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October 10, 2016

Item 4a

John Laird, Secretary for Natural Resources
Chair, California Ocean Protection Council
California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Via Electronic Submission: COPCpublic@resources.ca.gov

RE: Investment in Ocean Acidification and Hypoxia Research and Adaptation Projects

Dear Secretary Laird and Members of the Ocean Protection Council:

As co-chair of the West Coast Ocean Acidification and Hypoxia Science Panel, I had the opportunity to discuss numerous actions that the state and the west coast can pursue to better understand the potential impacts of OAH and possible avenues to mitigate and adapt to these impacts. The Science Panel produced the OAH report with findings, recommendations and actions.

I'm writing to express my strong support for the research, restoration and adaptation projects up for Proposition 84 funding at the October 17th OPC meeting. The funding recommendations build on ongoing west coast OAH modeling efforts by UCLA, SCCWRP, UW and NOAA. The proposed modeling research includes downscaling of OAH models to coastal nearshore environments, running additional modeling scenarios based on the feedback of water quality managers (dischargers, regulators, etc.), the addition of higher trophic levels (pelagic communities including fish) to the California Current model, additional modeling forums to share results and ensure that the models are usable by a larger community of researchers and coastal ocean managers, and working with pertinent stakeholders to extend the modeling effort to include San Francisco Bay.

In addition, the other research efforts and habitat restoration and adaptation research are consistent with the recommendations in the West Coast OAH report. They include: determining assessment endpoints for ecologically-relevant thresholds to assess ocean condition related to OAH impacts; and assessing the seagrass benefits for buffering the impacts of OAH from Humboldt Bay to San Diego; and a seagrass restoration effort in Humboldt Bay designed to reduce or eliminate impacts to a local oyster hatchery.

The research and restoration projects before the OPC deserve your serious consideration. I strongly recommend funding of these efforts.

Sincerely,

Alexandria Boehm

CENTRAL COAST CLIMATE COLLABORATIVE

Item 4g -

California Ocean Protection Council
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

October 7, 2016

Dear Ocean Protection Council members,

I am writing on behalf of the Central Coast Climate Collaborative to express our strong support of OPC's recommendation to fund the US Geological Survey to develop sea-level rise and coastal hazard maps using the Coastal Storm Modeling System (CoSMoS) for the Central Coast to inform climate vulnerability assessments, and to update coastal chang rates statewide for the outer California coast. We are also supportive of OPC funding Point Blue Conservation Science to develop an online *Our Coast, Our Future* mapping tool for the Central Coast.

The Central Coastal Climate Collaborative is a growing regional collaboration that will focus on engaging all communities throughout the region to help ensure a resilient and low-carbon Central Coast prepared for the impacts of climate change.

Understanding the impacts of both sea level rise and coastal storms is critically importan in helping us understand our true vulnerability to hazards along our coast, allowing us to be better prepared for impacts today and into the future. To date, this combined information is not available for the Central Coast (from Pt. Conception to Half Moon Bay). By funding CoSMoS for the Central Coast, you would fill this gap in coverage, allowing us to continue our work in this currently understudied region of California.

We are fully supportive of this funding recommendation. Please feel free to contact me at mboswell@calpoly.edu or 805-756-2496 if you have any further questions.

Sincerely,

Michael. R. Boswell, Ph.D., AICP
Chair, Organizing Committee for the Central Coast Climate Collaborative

State Water Resources Control Board

Items 4a - 4f

October 10, 2016

John Laird, Secretary for Natural Resources
Chair, California Ocean Protection Council
California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

RE: Investment in Ocean Acidification and Hypoxia Research and Adaptation Projects

Dear Secretary Laird and Members of the Ocean Protection Council:

As Chief Deputy Director of the State Water Resources Control Board, Division of Water Quality, I had the opportunity to read the report from the West Coast Ocean Acidification and Hypoxia Science Panel including their findings, recommendations and actions. I am writing to express my strong support for the research, restoration and adaptation projects up for Proposition 84 funding at the October 17th OPC meeting. The funding recommendations build on ongoing west coast OAH modeling efforts by UCLA, SCCWRP, UW and NOAA. The proposed modeling research includes downscaling of OAH models to coastal nearshore environments, running additional modeling scenarios based on the feedback of water quality managers (dischargers, regulators including the SWRCB, etc.), the addition of higher trophic levels (pelagic communities including fish) to the California Current model, additional modeling forums to share results and ensure that the models are usable by a larger community of researchers and coastal ocean managers, and working with pertinent stakeholders to extend the modeling effort to include San Francisco Bay.

In addition, the other research efforts and habitat restoration and adaptation research are consistent with the recommendations in the West Coast OAH report. They include: determining assessment endpoints for ecologically-relevant thresholds to assess ocean condition related to OAH impacts; and assessing the seagrass benefits for buffering the impacts of OAH from Humboldt Bay to San Diego; and a seagrass restoration effort in Humboldt Bay designed to reduce or eliminate impacts to a local oyster hatchery.

The research and restoration projects before the OPC deserve your serious consideration. I strongly recommend funding of these efforts.

Sincerely,

Jonathan S. Bishop
Chief Deputy Director

Oct. 12, 2016

The Honorable John Laird, Chair
California Ocean Protection Council
California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Re: Prop. 84 funding recommendations for OPC meeting of Oct. 17, 2016

Dear Mr. Laird,

I am writing on behalf of Humboldt Baykeeper to express our strong for the research proposal described under agenda Item 4b, *Potential seagrass buffering of Humboldt Bay to ocean acidification*.

Humboldt Baykeeper was launched in 2004 with a mission to safeguard coastal resources for the health, enjoyment, and economic strength of the Humboldt Bay community through education, scientific research, and enforcement of laws to fight pollution.

Ocean acidification is of great concern to the Humboldt Bay community due to the importance of fisheries and shellfish for economic, recreational, tribal and subsistence fishing, as well as the ecological health of the bay and coastal ecosystems. The proposed research will focus on the importance of pH as an aspect of water quality and the ecological threat posed by ocean acidification, with an emphasis on the role of eelgrass in maintaining water quality.

We urge you to approve funding for this important project.

Sincerely,

__s/_____
Jennifer Kalt, Director
jkalt@humboldtbaykeeper.org

1385 Eighth Street, Suite 228, Arcata, CA 95521
(707) 825-1020
www.humboldtbaykeeper.org

CENTRAL AND NORTHERN CALIFORNIA OCEAN OBSERVING SYSTEM
7700 Sandholdt Road Moss Landing, CA 95039 Tel: 831-775-1700 Fax: 831-775-1918

Oct. 12, 2016

The Honorable John Laird, Chair
California Ocean Protection Council
California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Dear Chairman Laird and Members of the Ocean Protection Council,

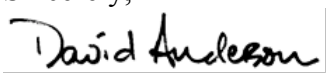
Thank you for sharing your proposal to develop the Humboldt Ocean Carbon Observatory and to deploy ocean acidification sensors (burkolators) in the Humboldt Bay region. This letter expresses our support for your proposal, which addresses one of the key monitoring needs in coastal marine science in our region (seawater carbonate chemistry), and which will produce data of interest to CeNCOOS and its data users. Your proposal to deploy environmental monitoring sensors in the coastal ocean is important to CeNCOOS for several reasons. Humboldt Bay is a key part of the CeNCOOS system. It is geographically remote, environmentally sensitive (e.g., eelgrass beds), and home to mariculture and other marine enterprises. Monitoring in this region is aligned with CeNCOOS' goals and the direction we are headed.

CeNCOOS is a collaborative consisting of fifteen organizations that enable sustained observing, modeling, and forecasting of the California Coastal Ocean, in support of marine operations, coastal hazards mitigation, understanding climate change, and protecting water quality and ecosystem health. We operate 13 shore stations, 27 coastal radars, and four modeling programs, and integrate information from observing platforms operated by others. We make the data, nowcasts, and forecasts available real-time, we curate and steward the resulting data, and ensure its preservation in long-term archives. Partnering with investigators like you is an important way for the regional observing systems to extend their observations and expand the archive. We partly-support the burkolator operated by Tessa Hill at Hog Island and adopting the Humboldt sensors as part of the CeNCOOS system would be a valuable addition.

We will be able to acquire, curate, and distribute the data your systems produce, following IOOS and other national best practices. CeNCOOS will assist your project by providing real-time Internet access to your monitoring data, including shared catalog services, by helping you curate the data following national standards, and by contributing your data to a long-term archive ($6k per initial set-up). We expect to continue these services beyond the project duration ($1k/yr). You are leveraging additional resources (Internet Service Provider, redundant off-site storage, integration of your data into existing browse and visualization systems, web services) that would cost tens of thousands of dollars (perhaps $35,000) if constructed separately. Regarding operation, we may be able to partially support the operation of one or both burkolators (or other instruments) and ancillary hydrographic measurements, using either IOOS funding or new grants that we propose together. The allocation of IOOS funds is approved annually by the CeNCOOS Board. These funds tend to be fully allocated to existing monitoring from one year to the next with a small amount available for new monitoring efforts. But Humboldt Bay was

identified as a top priority for the 'augmented support' version of our IOOS proposal, the amount you are seeking is at the same level as our typical level of support for the existing shore stations, and we are trying hard through grant writing and other means to increase our support for OA monitoring. Our support for existing shore stations has been long-lived, extending beyond ten years in some cases.

Sincerely,



David M. Anderson
Director, Central and Northern California Ocean Observing System (CeNCOOS)

October 12, 2016

John Laird, Secretary for Natural Resources
Chair, California Ocean Protection Council
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

RE: Item 4: Consideration of authorization to disburse Proposition 84 funds

Dear Secretary Laird and members of the Ocean Protection Council:

I offer these comments on behalf of California Coastkeeper Alliance (CCKA), Environment California, Surfrider Foundation, and Heal The Bay. Through the strategic investment of Proposition 84 and other state bond funds, California is improving the health and resiliency in marine protected areas and other ecologically vital places, with significant returns for ocean recreation and tourism. Projects from across the state can build on our investments in marine protected areas to improve water quality and foster cleaner beaches, oceans, and thriving coastal ecosystems statewide. We strongly support the projects under consideration for Ocean Protection Council authorization of Proposition 84 funds on ocean acidification, marine protected areas, sea level rise, sediment management, and sustainable fisheries, as described below.

I. Ocean Acidification (Support 4a, 4b, 4c, 4d, 4e, and 4f)

Ocean acidification (OA) and hypoxia have become increasingly evident in coastal waters as global carbon dioxide (CO_2) emissions have rapidly increased over the past centuries. While our oceans provide an important carbon sink, the vast quantities of CO_2 emitted into the atmosphere and subsequently absorbed by the oceans each year fundamentally alter the chemical composition of seawater. This in turn threatens the health of coastal ecosystems and the industries that depend on the marine environment. Projections indicate that the impacts of OA will be experienced severely and quickly along the West Coast of North America. However, in most coastal regions, data are not readily available to characterize short-term marine pH variability in the carbonate system, or to ascertain the 'baseline' necessary for identifying long term trends. In California, with the exception of pH, there are no water quality objectives for ocean acidification parameters (e.g. alkalinity and pCO_2), and Regional Water Boards are not actively monitoring for these parameters. This has created a considerable data gap in our understanding of the process of ocean acidification and its potential impacts on California's coastal ecosystem and economy. In response, the OPC established a panel in 2013 of leading scientific experts charged with analyzing the available science and developing recommendations to address ocean acidification and hypoxia (OAH) on the West Coast. The Panel's resulting report outlined six Major Findings, eight Recommendations, and fourteen

Action Items to confront OAH.[1] These actionable recommendations provides a strong foundation to improve California's resiliency to OAH. Accordingly, we strongly support OPC disbursement of Proposition 84 funds to improve our understanding of ocean acidification in California, and to develop effective science and policy solutions to address it, through the recommendations of the West Coast OAH Panel and Report.

Item 4a. *Advance integrated modeling of California's coastal ocean to inform ocean acidification and hypoxia policy*. The goal of this proposed project is to develop new tools and capacity for modeling our coastal system in order to more fully understand the patterns and impacts of OAH. This will directly address the recommendations of the West Coast OAH Report by identifying and addressing local factors to reduce OAH exposure and to help establish a coordinated research strategy. We strongly support the utilization of modeling to inform policy and encourage science-based action. In addition, this valuable information on currents and the nearshore environment can be integrated into other projects aimed at mitigating erosion, tracking trash pollution, and managing new development.

Item 4b. *Potential seagrass buffering of Humboldt Bay to ocean acidification and implication for aquaculture industry and hatchery and eelgrass managers* AND Item 4c, *Seagrasses' ability to ameliorate estuarine acidification*: Initial studies suggest that seagrasses and other plants can mitigate the impacts of OAH by removing CO_2 from seawater as they grow, thus offsetting the reduction of pH. In addition, eelgrass provides many important ecological services such as habitat, sediment stabilization, water quality improvement, and nutrient cycling.[2] However, data gaps remain regarding the best approaches for seagrass and kelp restoration to maximize benefit and to most effectively mitigate OAH. These proposed projects seek to fill that gap by advancing our understanding of ocean acidification and the chemical and biological benefits of seagrass in estuary environments. This knowledge will not only be useful for the application of these species specifically for OAH mitigation, but also for multi-benefit restoration projects aimed at improving the marine environment more broadly. This also directly addresses the recommendation of the West Coast OAH report to Reduce local OAH exposure by implementing strategies to remove CO_2 from sweater. [Please see also Humboldt Baykeeper letter of support].

Item 4d. *Revision of Ocean Acidification and Hypoxia Water Quality Criteria*: This project will fund workshops, an advisory committee, and a post-doctoral scholar to revise the current OAH water quality criteria. The larger goal is to review the best available science and develop scientifically-grounded policy recommendations to address OAH. Water quality criteria serve as a valuable threshold for many management activities, both in the planning and implementation stages, and are important for assessing and tracking the health of waterbodies. However, California is decades behind in creating robust water quality criteria that fully capture the impacts of OAH and the scientific consensus on OAH parameters. Many of our organizations have advocated for the development of water quality criteria to include OAH parameters since 2010. We strongly support this project as a crucial first step to protect our marine and coastal resources.

Item 4e. *MPA effectiveness and ecological responses in the face of changing ocean conditions*: Our organizations are committed to the robust implementation and long-term success of Marine Protected Areas. We support this

[1] West Coast Ocean Acidification and Hypoxia Science Panel. *Major Findings, Recommendations, and Actions*. April 2016. Available here: http://westcoastoah.org/wp-content/uploads/2016/04/OAH-Panel-Key-Findings-Recommendations-and-Actions-4.4.16-FINAL.pdf.
[2] *Id.*

project for its broad contributions to our understanding of the effectiveness of the MPA network for building ecological resilience in coastal and marine ecosystems. It would also provide an assessment of the spatial variability in OAH impacts and, conversely, resilience to OAH. By integrating ongoing MPA monitoring with OAH monitoring, existing ecological data can provide baseline data on ocean health that can be leveraged to evaluate how OAH is changing the ocean environment and what role MPAs can play in mitigating OAH. It is also hugely valuable for multi-benefit projects looking at marine resilience and adaptive capacity more broadly, allowing us a unique opportunity to simultaneously address multiple stressors to the marine environment.

Item 4f. *Inventory of Ocean Acidification and Hypoxia Hotspots*: As with the previous project, this project would be crucial for identifying spatial patterns in OAH impacts. It would also provide information that could be integrated with other ecological data to provide a larger picture on the multiple stressors facing different ecosystems and species, and their potential resilience to those stressors. This would assist decision-makers in identifying priority areas and species within the context of broader, ongoing conservation work. As with other projects under consideration, this work directly addresses multiple recommendations of the West Coast OAH report by addressing local factors to OAH and reducing co-occurring ecosystem stressors.

II. Sea Level Rise (Support 4g and 4h)

Sea level rise is one of the most pressing issues facing our state. The shoreline at risk is home to the majority of the state's population, as well as its most critical transportation, energy, and larger economic infrastructure. Unfortunately, climate change projections indicate that sea level rise, and its associated impacts, will become increasingly severe in the future. Many studies predict a rise of over one meter by 2100, significantly exacerbating coastal flooding and shoreline erosion.[3] Our organizations have worked to address sea level rise from all angles, by mitigating the impacts of erosion and flooding with on-the-ground restoration and the implementation of effective policies, and educating and preparing the public for climate change driven impacts to the coast threats. OPC has an important role to play by building the capacity of state and local agencies to understand and prepare for sea level rise, while fostering inter-agency and community collaboration. We strongly support the use of Proposition 84 funds to expand our understanding of sea-level rise impacts to support planning efforts.

Item 4g. *Develop Sea-level Rise and Coastal Hazard Maps for the Central Coast to Inform Climate Vulnerability Assessments, and Conduct Statewide Shoreline Change Rate Update and 'Our Coast, Our Future' Online Viewer for the Central Coast* AND Item 4h, *OPC-Science Advisory Team Working Group to Summarize Best Available Science on Sea-Level Rise* address important data gaps in our understanding of the impacts of sea-level rise. The proposed project in Item 4g would expand USGS's Coastal Storm Modeling System and the 'Our Coast, Our Future' web tool to the Central Coast, helping better predict coastal flooding, while also assessing the impacts of the 2015-2016 El Nino and modeling shoreline retreat due to erosion. The proposed project in item 4h would develop a Scientific Advisory Team charged with synthesizing the best available science and developing scientifically-based recommendations for confronting sea-level rise. These technological developments and scientific advances would help local communities develop vulnerability assessments and adaptation plans. Having a robust method for assessing coastal vulnerability is a crucial first step in developing adaptation strategies and identifying regional needs that will help guide the implementation of climate change adaptation projects.

[3] California Climate Change Center. *The Impacts of Sea-Level Rise on the California Coast*. May 2009. Available here: http://pacinst.org/app/uploads/2014/04/sea-level-rise.pdf.

III. Coastal Sediment Management (Support 4j)

Our organizations have long been involved in protecting California's coast as an invaluable economic, environmental, and recreational resource for our communities and ecosystems. Sand, in particular, is a critical component of the coastal system. However, erosion, from both acute storm events, as well as chronic patterns in currents, wave activity, sea level rise, and human intervention, threat to that resource by interrupting our sand supply. While erosion is a natural, ongoing process, current sediment management and development practices coupled with the impacts of climate change (i.e. sea level rise and changing storm patterns) has already begun to interrupt the delicate sediment-transport balance, likely causing critical sand deficits along California's coast in the future, as observed in the Coastal Sediment Management Workgroup's Beach Erosion Assessment.[4] Given the harmful impacts of erosion on our coastal communities, we strongly support the disbursement of Proposition 84 funds to study this process and potential mitigation options.

Item 4j, *Proposed Assessment of Significant Sand Resources in Federal and State Waters*: Given the risks associated with coastal erosion, as well as the complexity of the process, we believe a thorough understanding of the state's offshore sand and gravel supplies is an important step to ensuring that future efforts to mitigate the impacts of erosion are done with the best available science. While sand nourishment has become a popular tool to address erosion around the world, coastal restoration projects of that variety should not be implemented without complete information. The use of sand from federal waters managed by the Bureau of Ocean Energy Management requires a thorough assessment and inventory of available resources prior to use. With this in mind, the proposed project leverages state funds to complete that inventory, using USGS resources to accurately map offshore sand deposits for potential future use in critical erosion hotspots. This project also directly addresses OPC Strategic Plan Objective 11.2 by increasing the availability of tools and data to improve sediment-related planning. However, it is important to note, that this investigation does not lock the state into any particular management strategy by requiring the use of these resources. Rather, it obliges us to decide how sediment resources should be best used to allow for more flexible, adaptive management.

IV. Marine Protected Areas (Support 4k and 4l)

Our organizations have been deeply involved in the creation and ongoing management of California's marine protected areas (MPA) and as such, have a vested interest in ensuring the long-term success of the MPA network. As acknowledged in OPC's adopted Marine Protected Areas Partnership Plan (Partnership Plan)[5], the durability of the state's MPAs relies on leveraging partnerships, generating stewardship, and effective outreach, monitoring and enforcement. Therefore, we strongly support the disbursement of Proposition 84 funds to advance the efforts of the MPA Collaborative Network and enable a second round of MPA signage, as proposed in items 4k and 4l.

Item 4k. *MPA Collaborative Network Small Grants Program*: The MPA Collaborative Network (Collaborative Network) is made up of community partners in fourteen coastal counties who provide local expertise and support MPA activities including outreach and education, compliance and enforcement, and research and monitoring. The Collaborative Network, which is identified in the Partnership Plan as a critical partner in MPA implementation, is committed to ensuring that protected areas are woven into community culture and viewed as

[4] Coastal Sediment Management Workgroup. *California Beach Erosion Assessment Survey 2010*. October 2010. Available here: http://dbw.ca.gov/csmw/pdf/CBEAS_Final_10252010a.pdf.
[5] Ocean Protection Council. *The California Collaborative Approach, Marine Protected Areas Partnership Plan*. December 2014. Available here: http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf

public assets for recreation and exploration; however, they lack sustained funding to maintain their MPA management efforts. Funding for the Statewide Collaborative Forum and a small grants program will help guide priorities and bolster the effectiveness Collaborative implementation activities.

Item 4l. *Statewide MPA signage, Round 2*: Thanks to support from OPC in 2014, interpretive and regulatory MPA signs have been installed along the entire coast of California. These signs are helping improve compliance and enforcement and are raising public awareness of the value of these special places. They are also leveraging local partners, fostering community stewardship, and creating social infrastructure that will support ongoing MPA management. While the initial round of signage focused on top priority locations (based on high use, need for regulatory clarity, etc.), additional sign needs were acknowledged and continue to be identified. Funding a subsequent sign effort will extend the reach and visibility of this important education tool, filling in gaps and improving public understanding of MPA goals and rules.

V. Sustainable Fisheries

California's Marine Life Management Act (MLMA)[6] and the MLMA Master Plan[7] both highlight the need to include socioeconomic information the management of state fisheries. However, these documents fail to provide guidance on the types of information necessary or how to collect and analyze such data and integrate it into ongoing fishery management. Development of such guidance will ultimately allow the Department of Fish and Wildlife to compare a range of management scenarios with a better understanding of the ecological and economic impacts. Therefore, we support this project as it will help inform development of the MLMA Master Plan update, resulting in improved fishery management and increased sustainability of the state's marine ecosystems.

Sincerely,

Sara Aminzadeh
Executive Director
California Coastkeeper Alliance

Jenn Eckerle
Ocean Policy Consultant
Environment California

/s/

Jennifer Savage
California Policy Manager
Surfrider Foundation

Rita Kampalath, Ph.D., P.E.
Science and Policy Director
Los Angeles Waterkeeper

[6] California Department of Fish and Wildlife. *Marine Life Management Act, Section 7056(l)*. XXXXX. Available here: http://www.dfg.ca.gov/marine/pdfs/binders_nc/b3_79.pdf

[7] California Department of Fish and Wildlife. *The Master Plan: A Guide for the Development of Fishery Management Plans as directed by the Marine Life Management Act of 1998*. December 2001. Available here: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=33474&inline

United States Department of the Interior
BUREAU OF OCEAN ENERGY MANAGEMENT
Pacific OCS Region
760 Paseo Camarillo, Suite 102
Camarillo, CA 93010-6064

OCT 1 0 2016

John Laird, Secretary for Natural Resources
Chair, California Ocean Protection Council
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

RE: Action Item 4, Funding for Proposed Assessment of Significant Sand Resources in Federal and State Waters (Item 4J)

Dear Secretary Laird and members of the Ocean Protection Council:

The Bureau of Ocean Energy Management (BOEM) would like to express its support for the Ocean Protection Council's (OPC) proposed use of Proposition 84 funds to conduct an assessment and inventory of sand and gravel resources in federal and state waters. The proposed project addresses both the OPC Strategic Plan Objective 11.2 (Increase the availability of data and tools that can influence sediment-related planning decisions) and the strategic goals of BOEM.

The investigation, conducted by the U.S. Geological Survey (USGS), will provide valuable information about California's offshore sand resources. These sand resources may be critical in the future management of the state's coastal erosion and beach changes resulting from sea-level rise. With assistance from the OPC, the investigations will be conducted in three regions that are likely to contain beach-quality sand. Beach nourishment with sand resources has been shown to slow the rates of erosion and beach loss in California, thus providing measurable benefits.

The proposed study will be supported by $499,000 of funding from BOEM and $465,000 of in-kind services from the USGS. These resources are available because of the federal recognition of the resource needs in California and the strong partnership that can be developed with the state to conduct these studies. State funding support is also an important factor considered by BOEM given the competition for funds among coastal states and the limited funds BOEM has available to support OCS sand resource investigations.

We look forward to partnering with OPC during this and other future investigations. If you have any questions regarding this letter, you may contact Thomas Liu, Deputy Regional Director at (805) 384-6316 or thomas.liu@boem.gov.

Sincerely,

Thomas Liu For

Joan R. Barminski
Regional Director

Francis Chan, Associate Professor Senior Research
Department of Integrative Biology
Oregon State University, 3029 Cordley Hall, Corvallis, Oregon 97331-2914 U.S.A.
T 541-844-8415 | **F** 541-737-9131 | **E** chanft@science.oregonstate.edu

October 12, 2016

Dear Council Members,

I write to extend my strongest support for the ocean acidification and hypoxia projects that are under consideration by the Ocean Protection Council. I recently served as the co-chair of the West Coast Ocean Acidification and Hypoxia Science Panel. A core aim of the Panel was to set forth a suite of strategic recommended actions that can jump start new thinking and new solutions to address looming ocean changes. The range of projects under consideration builds from some of the best thinking of the Panel and represents timely and impactful steps forward. I have every expectation that these early investments in modeling, mitigation, and adaptation planning will catalyze science-informed options for California, the west coast and the nation as a whole. I commend your body for taking these pro-active and innovative steps.

Most Sincerely,

Francis Chan
Associate Professor Senior Research

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Monterey Bay National Marine Sanctuary
99 Pacific Street, Bldg 455a
Monterey, CA 93940

Via Email Only

Item 4i

October 14, 2016

Deborah Halberstadt, Executive Director
California Ocean Protection Council
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Re: Letter of Support for the Pilot Surfer's Beach Sand Replenishment Project, Planning Phase—Proposition 84 Grant Proposal

Dear Ms. Halberstadt:

The purpose of this letter is to express our support for the San Mateo County Harbor District's Proposition 84 funding proposal for the planning of the pilot Surfer's Beach Sand Replenishment Project (Project). The grant would allow the San Mateo County Harbor District and its partners to conduct the planning activities necessary to prepare for implementation of the Project, which would involve the placement of up to 75,000 cubic yards of sand on the beach, acquired from the deposition of clean sediment that has been trapped inside the East breakwater of Pillar Point Harbor. The sediment would be placed above mean high water along the most heavily eroding areas of Surfer's Beach so that sand can naturally work into the littoral system and help attenuate erosion. There is also an option to permit placement of clean sand from upland sources below mean high water.

Monterey Bay National Marine Sanctuary (MBNMS) and Greater Farallones National Marine Sanctuary (GFNMS) are Federally-protected marine areas on California's north and central coast. Pillar Point Harbor lies adjacent to MBNMS. GFNMS is responsible for managing and permitting activities within the northern portion of the MBNMS, north of Point Año Nuevo. GFNMS and MBNMS staff coordinate closely on issues and management decisions for this area.

We recognize the ongoing challenge of erosion at Surfer's Beach and, over the past several years, have collaborated with the Coastal Sediment Management Workgroup (CSMW), San Mateo County Harbor District and numerous other stakeholders to evaluate options for a pilot project that addresses the erosion issues. We would like to continue to be engaged in this planning process by working collaboratively to develop both short-term and long-term options for addressing erosion along this stretch of coast that would be sustainable and effective alternatives to coastal armoring.

The Project would address the significantly accelerated coastal erosion that has occurred on the bluffs and beaches adjacent to Pillar Point Harbor as a result of the construction of the East Breakwater approximately 55 years ago. The two primary issues that it will address are impaired public beach access/recreational impacts and damages to infrastructure from

coastal storms. Additionally, the Project will address the issues associated with accumulation of sediment within Pillar Point Harbor.

Specific benefits would include preventing or mitigating beach erosion and sea cliff retreat; improving protection of State Highway 1 and other coast-side commercial and private structures; increasing the quality and quantity of public access and public recreation to that stretch of coast; reducing the need for hard structures (e.g. seawalls and revetments), and; improving beach and wildlife habitat in the project area.

For these reasons, we strongly support the pilot Surfer's Beach Sand Replenishment Project, and ask that you approve the proposition 84 grant proposal from San Mateo County Harbor District. If you have any questions, please contact Karen Grimmer at MBNMS at (831) 647-4253.

Sincerely,

Paul Michel

Paul Michel
Superintendent

cc:
Maria Brown, Greater Farallones National Marine Sanctuary
Stephen McGrath, San Mateo County Harbor District
Chris Potter, California Sediment Management Workgroup
Clif Davenport, California Sediment Management Workgroup
Tom Kendall, U.S. Army Corps of Engineers

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center
Fisheries Ecology Division
Humboldt State University Marine Laboratory
P.O. Box 690
Trinidad, CA 95570

Item 4b

October 15, 2016

The Honorable John Laird, Chair
California Ocean Protection Council
California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Dear Mr. Laird,

I am writing to express strong support for the proposal by Dr. Joe Tyburczy and colleagues to enhance capacity for quantifying ocean carbonate chemistry in and around Humboldt Bay and to increase study of ocean acidification (OA) and its potential ecological and economic consequences in the region. The research aspects of the proposal are soundly designed and (as I'm sure other letters will attest) of great interest. However, I wish to focus on highlighting what I see as great opportunities to leverage the instrumentation included in the proposal in two projects focused on assessing OA and its effects.

The first is a growing time series of monthly ship-based ocean observations collected along the Trinidad Head Line, a transect that extends due west from Trinidad Head. This time series extends back to 2008 and has since supported diverse research and provided robust information on hydrography and plankton ecology to coastwide syntheses of the California Current (e.g., the CalCOFI State of the California Current reports). In recent years, we have added a pH sensor to our CTD package and conducted water sampling to quantify carbonate chemistry along the Line (part of which was conducted with OPC support). Access to a local Burkolator to assay these samples will greatly speed the analysis time and increase the precision of our measurements, and thus enhance information on OA conditions in the offshore waters that supply Humboldt Bay and coastal habitats during upwelling.

The second is an NSF-funded project in which we are studying how exposure to low-pH and low dissolved oxygen (DO) waters affects juvenile rockfish. Our study focuses on aspects of the behavior, physiology, swimming performance, growth, and gene expression that are relevant to individuals' growth (stress, foraging ability) and survival (predator avoidance), and thus have critical implications for the demography of the species during the critical pelagic-to-benthic habitat transition. Being able to precisely quantify the carbonate chemistry in our treatment tanks with the Burkolator will enhance the quality of this research. Moreover, this project will benefit from improved pH and carbonate chemistry data in Trinidad Bay (the source of our study fish), particularly in the course of adaptive sampling, in which we hope to measure responses of wild fish to low-pH/low-DO waters during intense upwelling.

I firmly believe that the proposal warrants support solely on its own merits, and hope that knowing that this investment will yield even greater returns of management-relevant science will only make your decision to grant this support even easier.

Best regards,

Eric P. Bjorkstedt, Ph.D.
NOAA Fisheries SWFSC, and
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Louis Blumberg, the Nature Conservancy

Comment on Item #4 – Climate Change

TNC requests that the Ocean Protection Council (OPC) allocate $200,000 of the remaining Prop. 84 funding to the California Coastal Commission for the purposes of updating its coastal armoring database and maps.

California's coast is eroding, and sea level rise threatens a dramatic acceleration of this trend.
As a result of past efforts to fight erosion, more than ten percent of the shore line has been transformed from natural to man-made structures. In southern California more than thirty percent of the coast is now armored.

Sea walls and armoring are a short term strategy at best, but they also accelerate erosion in other parts of the shore and have other social, economic and environmental impacts.

We need to understand better the impact of seawalls on our shorelines in order to plan for the future. However, the most recent dataset, provided by the CCC, is over ten years out of date and incomplete. Better data is necessary for determining the need to modify existing structures to account for a rise in sea level and to consider a range of options based on realistic projections of inundation from floods and sea level rise. Though new, up-to-date models like COSMOS now exist, they need better data to create accurate, effective plans. This data will improve the outcome of items 4g and 4h on your agenda.

Up-to-date coastal armoring data is critical for cities and local governments in updating their LCPs and general plans (as required by passage of SB 379 last year) and for state agencies like Parks (as mandated by AB 1482 and EO B30-

15) to determine their risk, comprehensively assess coastal access and potential areas for restoration, and understand the economic and environmental consequences of coastal management choices. We need a trustworthy, up-to-date, robust armoring dataset for these processes, and it is essential that the Coastal Commission maintain these data so that it is consistent across every county and can be tracked comprehensively over time.

Again, the Nature Conservancy requests that the Ocean Protection Council (OPC) allocate $200,000 of the remaining Prop. 84 funding to the California Coastal Commission for the purposes of updating its coastal armoring database and maps.

Thank you

Louis Blumberg,

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