

**Long-Term Restoration Planning for Baylands in Alameda, Santa Clara, and San Mateo Counties, California**

**South Bay Salt Pond Restoration Project<sup>1</sup>  
National Science Panel Meeting  
November 7 - 8, 2005**

**Summary of Recommendations**

**1.0 INTRODUCTION**

This report summarizes recommendations made by the National Science Panel (NSP) resulting from the fifth NSP meeting held on November 7 - 8, 2005. Six members of the NSP (see Appendix A) were present. Dr. Jorg Imberger was unable to attend due to a prior commitment. In addition, members of the Project Management Team (PMT), the Science Team, the consultant team, and other stakeholders were present. A complete list of attendees is provided in Appendix A.

The main objectives of this NSP meeting were to:

- Review and comment on efficacy of current monitoring conducted under the Interim Stewardship Plan (ISP);
- Review and comment on development of EIS/EIR alternatives;
- Review and comment on scientific and institutional approach described in the draft Adaptive Management Plan
- Review and comment on responses to previous NSP recommendations, and discuss continuing role of the NSP and science in the Project;

In addition, the meeting included a presentation on legacy contaminants and the Regional Monitoring Program by Jay Davis of SFEI. A list of materials provided to the NSP in advance of the meeting is included in Appendix B.

One of the primary focuses of this meeting was to reflect on the roles of the NSP and the Science Team over the last several years, and to think about how science can be better integrated into the project in the future as it transitions from the preliminary planning phase to the detailed design, implementation and adaptive management phases.

The recommendations presented here identify both near-term needs (e.g., activities requiring attention prior to the completion of the Draft EIS/EIR) and long-term needs, both of which are necessary to ensure a scientific basis for restoration in the South Bay.

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<sup>1</sup> The South Bay Salt Pond Restoration Project is that described in the Memorandum of Understanding of May 27, 2003 among the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the State Coastal Conservancy.

## 2.0 NEAR-TERM NEEDS

At the beginning of the initial planning phase, after the July 2003 meeting, the NSP identified the need for a Lead Scientist and a Science Team composed of local experts. The PMT responded to this recommendation and immediately began the process of hiring a Lead Scientist and putting together the Science Team. The Lead Scientist and the Science Team have had an enormous challenge over the last two years to make a real difference given the tight time constraints and the limited funding allocated to science. In spite of this, they have made some very important contributions to the project over the last two years, including:

- Establishing lines of communication between members of the research community and both the PMT and the consultant team. While this communication has not always been easy, it has undoubtedly provided some scientific accountability in the planning process.
- Producing the Science Syntheses, which provide long-overdue compilations of existing knowledge and benchmark the state of our knowledge about important aspects of the South Bay ecosystem.
- Providing a presence for science within the planning process at all levels. This is especially important in a program that seeks to be both scientifically based and publicly-supported. Integrating these components of the planning process was an ambitious goal and the scientists involved deserve much credit for working with stakeholders and agencies to improve the overall planning effort.

The NSP's recent recommendations relative to near-term actions have focused on the Initial Stewardship Plan (ISP) and the Adaptive Management Plan (AMP). The recommendations presented here also relate to these important aspects of restoration.

### 2.1 Interim Stewardship Plan

As the NSP has pointed out many times, the actions currently being taken under the ISP (opening ponds to varying levels of tidal exchange) represent tremendous opportunities to test uncertainties and learn from different management actions, and it is critical that this opportunity be exploited. The NSP recognize the commitment of managers to improving their management actions under ISP and acknowledge the challenges they have given limited funding and complex system dynamics. An important part of making the restoration succeed is getting beyond the present "trial and error" approach and embracing adaptive management by collecting and learning from data and using it to manage the program. The NSP was pleased to see data on pond dynamics under ISP and believe that scientific tools can be developed to help with day-to-day decision making. For instance, a model of pond water quality would assist managers in being able to test management scenarios and plan for specific types of water quality situations. Comparison of model outputs with data collected under specific management actions would also improve understanding and lead to better and more efficient pond management and/or restoration actions in the future.

The Science Team is currently soliciting Direct Action proposals for studies on the Island Ponds that are scheduled to be breached in March 2006. The Team believes that because

of tight time constraints and the need to have people in the field collecting baseline data by February 2006, there is not sufficient time to use a competitive bid process. There is also very limited funding allocated (\$100K). After the June 2005 meeting, the NSP had recommended both an RFP for the Island Ponds, and small grants for graduate students. These recommendations seem to have been disregarded; instead the two were combined into one \$100K package.

The NSP is concerned that insufficient time and resources are being made available to result in useful information, and a potentially or perceived conflicted selection process will raise questions about the validity of that information. A credible science program must start working on deadlines well in advance, be allocated sufficient funding, and be based on an open, competitive process. Given the short time frame and limited funding, the NSP made several comments at the November meeting aimed at stretching the funding to get as much as possible out of this \$100K. This would benefit the quality of the research, ensure that the research is focused on answering targeted questions, and provide useful data to guide the project.

The NSP reinforces our earlier recommendation that a competitive process be used to allocate the \$100K for Island Ponds studies. In addition, we suggest that the competitive process have the following attributes:

- Review panel members should not be involved in the project (and preferably be from outside the region).
- Review panel members should be identified immediately to ensure their availability to participate in the review. If the review is conducted using a teleconference it will provide an opportunity for them to gain more background on the project, ask questions, interact among disciplines, and ensure reviews are completed in a timely manner.
- Reviewers should be provided very explicit guidance on how proposals are being evaluated and prioritized, and how many will be selected. While solicitation documents may identify several main topics of study, with only \$100K available it may be preferable to select only one good proposal than to attempt to do several studies. This option should be made clear to applicants so that proposals can be prepared accordingly.
- Restricted overhead rates and/or required matching funds are common in such competitions and should be considered as ways to leverage funding for studies of the Island Ponds.

The NSP is also concerned that insufficient attention is being paid to integrating existing data collection efforts into the ISP studies. Especially given the limited available funding it is crucial to build on existing efforts and identify synergies rather than reinvent or duplicate them.

## 2.2 Adaptive Management Plan

The Adaptive Management Plan (AMP) being developed by the Science Team is a planning/guidance document that seeks to establish a continuing role for science and adaptive management in restoration. It provides an excellent background to the broader concepts of adaptive management and its applicability to restoration science. As it is presently designed, the AMP should be able to provide critical guidance to the long-term restoration strategy of the project. However, the limited scope of the existing AMP is inadequate to guide the combination of structured manipulations and scientific that will be so critical in the formulative stages of the project. If this is to be the 'home' for science as restoration proceeds, it is vital that the focus be not simply on the traditional approach to effectiveness and validation monitoring (e.g., counting to determine whether success criteria are met). Addressing the question of why change is happening has to start now and has to be continuous.

Adaptive management needs to be implemented at the beginning of the ISP process. The NSP believes that this can be achieved despite regulatory constraints on pond management under ISP. Uncertainty will be reduced by taking existing assumptions, alternative actions, and potential restoration and management scenarios and explicitly and iteratively testing those using structured manipulations and detailed monitoring. Science must be proactive. It is not possible to determine why goals were not achieved after the fact without investigating more than the expected outcomes of restoration actions. When the unexpected occurs it is also not possible to stop everything to conduct a targeted study. Monitoring in support of adaptive management must be based on conceptual models of system function, manipulations or experiments designed at a number of scales, and monitoring designed to address causality as well as targeted outcomes. This requires supplemental science funding

In addition, performance criteria that form the basis of AMP monitoring should be focused on the processes that are assumed to lead to specific targets rather than the targets themselves. The AMP should instead include a few examples and show a process by which targets could be developed as part of development of the EIS/EIR. There is considerable danger in attributing numeric goals that do not take into account natural variability or other factors outside the control of the project (e.g., recent experience with fluctuations of the Delta Smelt population). This may be especially applicable to the migratory bird objective of SBSP restoration because populations could be drastically influenced by events in the Arctic or elsewhere that have nothing to do with the outcome of restoration actions in the South Bay.

## 3.0 LONG-TERM FUNDING FOR SCIENCE

From the start on this project, the NSP has emphasized the need to allocate sufficient funding to integrate applied science into the project – at least 10% to 15% of total project costs. The recent allocation of only \$100K to address the unique opportunity provided by the Island Ponds illustrate that thus far such a commitment has not been made. We re-emphasize that a concerted effort needs to be made to plan ahead for science in the long

term. This must identify the scientific needs of the current and future planning processes, monitoring needed to support adaptive management, including targeted studies, and support to integrate non-program scientific efforts addressing issues of import to South Bay restoration. The use of funds available for data collection, field studies and modeling from the ISP, SBSP, and the Shoreline Study should be coordinated to avoid duplication, leverage additional funding from external agencies (e.g., NSF, Sea Grant) to add value to both planning and implementation. Funding for applied science should focus on:

- synthesis of data from existing and on-going monitoring efforts;
- process monitoring (not compliance monitoring);
- modeling to allow support management actions;
- active scientific discourse including consultants, Science Team, and outside experts (this would include all South Bay activities, not just the SBSP project, and would include organization of a South Bay Symposium); and,
- adaptive management/scientific experiments incorporated in all aspects of restoration, including ISP.

The SBSP restoration is a project with large public exposure. In order to generate credibility and obtain the best results from science, the NSP believes that it is critical to incorporate open competitive and peer-review processes to solicit, select and fund scientific studies. Long-term planning for science funding needs to start now, so that the schedule will permit time to generate high quality proposals through a competitive process and support the provision of knowledge and tools at critical junctures in planning and restoration.

#### **4.0 LONG TERM PLANNING – SCIENTIFIC LEADERSHIP**

The NSP recognizes that a new kind of scientific leadership for the Project will be required as the project moves through the planning process and beyond the EIS/EIR phase into the implementation phase in fall 2006. In order to prepare for this phase, the PMT should begin planning immediately for this transition. As discussed in Section 2.0, the Lead Scientist has made important contributions to the planning process, and should continue in this role through the Draft EIS/EIR.

However, the NSP envisions that the role of the Lead Scientist will be significantly different in the implementation phase. The Lead Scientist will then be more responsible for fund-raising, engaging the academic community and generating interest in the SBSP project as a national model for restoration. As discussed in Section 3.0, it is critical that sufficient funding be allocated to applied science, and the Lead Scientist will need to identify and pursue sources of funding for research, and emphasize the importance of science to the PMT, the Executive Leadership Group, and the funding foundations.

The NSP recommends that the PMT immediately begin the search process in order to find and appoint a highly qualified Lead Scientist for the implementation phase by fall 2006. This will be a difficult role to fill, as it requires an individual with considerable scientific planning and funding experience, expertise, and stature in the scientific

community, as well as the enthusiasm and vision to generate support in both scientific and layperson groups. In addition, the position requires a commitment to work directly with the project team, stakeholders and local scientific institutions. The NSP will be pleased to assist as necessary with the search process.

## **5.0 NEXT MEETING**

The next NSP meeting will likely be scheduled for March or April of 2006, at about the time the Island Ponds are breached. If the meeting occurs after the breach, a field trip could be held as part of the NSP meeting.

It is proposed that this next meeting be structured differently than the typical past NSP meetings, to focus on topical discussions on key monitoring issues relevant to adaptive management. The goal is to explore in detail, and demonstrate a process for, the identification of adaptive management strategies based on process monitoring, targets and triggers. The NSP recognizes that the draft EIS/EIR will require that details are provided on these issues for each objective of the restoration. Two topics that are of interest to members of the NSP and which seem ripe for such discussion are vegetative changes and pond-bay interactions.

Within the normal two-day NSP meeting schedule, the bulk of each day would be devoted to one of these topics. The NSP recommends that a member of the consultant team and a member of the Science Team join forces to prepare presentations that summarize the state of knowledge for each topical discussion. For example, Michelle Orr and Fred Nichols could work together on the pond-bay interactions, and Ron Duke and John Callaway could work together on vegetation changes. Sam Luoma and Si Simenstad of the NSP have volunteered to assist the Science Team/consultant team duos prepare for this meeting.

For each topic, the team would identify a series of presentations and discussions to would focus the presentations on:

- summarizing state of knowledge;
- identifying rates of change (historical data for the past, and future predictions); and,
- suggesting drivers of change/forcing factors.

The outcome of the sessions would be the development of potential adaptive management strategies based on targets, triggers and process monitoring for the two topics, as well as recommendations on how similar decisions should be reached for other restoration outcomes and issues.

To document the outcome of these discussions, the NSP will generate a summary for each topic (3-5 pages) with assistance from the duos. URS would assist with drafting notes for each topic, and provide them to the teams and the NSP for refinement. The NSP would also develop commentary and recommendations on the process and the discussion.

Some time at the end of each day would be allocated for discussion of other issues to include:

- initial thoughts from the new social scientist on the Science Team;
- a presentation by the PMT on funding available for scientific studies and monitoring under all SBSP-related programs;
- update on the Island Ponds breach and a review of how the directed action process worked and what data is being generated; and
- a brief summary of the Shoreline Study and how it interfaces with SBSP.

Note that the next NSP meeting will thus be two whole days of work and discussion.

## Appendix A

### List of Attendees National Science Panel Meeting June 13 - 14, 2005

#### National Science Panel

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#### Project Management Team

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**Others**

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## **Appendix B**

### **List of Review Materials National Science Panel Meeting June 13 - 14, 2005**

Most review materials, meeting presentations, and agenda can be found on the project website at: <http://www.southbayrestoration.org/Events.html#natscipanel>

1. Project Status Report (Nov 4, 2005)
2. Development of the Preferred Alternative (Oct 28, 2005)
3. Draft Adaptive Management Plan (October 28, 2005)
4. PMT and Science Team Responses to NSP Recommendations
5. USGS Short-term Data Needs, 2003-2005 Draft Final Report
6. USGS Science Support for Salt Pond Restoration and Management: Short-term Data Collection Needs: Proposed Scope of Work (Sept 22, 2005)
7. Memo on Initiating Adaptive Management Studies at the Island Ponds (Oct 31, 2005)
8. Draft Conflict of Interest Guidance for Science Team (Oct 14, 2005)