

SOUTH BAY SALT POND RESTORATION PROJECT STATUS REPORT

INTRODUCTION

This report is provided as part of the material developed for the National Science Panel meeting scheduled for October 12-13, 2004. It gives information on the status of the project to be used as context by the National Science Panel. It also provides information for other stakeholders regarding the project.

BACKGROUND AND INITIAL STEWARDSHIP

The 15,100 acres of former salt production ponds in the South San Francisco Bay area (Figure 1) were purchased by the State and Federal governments in March 2003. The terms of the purchase provide for Cargill to reduce each pond's salinity to a prescribed level, at which point management responsibility for the pond is transferred to the new owner, the Department of Fish and Game or the U.S. Fish and Wildlife Service, depending on the location of the pond.

The Initial Stewardship Plan (ISP) describes how the ponds will be managed prior to the completion of the long-term Restoration Plan. The goal of the ISP is to stop the salt production process in the transferred ponds and maintain them in a reasonable state until the long-term Restoration Plan is complete. This will be accomplished through the management of water in the pond areas primarily via the installation of water management structures which are essentially tide gates. There also will be some pond breaches, and some ponds will be managed with direct precipitation, only.

The ultimate layout of the water management structures is shown in Figures 2, 3 and 4. Alviso Ponds A1 – A8 have been transferred to the Fish and Wildlife Service and have had the new water control structures installed. All of the Eden Landing Ponds have been transferred to the Department of Fish and Game. Water management structures anticipated in the ISP are gradually being installed in this area. The Ravenswood Ponds and Alviso Ponds A22 and A23 will take several years to be ready for transfer.

Alviso Ponds A19, A20, and A21 which are referred to as the "Island Ponds" will be the only Alviso Ponds where the levees will be breached (no control structures) as part of the ISP and open to tidal action. This is anticipated in 2006.

Monitoring of the ISP water movement is being performed as part of the discharge requirements adopted by the Regional Water Quality Control Board. In summary, monitoring is focused on salinity, temperature, dissolved oxygen, and pH, with some limited monitoring of chlorophyll (a) and selected metals. A special study of mercury in pond sediments is being performed, as well.

RESTORATION PLANNING PROGRESS

Elements of the Record of Decision

As part of the restoration planning process, the Project Management Team has developed the following description of the elements that are expected to be components of the Record of Decision. They are intended to give all stakeholders in the planning process a common understanding of expectations from the process.

The 8 anticipated elements of the Record of Decision are:

1. **Integrated Habitat Restoration, Flood Protection, and Public Access Plan (The Plan)** – A plan for restoration of all of the ponds to achieve a mix of tidal marsh and managed ponds (e.g. 2/3, 1/3) including integrated actions for flood management and public access, all to be achieved through several phases of implementation. Irreversible decisions (those that would not be subject to modification during the implementation period) would be identified. All other decisions would be subject to modification during the implementation period via the Adaptive Management process identified below. The Plan would be depicted in text and as a single map of the project area.

Phased implementation of The Plan would be described as a sequential list of restoration actions for each pond with proposed dates for restoration. For example, in Phase One (2008) a specified set of ponds would have actions taken to restore them to tidal action, and a different specified set of ponds would have actions taken leading to improved managed pond habitat. Flood management and public access improvements integral with the restoration actions would be accomplished, as well.

The later phases would identify dates, ponds and actions until The Plan is completely implemented. Each of these phases could be adjusted in time, pond group and/or action depending on the results of monitoring, funding, etc consistent with the Adaptive Management Methodology identified below. Prior to implementation of The Plan for each pond, that pond will be managed according to the Initial Stewardship Plan.

2. **Conceptual Models** - A set of conceptual models that are easily understood which are used to demonstrate why this basic restoration plan is expected to achieve the Project's Goals and Objectives.
3. **Uncertainties and Assumptions** - A description of the key uncertainties or assumptions that exist at critical points or linkages in the models.

4. **Synthesized Knowledge** - A description of the synthesized knowledge that leads to the conclusions regarding The Plan, the Conceptual Models, and the Uncertainties & Assumptions.
5. **Phase 1 Actions, Monitoring & Applied Studies** - A set of initial actions designed to begin implementation of The Plan coupled with monitoring and a set of applied studies designed to test the Conceptual Models and assumptions and increase the knowledge base. While The Plan would lay out the anticipated actions in all phases, Phase 1 would be described in substantially more detail.
6. **Adaptive Management Methodology** - A methodology for acting on the information gained in implementing the Phase 1 Actions, Monitoring and Applied Studies (as well as futures phases) to:
 - Modify those actions;
 - Revise future phases of actions, monitoring and applied studies; and/or
 - Revise the assumptions and knowledge base.An example of a modification or revision would be changing the ultimate mix of tidal marsh area to managed pond area from 2/3:1/3 to 50:50 ten years into implementation. Another example would be to change the specific ponds that are retained as managed ponds in a particular habitat mix.
7. **Continuing ISP and Other Applied Studies** - Continuation of Directed Actions and proposal-based applied studies begun in 2004 regarding the results and effects of ISP implementation, as well as other related applied studies to reduce uncertainty and increase the knowledge base.
8. **Institutional Arrangements** – A description of any institutional arrangements (legislation, contracts, MOUs, etc.) needed to best carry forward the elements of the Preferred Alternative. Institutional arrangements will at a minimum relate to land management (involving the Dept. of Fish and Game and the U.S. Fish and Wildlife Service as the landowners), flood management (involving the local flood control agencies), and science activities (relating to administration of applied studies funding and adaptive management decision making).

Alternatives Development

The process of alternatives development is proceeding as laid out in the Alternatives Development Framework (August, 2004) (available on the Project web site). The process includes the development of Project Objectives and more detailed evaluation criteria that can be used to compare the performance of alternatives. Preliminary Project Alternatives will be developed by December and then evaluated in early 2005 using the evaluation criteria to compare and contrast them. This process will culminate in the development by mid-2005 of approximately four Project Alternatives for analysis under NEPA and CEQA. Each of these Alternatives will include the proposed Phase 1 set of actions. It is expected that while the Alternatives will be different, the Phase 1 actions will be the same under each Alternative.

As part of this process, the Project conducted 2 public workshops on Initial Project Options. These workshops were held on September 29 and 30 regarding the Eden Landing (9/29) and Alviso and Ravenswood (9/30) pond complexes. A follow up workshop will be held on October 27 regarding the entire project area. The purpose of the workshops was to start to bound the reasonable range of alternatives for each of the three pond complexes.

Science Plan

The Project Science Plan outlines a science program that will contribute to the planning and implementation of the Project. Specifically, the Science Plan provides the *content basis* and *process* for the collection, synthesis and dissemination of the best available science for the Project and to support the adaptive management necessary to achieve Project Objectives. The National Science Panel recommended the development of a Science Plan to help guide the science of the Project. The Lead Scientist and Science Team took that recommendation and expanded on it to develop a document that would live and grow with the Project over time.

The three pillars of this Plan are the Broad Science Questions and Key Science Issues, which are central to achieving Project Objectives; Science Syntheses that provide the state of the science on the Project Objectives; and the Science Structure that implements an on-going process of evaluating key questions, collecting and synthesizing information, disseminating the data to decision-makers, and evaluating restoration progress. The Science Plan describes the role of science in the Project starting with identification of key issues, a description of what is known and not known about these issues, and what are key questions that need to be answered. The Draft Science Plan is available to the public via the Project web site and has been distributed to the National Science Panel members.

Mercury Technical Memorandum

One area of science that is of great concern to the Project is the understanding of the risks posed by mercury in the Project vicinity. The Mercury Technical Memorandum (August 2004) summarizes the results of pertinent reports on the existing levels of mercury in the Project area, presents a Conceptual Model of mercury cycling, and makes recommendations regarding the management of mercury as it relates to the Project. As a result of this analysis, mercury is not seen as a fatal flaw in the restoration of the salt ponds. It is anticipated that ongoing and future studies of mercury cycling in the South Bay will provide the information needed to successfully restore habitats while minimizing and managing the impacts of mercury on the biota. The Technical Memorandum is available on the Project web site.

Conceptual Models

Conceptual models are being developed in relation to each of the Project Objectives. A draft prototype model for the Salt Marsh Harvest Mouse is being developed for discussion at the October National Science Panel meeting.

Adaptive Management Plan

The Adaptive Management Plan is an essential element of the Record of Decision as described above. An outline of the Adaptive Management Plan has been prepared and is available to the public on the Project web site and has been distributed to the National Science Panel members. A Draft Adaptive Management Plan is expected to be available in March 2005.

Environmental Review Process

The Notice of Intent under NEPA and Notice of Preparation under CEQA (all as one document) for the Project has been prepared and is anticipated to be published in the Federal Register by November 1. Scoping meetings required by both NEPA and CEQA are scheduled for November 16 and 17. Those dates are dependent on the date the Notice is published in the Federal Register. It is currently proposed for the Lead Agencies to be the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers under NEPA and the Department of Fish and Game under CEQA.

South San Francisco Bay Shoreline Study

The South San Francisco Bay Shoreline Study (Shoreline Study) is the Corps of Engineers authorized basis for evaluating "flood damage reduction, environmental restoration, and related purposes" in and around the Project area. The Corps has concluded that there is a Federal interest in a project and there is a non-Federal sponsor for such a project (the State Coastal Conservancy). The Shoreline Study will now proceed to the Feasibility Study stage. The Project Management Team and Corps staff are meeting on a regular basis to coordinate the Project and the Shoreline Study. The Project Schedule flow chart shows the relationship of the Project and the Shoreline Study in time.

INVESTIGATIONS AND STUDIES UNDERWAY

Various investigations and studies are underway or have recently been completed as part of the data acquisition effort that will contribute to the Project. Each of those efforts is summarized below.

USGS Investigations

USGS is collecting baseline information and datasets critical for the restoration planning process in the salt ponds and in the adjacent slough systems.

The Salt Ponds

- Pond bathymetry and levee habitat mapping of ponds in the purchase agreement.
- Characterization of sediments, primary productivity, invertebrate composition, and fishes in ponds.
- Monthly monitoring of water quality concurrent with bird surveys to document baseline levels and to track changes.

The Open Bay and Slough Systems

- Assessment of the hydrology and present morphology of the South Bay sloughs by analyzing existing data augmented with collection of new data.
- Characterization of invertebrate and fish communities in the slough systems and comparison with South Bay pond communities.
- Assistance in development of a land surface elevation map (LiDAR) for the South Bay region and assistance with mapping South Bay open bay and slough bathymetry.

LiDAR and Bathymetry

TerraPoint provided LiDAR topographical mapping services for the South Bay Salt Pond Project, including levees, mudflats, dry ponds and upland areas within the 100-year flood zone south of San Francisco International Airport and Oakland International Airport. The objective was to provide 3-dimensional topographical information to a vertical accuracy on hard surfaces of 10-15 cm at the 2 Sigma level. TerraPoint collected GPS ground control check points as necessary and used existing ground control to verify the LiDAR data accuracy. TerraPoint also acquired digital video imagery at 2 frames per second during all missions, on a best effort basis, using a Geo-3D system. The timing of this project coincided with "low low tides" in order to collect as much elevation data as possible to the water's edge.

Sea Surveyor will conduct a marine geophysical survey of surficial sediments in South San Francisco Bay, including tidally submerged lands in Alameda, Santa Clara, San Francisco and San Mateo Counties. The survey area is bounded to the north by latitude N37° 43' between Hunters Point and Oakland International Airport, and includes Coyote Creek and four sloughs (Alviso, Artesian, Mud, and Ravenswood) at the south end of San Francisco Bay. The survey will occur during high tides in the fall of 2004 using Class 1 hydrographic survey methods and accuracies outlined in the Army Corps of Engineers' 1994 *Hydrographic Surveying Manual* (EM-1110-2-1003). Soundings will be collected to an elevation of +0.3m Mean Lower Low Water (MLLW) or higher in order to overlap the aerial LIDAR survey.

USGS is providing contractor oversight, data review assistance, and mapping for both of these surveys, and also collected bathymetry data within salt ponds that had sufficient water for a small boat.

IKONOS imagery by City of San Jose

As part of its ongoing activities, the City of San Jose performs vegetation mapping in the vicinity of the San Jose/Santa Clara WPCP discharge point. Their data collection in Spring 2004 included IKONOS satellite imagery of an expanded area of the South Bay for the benefit of this Project. Figures 2-4 use some of that imagery as the base layer. The images are being used by the Consultant Team in their analysis.

PRBO Habitat Conversion Modeling

PRBO is conducting phase two of its habitat conversion model, providing predictions about the effects on bird communities of salt pond loss and tidal marsh gain under various restoration scenarios. PRBO will also provide recommendations about optimal salt pond / tidal marsh configuration and management from a bird community conservation standpoint. The analysis will include all major wetland bird groups in San Francisco Bay, but will evaluate restoration outcomes based on carefully chosen indicator species and diversity indices.

This iteration of the HCM involves major improvements to the existing model, as well as laying the foundation for a future grid-based, dynamic spatial model. The scope of work includes:

- Conducting additional data collection efforts on birds in the salt ponds and tidal marshes of the South Bay;
- Identifying characteristics of tidal marshes that support maximum bird species diversity and productivity;
- Identifying optimal salt pond characteristics (such as depth, size, and salinity) so that pond types and configurations can be determined;
- Determining how much pond habitat is needed to support the U.S. Fish and Wildlife Service's recovery plan objective of maintaining 500 western snowy plovers in the South Bay;
- Modeling predicted bird densities for restoration alternatives as they are proposed; and
- Based on modeling results, making recommendations on the amount and configuration of tidal marsh and managed ponds in the South Bay that will maximize bird species diversity and density.

PROJECT SCHEDULE

Attached is a Project schedule showing the interrelationship of the various Project components that are described above.

Figure 1

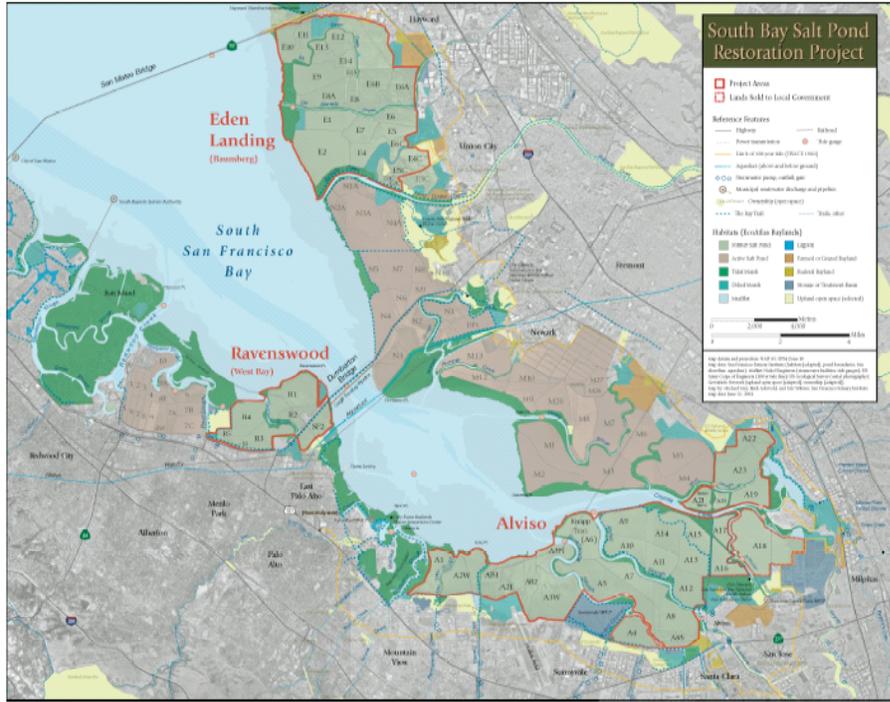


Figure 2

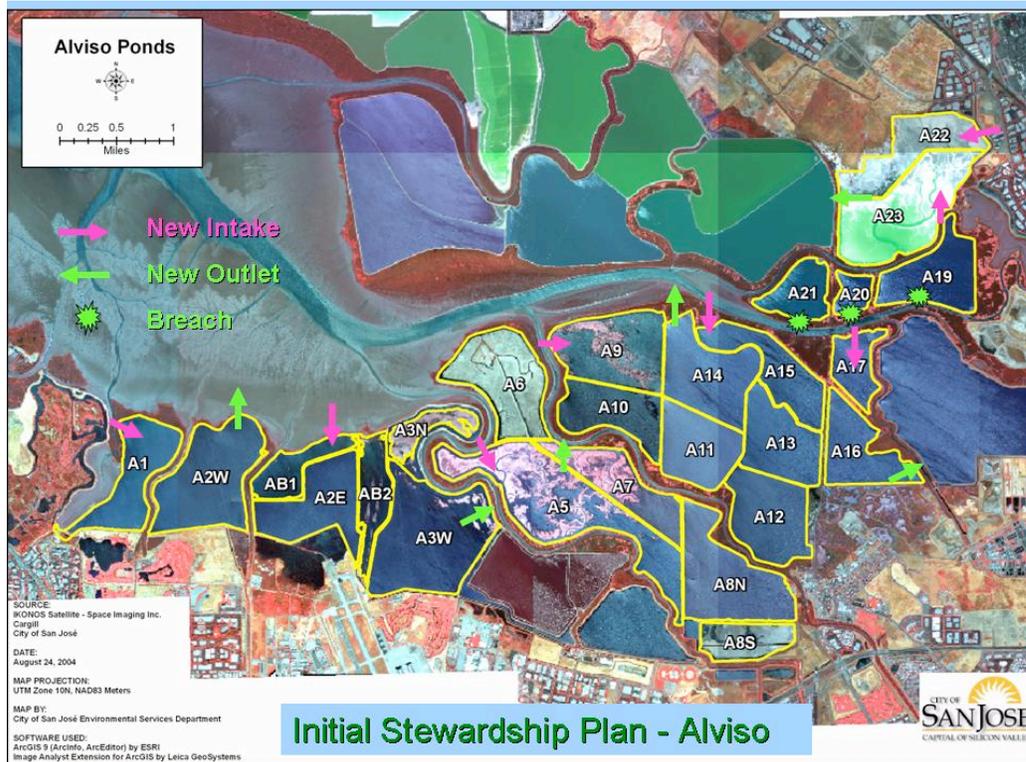


Figure 3

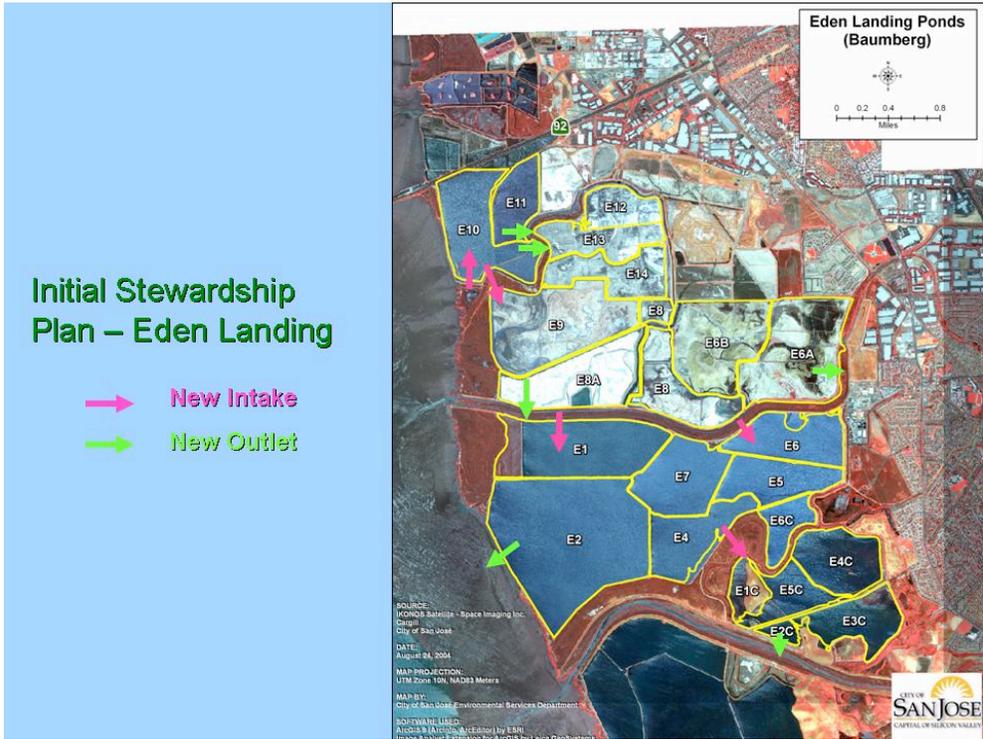


Figure 4

