Elkhorn Slough Tidal Wetland Project

PARSONS SLOUGH WETLAND RESTORATION PLAN

REQUEST FOR SERVICES

I. INTRODUCTION

The State Coastal Conservancy (SCC), working closely with the Elkhorn Slough National Estuarine Research Reserve and Elkhorn Slough Foundation, is seeking a consulting firm or team to provide engineering and environmental consulting services to develop a Parsons Slough Wetland Restoration Plan. The project will be funded by the Conservancy and the Environmental Protection Agency. The Plan will evaluate tidal marsh restoration alternatives for Parsons Slough including actions to reduce the tidal prism in the area and/or add sediment to rebuild marsh elevations. The overall timeframe to conduct and complete all phases in the scope of services is tentatively from March 2007-January 2009.

Proposals are due by 4:00 p.m. on February 13, 2007. See the Submittal section below for more details.

II. PROJECT AREA

Elkhorn Slough is a 2440-acre wetland complex located on the edge of Monterey Bay, midway between Santa Cruz and Monterey. A portion of the slough has been designated as a National Estuarine Research Reserve (NERR). The Parsons Slough complex is located on the southeast side of Elkhorn Slough and consists of the 254-acre Parsons Slough (including the “Five Fingers” area) and the 161-acre South Marsh area. The project area includes the entire Parsons Slough complex.

Figure 1. LIDAR map of Elkhorn Slough tidal habitats and 2005 aerial photograph showing the location of the Parsons Slough Marsh Complex (includes South Marsh).
III. PROJECT BACKGROUND

The Elkhorn Slough estuary, containing California’s second largest tract of salt marsh, is currently facing unprecedented rates of tidal wetland loss and degradation. Over the past 150 years, human actions have altered the tidal, freshwater, and sediment processes which are essential to support and sustain Elkhorn Slough’s estuarine habitats. Fifty percent of the tidal salt marsh in Elkhorn Slough has been lost in the past 70 years. This habitat loss is a result of past diking and draining, increased tidal flooding which “drowns” the vegetation, and bank erosion which causes the marsh to collapse into the channel.

Accelerating bank and channel erosion in Elkhorn Slough is deepening and widening tidal creeks, causing salt marshes to collapse into the channel, and eroding soft sediments that provide important habitat for invertebrates from channel beds and mudflats. Habitat functions for estuarine fish, shorebirds, and salt marsh are rapidly deteriorating. Increased duration and/or frequency of tidal flooding of marshes from a larger tidal prism are likely causing plants to “drown” in central areas of the marsh. Based on current knowledge, the accelerated rates of tidal erosion and marsh drowning are primarily due to the construction of a harbor in 1947 which enlarged the estuarine mouth by five times its size and has caused the tidal prism to more than double since that time. The subsidence of marsh areas, the loss of riverine sediment inputs, and sea level rise may also contribute to marsh drowning. It is predicted that the current dramatic rates of marsh loss and tidal habitat degradation in Elkhorn Slough will continue in the near future if no restoration actions are taken. The predicted changes will cause severe habitat impacts by eroding the channel, tidal creeks, and mudflats, causing marsh plants to die, and threaten public and private property.

The Parsons Slough Marsh Complex was historically dominated by tidal salt marsh and tidal creeks (Appendix A). In 1872, a railroad was built along the western side of this area and this railroad embankment blocked off the connections of about half a dozen tidal creeks. By 1913, a number of large, artificial freshwater ponds for waterfowl hunting were created by the construction of earthen levees around marsh areas to block tidal exchange. The entirety of Parsons Slough was removed from tidal exchange by 1956 and large areas were cleared, leveled, and drained for pastureland. The draining of the tidal marsh areas in Parsons Slough caused the marsh sediments to dry out, compact, decompose, and subside by several feet. During winter of 1982-1983, a levee breached near the mouth of Parsons Slough during a storm event allowing tidal waters to enter Parsons Slough (including South Marsh). The levee to South Marsh was temporarily rebuilt, water was pumped out to finish the creation of habitat islands and tidal channels for the South Marsh restoration project, and then the levee was intentionally breached restoring full tidal exchange to the complex in the fall of 1983. This restoration project took place soon after the Elkhorn Slough Reserve was designated and obtained ownership of these wetlands. Today, due to the increased tidal energy in the system, even these recently restored marsh habitat islands are deteriorating. The Parsons Slough complex now accounts for approximately 30% of the tidal prism in Elkhorn Slough. The increase in Elkhorn Slough’s tidal prism has accelerated tidal marsh loss and habitat degradation throughout the system from tidal erosion of the channel, creeks, mudflats, and marsh banks and tidal flooding of interior marsh areas. A more detailed management history and photos of the Parsons Slough Marsh Complex can be found at http://www.elkhornslough.org/tidalwetland/twmap06.htm.
In 2004, the Elkhorn Slough NERR initiated a planning effort to evaluate the tidal erosion issues at Elkhorn Slough and develop restoration and management strategies. Through the Tidal Wetland Project (TWP) planning process, experts from multiple disciplines agreed that without intervention, excessive erosion will continue widening the tidal channels and converting salt marsh to mudflat. This will result in a significant loss of habitat function and decrease in estuarine biodiversity. Several projects to address the problem were identified. Restoration of Parsons Slough was selected as the highest priority project because significant habitat improvements can be achieved within the complex, while also potentially achieving systemwide benefits. Additional information about the Elkhorn Slough Tidal Wetland Project can be found at http://www.elkhornslough.org/tidalwetlandplan.htm.

IV. PROJECT DESCRIPTION

The goal of the project is to develop a plan to restore salt marsh (including a complex of tidal creeks, pannes, vegetated plains, and wetland/upland transitional areas) to Parsons Slough. Because of severe land subsidence from wetland diking and draining, the elevation within Parsons is now two feet below a level that can support tidal marsh under current conditions. Therefore, the two primary options for restoring salt marsh are to mute the tidal range or add sediment to raise the marsh plain. Because Parsons Slough accounts for about 30% of the tidal prism systemwide, muting the tides in this subarea could significantly reduce the overall tidal prism and potentially reduce ongoing marsh loss and tidal habitat degradation in the main system as well.

The Restoration Plan should evaluate alternatives for restoring tidal marsh in Parsons Slough including options for controlling tidal exchange and adding sediment to mudflats. The plan should consider the effects both within the Parsons Slough complex and system-wide of various alternatives. The plan should evaluate both the technical and economic feasibility of the alternatives, as well as the biological and water quality benefits of each. A preferred restoration alternative will be identified as part of the plan. The selected approach must be flexible enough to be compatible with current conditions, as well as with conditions if sediment is added to Parsons or if future restoration is undertaken at the mouth of Elkhorn Slough. Development of the plan will be overseen by a project team made up of the SCC Project Manager, TWP Project Coordinator, and a small, multi-agency/scientific advisory team similar in makeup to those that are overseeing development of the Tidal Wetland Project (Appendix B).

V. SCOPE OF SERVICES

Consultant firm/team shall complete the following tasks:

Task 1. Establish goals and objectives for Parsons Slough Wetlands Restoration Plan.

The contractor should convene a meeting of the project team to establish specific goals and objectives for the restoration plan. The goals and objectives must be consistent with the
overarching TWP goals and objectives (Appendix C), but should be specific to the Parsons project. The contractor, in consultation with the SCC and TWP project managers, will develop a draft list of goals and objectives that will be reviewed and revised at the meeting.

Deliverable: Draft and final goals and objectives. Note: Unless otherwise indicated, deliverables can be presented in electronic form.

Task 2. Develop Quality Assurance Project Plan

The contractor, in consultation with the project managers and the EPA, will develop a Quality Assurance Project Plan (QAPP), in accordance with the EPA Region 9 guidelines (http://epa.gov/region9/qa/pdfs/wetlandsqapp-04.pdf). The QAPP must address new data that will be collected as part of the project, as well as existing data that will be used in the project analysis. Before preparing the QAPP, the contractor shall identify all of the data needed to complete the project, review the list of existing data sources, and develop a sampling plan for any additional data that is needed. NERR staff will provide all available data to the contractor, including information on collection and sampling methods as requested. A draft QAPP will be prepared for review by the EPA and revised as necessary.

Deliverable: Draft and final QAPP.

Task 3. Prepare Existing Conditions Report

The contractor will prepare a report summarizing the existing hydrologic, ecologic, and water quality conditions within the Parsons Slough wetland complex. The Existing Conditions Report (ECR) should include a habitat assessment for the study area using existing data, supplemented where necessary with additional surveys. The habitat assessment should include: habitat types, sensitive species considerations, and evaluation of existing habitat and land management practices. The assessment should include a habitat map of the project in GIS format, using existing maps available from NERR staff to build upon for these efforts. Acreages of existing habitat types should be summarized in a table. The ECR should summarize existing conditions for the wetland system including parameters such as hydrologic conditions (i.e. tidal prism, tidal inundation, groundwater, storm runoff, velocity, sediment deposition/erosion), water quality (i.e. turbidity, dissolved oxygen, nutrients, salinity), and ecology (i.e. habitat composition and key indicator species such as benthic invertebrates, sharks/rays, listed species). The ECR should also summarize existing sediment conditions, including composition, grain size, and depositional patterns. Information in the existing conditions report must be detailed enough to be used in preparing a CEQA document for the project.

Deliverable: Draft existing conditions report, including habitat map layer.

Task 4. Evaluate Options for Sediment Additions to Rebuild Marsh Habitat

The contractor will prepare a report analyzing options for sediment additions to rebuild tidal habitat elevations. This report should identify possible sediment sources and estimate the relative
cost of using each source (including transportation). The analysis should review and evaluate sediment addition techniques that have been used in other wetland restoration projects and that would be appropriate given the potential sediment sources. The analysis should include a review of issues related to sediment placement (i.e., starting at the tips of the fingers and moving out vs. starting near the railroad bridge opening). For the most likely sediment addition scenarios, the report should then evaluate the regulatory issues associated with each including but not limited to: how to permit a multi-year sediment addition project and whether habitat impacts would be self-mitigating or would require additional habitat restoration as mitigation. Finally, the report should also identify critical issues that would need further study.

Deliverable: Draft options for sediment addition report.

Task 5. Develop and Evaluate Restoration Alternatives

The contractor will identify wetland restoration alternatives for Parsons Slough based on the goals and objectives, existing conditions report, and the sediment addition analysis. The number and type of restoration alternatives that will be evaluated in this project will be decided by the project managers, project team, and contractors. The no action alternative should be included in the analysis. For each alternative, the analysis should include:

- **Description.** Describe each alternative, including the major restoration elements, predicted changes hydrologic regime, tidal habitat quantity and quality, and water quality. The timeline for predictions should include immediately after construction, 5 years, and 20 years. Each description should include a table summarizing pre- and post-project habitat types by acre. Describe how restoration alternatives will be designed to optimize ecological endpoints with structures that are resilient over long time periods, incorporate opportunities for adaptive management, and minimize ongoing maintenance. Describe potential impacts to the railroad levee and related structures. Describe how alternatives would be compatible with future sediment additions to the wetland complex and/or changes to the tidal exchange at the mouth of Elkhorn Slough.

- **Hydrodynamic modeling.** The contractor should develop a hydrodynamic model to demonstrate the outcome of different designs. The model output should include predictions of tidal prism, tidal inundation, velocity, sediment deposition/erosion, and salinity.

As part of a related project, a hydrodynamic model (Delft) is being created for the entire Elkhorn Slough, and model input files and results will be available in March 2007 for the contractor to use for this project. The contractor may use Delft or convert these files into another open source or commercially available model. The model and files developed for Parsons Slough will be used for subsequent project phases so it needs to be accessible to other users. All modeling efforts should include a detailed description of model calibration and validation, assumptions used, uncertainty analysis and should account for projected changes in sea level, episodic events, and groundwater overdraft/saltwater intrusion.
• **Preliminary Designs.** Prepare preliminary design plans including structures, conceptual grading plans, typical cross-sections, and habitat elevation bands.

• **Maintenance.** Evaluate long-term maintenance needs, including but not limited to maintenance and management of water control structures.

• **Preliminary environmental review.** Identify potentially significant impacts and possible options for mitigating them. This should include but is not limited to predictions about changes to water quality (i.e. turbidity, dissolved oxygen, nutrients, salinity) and ecology (i.e. future habitat composition and changes to key indicator species such as benthic invertebrates, sharks/rays, and listed species).

• **Estimated costs.** Project costs should include estimates for design, engineering, environmental review, permitting, construction, and long-term management and monitoring.

• **Summary of pros and cons.** Briefly summarize the pros and cons of each alternative.

The alternatives report should include summary tables that compare alternatives based on project goals, ecological outcomes, and cost. Contractor will provide the alternatives report to the project team for review. Contractor will then facilitate a meeting of the project team to reach consensus on a preferred alternative.

**Deliverable:** Draft alternatives report, preliminary designs, hydrologic model inputs and outputs (form to be agreed upon). Memo explaining rationale for selecting preferred alternative.

**Task 6. Prepare Parsons Slough Wetland Restoration Plan**

The contractor will develop a Parsons Slough Restoration Plan that incorporates the products of the earlier tasks. The plan should include a CEQA initial study of the preferred alternative. The level of detail in the plan should be adequate to complete CEQA (30% design level), apply for permits, and prepare final design and engineering plans. The plan should include a list of permits and approvals that would be required for the project along with a list of additional studies that would likely be required during the permitting process.

**Deliverable:**
- Draft restoration plan.
- Final restoration plan. 10 hard copies and electronic copy.

**Tasks 7. Project Management**

The contractor will complete the work in close coordination with the SCC and TWP project managers. The contractor will also be required to meet with and prepare materials/presentations for the project team, TWP Science Panel and Strategic Planning Team, and public as follows (at a minimum):

• Project initiation meeting to set goals and objectives (project team)
• Alternatives discussion and selection of preferred alternative (project team)
• Draft restoration plan (joint meeting of the project team, TWP Science Panel and Strategic Planning Team; public meeting)
• Update meetings twice yearly (project team)

Contractor should describe the overall approach to project management and proposed format for client communications. The consultant should propose a schedule for project meetings that best meets the project goals.

The contractor will provide all draft documents for review by the project team. The contractor will be returned one set of comments on all draft documents and explain how they addressed comments. Except where noted in the list of deliverables, revisions to draft documents will be made in Restoration Plan. The draft Restoration Plan will be reviewed by the full TWP Science Panel and Strategic Planning Team and will also be subject to a broader stakeholder, agency, and peer review. Final documents will be posted on the TWP web pages for public distribution. This task should include the following:

• Project schedule with milestones for each task and identification of critical path tasks
• Meeting dates (contractor will prepare a meeting agenda, presentation, and summary for each meeting)
• Budget broken down by task showing both hours and dollars for each task.

VI. FUNDING

Funds of $180,000 are available to complete the tasks described above. The scope of work is somewhat negotiable; however, the maximum funding level is not negotiable.

VII. SCHEDULE

All submittals received by the deadline will be evaluated. The Conservancy retains the right to decide, at its sole discretion, whether to evaluate submittals received after the deadline.

Consultant Selection Schedule

<table>
<thead>
<tr>
<th>Pre-submittal meeting</th>
<th>January 26, 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal submittal deadline</td>
<td><strong>February 13, 2007, 4:00 p.m.</strong></td>
</tr>
<tr>
<td>Interviews</td>
<td>February 22, 2007</td>
</tr>
<tr>
<td>Contractor Selected</td>
<td>February 28, 2007</td>
</tr>
<tr>
<td>Final scope of work, budget, and contract signed – start of work</td>
<td>March 19, 2007</td>
</tr>
</tbody>
</table>
Proposed Project Schedule

The project schedule for interim deliverables can be adjusted as needed, but the project must be complete by January 31, 2009, with at least a two month review period for the draft restoration plan. Contractors may propose an alternate schedule that meets these requirements. Contractors are encouraged to shorten the timeline for these activities, but only if it is realistic.

<table>
<thead>
<tr>
<th>Task</th>
<th>Status</th>
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<tbody>
<tr>
<td>Establish Goals and Objectives</td>
<td>Final - May 2007</td>
</tr>
<tr>
<td>Finalize QAPP</td>
<td>Final - July 2007</td>
</tr>
<tr>
<td>Existing Conditions Report</td>
<td>Draft - January 2008</td>
</tr>
<tr>
<td>Marsh Sediment Addition Analysis</td>
<td>Draft - May 2008</td>
</tr>
<tr>
<td>Project Management</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

VIII. INFORMATION TO BE INCLUDED IN SUBMITTAL

A. **Cover Page** should include name and complete contact information for person to contact with questions or requests for additional information.

B. **Intended Approach** demonstrates the process that will be used to complete the Restoration Plan. Contractors are required to form their own teams to accomplish all of the tasks outlined in this request for proposals. Describe how you intend to accomplish each of the specific tasks in this proposal. Include a timeline demonstrating your proposed start and end dates for the products in each task. Explain how you will integrate intermediate and final information generated from certain tasks to others.

C. **Organization** includes a description of who will perform the tasks, identification of the project lead, and resume and contact information for each person who will be involved in the project.

D. **Relevant Project Experience and References** describes the level of involvement in similar tidal restoration projects. Include contact information (including phone numbers and email addresses for references) for at least five clients that you have worked with on similar tidal wetland restoration projects so that we may contact them in regards to your work. Describe why your team members are specifically qualified (or what distinguishes your services from competitors) to accomplish the tasks in this RFP.
E. Detailed Budget broken by task and staff member. Subconsultant budgets should also be broken down by task. The applicant should include an explanation of how the budget can accommodate changes in scope or unknown factors given the $180,000 maximum.

Proposals must be received no later than 4 p.m. on Tuesday, February 13, 2007. Proposals should use 12-point font, 1.5 spacing, and 8.5x11 inch format. Electronic copy of proposal must be under 2MB in file size. Proposals should be brief and to the point (no more than 20 pages will be accepted for the main body of the proposal). Proposals should be submitted with one hard copy and an electronic copy (email is okay) to both of the following people:

Trish Chapman
Coastal Conservancy
1330 Broadway, Suite 1330
Oakland, CA 94612
tchapman@scc.ca.gov

Barb Peichel
Tidal Wetland Project Coordinator
Elkhorn Slough NERR
1700 Elkhorn Road
Watsonville, CA 95076
barb@elkhornslough.org

You will receive email notification by the following day that your proposal has been received.

IX. SELECTION PROCESS

The selection process will include review of project proposals by selected technical experts based on the contractor’s approach to tasks and the criteria listed below. Applicants may also be asked for a formal interview during the selection process in February and a final decision will be made by early March. Potential contractors will be ranked based on the following criteria:

1) Demonstrated competence, including the firm/team’s past experience with similar tidal wetland restoration projects (i.e. planning, permitting, and implementing similar scale and types of projects); the education and experience of key personnel, including principals to be assigned and the proposed level of their participation; the firm/team’s capability to adequately analyze the project; the firm/team’s ability to meet the project schedule; the longevity of the firm(s) and amount of staff turnover; and the nature and quality of the firm(s)’s past completed work; and

2) Specialized qualifications for the services to be performed.

3) Small business status of the contractor submitting a statement of qualification.

4) D/VBE status of the contractor submitting a statement of qualification

5) The good faith effort of the contractor to subcontract with D/VBEs as set forth in Public Contract Code Section 10115.
These factors will be weighed according to the nature of the project, the needs of the Conservancy, and the complexity and special requirements of the project. TWP project managers and collaborators and technical experts will assist the Conservancy in the evaluation of proposals and selection of consultant.

The consultant will be hired under contract to the Conservancy. The Conservancy will attempt to negotiate a contract with the best qualified firm/team at compensation which the Conservancy determines is fair and reasonable to the State of California. If the Conservancy is unable to do so, negotiation with that firm/team will be terminated and negotiations will then proceed in the same manner with the other firms/teams on the list in order of ranking. If the Conservancy is unable to negotiate a satisfactory contract with any of the selected firms/teams, the Conservancy may select additional firms and continue the negotiation process.

The consultant will be paid for its actual time and expenses up to the amount provided for each task in the final project budget. The consultant should anticipate that ten percent (10%) will be withheld until all work is completed to the satisfaction of the Coastal Conservancy. The Conservancy must also approve all interim work products before payment.

X. CONTACT

There will be an opportunity to ask questions about the project at the pre-submittal meeting on January 26, 2006. Prospective applicants are strongly encouraged to attend this meeting.

Questions regarding this RFP should be directed to Barb Peichel, Tidal Wetland Project Coordinator, Elkhorn Slough National Estuarine Research Reserve, at barb@elkhornslough.org or 831-728-2822x308.
Appendix A. Aerial photographs demonstrate the decrease of salt marsh vegetation in the Parsons Slough Marsh Complex from 1931 to 2005.
Appendix B. List of participants and roles involved in the Elkhorn Slough Tidal Wetland Project.

**Strategic Planning Team**
The primary role of the Strategic Planning Team (SPT) is to make decisions about the strategic planning process to develop and implement Elkhorn Slough Tidal Wetland Project restoration strategies.

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karen Berresford¹</td>
<td>U.S. Army Corps of Engineers, San Francisco District</td>
</tr>
<tr>
<td>Louis Calcagno</td>
<td>County of Monterey Board of Supervisors</td>
</tr>
<tr>
<td>John Callaway²</td>
<td>University of San Francisco</td>
</tr>
<tr>
<td>Jeff Cann</td>
<td>California Department of Fish and Game, Monterey</td>
</tr>
<tr>
<td>Trish Chapman</td>
<td>California Coastal Conservancy</td>
</tr>
<tr>
<td>Becky Christensen</td>
<td>Elkhorn Slough National Estuarine Research Reserve³</td>
</tr>
<tr>
<td>Ross Clark²</td>
<td>California Coastal Commission, Central Coast District</td>
</tr>
<tr>
<td>Josh Collins³</td>
<td>San Francisco Estuary Institute</td>
</tr>
<tr>
<td>Kelly Cuffe (alternate)</td>
<td>California Coastal Commission, Central Coast District</td>
</tr>
<tr>
<td>Robert Curry²</td>
<td>California State University Monterey Bay (retired)</td>
</tr>
<tr>
<td>Andrew DeVogelaere</td>
<td>Monterey Bay National Marine Sanctuary (NOAA)</td>
</tr>
<tr>
<td>Sarah Fischer (alternate)</td>
<td>National Marine Protected Areas Center (NOAA)</td>
</tr>
<tr>
<td>Kaitilin Gaffney</td>
<td>The Ocean Conservancy</td>
</tr>
<tr>
<td>Deirdre Hall</td>
<td>Monterey Bay National Marine Sanctuary (NOAA)</td>
</tr>
<tr>
<td>Jim Harvey²</td>
<td>Moss Landing Marine Laboratories</td>
</tr>
<tr>
<td>Scott Hennessy</td>
<td>Monterey County (retired)</td>
</tr>
<tr>
<td>Yvonne LeTellier</td>
<td>U.S. Army Corps of Engineers, San Francisco District</td>
</tr>
<tr>
<td>Cheryl McGovern</td>
<td>U.S. Environmental Protection Agency, Region 9</td>
</tr>
<tr>
<td>Trish Chapman</td>
<td>Linda McIntyre</td>
</tr>
<tr>
<td>Bill McIver</td>
<td>U.S. Fish and Wildlife Service, Ventura</td>
</tr>
<tr>
<td>Julie Niceswanger¹</td>
<td>U.S. Fish and Wildlife Service, Ventura</td>
</tr>
<tr>
<td>Larry Serpa (alternate)¹</td>
<td>The Nature Conservancy</td>
</tr>
<tr>
<td>Mark Silberstein</td>
<td>Elkhorn Slough Foundation</td>
</tr>
<tr>
<td>Laura Smith</td>
<td>The Nature Conservancy</td>
</tr>
<tr>
<td>Charlie Wahle</td>
<td>National Marine Protected Areas Center (NOAA)</td>
</tr>
<tr>
<td>Kerstin Wasson (alternate)²</td>
<td>Elkhorn Slough National Estuarine Research Reserve³</td>
</tr>
<tr>
<td>Jerry Wilmoth</td>
<td>Union Pacific Railroad</td>
</tr>
<tr>
<td>¹ = Past participant</td>
<td></td>
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<tr>
<td>² = Also serves on Science Panel</td>
<td></td>
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<tr>
<td>³ = Partnership between NOAA and CA DFG</td>
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</table>
Appendix B. List of participants and roles involved in the Elkhorn Slough Tidal Wetland Project (continued).

Science Panel and Working Groups for the Elkhorn Slough Tidal Wetland Project

The primary role of the Science Panel (SP) is to provide technical advice to the Strategic Planning Team about restoration strategies based on the best available science.

Josh Adams
U.S. Geological Survey

Joe Needoba
Monterey Bay Aquarium Research Institute

Ivano Aiello
Moss Landing Marine Laboratories

Nick Nidzieko
Stanford University

Sean Anderson
Stanford University

Jim Oakden
Moss Landing Marine Laboratories

Larry Breaker
Moss Landing Marine Laboratories

John Oliver
Moss Landing Marine Laboratories

Jason Brush
U.S. Environmental Protection Agency

Gary Page
Point Reyes Bird Observatory

Greg Cailliet
Moss Landing Marine Laboratories

Jill Rooth
SAIC

Craig Conner
U.S. Army Corps of Engineers

Josh Sampey
California State University Monterey Bay

Gage Dayton
Moss Landing Marine Laboratories

Ken Johnson
Monterey Bay Aquarium Research Institute

Lesley Ewing
California Coastal Commission

Greg Shellenbarger
U.S. Geological Survey

Michael Foster
Moss Landing Marine Laboratories (retired?)

Peter Slattery
Moss Landing Marine Laboratories

Mike Graham
Moss Landing Marine Laboratories

Doug Smith
California State University Monterey Bay

Kim Hayes
Elkhorn Slough Foundation

Jason Smith
Moss Landing Marine Laboratories

Rikk Kvitek
California State University Monterey Bay

John Takekawa
U.S. Geological Survey

Jessie Lacy
U.S. Geological Survey

Eric Van Dyke
Elkhorn Slough Reserve

Bryan Largay
Largay Hydrologic Sciences, LLC

Mike Vasey
San Francisco State University

Steve Lonhart
Monterey Bay National Marine Sanctuary

Isa Woo
U.S. Geological Survey

Erika McPhee-Shaw
Moss Landing Marine Laboratories

Andrea Woolfolk
Elkhorn Slough Reserve

Stephen Monismith
Stanford University

1 = Past participant

2 = Partnership between NOAA and CA DFG
Appendix C. Consensus vision, goals, objectives, and principles developed for the Elkhorn Slough Tidal Wetland Project

Elkhorn Slough Tidal Wetland Project
Vision, Goals, Objectives, and Strategic Planning Principles

Vision
“We envision a mosaic of estuarine communities of historic precedence that are sustained by natural tidal, fluvial, sedimentary, and biological processes in the Elkhorn Slough Watershed as a legacy for future generations.” – Strategic Planning Team, Elkhorn Slough Tidal Wetland Plan

Goal 1. Conserve the existing highest quality estuarine habitats and native biodiversity by aiming for a more natural rate of habitat change.

Objectives. Significantly reduce the rate of:
A. salt marsh conversion to other habitat types,
B. subtidal channel erosion,
C. loss of soft sediments from mudflat and subtidal channel habitats, and
D. tidal creek conversion to other habitat types.

Goal 2. Restore and enhance the estuarine habitats of Elkhorn Slough. Aim for the natural distribution, extent, and quality of Elkhorn Slough habitats with special emphasis on habitats with the highest loss rates.

Objectives. Strive to increase the extent of:
A. salt marsh habitats, including the natural distribution and abundance of tidal creeks, pannes, vegetated plains, and wetland/upland transitional areas,
B. tidal brackish marsh habitats, including the natural distribution and abundance of tidal creeks, pannes, vegetated plains, and wetland/upland transitional areas,
C. freshwater/saltwater natural transition gradients and connectivity, and
D. high quality soft sediments in mudflat and subtidal channel habitats.

Goal 3. Restore and enhance the natural processes (hydrology and geomorphology) of Elkhorn Slough and its watershed to sustain a more stable and resilient estuarine system. Emphasize the roles of natural sources, transport, circulation, filtration, and storage of water and sediment.

Objectives. Take actions to:
A. attain a more appropriate tidal influence by reducing the tidal prism in undiked areas,
B. restore appropriate levels of tidal exchange to former tidal areas that have no tidal connection or a very restricted tidal exchange if it will not exacerbate tidal erosion and salt marsh loss in other areas, and
C. re-establish or augment the supply of suitable sediments to increase the elevations and resiliency of subsided marsh areas.

Please Note: The intent of the vision, goals, objectives, and strategic planning principles is that these statements should be used in coordination with each other for the strategic planning process to develop an Elkhorn Slough Tidal Wetland Plan.
Appendix C. Consensus vision, goals, objectives, and principles developed for the Elkhorn Slough Tidal Wetland Project (continued)

Strategic Planning Principles

• Consider the broadest range of possible approaches to achieve the goals and objectives.
• Accommodate boating, farming, transportation, recreation, and other human uses necessary to support people in the region.
• Incorporate the needs of special estuarine conservation targets such as estuarine-dependent species, state- and federally-listed species, migratory species, and formerly dominant species.
• Give priority to actions that focus on protecting estuarine habitats most rapidly being lost both locally and in the region.
• Mitigate or avoid the negative impacts and consider the positive impacts of management strategies to neighboring landowners.
• Support projects that improve water quality for estuarine habitats and humans.
• Take into account present natural and cultural constraints and future geomorphologic and climatic conditions in selecting restoration strategies.
• Consider how restoration and management strategies might be tested and implemented through pilot projects and reversible steps.
• Take advantage of opportunities for short-term pilot and demonstration projects that answer research questions most relevant in adaptively managing the resource.
• To the extent possible, find solutions that minimize the long-term cost of on-going maintenance required to sustain ecological services of habitats or the natural processes that control them.
• Maintain flexibility so that the planning process and potential strategies can be adaptively managed in the future.
• Recognize that the geographic scope is variable depending on estuarine processes so different scales need to be considered.
• Keep a watershed perspective. Consider the conservation and management efforts of adjoining upland and stream habitats.
• Document the major assumptions of all restoration designs and determine if the project seems reasonable to accomplish the goals.
• Learn from the successes and failures of similar projects that have been implemented and favor management strategies with high rates of success.
• Collaborate and stay informed about other planning processes in the area without disrupting those efforts.
• Aim for more aesthetically-pleasing structures when large-scale projects are designed.

Definitions:  
Vision – a short, compelling statement describing a desired future state.  Goals - the purpose towards which a management alternative is directed.  
Objective – a specific, measurable step to accomplish a goal.  
Strategic Planning Principles – general considerations that will be used to guide strategic planning. Ideally, the strategic planning principles would all be maximized, but there is recognition that some of these principles are incompatible and that there will inevitably be tradeoffs.
Appendix D. Existing data sources relevant to this proposal and the Elkhorn Slough Tidal Wetland Project.

- Maps and a management history of Parsons Slough can be found at: [http://www.elkhornslough.org/tidalwetland/twmap06.htm](http://www.elkhornslough.org/tidalwetland/twmap06.htm).
- TWP meeting summaries containing discussions of Parsons Slough Restoration (i.e. 9/28/05, 8/9/05) at [http://www.elkhornslough.org/tidalwetland/meetings.htm](http://www.elkhornslough.org/tidalwetland/meetings.htm).
- 150 years of Human Alterations and Tidal Habitat Change (1870-Present) in Elkhorn Slough at [http://www.elkhornslough.org/tidalwetland/faq_docs.htm](http://www.elkhornslough.org/tidalwetland/faq_docs.htm).
  - The Seafloor Mapping Lab (SFML) high-resolution mapping of Elkhorn Slough.