Background information for
Sediment Management in
The Alameda Creek Flood Control Channel
Alameda County, California

Summary

The Alameda County Flood Control District (ACFC) owns and maintains a twelve mile long flood control channel that crosses the bay plain in South San Francisco Bay. The lower four miles of this channel crosses the Baumberg complex of salt ponds and have accumulated a significant amount of sediment. This has reduced the capacity of the channel to carry its design flows. The ACFC is studying alternatives for removing this sediment. One of the more promising alternatives is to allow extreme flood flows to spill into the adjacent Baumberg ponds and to restore the Baumberg ponds to tidal action, thereby increasing the tidal flows and scour in the flood control channel.

General Watershed Characteristics

Alameda Creek drains the Livermore-Amador and Sunol Valleys through Niles Canyon. It then flows westward across the bay plain toward Coyote Hills and into South San Francisco Bay. It is the largest local watershed in the Bay Area. At the exit of Niles Canyon, USGS maintains a Stream Gage Station (11179000). The size of the watershed at the gage station is 633 square miles. This gage has been in operation for 111 years. The largest flood measured was in 1955 with an estimated peak discharge of 29,000 cfs.

Flood Control Channel Construction by the Corps of Engineers

The storms of December 1955 and April 1958 inundated large areas of the rapidly developing bay plain and spurred local governments to lobby Congress for Federal assistance in the form of a Federal Construction project.
The project was authorized in the Federal Flood Control Act of 1962. It authorized participation in the construction of the Arroyo del Valle reservoir in the Livermore-Amador Valley for flood peak storage as well as channel work consisting of straightening and widening and in part riprapping Alameda Creek across the bay plain for approximately twelve miles.

The project is designed to provide “standard project flood” protection for the metropolitan areas on the bay plain (Fremont, Union City and Newark). Peak design flows adopted for the design are 52,000 cfs which is a 0.2% chance event. The channel bottom width ranges from 400 feet near the bay outlet to 130 feet at Niles. The bottom rises about 75 feet as it crosses the bay plain, with the lower 7 miles being relatively flat and the upper 5 miles relatively steep. Levee protection is provided for almost the entire length of the channel. Earthen setback

levees are provided in the lower four miles that cross the salt ponds. Riprap protection is provided upstream of the salt ponds.

Sediment removal history

Sediment has been removed from the 3 mile segment upstream of the salt ponds several times since construction was completed. In 1975 and 1989, approximately 190,00 cubic yards was removed in each year. Approximately 367,000 cubic yards was removed again over a four year period from 1998 to 2001. Construction cost for the 1998-2001 project was over $3 million. Project mitigation costs were almost $1.5 million.

Sediment removal studies through the Baumberg ponds.

Approximately 1 million cubic yards of sediment has accumulated in this 4 mile reach. This has reduced the carrying capacity of this reach of channel to approximately 30,000 cfs. This reach of the channel now only provides protection from a 1 to 2% chance event.

The maintenance agreement between the Corps of Engineers and the ACFC requires that the ACFC return the channel to its initial 0.2% level of protection. Initial cost estimates to remove sediment to accomplish this are over $30 million.

URS Corp. was hired in1998 to look at less costly alternatives, in lieu of, sediment removal from this 4 mile segment.

One of the more favorable study alternates involves allowing flood flows over the 1% event to spill into the adjacent Baumberg salt pond complex through an emergency spillway along with restoring the Baumberg complex to tidal action through several breaches in the channel levee. The increased tidal flows that this would produce, should provide more scouring of the flood control channel and thereby slowly increase the carrying capacity. A new “inboard” levee, approximately 2 miles long would probably need to be constructed from the emergency spillway in a northerly direction to protect homes built easterly of the Baumberg salt ponds. These studies are currently being completed and a final report is due in June 2004.

Sediment Budget and Sediment Source Analysis

In early 2003, the ACFC retained a Consultant, Watershed Sciences, to begin evaluation of existing sediment data and to develop a methodology for a sediment budget and source analysis. Initial efforts are directed at fluvial sediment issues. A first year progress report has been completed and the study is ongoing through this year.

Bair Island Briefing Paper

Date: March 24, 2004

Prepared By: Clyde Morris, Refuge Manager, Don Edwards San Francisco Bay NWR, Fremont, CA

Subject: Bair Island Restoration Project, Redwood City, San Mateo County, CA

Purpose: The U.S. Fish and Wildlife Service (FWS) and the California Department of Fish and Game (DFG) jointly manage approximately 3,000 acres that were historically tidal marsh on Bair Island in San Francisco Bay near Redwood City. In this project, approximately 1,400 acres will be restored to tidal salt marsh. This will provide habitat for endangered species, waterfowl, shorebirds and other native wildlife

Background: Bair Island was historically tidal marsh and mudflats. It was diked in the late 1800's and early 1900's for farming and cattle grazing. The majority of Bair Island was converted to salt evaporation ponds in 1946 and remained in production until 1965 before transferring the lands to a succession of real estate development companies. In 1982, the voters of Redwood City rejected Mobil Development Company=s development plans through a local referendum. In 1997, the Peninsula Open Space Trust (POST) purchased the majority of the privately owned portions of Bair Island and sold/donated it in 1999 to the State of California and U.S. Fish & Wildlife Service for restoration of wildlife habitat.

Issues:

X If the lands are not restored in a managed program, the levees will erode and uncontrolled tidal inundation would occur. This would result in the following: 1) increased sedimentation of the Redwood Creek Shipping Channel resulting in the need for more frequent costly dredging by the Port of Redwood City, 2) increased tidal velocities at Pete=s Harbor Marina resulting in unsafe operating conditions for boating, 3) increased potential for bird strike hazard for aircraft using the San Carlos Airport, 4) delay in the restoration of wildlife habitat, 5) eventual closure of a Refuge public access trail that receives 250,000 visits each year.

X Restoration of Bair Island was identified in the 1984 California clapper rail and salt marsh harvest mouse Recovery Plan as Aan action that must be taken to prevent the extinction or to prevent the species from declining irreversibly@. Restoration would also provide habitat for numerous waterfowl, shorebirds, harbor seals, fish and other native wildlife.

X When the land was acquired by the Refuge, it included a 3-mile public access loop trail on Inner Bair Island. This trail would be converted to two point access trails totaling 2.7 miles both ending in wildlife viewing platforms on Smith Slough. Changing the trail from it current loop configuration will allow the restoration of Smith Slough to its historic channel thereby preventing increased tidal velocities from damaging Pete=s Harbor Marina and would provide additional protection of endangered species habitat. Changing the loop trail to two point access trails is not supported by some of those who currently use the trail for jogging and bicycling. In addition, this trail has been popular for walking dogs without a leash which has been allowed to continue under Refuge management until a restoration plan could be completed. Some dog owners have not complied with Refuge rules meant to protect wildlife. Therefore, the plan would require dogs to have 6-foot leashes and a monitoring plan would be implemented to determine if dog owners are in compliance with Refuge rules.

X Use of dredged material to raise the elevation of Inner Bair Island before breaching its levees will lessen the potential for bird strikes on aircraft approaching the adjacent San Carlos Airport, by reducing the period of time before the area becomes vegetated.

X Installation of a flow restrictor in Corkscrew Slough will prevent increased sedimentation of the Redwood Creek Shipping Channel. A portage with wildlife viewing platform will be built around the flow restrictor to be used by small boats for the short-term until scouring of the slough channels decreases the tidal velocities at the flow restrictor. In the long-term, the restoration project will scour the shallow channels thereby increasing the boating opportunities in the sloughs of Bair Island.

X Hunting and fishing opportunities will improve with restoration of the wildlife habitat. Wildlife-oriented recreational opportunities will increase with improved recreational facilities such as interpretive signs, wildlife viewing platforms and sanitary facilities.

Main Message: Restoration of tidal salt marshes will prevent future impacts to the existing Redwood Creek Shipping Channel used by the Port of Redwood City, reduce potential for bird strikes on planes using the San Carlos Airport, and minimize potential impacts to Pete=s Harbor Marina. It will increase habitat for endangered species, waterfowl and other native wildlife. It will increase and improve the quality of wildlife-dependent recreational opportunities.

Perspective: There is substantial local support for this project. Changes in existing public recreational opportunities toward more wildlife-oriented activities will benefit wildlife and will be compatible with the Refuge's purpose.

Status: 2004: Draft EIS/EIR undergoes public review & Final Completed; Control of Spartina alterniflora started.
2005: Construction drawings developed & permit process initiated
2006: Outer Bair Island levee breached, restoration begins w/ monitoring, dredge material starts being placed on Inner Bair Island
2007: Dredge material placement completed; flow restrictors constructed in Sloughs, Inner and Middle Bair levees breached, restoration begins w/monitoring

Contact: Clyde Morris, Refuge Manager, Don Edwards San Francisco Bay NWR, Phone :(510)792-0222

California Department of Fish & Game
Eden Landing Ecological Reserve

Management Plan Summary

DFG holds title to and is currently constructing an 8-35-acre tidal wetland restoration project on the Eden Landing Ecological Reserve (Eden Landing ER). DFG is also responsible for management of approximately 5,300 acres of fee title in Alameda County (the Baumberg Ponds) located immediately adjacent to the 835-acre Eden Landing ER in Hayward, Alameda County. The 5,300-acre acquisition is part of the approximately 15,100 acres of salt ponds and other properties acquired from Cargill, Inc. in Alameda, Santa Clara and San Mateo counties. The 15,100 acres of South Bay salt ponds provides an opportunity to conduct a large-scale wetlands restoration project and achieve many of the goals and objectives of the *Baylands Ecosystem Habitat Goals*. Management of the property will be directed toward restoration of natural habitats that contribute to and help sustain the overall ecosystem health of the San Francisco Bay. Restoration and enhancement activities will be conducted to reestablish salt marsh and management of saline ponds where appropriate for the benefit of waterfowl and shorebirds, and to remove invasive species.

Management Objectives

1. Restore and enhance salt marsh and managed saline ponds for threatened and endangered species and species of concern, including shorebirds and waterfowl.
2. Protect habitat for several sensitive species, including some which are listed under the California Endangered Species Act or are designated fully-protected species.
3. Provide for limited, high quality, public recreation and hunting opportunities,.
4. Provide landscape-level linkage of baylands administered by the DFG and the US Fish and Wildlife Service and provide flood protection in cooperation with local agencies.

Several State and Federally listed species are known to inhabit the property including salt marsh harvest mouse, western snowy plover, California least tern, and California clapper rail and California black rail. Important species on site include numerous species of waterbirds.

DFG, in cooperation with the U. S. Fish and Wildlife Service, has prepared an Initial Stewardship Plan (ISP) for the 15,100 acres acquired. Completion and implementation of this plan allowed for acquisition of several permits, including the March, 2004 Waste Discharge Permit from the Regional Water Quality Control Board. Construction of water control structures to discharge pond waters into San Francisco Bay will begin in the spring of 2004. The ISP will guide initial management of the ponds while a long-term restoration and management plan is prepared.

MONITORING SUMMARY/STUDIES REQUIRED: for 835-acre Eden Landing ER

1. waterbird distribution, habitat use, composition, abundance
2. SNPL nesting activities (monitor similarly to past/current effort led by USFWS)
3. CLRA, SMHM colonization/distribution within restored areas.
4. Tidal marsh vegetation establishment
5. Sedimentation rates
6. Tidal channel evolution/development
7. Tidal prism, extent of tidal inundation

1. Waterbird use monitoring shall be done monthly from September-April after restoration of tidal influence. Counts shall be conducted via walking/driving levees.

Surveys shall be paired, one high-tide, one low-tide, based on 1996-7 and 1997-8 survey methodology (Casady, 1998). Areas to be monitored include A) Tidal Area, B) SNPL mgmt area, and C) seasonal wetland areas. Frequency of surveys shall be annually for years 1-5, then 1 time per 5 years for years 5-20. In report, need to describe pre- and post-restoration conditions and use.

2. Snowy Plover nesting surveys for minimum 5 years post construction to determine presence. Following Mgmt. Plan implementation, weekly observations Feb-Aug, as per current program (USFWS).
3. Annual surveys after 3 years post construction (assuming adequate marsh development) to determine presence. SMHM monitoring shall consist of visual searches of marsh edges, lifting cover. CLRA monitoring shall consit of winter season airboat surveys (Dec.-Jan) in 7-foot+ tides, and auditory surveys for calling rails in Feb/mar/Apr, including mapping locations and recording numbers. From 5 years after construction is completed, every 5 years monthly breeding season auditory surveys in established stations, including mapping locations and recording numbers.
4. Vegetation establishment: Monitoring program shall produce reports annually for 10 years, and will use aerial photography to establish trends in vegetation colonization and marsh development. Scale to be 1" = 200'. Vegetation communities shall be mapped, including ground-truthing via boat and/or levees to determine plant densities, species composition and to ID small patches not discernable via aerial photos. Vegetation should be described after ground-truthing, and editing of the aerial veg.map should be done based on ground-truth data. Data should include a qualitative assessment of pickleweed structure and vigor. Invasive species should be identified where eradication is required and should be documented in the annual monitoring report. Land-based photo stations should be established to cover the entire site for establishment of marsh over time.

(Caltrans site only) % cover

Year	Amount (%) of pickleweed
2	10
3	30
4	60
5	80

Caltrans site: 100% cover by halophytes, 80% pickleweed = 16" tall @ yr.10 Data required: Total cover, species composition, % native spp., mean/max vegetation strata height. Require a minimum of 3 replicate, 30-meter transects. Transects to be located prior to when tidal influence is restored and used as baseline (year 0) data. Data to be collected as 1-meter intervals along transect. Photo-documentation of transect also required.

5. Sedimentation: Install a minimum of 5 staff gauges at selected locations in marsh plain. Conduct as-built reference survey of staff gauges, locations/elevations. Use of remote sensing data should be used if funds are available. Monitoring program shall produce reports annually for 10 years.
6. Channel development: Use annual aerial photos for mapping channels at scale of 1"=200'. Obtain cross-sections of channel profiles annually for 5 years at selected locations. Minimun of 3 profiles in Mt. Eden Creek and North Creek channels and 2 in the next lower order channels (4 per drainage or ten total x-sect. profiles). Monitoring program shall produce reports annually for 10 years.

Lower Guadalupe River Project

The Santa Clara Valley Water District began construction on the Lower Guadalupe River project in early April 2003. Channel capacity will be increased to accommodate storm water runoff resulting from events up to of a 100-year flood* (estimated at 18,350 cfs).

Project work will include: construction of floodwalls or raising levees along the river banks; replacement of the HWY 237 eastbound bridge (bridge construction will begin August 2003); modification of 19 storm drain outfalls; improvement and construction of maintenance roads and undercrossings; improvement of the west perimeter levee around Alviso, and construction of grade-control weirs (gradual drops in the stream elevation) and construction of an overflow weir to divert high flows into Alviso Pond A-8. Flows above approximately 8,600 cfs will be stored in Pond A8 until peaks recede and the stored water will be pumped back into Alviso and Guadalupe Sloughs.

The project also features environmental and mitigation and enhancements, which include: future recreation and trail extensions on project levees; sediment and vegetation management plans in project area; temporary pumps in the salt ponds after major storms to reduce the depth and duration of storm-related flooding in the ponds; management of vegetation in the river channel near the UPRR bridge; strengthening the levees separating the salt ponds; fish passage improvements, and planting of native vegetation.

Although measures will be taken to minimize construction impacts, residents and businesses in the project area may be impacted. The project will require large amounts of equipment, material and personnel to complete it on schedule. Heavy equipment and trucks will be entering and leaving the project site at most river crossings and will include the Alviso Marina, Gold Street, Tasman Drive, Montague Expressway, Trimble Road, Airport Boulevard and Airport Parkway. Traffic control will be provided at these areas.

Project completion is scheduled by April 2005. By December 2004, all project features needed to provide increased hydraulic capacity will be in place.

In a related project, the Alviso Slough Enhancement Project, the District has been investigating the potential for enhancing fisheries habitat in Alviso Slough by increasing tidal prism and salinity. A technical report prepared by Schaaf & Wheeler delineated options for doing so by managing flow through Pond A8. This report has been provided to the Project Management Team of the South Bay Salt Pond Restoration Project for further consideration in the development of the long-term restoration plan.

For additional information, please refer to:

http://www.valleywater.org/Water/Watersheds_streams_and_floods/Watershed_info_&_projects/Guadalupe/Lower_Guadalupe/index.shtm#description

U. S. Department of the Interior

U. S. GEOLOGICAL SURVEY

2 April 2004

Memorandum

To: National Science Panel, South Bay Salt Pond Restoration Project
From: USGS Salt Pond Research Team
Subject: USGS Data Collection – short term needs

In 1998, the U. S. Geological Survey initiated a research program on salt ponds under the USGS Priority Ecosystem Studies Program. Work was conducted in both the North and South Bay salt ponds to provide a better understanding of salt pond ecology and to develop information for future restoration planning. State, federal, and nonprofit groups completed negotiations for acquisition of a major portion of the South Bay salt ponds in the spring of 2003. Acquisition details included funds for rapid completion of initial management and planning efforts. Siegel and Bachand (2002a) summarized the complicated issues surrounding the restoration program, and in a subsequent report (Siegel and Bachand 2002b), identified critical short-term information needs for planning and report development. A list of the highest priority needs were established in a meeting with the Coastal Conservancy, U. S. Fish and Wildlife Service, California Department of Fish and Game, and USGS on 15Dec02 to initiate data collection efforts.

Immediate short-term needs decided by the Project Management Team included data collection in both Salt Ponds and Slough Systems. Salt Ponds: (1) complete bathymetry and levee habitat mapping for interim management and hydrological modeling of restoration scenarios; (2) characterize sediments, primary productivity, invertebrate composition, and fishes for salinity reduction and initial phases of restoration; and (3) continue monthly monitoring of water quality concurrent with bird surveys to document baseline levels and track changes. Slough Systems: (4) assess hydrology and present morphology of the sloughs from existing data and collection of new data; (5) characterize invertebrate and fish communities; and (6) assist in development of a land surface elevation map for the South Bay region including bathymetry. A 2-year USGS proposal was submitted to complete the work in Feb03, but initial funding was only allocated for the first year in Jun03. A second year scope of work was submitted in early Mar04 to complete the 6 objectives. In this briefing, we provide an update on the first 9 months of work.

SALT PONDS

Objective 1: Map the bathymetry

A. Progress-- 35 ponds successfully completed with shallow-water sounding system developed for this project (1 cm depth accuracy). Some ponds were not possible to survey (see below), but these ponds will be completed with LIDAR at lower accuracy (~15 cm).

1. Pond Sampling Update (53 total ponds):

Ponds completed (35):	A1, A2W, A2E, A3W, A7, A9, A10, A11, A12, A13, A14, A15, A16, A17, A20, A21, A22, B2C, B6C, B1, B2, B7, B14, A3N, A5, A8, AB1, AB2, B1C, B4, B5, B5C, B6, B8, B9, B10
Ponds not completed (18):	A9[a], A19[a], B4C[b], B11[a], A6[a], A23[a], B6A[a], B6B[a], B8A[a], B12[b], B13[b], R1[a], R2[a], R3[a], R4[a], R5[a], RS5[a], RSF2[a] [[a]too shallow, [b]debris]

B. *Problems*— dry or debris-ridden ponds, missing staff gauges.

C. *Timeline*— **Ontime**: preliminary data available, GIS coverages planned for Dec04.
D. *Improvements*— dry ponds and levee mapping covered in LIDAR (see Obj. 6).

Objective 2: Characterize water, sediments, productivity, invertebrates, and fish

A. *Progress* – Invertebrate samples (1 mm and 0.5 mm subsamples) collected (lab work in year 2) at 41 ponds (May03: A1-A16, B1-B2; Jun03: A17, A19-A23, B3-B8, R1, R3-R5S); 12 ponds sampled later. Water samples completed for 51 ponds and submitted for N, P, S analyses, SCUFA samples for chl*a*, nutrient report delivered in Jan04. Sediment samples completed (Dec03), report delivered in Jan04. Sediment samples for Hg collected and stored. Fish biologist hired (Nov03) for spring sampling.
B. *Problems* – dry ponds.
C. *Timeline* – **Ontime**: nutrient and sediment sampling report delivered, fish sampling ongoing (Apr-Jun).
D. *Improvements* – Homogeneous sediment samples cut to 3 samples, added slough sediment samples.

Objective 3: Conduct monthly bird surveys

A. *Progress* – completed bird surveys and collected water quality data monthly. Captured and color-banded western sandpipers for between-pond movement studies.
B. *Problems* – elevations needed to relate habitat use with water depths.
C. *Timeline* – **Ontime**: data available monthly after survey, continuing through year 2.
D. *Improvements* – added winter survey assistance.

SLOUGHS

Objective 4: Hydrologic data summary

A. *Progress* – Installed 2 CTDs in response for SCC request for salinity and temperature measurements at channel marker 17 on 2 Dec03 for the winter runoff. Reviewed SCC winter data collection plan. Gathered previous measurements and studies of South Bay sloughs. Hired sediment sampler for Coyote Creek in Sep03; installed high flow sampler at gage, collected suspended sediment, Oct03 --37 completed, 20 analyzed. Stream flow record collected and computed. Provisional data available upon request.
B. *Problems* – Evaluating quality of some of the gathered data.
C. *Timeline* – **Ontime**: draft report Jun04, final Coyote Creek suspended-sediment report Apr05.
D. *Improvements* – none at this time.

Objective 5: Slough ecology sampling

A. *Progress* – Completed sediment sampling of Alviso Slough system (Dec03), stored Hg samples; scheduled spring invert samples of Alviso, Baumberg. Met with NMFS in Dec03 for fish permits.
B. *Problems* – instrument clogging, logistics in shallow sloughs. NMFS required delay for fish sampling Biological Opinion, causing a delay.
C. *Timeline* – **Ontime**: fieldwork Sep03-May04, mud flat invert report Jun04, final report 2005.
D. *Improvements* – Added slough sediment samples for analyses for Alviso system.

Objective 6: Land surface elevation map

A. *Progress* – NASA withdrew from EAARL LIDAR survey in Feb04. Initiated SCC contract for alternate LIDAR survey and supplemental soundings of South Bay and sloughs.
B. *Problems* – late loss of EAARL LIDAR commitment by NASA.
C. *Timeline* – **Revised**: flight (May04), raw data (May04), surface with vegetation (Jun04), surface without vegetation (Sep04), final sediment loss maps completed in 2005.
D. *Improvements* – developed predictive model relating pond restoration and tidal flat sedimentation, ground-truthed elevations and vegetation, examined short-term sedimentation (2002 to 2004) in Alviso tidal flats. Expanding LIDAR coverage for areas affecting project, limited areas in airport control areas.

South Bay Salt Ponds Initial Stewardship Plan

Status Report April 5, 2004

The Initial Stewardship Plan (ISP) has been developed over the past two years to guide the initial management and operation of the South Bay Salt Ponds following there acquisition by the Department of Fish and Game (DFG) and the U.S. Fish and Wildlife Service (FWS). The ISP provides for the operation and management of the ponds once they are separated form the ongoing salt making process and until the long term restoration and management plan for the ponds is developed and implemented. The ISP was developed with the assistance of technical specialists in water quality, hydrology, soils, engineering and biology /wetland ecology. The objectives of the plan include:

- Cease commercial salt operations.
- Introduce tidal hydrology to ponds where feasible
- Maintain to the maximum extent feasible the existing functions and values of the ponds for wildlife, particularly migratory and resident shorebirds and waterfowl.
- Assure the ponds are maintained in a restorable condition to facilitate future long-term restoration.
- Minimize management costs.

The ISP describes the water control facilities and operational management of surface water required to manage the salt ponds independently from ongoing salt production operations. The ISP also describes routine maintenance and monitoring protocols to direct adaptive management of the ponds during the ISP period.

Changes to existing operations include:

- Circulation of bay waters through a reconfigured ponds system and release of pond contents to the Bay. This will result in an overall freshening of ponds subject to management under the ISP.
- Managing some ponds as seasonal ponds, to reduce management costs and optimize habitat for migratory shorebirds.
- Restoration of three ponds to full tidal influence.
- Managing several ponds in the Alviso Complex as higher salinity ponds to support specific wildlife populations.

The ISP was completed in the fall of 2003 and a joint Environmental Impact Statement/Report (EIS/R) was circulated early in 2004. The EIR has been certified by the Department and the EIS is being finalized by the FWS. Permits are being acquired this spring the most important of which was a discharge permit from the San Francisco Regional Water Quality Control Board. The discharge permit establishes the conditions under which pond waters can be discharged into San Francisco Bay and sets the salinity levels to which Cargill Salt must reduce the ponds before transferring management responsibility to the Department and FWS.

The Department and FWS with funding from the Resources Legacy Fund and Wildlife Conservation Board are preparing to implement the ISP this spring and summer in preparation for receiving management responsibility for ponds from Cargill Salt. The transfer of ponds will occur over the next several years with most of the Baumberg and Alviso ponds being transferred by the spring of 2005. The Island Ponds and West Bay Ponds would not be transferred until 2006 and 2008.

The ISP can be found at: http://www.southbayrestoration.org/pdf_files/ISP.pdf

Santa Clara Valley Water District
Pond A4 Tidal Wetland Restoration Project
Brief Project Description

Project Location: Pond A4 is located in South San Francisco Bay, within the cities of Sunnyvale and San Jose, Santa Clara County. The pond is bordered by Sunnyvale West Channel to the west, Guadalupe Slough to the northeast and Sunnyvale East Channel along the Southeastern corner. The adjacent landscape is comprised of diked baylands (sewage treatment pond and salt ponds), except to the south, which is highly urbanized.

Past and Existing Use: Historically, the 310-acre pond was part of an extensive tidal marsh that bordered San Francisco Bay. Earthen levees constructed for salt production in the early 1900s isolated the site from tidal and freshwater flows. Since that time, the pond has been used for salt production and recreation. The pond has been owned by the Santa Clara Valley Water District since 2000, and Cargill has continued to manage the pond for salt production. Cargill is currently in the process of normalizing salinity in the pond, in accordance with terms of their lease termination plan.

Project Description: The purpose of the project is to provide mitigation for District impacts to 66 acres of tidal wetlands. The District plans to fulfill this obligation by restoring 66 acres of diked baylands to a self-sustaining full tidal marsh ecosystem. The presence of a brackish marsh plant community immediately adjacent to Pond A4 indicates that once the pond is opened to tidal inundation, a brackish marsh community will likely develop within the pond.

This project will face many of the same issues as the larger, regional restoration. For example, the pond must be managed so as to maintain normalized salinity after Cargill ceases industrial operations and until the pond is restored. Pond A4 is subsided, which may require importing sediment to raise the pond bottom for expediting marsh development. The Bay Trail is aligned along the pond's southern levee, so recreational access is an important consideration in project design. Increased tidal prism may result in downstream erosion. Pond A4's close proximity to a heavily urbanized area underscores the need for flood protection to be incorporated into the project. Environmental enhancements are also possible at Pond A4, as well as integration with the District's upcoming Sunnyvale East and West Natural Flood Protection Projects.

The District has conducted detailed technical studies of Pond A4 to determine baseline conditions, culminating in an Opportunities and Constraints Report. Based on this work, the project is currently in the process of developing conceptual alternatives for meeting the 66-acre mitigation requirement at the Pond A4 site. The District is also considering an opportunity to relocate this project to the Island Ponds (A19, A20 and A21) owned by the U.S. Fish and Wildlife Service. Relocating the project may allow for better integration of Pond A4 into the regional South Bay Salt Pond Restoration Project, as well as providing U.S. Fish and Wildlife Service an opportunity for early restoration success at the Island Ponds.