CALFED BAY-DELTA PROGRAM

NORTH BAY
TECHNICAL TEAM MEETING REPORT

Prepared for

CALFED Bay-Delta Program
Ecosystem Roundtable

San Francisco Bay Joint Venture

North Bay Forum

4 April 1997

D-026884

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1. INTRODUCTION

The CALFED Bay-Delta Program was established in May 1995 as a cooperative effort among seven state and federal agencies with management and regulatory responsibilities in the Bay-Delta. The program is aimed at developing a long-term solution to problems affecting the San Francisco Bay/Sacramento-San Joaquin Delta estuary in Northern California, with a focus on ecosystem quality, water quality, water supply, and system reliability. The Ecosystem Roundtable was formed as an advisory stakeholder group to CALFED to provide guidance regarding implementation of ecosystem restoration projects in the next three-to-five years. CALFED is soliciting input from technical experts in a variety of disciplines and geographical areas to aid in identifying and prioritizing ecosystem problems and restoration actions.

The North Bay technical team was formed to provide input to CALFED on restoration actions in the North Bay area that would benefit priority species and habitats identified in the "Implementation Strategy to Identify Priorities for Bay-Delta Ecosystem Restoration." The technical team is one of five geographically defined teams that are providing input to CALFED for development of a workplan that will guide funding of near-term restoration actions.

1.1 CALFED Funding and Process Overview

Figure 1 presents an overview of the schedule for implementing CALFED projects. Available funding is sufficient to support a wide range of good projects. Most of the funding for the North Bay area will probably be directed to non-profit organizations such as local governments and special districts. Cost sharing with other funding organizations will be helpful in obtaining CALFED approval for a project. Available funding includes:

- $60 million Proposition 204 funds for near-term, non-flow related ecosystem restoration projects
- $10 million from the Metropolitan Water District
- $143 million in President Clinton's FY 1998 budget

Additional funds from other sources may become available as good projects are identified. The available funds will be used for near-term projects that can be implemented during the next three-to-five years.

CALFED has determined that each project must have a site specific monitoring plan. In addition, CALFED will implement an overall monitoring plan to identify which projects have positive impacts on the ecosystem and how similar projects can be improved in the future. Additional monitoring programs have been set up by the Central Valley Project Improvement Act (CVPIA) program and Interagency Ecological Program (IEP). A major effort will be made to consolidate all databases related to Central Valley salmon and also to have the monitoring results organized in one location.

In general, emphasis will be given to projects with specific restoration actions rather than to research and studies; however, in some cases there will be a need for studies to refine existing knowledge or bridge data gaps.

1.2 Technical Team Meeting

The North Bay Technical Team meeting was held at the California Maritime Academy in Vallejo on March 19th, 1997. The meeting was jointly sponsored by the following organizations:

- CALFED Bay-Delta Program
- San Francisco Bay Joint Venture
- North Bay Forum

A list of participants is included in Appendix A. A copy of the agenda and material provided to participants before the meeting is provided in Appendix B.

The meeting began with a review of meeting ground rules and organization, provided by Eugenia Laychak from the California Center for Public Dispute Resolution. Eugenia served as the meeting facilitator, and helped ensure that the meeting objectives were met and that a clear set of decisions were made.

The objective of the meeting was to bring together the best available technical knowledge to help restore the North Bay watershed and wetlands. The meeting focused on the area from the Petaluma, Sonoma, and Napa rivers eastward to Carquinez Strait, including all of the Northern San Pablo Bay wetlands and sloughs, and upland areas, if appropriate.

2. NORTH BAY HISTORICAL OVERVIEW

Paul Schaffer of the Resource Conservation District gave a broad historical overview of the agricultural transition of the Napa-Sonoma area over the last hundred years. A vineyard industry thrived in the area during the early part of this century, but steadily declined during prohibition. The vineyard industry is once again thriving. There has been a change in land management practices as the vineyards have increasingly moved from the valley floor up onto the hillsides. Vineyard managers now tend to mow between rows instead of discing in order to cut down on erosion. There is also a trend towards best management practices and the use of less fertilizer and pesticides.

Oat hay is planted in many lowland flat areas. It is typically planted in the fall and harvested in the spring. Some farmers use it as hay and others harvest it for grain. The farmers typically disk the land 3 to 4 times and use some fertilizers and herbicides. Use of riparian habitat and water in the Sonoma River is now very heavy. There are a lot more restrictions on water use from the Napa River.

Josh Collins of the San Francisco Estuary Institute gave a broad overview of North Bay changes from 1800 to the present. Much of the information on how the land has changed over time can be obtained through local expertise and from old photographs and paintings. Another source of information is USGS stream gages; however, the USGS is now closing down its stream gages around the North Bay. This is considered very unfortunate since there is still need to learn more and gain a fuller understanding about what is happening both in the wetlands and bathometrically.

From historical information, it can be seen that: 1) water movement patterns have changed substantially, 2) there are numerous sub-aqueous channels that connect the main perennial water channels, and 3) there is now a much greater extent of mud flats than historically existed. It is also evident that land that was once tidal marsh is now used for farms. Petaluma marsh is the largest section of marsh remaining in the area, but there has been a progressive pattern of marshland reduction due to oat hay farming and landfill. Mosquito abatement activities, including heavy use of pesticides, have also significantly affected marsh lands. There is a long history of digging ditches in the marsh areas to drain the land. Drainage and spraying have affected both shorebirds and migratory bird populations. Draining the marsh lands has also reduced the number and size of the vernal pools at the edge of the marsh lands.

Examination of cuts along some creeks shows that there has been approximately a 5-foot incision in the last 100 to 150 years. In other areas, the creeks have experienced extreme siltation. Some railroad line construction over marsh land channels is too restrictive and results in slowing natural flows. Channelizing to open up some channels must be done very carefully. For example, increasing flows in the lower end of a channel may result in increased flow rates in other areas, resulting in erosion and loss of riparian vegetation. One problem in the upper watershed is that all the small creeks connecting the three major rivers have numerous artificial impoundments.

3. SPECIES

The following species were considered priority species for the North Bay, as defined in the previously cited Implementation Strategy:

- San Joaquin River fall run chinook salmon
- Winter-run chinook salmon
- Spring-run chinook salmon
- Delta smelt
- Splittail
- Steelhead trout
- Green sturgeon
- Striped bass
- Migratory birds

The list does not specifically identify longfin smelt, but they are being treated like Delta smelt; improvements to the ecosystem that benefit delta smelt should also benefit longfin smelt. Similarly, shore birds have not been identified as target species, but they should benefit from improvements to wetlands and water quality. Striped bass and migratory birds are considered priority species, even though striped bass is not a native species and the migratory birds are only using the system in transit to other areas.

Other species and habitat types are important, and projects which provide multiple species benefits will be favored. Restoration of priority species and habitats is expected to significantly benefit other species and habitats of special concern.

4. ECOLOGICAL STRESSORS

The group discussed and listed all stressors and the particular habitats affected (Table 1). Habitats included in the discussion were tidal wetlands, seasonal wetlands, shaded riverine aquatic, and estuarine channels. The group defined the boundary between tidal wetlands and estuarine as the mean low water mark.

Flooding was considered a stressor due to the lack of transitional habitat for refuge in major flood events. Grazing was identified as a stressor because it impacts the estuarine habitat through its effect on adjacent vegetation. Marsh land flows affect fish species composition due to temperature, water quality and other factors.

After identifying the list of stressors and associated habitat, the group identified their relative importance. The criteria for prioritizing each stressor were:

- Technical importance to ecosystem recovery
- Impacts across all habitats
- Potential to create desirable future conditions
- Effect on ecosystem structure

The relative priority of each stressor was determined by the votes of the technical experts attending the meeting. The ranking values presented in Table 1 are a normalized distribution (on a scale from 0 - 100) of the votes assigned to each stressor.

The group identified similarities among stressors and noted that the following stressors could perhaps be combined:

- Diking and lack of tidal wetlands
- Exotic plants and animals
- Habitat fragmentation with lack of habitat diversity
- Channel modification and instream structures
- Sedimentation and erosion
- Salt water intrusion, delta outflow and water diversions (the stressor is, in a sense, lack of fresh water)

The problem of institutional stressors to recovery was also discussed at some length. Because of the high turnover rate in the resource management agencies there is very little mentoring and a lack of accountability.

5. RANKING OF RESTORATION PROJECTS AND PROGRAMS

After the stressors were prioritized, the group identified and ranked the types of actions that would be useful in reducing the impacts and restoring habitat (Table 2).

The highest priorities for projects were wetland restoration and some upland issues, such as agriculture and riparian issues.

6. CONCLUDING COMMENTS

The group did not have enough time to address fish issues thoroughly. It is known that a large steelhead run previously existed, but sufficient information is not available regarding the limiting factors on North Bay river steelhead populations. The problems could be attributed to over fishing, lack of gravel, fine sediments, lack of deep water pools, high temperatures, stranding of fry, or physical barriers.

In order to better understand the hydrology and sediment transport issues, funding needs to be allocated for some basic research and preliminary work such as modeling. There is also a need to address the concerns of local landowners for good levees, which may require setting aside funds for long-term, ecologically appropriate levee maintenance.

TABLE 1. STRESSORS AND HABITATS EVALUATION (✓ = some impact; -- = no impact)

Stressors	Habitats				Ranking[1]
	Tidal Wetlands	Seasonal Wetlands	Shaded Riverine Aquatic	Estuarine Channels	
Diking of wetlands	✓	✓	--	--	54
Pumping	✓	✓	✓	✓	0
Water diversion for irrigation	✓	✓	✓	✓	51
Draining	✓	✓	--	--	11
Exotic plants	✓	✓	✓	✓	23
Urbanization	✓	✓	✓	✓	46
Lack of transition vegetation	✓	✓	✓	✓	51
Channel modification, straightening	✓	✓	✓	✓	26
Hydrographic change, flushing flows	✓	✓	✓	✓	23
Exotic fauna	✓	✓	✓	✓	23
Grazing	✓	✓	✓	--	23
Instream structures, dams, culverts, trestles	✓	✓	✓	✓	26
Levee maintenance	✓	✓	✓	✓	3
Lack of tidal wetlands	✓	✓	--	✓	100
Dredging disposal	✓	✓	--	✓	3
Sedimentation aggregation	✓	--	✓	✓	34
Urban & ag. runoff and non-point pollution	✓	✓	✓	✓	6
Urban point source pollution, waste plants	✓	✓	✓	✓	3
Change in land use intensity, ag. use	✓	✓	✓	✓	54
Disposal of accumulated salts	✓	--	--	✓	51
Water quality from Carquinez Strait	✓	--	--	✓	37

[1] Normalized number of votes by the group, scaled from 1 - 100.

Stressors	Habitats				Ranking[1]
	Tidal Wetlands	Seasonal Wetlands	Shaded Riverine Aquatic	Estuarine Channels	
Lack of channel complexity	--	✓	✓	--	14
Lack of topographic complexity in marshes	✓	✓			17
Bank erosion from boats, wind, mass slides	✓	✓	✓	✓	29
Fish and animal harvest	--	--	--	--	0
High water temperatures	--	--	✓	✓	0
Lack of riparian cover		✓	✓	✓	54
Contaminated sediments, Mare Is., Napa	✓	--	--	✓	6
Mosquito abatement	✓	✓	--	--	11
Management of marsh flows by structures	✓	✓	--	--	17
Flood control facilities and practices	✓	✓	✓	✓	23
Subsidence	✓	✓	--	--	11
Groundwater drawdown	--	✓	✓	--	9
Saltwater intrusion	✓	✓	✓	✓	6
Barriers to fish and animal movement	✓	✓	✓	✓	23
Low dissolved oxygen and high temperature			✓	✓	0
Increased public access	✓	✓	✓	✓	11
Watercraft discharge near shore and exotics	✓	--	--	✓	0
Point source pollution at Mare Island	✓	✓	✓	✓	11
Hatchery practices, genetics issues	--	--	--	--	0
Habitat fragmentation					60
Habitat diversity maintenance					20
Institutional stressors, mentoring, lack of accountability, high staff turnover					23

TABLE 2. NORTH BAY PRIORITY STRESSORS AND ACTIONS

Projects and Programs	Actions
HIGH PRIORITY	
Lack of Tidal Wetland and Diked Former Wetlands	Acquire land on Napa and Petaluma rivers from willing private land owners.
	Restore other land.
	Refer to habitat goals ~~and program set by CDFG & USFWS~~ project.
	Develop plans to buy specific properties that are targets for development before they become unavailable.
	Support CALFED goals and process. Pilot studies can be included in the action list.
	Increase size of drains to the marsh lands along highway 37 to improve drainage.
Change in Agricultural Land Use Intensity	Support local efforts for sustainable agriculture.
	Match funding for private landowner actions (for example, "Partners for Wildlife").
	Establish buffer areas.
	Demonstration farm sites.
	Identify lands that have a high potential for mass landslide potential and take early action to prevent erosion.
	Establish setback levees.
	Acquire floodplain easements.
Lack of Riparian Cover	See actions listed above under change in agricultural land use intensity.
	Assist RCDs to do outreach to land owners for riparian fencing and range land management training.
	Fund vegetation and maintenance in riparian urban corridors.
	Develop setbacks for every acquisition.
	Support vineyard disease research on Pierces disease in a riparian friendly way.
	Study the extent of the Napa riparian zone.

Projects and Programs	Actions
MEDIUM PRIORITY	
Water Diversions	Support switch from use of potable water to reclaimed water in parks and golf courses.
	Consider water acquisition in Central Valley.
	Support water conservation education.
	Help Sonoma hospital change over to reclaimed water since it is a major local river water user.
	Develop a water budget for low water years.
	Fund programs to keep the USGS stream gages.
	Support local water conservation organizations and water management plans.
Sediments and Aggregations	See action list above for riparian cover.
	Support local stewardship groups.
	Support local education on erosion control.
	Support local land owner education efforts.
	Conduct studies on erosion containment transport and flow dynamics.
	Develop models for sediment sources.
	Assess and monitor sediment sources and impacts.
	Strengthen enforcement of best management practices on land development and public and private roads.
	Fund storm water erosion enforcement.
	Facilitate public outreach and discussion with regulators, regulatees, and resource specialists.
Disposal of Accumulated Salts	Determine alternative methods for discharging salts back into bay from salt ponds.
	Convert land (approximately 7,000 acres) to tidal wetlands.
	Develop physical infrastructure to remove salt (if necessary).

Projects and Programs	Actions
Urbanization	Acquire wetlands so that there is no more building on them.
	Help city councils to limit growth in critical habitats.
	Identify way to preserve land with less than fee acquisition.
	Present riparian core areas as amenities and educate developers to their value.
	Educate local government on how to prevent development in critical areas.
	Plug into the local master planning process.
	Model planned buildout based on master planning at UC Berkeley Urban Planning Institute.
	Acquire buffer zones.
	Public education on Best Management Practices (BMP) approach to development.
Bank Erosion	See above list on sediments and aggregations.
	Educate public and enforce boat speed in critical areas.
	Apply biotechnology techniques.
Exotic Plants and Animals	Fund control programs.
	Conduct research to determine effects, distribution, and best control methods.
	Fund pilot exotic species eradication programs.
	Community education and manuals to help homeowners to identify and remove exotic species.
	Develop strategy for red fox.
	Conduct public education and enforcement on introduction of exotic fish and plants to the aquatic habitat.
Agricultural Chemicals	Create scientifically designed sampling program based on a scaled down RMP program. (The money is probably better spent on other efforts. If agricultural chemicals are still going into the system, buying wetlands will not improve the system. Chemicals are not especially bad compared to the San Joaquin, as indicated by cursory monitoring programs. What comes down the Carquinez Strait is what is going onto the existing wetlands.)

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Projects and Programs	Actions
LOW PRIORITY	
Barriers to Species of Special Concern	Plan for the removal of barriers on diked bay lands which block movement of smelt.
	Make a plan for the removal of barriers for steelhead passage. (RCD already has documents for this kind of project.)
	Put balls on power lines to alert birds.
	Erect wildlife passage areas on highways.
	Address problems with unscreened diversions, especially on the Napa River.
	Restore vegetation and complexity to the riparian systems to help cool the water and provide protection for steelhead.

Appendix A

Attendee List