ventura, California* covers the project period of **September 1, 2018 through August 31, 2021**. This project period covers tasks associated with the 2018 Sea Grant, which include the following tasks¹: Task 4) Permit Assignment Strategy, Task 5) Environmental Review, Task 6) Shellfish Sanitation, Task 7) Aquaculture Information Dissemination, Education and Public Outreach, and Task 8) Project Summary.

Task 4 Permit Assignment Strategy

Task 4 of the Sea Grant involved development of a unique permit assignment strategy, whereby the Port District could seek and obtain a master permit for the Project and could sub-permit smaller areas within the 2,000-acre area to be operated by individual shellfish companies.

Permit applications were previously submitted to the Corps and the CCC in 2018. Upon submission of its application, the Port District and its consultants engaged in discussions with the Corps regarding a “sub-permitting” strategy. During these discussions, the parties discussed several different options: (1) a structure similar to a sublease where the Port District would sub-permit certain parts of the overall project area to shellfish companies,

¹ In May 2021, California Sea Grant received revisions to Task 7 and Task 8 consistent with the Board’s policy direction. The revised Task 7 and Task 8 are discussed in greater detail below.

subject to expedited review and approval by the Corps and CCC; (2) a proposal modeled off the Sacramento Habitat Conservation Plan whereby grower applications would be reviewed by the Port District and the Corps would issue a letter of permission (LOP) if the application complies with the terms and conditions included in the overall project permits obtained by the Port District; and (3) an LOP process modeled off of the shellfish aquaculture permitting process currently being employed by the Corps in Washington State, whereby an LOP may be issued if the aquaculture project complies with the terms and conditions contained in a programmatic biological assessment and associated biological opinions issued by the National Marine Fisheries Service (NMFS) and U.S. Fish & Wildlife Service and the project does not trigger permitting requirements under Section 404 of the Clean Water Act.

The Port District was also engaged in discussions with agency staff regarding clarifications of the Project description, proposed conditions, mitigation measures, and monitoring plans. Between 2018 and 2020 the Port District received and responded to several requests for additional project information from the agencies, including the Corps, CCC, and U.S. Coast Guard. In January 2020, the Corps requested two documents in order to continue processing the permit application: (1) a draft navigational risk assessment; and (2) documented resolution with the Ventura County Local Agency Formation Commission (LAFCo). Due to the time it would take to produce the requested information, the Corps withdrew the Port District application in February 2020. It was anticipated that once the Corps received these requested documents, the application review process would be re-initiated.

In November 2020, the Port District approved a Preliminary Operations Plan, which provided substantial additional detail regarding the proposed permitting strategy for the Project and how various tasks and responsibilities would be delegated between shellfish growers, the Port District, and other regulatory agencies. The approach proposed in the Operations Plan would have expedited review by the Corps and other regulatory agencies while allowing the Port District to retain some control over the Project. Specifically, the Operations Plan included Permitting Option (2) discussed above.

Unfortunately, despite substantive efforts to work with the state legislature to resolve the jurisdictional conflict with Ventura LAFCo, the Corps application continued to remain on-hold. In the meantime, NOAA had identified Southern California as one of two proposed AOAs. Ultimately, the Port District was not able to engage in substantive discussions with the Corps regarding this proposal because it was not able to resolve its issues with Ventura LAFCo, and therefore was not able to resume permitting discussions with the Corps concerning the Project.

While the Port District could have considered alternatives to the recommendations, such as relocating the Project to State waters to resolve the LAFCo jurisdictional conflict and some environmental NGO concerns, the California Fish and Game Commission (FGC) indicated they face significant challenges in processing aquaculture applications, such as the Project, due to resource constraints. Therefore, it would likely be a lengthy time-period for the FGC to process an application for the Project. The Port District would also need to commission development of an environmental impact report to comply with the California Environmental Quality Act. Further, the Port District relocated the project from state to federal waters after significant opposition was received by commercial fishing interests. If successful, the AOA process could also facilitate expedited permitting for aquaculture projects in federal waters. NOAA is considering an alternative that would identify potential aquaculture sites located in the Santa Barbara Channel, partially based upon the science and data collected for the Project.

Given the direction from the Board in March 2021 to withdraw the pending applications for the Project, the Port District will not continue to develop this unique permitting proposal. However, the Port District has met with the Corps to discuss the Port District's intent to continue to vigorously support shellfish aquaculture in the Santa Barbara Channel. The Port District continues to believe that this permitting framework could be useful to both the

Port District and other port authorities and harbor districts in the future seeking to assist in permitting aquaculture operations. Additional details regarding the permitting process and the Port District's decision-making are included in the report provided under Sea Grant Task 8.

Task 5 Environmental Review

Task 5 of the Sea Grant involved supporting the environmental review process through developing environmental reports, studies, avoidance and minimization measures, and best management practices (BMPs) for submittal to agencies. This task also involved administrative and permitting efforts including communications and follow-up submittals to agency requests for information and support prior to and during meetings.

Overall, during the reporting period the Port District, VSE volunteers, and consultants produced multiple studies and documents to support the VSE project. These are listed in Table 1 and provided under Subtask 7.4.

Table 1. Supporting Studies Produced Between September 1, 2018 and August 31, 2021

Catalog No. ¹	Document Title	Author ²	Date
Siting Considerations			
05	CASS Technical Report, Ventura Shellfish Enterprise: Aquaculture Siting Analysis Results	NOAA NCCOS	February 2019
06	Spatial Analysis to Evaluate Options for Siting Ventura Shellfish Enterprise in California State Waters, Santa Barbara Channel, California USA	NOAA NCCOS	September 2020
Technical Documents			
Environmental			
07	Biological Assessment for the Ventura Shellfish Enterprise Project	Dudek	September 2018
08	Essential Fish Habitat Assessment for the Ventura Shellfish Enterprise Project	Dudek	September 2018
09	Sediment and Water Quality Monitoring Plan for the Ventura Shellfish Enterprise Project	Dudek	August 2019
10	Aquaculture Gear Monitoring & Marine Debris, and Wildlife Entanglement Plan for the Ventura Shellfish Enterprise Project	Dudek	August 2019
11	Predator Control Management Plan for the Ventura Shellfish Enterprise Project	Dudek	August 2019
12	Gear Removal Management Plan for the Ventura Shellfish Enterprise Project	Plauché and Carr	August 2019
13	Ventura Shellfish Enterprise, Ventura Port District – Application #SPL-2017-00093-BLR, Sub-Permitting Proposal	–	–
14	Spill Prevention and Response Plan for the Ventura Shellfish Enterprise Project	Dudek	August 2019
15	Attachment 13, List of Potential Biofouling Organisms for the Ventura Shellfish Enterprise Project	Dudek	November 2019
16	Aquaculture Navigation Risk Assessment	COWI	July 2020

Catalog No. ¹	Document Title	Author ²	Date
17	Aquaculture Navigation Risk Assessment – Responses to Public Comments	COWI/VPD	July 2020
Engineering			
18	Evaluation of Mussel Backbone System in Extreme Storms – Phase II Report: Design Modifications	Maine Marine Composites	August 2019
19	Engineering Evaluation of Break-away Links and Cascading Failure Risk for a Mussel Backbone System	Kelson Marine Co.	November 2020
Operational			
20	Ventura Shellfish Enterprise Preliminary Operations Plan	Dudek	November 2020
21	Ventura Shellfish Enterprise Preliminary Operations Plan – Responses to Comments	VPD	November 2020
Economic			
22	Economic and Fiscal Impact Analysis	Illuminas Consulting	November 2020
23	Grower Proforma (excel workbook)	Scott Lindell	November 2020, last update

Notes:

¹ Catalog number as listed under Subtask 7.4.

² NOAA NCCOS = National Oceanic and Atmospheric Administration, National Centers for Coastal Ocean Science; VPD = Ventura Port District

It should be noted that the Navigational Risk Assessment is believed to be the first completed for an aquaculture project in the U.S. and can be used to help inform NOAA in siting within the Santa Barbara Channel as part of the AOA process. During the reporting period, a detailed grower proforma was also developed for the project to illustrate projected 10-year grower costs and revenues associated with operating a 100-acre plot in the VSE project area. This proforma was included as an attachment to an Economic and Fiscal Impact analysis, which was developed to provide a review of estimated economic impacts associated with the VSE project. This analysis considered both fiscal projections for the Port District (such as revenues from project fees and other costs) and economic projections related to job impacts throughout the region.

The Navigational Risk Assessment and Preliminary Operations Plan (with the Engineering analyses as an attachment) were submitted to the state and federal agencies for their review and consideration in the fall of 2020. Since that time, the Port District engaged in further discussions with environmental NGOs, state, and federal agencies to discuss project siting. In addition, on June 11, 2020 the Port District, consultants, and James Morris (NOAA) presented on the VSE project and NOAA science to support aquaculture siting and management to the Pacific Fishery Management Council Habitat Committee.

Task 6 Seafood Quality Assurance and Public Health Safety

Overview. As indicated in the most recent annual Sea Grant report (6/23/2021), Coastal Marine Biolabs (CMB), The Cultured Abalone Farm, and a small group of community volunteers initiated a baseline biotoxin monitoring program (B2MP) that was developed in consultation with the U.S. Food and Drug Administration (FDA) and the NOAA Seafood Inspection Program in prior project years. The data obtained through this program is intended to assist FDA representatives in the design of an area-wide Biotoxin Monitoring Contingency Plan that will ultimately specify the control procedures and testing requirements for future mussel growers who harvest mussels within the project area. Importantly, the program conforms to federal requirements published in the *National Shellfish Sanitation Program (NSSP) Guide to the Control of Molluscan Shellfish: 2019 Revision* (FDA and ISSC 2019; refer to pp. 223-228 of the guide for specific requirements).

Despite the recent withdrawal of the permit application by the Port District (discussed above), CMB is committed to continuing the B2MP program for a 3-year time period given its value to public health agencies, marine stakeholders, and future mussel aquaculture permitting efforts focused on the growing area of interest. This final report, includes data obtained for Year 1 of the B2MP program. Because this data will be presented to FDA representatives for independent review and analysis at the conclusion of the B2MP program, the findings are provided without interpretation or any form of statistical analysis.

Data Collection. Data collected through this monitoring program are presented in **Appendix A (Figures), Appendix B (Table 1), and Appendix C (Tables 2 and 3)** of this report. A brief description of each component of the data collection efforts is provided below.

Sampling Stations. Sampling was conducted by field volunteers at five stations positioned at the four corners and center of the growing area of interest (**Appendix A, Figure 1**). As indicated in a prior annual Sea Grant report, the location of these stations was recommended by FDA representatives during the development of the monitoring program.

Collection Team and Vessel. The collection team consisted of community volunteers who received extensive field training by CMB staff to: 1) establish compliance with the standard operating procedures (SOPs) and sample handling guidelines; 2) preserve the chain of sample custody during field collection events; and 3) ensure the safety of vessel operators, collectors, and other passengers during sampling. Training sessions consisted of the following core elements: 1) review of vessel operator's pre-departure safety preparations; 2) evaluation of vessel operator's ability to navigate to sampling stations; 3) evaluation of proficiency in the use of an onboard lift system to retrieve mussel sentinels and affixed data loggers; and 4) training in the execution of field SOPs. The vessel used to conduct field sampling during Year 1 of the program met the following requirements established by the team: 1) the vessel is currently registered with the California Department of Motor Vehicles; 2) the vessel has passed a USCG Vessel Safety Check by a certified Vessel Examiner within the last 12 months; 3) the vessel contains all federally required safety equipment specified for the vessel length and type/use; 4) the vessel is equipped with an onboard GPS chart plotter capable of accepting waypoints corresponding to the sampling station coordinates; and 5) the vessel is equipped with a mechanical lift system to safely and efficiently retrieve mussel sentinels and data loggers affixed to sentinel lines.

Physical Data. pH and temperature data for the central sampling station (Station 3) are presented in **Appendix B**, Table 1. These data were recorded between sample collections with the use of submersible data loggers (Hobo pH and Temperature Data Logger, Onset Computer Corporation). Loggers were affixed to the top of the fuzzy rope (substrate) segment of mussel sentinel lines at a depth of approximately 20 feet and programmed to record pH and temperature at a 4 hour logging interval. pH electrodes were calibrated with three buffer standards within 12 hours of logger deployment. Data captured by each logger was downloaded via a Bluetooth connection to the HOBOMobile for iOS app (Version 2.2 build 0331.06).

Phytoplankton Sampling. Phytoplankton samples were obtained at sampling stations by performing five 50-foot (ft) vertical tows of a 20-millimeter (mm) mesh phytoplankton net (25 centimeter (cm) X 1 meter (m); Research Nets, Inc.) fitted with a 25 cm bridle ring, a 200 mL (2.5 inch diameter) PVC collection bottle, a snap shackle for attaching small lead weights (to minimize horizontal drift during periods of high current), and a removable nylon tow line with a 50-ft. depth marking. To simplify and standardize net deployment and recovery, the tow line was guided along an open-face pulley block affixed to the lift arm of a commercial pot puller/winch system used to retrieve mussels and data loggers (**Appendix A**, Figure 2). After each tow, approximately 200 milliliter (mL) seawater was decanted from the collection bottle into a wide-mouth High Density Poly Ethylene (HDPE) bottle containing 4 mL neutralized formalin solution (fixing agent), which was prepared within 12 hour of each collection event. Upon arrival at the CMB lab, samples were stored in the dark at 4 degrees Celsius (°C) pending analysis.

Phytoplankton Analysis (Enumeration). In accordance with the monitoring plan, CMB employed the Utermoehl method to enumerate two locally occurring, biotoxin-producing organisms in phytoplankton samples taken from sampling sites: *Pseudonitzschia* sp. and *Alexandrium* sp. (**Appendix A**, Figure 3). Briefly, fixed phytoplankton subsamples of defined volumes (10-50 mL) were decanted into plastic sedimentation chimneys/columns temporarily sealed to glass bottom slides (25 mm field diameter) and allowed to settle for ≥ 12 hours at room temperature. Slides containing settled phytoplankton were then coverslipped and mounted on the stage of an inverted microscope (Zeiss AXIO Observer.A1) for analysis. Cell/colony counts were subsequently performed under phase contrast optics using a ZEISS LD Plan Neofluar 20X Ph2 objective lens (for a total magnification of 200X). To reduce the amount of time required to perform these analyses, cells/colonies occupying half of the slide/chamber area were quantified using the following equation: $N = X (Ad/av)$, where:

N = cells (or colonies)/L

X = cells (or colonies) counted

v = chamber volume (i.e., the volume of phytoplankton subsample settled)

a = area of the settling field counted (in mm^2)

A = total settling field diameter (in mm^2)

d = dilution factor

For *Alexandrium* sp. counts, only cells associated with a colony of two or more individuals were recorded. For *Pseudonitzschia* sp. counts, only chains consisting of three or more cells were recorded (**Appendix C**, Table 2).

Phytoplankton Analysis (Percent Composition and Relative Abundance). In an effort to enhance the value of the monitoring program for marine stakeholders in the Southern California Bight, phytoplankton subsamples obtained from Sampling Station 3 were submitted to the California Department of Public

Health (CDPH) for inclusion in the longstanding Marine Biotoxin Monitoring and Control Program (**Appendix A**, Figure 4). The program, which relies on a statewide consortium of organizations, agencies, and volunteer samplers, is designed to detect toxin-producing phytoplankton species in ocean waters before they impact shellfish resources or pose a threat to human health.

In addition to contributing to an early warning system for the detection of biotoxins in coastal California shellfish, our participation in this statewide monitoring program produced an additional dataset for the growing area of interest (**Appendix C**, Table 3). For these analyses, the percent composition and relative abundance of *Pseudonitzschia* sp. and *Alexandrium* sp. were analyzed by CDPH staff (Richmond, CA) from phytoplankton subsamples collected by our team.

Shellfish Toxicity Screening and Testing. Pursuant to federal guidelines outlined in the 2019 revision of the NSSP Model Ordinance, the detection of biotoxins in mussel sentinel tissue through the use commercially available field screening kits, analytical methods, and viability assays is an important aspect of the baseline biotoxin monitoring program that was originally scheduled to commence in July 2021, after sentinels reached an appropriate size for sampling. However, due to an impending change in the collection vessel and volunteer team (and the concomitant need to train new volunteers and install a mechanical device on the vessel for the retrieval of data loggers and mussel sentinels), this component of the program is tentatively scheduled to begin in November 2021. At that time, the team will also begin shipping tissue samples from Sampling Station 3 to the CDPH lab for an independent analysis of ASP and PSP toxins². As noted in the most recent report, these analyses will further support the CDPH monitoring programs by providing an offshore data point for toxins in shellfish tissue. It bears noting here that the bench protocols used for the detection of biotoxins in mussel tissue (using the Neogen Reveal 2.0 system) were optimized in the CMB lab since the last report and are ready for implementation after the November field collection.

Task 7 Aquaculture Information Dissemination, Education and Public Outreach

The Project was designed to minimize constraints and barriers for entrepreneurs and existing seafood producers seeking to enter the aquaculture industry or expand current mussel farming operations. By permitting twenty, 100-acre growing parcels the Port District was assuming the initial risk associated with acquiring permits and would have engaged in a public process to solicit applications and authorize grower/producers to operate within the permitted area pursuant to sub-permits and/or an operating agreement.

To secure grower/producer tentative commitments, the Port District was initially undertaking three main work streams: (1) research and identify prospective local, regional, national, and international grower-producers that are suitable candidates for participation in the Project; (2) provide direct engagement with potential grower/producers;

² As described in FDA and ISSC (2019), “There are five (5) types of shellfish poisonings which are specifically addressed in the NSSP Model Ordinance: PSP, NSP, ASP (also known as Domoic Acid poisoning), DSP and AZP. Of these five (5) types of shellfish poisoning, PSP, NSP and ASP are the most dangerous. PSP and ASP can cause death at sufficiently high exposures. In addition, ASP can cause lasting neurological damage. PSP is caused by saxitoxins produced by the dinoflagellates of the genus *Alexandrium* (formerly *Gonyaulax*). The dinoflagellate *Pyrodinium bahamense* is also a producer of saxitoxins. NSP is caused by brevetoxins produced by the dinoflagellates of the genus *Karenia* (formerly *Gymnodinium*).”

and (3) develop a Port District approved grower/producer application process. Work for this effort began in September 2018.³

In March 2021 as the Port District shifted the focus from pursuing permits for aquaculture to supporting NOAA's AOA process and vigorously advocating for aquaculture, the Port District continued to commit to aquaculture information dissemination, education, and public outreach in the form of the following revised sub-tasks: 7.1) Grower/Producer Outreach, 7.2) Public Outreach Presentations, 7.3) VPD Fiscal and Economic Impact Analysis, and 7.4) Catalogued Project Information. In May 2021, California Sea Grant received revisions to Subtask 7.1 work streams (2) and (3) into Subtasks 7.2 through 7.4 which are consistent with the theme and intent of this Task. Each of these sub-tasks are discussed below.

Subtask 7.1 Grower/Producer Outreach and Inclusion

Task 7 consisted of a stepwise approach to securing grower/producer commitments to participate in a permit assignment process, which would have laid out the responsibilities and conditions to be performed by shellfish growers, in cooperation with the Port District and other regulatory agencies. It was assumed individuals and entities on this list, and the social/profession networks they maintain, would aid in the identification of prospective local, regional, national, and international grower-producers that are suitable candidates for participation in the Project. The nascency of the Project and permitting approach necessitated the creation of a database designed to generate interest and facilitate engagement with a broad cross-section of potential participants, resulting in the selection of candidates best positioned to fulfill the objectives of the project.

This sub-task is completed with the development of a database framework to input contact data for prospective grower/producers as described above and the initiation of research to identify suitable candidates. The database is comprised of contact information for approximately 750 individuals, institutions, and entities directly or indirectly associated with the production and/or distribution of sustainable seafood. The categories within the database are separated by geography for those involved in commercial operations globally, and by associations, research organizations, and fisheries academic programs. The database includes, but is not limited to, those who contacted the Project directly, both large and small scale domestic and international shellfish grower/producers, government and research institutions, supply and distribution entities, impact investors, industry associations and more.

Subtask 7.2 Public Outreach Presentations

The Port District is committed to transparency in all facets of its decision-making process and has performed extensive public outreach through hosting public workshops, presenting Project details at public Board meetings, posting Project updates and notices on the Project website (*venturashellfishenterprise.com*), organizing pre-application meetings with regulatory agencies, organizing meetings with environmental NGOs, and sending email notifications to registered stakeholders. A summary of public outreach prior to September 2018 is described in a Port District letter response to the USCG (see Task 7.4, Catalogued Project Information, Catalog No. 32-b,

³ No additional work was completed on work streams (2) and (3). Work stream (2) would have entailed more robust engagement contemplated as the Project moved through the entitlement process; and work stream (3) would have been developed in consultation with the Corps, who is the permitting authority for the project.

Subject: Ventura Shellfish Enterprise Aquaculture Project – Navigation Risk Assessment Information Request, March 12, 2021).

In August and September 2021, the Port District General Manager along with legal, environmental/permitting, and aquaculture technical experts and consultants prepared and presented four public presentations related to the Project and which provided a forward-looking approach to considerations for future aquaculture development in the Santa Barbara Channel. Table 2 provides a summary of these presentations. **Appendix D** provides a copy of each of these presentations. These presentations are also publicly available on the Port District website (see Subtask 7.4).

Table 2. 2021 Public Outreach Presentations

Date	Presentation Title	Organization	Location
8/14/2021	Ventura Harbor: Opportunities for Offshore Aquaculture off the California Coast	Aquaculture America	San Antonio, TX
8/14/2021	Navigating Permitting Requirements for Offshore Shellfish Aquaculture: Challenges and Opportunities Faced by the Ventura Shellfish Enterprise Project	Aquaculture America	San Antonio, TX
8/16/2021	Case Study: Ventura Shellfish Enterprise in the Santa Barbara Channel	Association of Environmental Professionals	Virtual and Long Beach, CA
9/20/2021	Aquaculture in the Santa Barbara Channel: The Next Steps	Pacific Coast Shellfish Growers Association	Virtual

Subtask 7.3 Port District Fiscal and Economic Impact Analysis

A Fiscal and Economic Impact Analysis was developed on behalf of the Port District for the Project and is provided as **Appendix E**. This analysis provides a review of estimated economic impacts associated with the Project and considers both fiscal projections to the Port District (such as revenues from project fees and other costs) and economic projections related to job impacts throughout the region. Economic impact measures the effects on the local economy by the introduction of new business operations. Effects are measured as new economic output, jobs, and overall growth in area wages due to this new activity. This report provides practicable information to other public agencies and shellfish companies considering aquaculture.

Subtask 7.4 Catalogued Project Information

Over six years of effort to develop the Project, the Port District along with Project volunteer partners, consultants, and NOAA have developed over 70 studies and reports related to the assessment, analysis, design, and other considerations for the establishment of an open ocean shellfish aquaculture farm. These technical reports and details provide a considerable amount of information that will be beneficial for the advancement of the aquaculture industry and success to individual shellfish companies and are available to the public through the Port District’s website (<https://venturaharbor.com/ventura-shellfish-enterprise/documents/>) in order to provide all sectors interested in aquaculture (e.g., industry, education, non-profits) with a wealth of information associated with aquaculture in the Santa Barbara Channel.

Task 8 Project Summary

The Project was the first of its kind proposed within federal waters along the west coast. As a result, the Port District, Project volunteers, and consultants have amassed a considerable amount of technical information and insights into advancing the aquaculture industry in the Santa Barbara Channel. **Appendix F** provides a concise report to document the practical and strategic decisions that were made to keep the Project on a critical path for timely completion of all project tasks (Tasks 1 through 8) applications. This report focuses on key project design elements (including species selection, technical design, project scope and location), recommendations for efficient Project management (i.e., role of the Port District and Project participating members), and recommendations to improve Project deliverables for (i.e., Task 1 through Task 8). In addition, the focus of this report is to provide practical suggestions and lessons learned by Project consultants and volunteer partners that may be leveraged by others seeking to permit sustainable shellfish aquaculture for commercial purposes in federal waters in the future. This report was drafted with input from Project consultants and volunteer partners, the Project's principal investigators, NOAA and California shellfish coordinators, NOAA technical staff, and university/research affiliates.

References

FDA and ISSC (U.S. Food and Drug Administration and Interstate Shellfish Sanitation Conference). 2019. National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish. 2019 Revision. Available at <https://www.fda.gov/food/federalstate-food-programs/national-shellfish-sanitation-program-nssp>

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Appendix A

Figures 1 through 4 (Task 6 Supporting Information)

Appendix B

Table 1 (Task 6 Supporting Information)

Appendix C

Tables 2 and 3 (Task 6 Supporting Information)

Appendix D

Public Outreach Presentations

Appendix E

Economic and Fiscal Impacts of the Ventura Shellfish Enterprise Project

Appendix F

Aquaculture Permitting Case Study: The Ventura Shellfish Enterprise and Offshore Shellfish Aquaculture

