

CALIFORNIA OCEAN PROTECTION COUNCIL

Item 4e

Staff Recommendation
June 29, 2016

Completing the Core Objectives of the Moro Cojo Slough Management and Enhancement Plan

Amy Vierra, Deputy Director

RECOMMENDED ACTION: Authorization to disburse up to \$1,334,030 to Coastal Conservation and Research, Inc. to restore the Moro Cojo Slough through the construction of a weir, acquisition and restoration of a 35-acre parcel, and development of guidelines for long-term management of a repaired tidal gate, and adoption of findings under the California Environmental Quality Act.

LOCATION: Moro Cojo Slough, Moss Landing/Castroville, Monterey County

STRATEGIC PLAN OBJECTIVE(S): Sustainable Fisheries and Marine Ecosystems; Climate Change

EXHIBITS

Exhibit A: [Project Location and Site Map](#)

Exhibit B: [Site images](#)

Exhibit C: [Letters of support](#)

Exhibit D: [Negative Declaration/Initial Study](#)

Exhibit E: [Draft Notice of Determination to be filed if the Ocean Protection Council approves project](#)

FINDINGS AND RESOLUTION:

Staff recommends that the Ocean Protection Council (OPC) adopt the following findings:
“Based on the accompanying staff report and attached exhibits, the Ocean Protection Council hereby finds that:

- 1) The proposed project is consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act.
- 2) The proposed project is consistent with the Ocean Protection Council's Proposition 1 grant guidelines (adopted September 2015).
- 3) The Ocean Protection Council has reviewed the Negative Declaration adopted by the County of Monterey on May 2, 1996 pursuant to the California Environmental Quality

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Act and attached to the accompanying staff recommendation as Exhibit D (SCH #96041068), and concurs with the County's determination that the project will not have a significant effect on the environment."

Staff recommends further that the OPC adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

"The California Ocean Protection Council hereby approves the disbursement of up to \$1,334,030 to Coastal Conservation and Research, Inc. to restore the Moro Cojo Slough through the construction of a tidal weir, purchase and restoration of 35 acre privately owned parcel, and development of guidelines for long-term management of a repaired tidal gate.

1. Prior to the disbursement of any funds, Coastal Conservation and Research, Inc. shall submit for the review and written approval of the OPC's Executive Director the following:
 - a. A detailed work program, including budget and schedule;
 - b. A plan for signage to acknowledge OPC and Proposition 1 funding;
2. Prior to the disbursement of any funds for construction activities associated with the 35-acre parcel, Evidence that Coastal Conservation and Research, Inc. shall submit evidence that it has applied for ~~has obtained~~ a coastal development permit ~~and grading permit from Monterey County~~ for the acquired parcel.
3. Prior to the disbursement of any funds for construction activities associated with the weir, Coastal Conservation Research, Inc. shall submit the following:
 - a. Evidence that Coastal Conservation and Research, Inc. has obtained a 401/404 permit and Sec. 1600 permit for the construction of the weir.
 - b. Evidence that Coastal Conservation and Research, Inc. has obtained a coastal development permit and grading permit from Monterey County for the weir."

PROJECT SUMMARY:

Site Description:

The Moro Cojo Slough drains 17 square miles of watershed with its mouth emptying into what is now known as Moss Landing in the center of Monterey Bay. Historically, the slough encompassed vast expanses of fresh and brackish water wetlands that supported a rich and diverse community of wildlife, filtered sediments from the water, prevented erosion, reduced the threat of floods, and recharged shallow aquifers.

During the 20th century, most of the fresh and brackish water habitats of the Salinas Valley (including the Moro Cojo Slough) were "reclaimed" for agricultural use. Additionally, shallow groundwater was lost due to over pumping for irrigation. Due to the conversion of estuarine ecosystems to agricultural production, the construction of the Pajaro Valley railroad, and the construction of Moss Landing Harbor (described below), water movement was severely altered in the slough. The remaining wetlands create a patchwork of fragmented but valuable aquatic habitats.

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In the 1940s, the US Army Corp of Engineers breached the sand bar at the mouth of the Salinas River in order to construct Moss Landing Harbor. Shortly thereafter, a tidal gate was constructed to regulate the flow of saline water into what had historically been a brackish water environment.

An emergency situation occurred in December 2014 when the tide gate structure at Moss Landing Harbor failed, threatening twenty years of restoration efforts. This catastrophic failure allowed saltwater to flood brackish and fresh water portions of the system, and threatened many special status species, including the tidewater goby (*Eucyclogobius newberryi*) and California brackishwater snail (*Tryonia imitator*), the Santa Cruz long-toed salamanders (*Ambystoma macrodactylum croceum*), California tiger salamanders (*Ambystoma californiense*), and California red-legged frogs (*Rana aurora draytonii*). All these species are threatened with extirpation from the estuary if the tide gates are not repaired and operated properly. Reestablishing proper mixing however is technically problematic because data depicting tidal mixing supported by the old, malfunctioning gates is limited. The County has requested technical guidance by researchers at Central Coast Wetlands Group (CCWG)/Moss Landing Marine Labs and its partners to prescribe the proper tidal regime necessary to reestablish tidal mixing characteristics and protect special status species. This project seeks to provide that guidance to the County while also implementing a substantial restoration effort to leverage the work already performed in the area.

Project History

Today, the Salinas River system drains 40% of the water entering the Monterey Bay National Marine Sanctuary. These waters are well documented by the State and Regional Boards as impaired by numerous urban and agriculture related pollutants. For this and other reasons, the County of Monterey began a collaborative effort in the 1990s to plan for the future of the slough.

The *Moro Cojo Slough Management and Enhancement Plan* (Moro Cojo Plan) was written in 1996 and describes restoration efforts within the estuary and watershed, promotes the protection of threatened species and depicts management of the resources in concert with adjacent land uses. The Moro Cojo Plan was adopted as a portion of the Monterey County Local Coastal Plan. CCWG and Coastal Conservation and Research, Inc. (CCR) have restored more than 100 acres of estuarine and freshwater wetlands, documented improvements to water quality from these restoration projects and acted as a technical resource to Monterey County (described in the *Moro Cojo Slough Status Update, 2013*). Now, twenty years after its original drafting, CCR and its partners including CCWG, Monterey County, Resource Conservation District of Monterey County, the Greater Monterey Integrated Regional Water Management Plan participants, Elkhorn Slough Foundation, farmers, and various resource agency staff are partnering to finalize implementation of the Moro Cojo Plan and ensure long-term management of the system is preserved.

Project specifics

The project will fulfill major objectives of the Moro Cojo Slough Management and Enhancement

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Plan (Moro Cojo Plan, 1996) and management objectives for the State Marine Reserve. The project consists of three major activities: 1) development of a long-term management strategy for the tidal gates; 2) construction of a weir near the Southern Pacific Railroad; and 3). Acquisition and restoration of 35-acres of agricultural land.

As mentioned above, the tidal gate at Moss Landing failed in December 2014 allowing more saline water to enter the historically brackish estuary, threatening many protected species and twenty years of restoration work. The County of Monterey is responsible for the repair and maintenance of the tidal gate but currently lacks data to inform the proper salinity mixing. CCR intends to inform the management of the tide gate by 1) developing a model; and 2) by reconvening the Moro Cojo Technical Advisory Committee (TAC) to inform the development of the model and provide advice on technical issues surrounding the tide gate. These activities constitute less than 25% of the total amount of funding requested from the OPC per the grant guideline stipulation that no more than 25% of project costs be allocated to non-implementation activities.

With respect to the upstream weir, the purpose of the structure is to prevent more saline water from moving upstream and inundating the groundwater aquifer. CCR and CCWG will develop draft detailed hydraulic and engineering design plans for the upstream weir and ultimately construct the upstream tidal management weir.

Lastly, OPC funding will be used for the purchase of the last private parcel (35 acres) within the estuarine portion of the Moro Cojo Slough. The parcel owner, SeaMist farms, submitted a letter to the OPC expressing its willingness to complete negotiations for the transfer of the parcel. The project will restore the property to a functioning marsh and ultimately transfer the land to the Elkhorn Slough Foundation who has also submitted a letter to the OPC expressing its desire to become the ultimate property owner. The Elkhorn Slough Foundation manages nearly 4,000 acres in the area and is accredited by the Land Trust Accreditation Commission.

PROJECT FINANCING

Ocean Protection Council	\$1,334,030
DWR- Greater Monterey County IRWMP Implementation Grant	\$90,000
Monterey County for tidal gate repairs and on-going maintenance	\$60,000
SWRCB Irrigation Nutrient Management Grant	\$24,000
TOTAL	\$1,508,030

The expected source of Ocean Protection Council funds for this project is the fiscal year 2015-16 appropriation to the Natural Resources Agency pursuant to the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1, Water Code §79700 et. seq.). Funds appropriated to the Natural Resources Agency derive from Chapter 6 (commencing with §79730) and may be used “for multibenefit water quality, water supply, and watershed

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protection and restoration efforts for the watersheds of the state” (Water code §79731). Section 79732 identifies specific purposes of Chapter 6, which includes restoration of wetland ecosystems and coastal watersheds, including for reduction of climate change impacts on these ecosystems.

The proposed project is an appropriate use of Proposition 1 funds because it has multibenefits and will restore the ecological health and natural connectivity within the Moro Cojo Estuary through enhanced tidal exchange, improved water quality and freshwater retention; creation of contiguous wildlife connectivity throughout the watershed and reducing impacts of saltwater intrusion on freshwater habitats. The benefits of the project are increased carbon sequestration, enhanced resiliency to climate change, improvement in water quality via natural systems, and reestablish proper connectivity and tidal mixing.

The proposed project was selected through a competitive grant process under the Ocean Protection Council’s *Proposition 1 Grant Guidelines* adopted in September 2015 (“Prop 1 Guidelines”) (see §79706(a)). The proposed project meets each of the evaluation criteria in the Prop 1 Guidelines as described further below.

CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:

The proposed project is consistent with the Ocean Protection Act, Division 26.5 of the Public Resources Code, because it is consistent with trust-fund allowable projects, defined in Public Resources Code Section 35650(b)(2) as projects which:

- 1) Improve coastal water quality
- 2) Improve management, conservation, and protection of coastal waters and ocean ecosystems
- 3) Provide funding for adaptive management, planning, coordination, monitoring, research, and other necessary activities to minimize the adverse impacts of climate change on California’s ocean ecosystem, including, but not limited to, the effects of sea level rise, changes in ocean productivity, and ocean acidification on coastal and ocean habitat, wildlife, fisheries, chemistry, and other key attributes of ocean ecosystems and to increase the state’s understanding of the ocean’s role in carbon sequestration. Adaptive management strategies, planning, research, monitoring, or other activities shall be designed to improve the management of coastal and ocean resources or aid the state to adapt to climate change impacts.

Through the acquisition of the private parcel and subsequent conversion into a functioning wetland, the project will contribute towards improved water quality and habitat in the area. In addition, the flood capacity of the area will be increased allowing for more resilience to potential impacts of climate change while simultaneously sequestering carbon.

CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:

This project implements Focal Area Sustainable Fisheries and Marine Ecosystems whose stated goal is to “promote the long-term health of marine ecosystems and sustainability of marine fisheries in order to protect California’s living marine resources and the communities that rely

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upon them.” The goal of the present project is to restore the health of a rare ecosystem in California—brackish wetlands—and the threatened and endangered species dependent upon the ecosystem.

This project implements Focal Area Climate Change. This project helps to implement Objective 4.2: “Encourage the development and adoption of sea-level-rise adaptation strategies”. More specifically, it helps to implement a proposed action to “Identify and recommend emerging “best” and innovative practices, such as model ordinances and habitat protection measures, and promote and support their implementation” (emphasis added).

CONSISTENCY WITH THE OPC'S PROPOSITION 1 GUIDELINES:

The following are the criteria that were applied to the applications in either the Letter of Intent or full proposal stage of the evaluation.

Chapter 6 of Proposition 1 purposes:

Purpose 2: Implement watershed adaptation projects in order to reduce the impacts of climate change on California’s communities and ecosystems;

Purpose 4: Protect and restore aquatic, wetland, and migratory bird ecosystems, including fish and wildlife corridors;

Purpose 10: Protect and restore coastal watersheds, including, but not limited to, bays, marine estuaries, and nearshore ecosystems;

Purpose 12: Assist in the recovery of endangered, threatened, or migratory species by improving watershed health, instream flows, fish passage, coastal or inland wetland restoration, or other means, such as natural community conservation plan and habitat conservation plan implementation

OPC's Key Issue Areas for Prop 1 Funding:

Marine Managed Areas; Coastal and Ocean Water Quality Impacts- Pollution into the state marine reserve will be reduced by restoring 35 acres of wetland habitat that will filter upstream agricultural runoff at the boundary between the estuarine and fresh water habitats.

Climate Change: Sea-level Rise- The project will increase the area’s resiliency and adaptive capacity to climate change by constructing control structures to protect fresh water habitats and establishing transitional habitat to support marsh migration.

Multi-benefits:

This project will improve carbon sequestration through the restoration of 35 acres of estuarine and upland habitat. Other benefits include improved water quality, greater resiliency to climate change impacts, and increased habitat, particularly for threatened and endangered species.

Ability to adapt to impacts of climate change:

This project will address the risks to species and habitats of the Moro Cojo Slough (a State Marine Reserve) due to climate change with a focus on implementing long-term management strategies that support the slough’s adaptive capacity to storm and tidal induced flooding, and

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saltwater intrusion into the brackish and fresh water areas of the estuary. The Moro Cojo Slough contains vast areas of habitat within one meter of mean sea level, which leaves the estuary uniquely situated to adapt to sea level rise.

California Water Action Plan Goals:

This project implements Action Item 4) “Protect and restore important ecosystems” through the restoration of a coastal watershed. It will restore the ecological health within the Moro Cojo Slough through improved water quality and creating contiguous wildlife habitat connectivity throughout the watershed and reduce saltwater impacts on freshwater resources resulting from elevated sea levels.

Removes or reduces multiple stressors to the environment:

The project will provide Monterey County technical guidance in reestablishing appropriate tidal mixing to return the area to a functioning estuarine ecosystem within the State Marine Reserve and fresh water habitat upstream of the proposed weir. The weir will protect freshwater species from ocean tidal impacts and increase resiliency from future sea-level rise stress.

Utilizes green infrastructure, natural systems, or systems that mimic natural systems:

CCR, CCWG, and Elkhorn Slough Foundation have placed easements on numerous and restored more than 100 acres of wetland habitat and improved water quality from these restoration projects. This project will build on previous work that has focused on restoration and enhancement of watershed processes and the restoration of fresh and estuarine habitat to improve water quality.

New, innovative, or proven technologies or practices:

This project will integrate previous hydraulic and water quality data with detailed mapping of salinity gradients to develop a hydrologic management strategy. Moss Landing Marine Lab faculty will assist with hydrologic modeling of the Moro Cojo Slough watershed. In collaboration with this project, Dr. Kim Null at Moss Landing Marine Laboratory is working to develop a nutrient fate/transport model for the Moro Cojo watershed.

Sustainable outcomes:

This project will directly restore the ecological health and natural ecosystem connectivity of the lower Moro Cojo Slough Estuary, enhancing tidal exchange to support priority estuarine and freshwater species. It will expand the long-term adaptive capacity of the Moro Cojo Slough State Marine Reserve and surrounding habitats in the lower slough, and protect upstream freshwater ecosystems from sea-level rise.

Ability to begin implementing the project in timely fashion:

CCWG and CCR have completed many habitat restoration projects in the Moro Cojo Slough over the past 20 years in a timely manner. In October 2015, a meeting was held with regulatory agencies and Monterey County to discuss proper tide gate management and all supported requesting resources to address the failing tide gates and the proposed restoration activities.

Provide mapping/data that can enhance current understanding:

This project plans to quantify and map salinity and tidal exchange dynamics throughout the estuary to support the County's efforts to reestablish estuarine conditions that support special status species. The project will model water quality management efforts and identify nutrient problem areas within the watershed and coordinate the management of the numerous restoration and conservation projects under a single adaptation strategy to climate change for the Moro Cojo Slough Estuary.

Demonstrates solutions that can be implemented regionally and/or statewide:

CCWG and CCR are partnering with the State Coastal Conservancy, The Nature Conservancy, fish and wildlife agencies and the agriculture industry to quantify the cumulative benefits of enhanced farming practices on estuarine resources. The acquisition and improved management of estuarine and fresh water resources outlined in this proposal will benefit agriculture industry efforts to reduce pollution inputs to receiving waters and will help support regional efforts to orchestrate adaptive management of estuaries to sea-level rise.

Demonstrates experience successfully implementing similar projects or demonstrates appropriate and necessary partnerships to complete the project.

CCR and CCWG have led efforts to implement the Moro Cojo Slough Management and Enhancement Plan for the past 20 years. Their staff, equipment, resources and local restoration track record illustrates the likely success of this large-scale design and restoration project being completed on time and within budget. Monterey County is also a vested partner that brings decades of hydraulic management experience to the project

Consistent with best available science:

This project will integrate previous hydraulic and water quality data with detailed mapping of salinity gradients to develop a hydrologic management strategy. Given the location and knowledge of all of the partners involved in the project, the project plans are built off years of improvements to restoration technologies for this particular region.

Demonstrates a clear and reasonable method for measuring and reporting effectiveness of project:

As a member of the California Wetland Monitoring Workgroup, CCWG has supported statewide consistency in the tracking and reporting of wetland restoration activities. Using the California Rapid Assessment Method (CRAM), CCR and CCWG will be able to document restoration success and water quality monitoring (nutrients, dissolved oxygen, salinity) to document water quality enhancement from the project.

Likelihood of project to fulfill its stated objectives: Given CCR's extensive record of restoring wetlands in the area and given the partnerships between CCR, CCWG, and Monterey County, the project has a high likelihood to fulfill its stated objectives.

Community support as well as support from outside local area: The Moro Cojo Slough

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Management and Enhancement Plan was drafted in the mid-1990's specifically to accommodate the needs of the various resources and stakeholders including the county and community of Castroville, regulatory agencies (including the California Coastal Commission), land conservation groups, and farmers.

Authorship of letters submitted with the grant application include Assemblymember Mark Stone, Sea Mist Farms, County Supervisor John M. Phillips, Central Coast Wetlands Group, Elkhorn Slough Foundation, Moon Glow Dairy, Monterey Bay National Marine Sanctuary, and Monterey County Water Resources Agency.

Bonus points

Advances the management individual marine managed areas (MMAs) or the statewide MMA network: This project will directly benefit the Moro Cojo and Elkhorn Slough State Marine Reserves and the Elkhorn Slough State Marine Conservation Area. This effort will restore the ecological health of the Moro Cojo Estuary, improve water quality and enhance tidal exchange, restore the last parcel of degraded estuarine habitat, and build resiliency for future impacts of sea level rise. Species specifically within the Moro Cojo SMR include Northern Anchovy, Topsmelt, Tidewater Goby, Stickleback, Starry Flounder, Opaleye, Black Surfperch and Brackish Water Snail.

Benefits disadvantaged communities:

This project benefits the disadvantaged communities of Castroville (Block Group ID Number: 060530104001) and Moss Landing (Place ID Number: 0649488). The proper management of this estuary will protect adjacent farm and urban areas of Castroville from flooding, support local sport and commercial fishing stocks, and provide Castroville Elementary and North Monterey County High School students with educational and open space recreational opportunities.

COMPLIANCE WITH CEQA:

A Negative Declaration was filed by the County of Monterey on May 2, 1996 for the Moro Cojo Slough Management and Enhancement Plan. The OPC has considered the Negative Declaration filed by the County of Monterey pursuant to section 15096 of the CEQA Guidelines (attached as Exhibit D) , and concurs with the County's determination that the project will not have a significant effect on the environment.

OPC will delegate to staff the ability to file a notice of determination consistent with these findings (draft notice attached as Exhibit E).