



Funding San Francisco Bay Joint Venture Habitat Goals

SAVE THE BAY

Regional and Subregional Costs of Goals Implementation

A high level of funding for wetland and riparian projects will be essential to the success of the San Francisco Bay Joint Venture. Securing public and private funding to implement the SFBJV management strategies remains the shared responsibility of Joint Venture's partners, including Federal and State governments and private conservation organizations. Additional funding should be obtained through corporations and individuals who appreciate or benefit from the region's wetlands and can embrace the importance of revitalizing them, together with their wildlife populations.

Means of Funding the Goals. Many steady and large funding sources must be harnessed for accomplishing the Joint Venture's habitat goals. The North American Wetlands Conservation Act (NAWCA) will continue to be a major source of funding for SFBJV projects, as it is for other joint ventures. Other potential sources of federal funding include the Land and Water Conservation Fund, the Estuary Habitat Restoration Partnership Act, the Conservation and Reinvestment Act, and National Fish and Wildlife Foundation grants. In addition to past sources of state funding such as Wildlife Conservation Board and Coastal Conservancy grants, statewide park and

water bonds can provide substantial sources of funding. Entirely new fee or tax-based resources that can be linked with Clean Water Act implementation are also needed. These include vehicle license fees dedicated to water quality/wetland projects as proposed in new legislation, "Transportation Fund for Clean Water." Another option is to develop an "estuary wetlands restoration program" using the EPA State Revolving Funds (SRF) in coordination with the Bay Area Stormwater Management Association as a means to finance habitat projects. (Repayment of SRF loans could be secured through stormwater, or other utility fees, and/or park or water bonds.)



Clapper rail

US FISH AND WILDLIFE SERVICE

SFBJV conservation partners such as the National Audubon Society, Bay Institute, Save the Bay, Ducks Unlimited, Sierra Club, Point Reyes Bird Observatory, and Urban Creeks Council should promote increased funding for projects that address the goals and objectives of the SFBJV. They are encouraged to use this Implementation Strategy to justify a suite of systematic implementation funding programs to support the fulfillment of the San Francisco Bay Joint Venture Habitat Goals.

Cost Summary of SFBJV Goals. A cumulative cost summary is described below. **Table 7-1** shows the

summary goals for the Bay Area divided into specific cost objectives for each of the five subregions of the SFBJV. However, it should not be seen as a rigid economic analysis but basic preliminary cost estimates provided to assist Joint Venture partners in grasping the financial commitment needed to reach the goals. No attempt was made to adjust for inflation costs over the 20-year goals' horizon. However, just as some costs will increase due to inflation and other unforeseen factors, other costs can also be reduced through economies of scale for large restoration projects.

The total cost of accomplishing the habitat

Table 7-1
San Francisco Bay Joint Venture Wetland Habitat Costs by Subregion

Subregions	Bay Habitats (millions)		Seasonal Wetlands (millions)		Creeks and Lakes (millions)		Total by Subregion (millions)	
	20 yrs	Annually	20 yrs	Annually	20 yrs	Annually	20 yrs	Annually
Suisun Subregion								
Acquire	15	0.75	55	2.75	—	—	70	3.5
Restore	10	0.5	9	0.45	40	2.0	59.0	2.95
Enhance	2	0.1	6	0.3	80	4.0	88	4.4
North Bay Subregion								
Acquire	115	5.75	90	4.5	—	—	205	10.25
Restore	75	3.75	36	1.8	20	1.0	131.0	6.55
Enhance	13	0.65	12	0.6	40	2.0	65	3.25
Central Bay Subregion								
Acquire	45	2.25	5	0.25	—	—	50	2.5
Restore	20	1.0	0	0	52.5	2.635	72.5	3.625
Enhance	4	0.2	1	0.05	157.5	7.875	162.5	8.125
South Bay Subregion								
Acquire	140 ¹	7.0	35	1.75	—	—	175	8.75
Restore	80	4.0	9	0.45	92	4.6	181.0	9.05
Enhance	42 ¹	2.1	4	0.2	253	12.65	299	14.95
San Francisco/San Mateo Coast²								
Acquire	TBD	—	TBD	—	—	—	TBD	—
Restore	TBD	—	TBD	—	60	3.0	60	3.0
Enhance	TBD	—	TBD	—	50	2.5	50	2.5
Total Costs by Type								
	561.0	28.05	262	13.1	845	42.25	1,668	83.40
Monitoring = Extra 3 percent								
	577.83	28.89	269.86	13.49	870.35	43.52	1,718.04	85.9

Source: SFBJV (1999)

Notes: 1. 25,000 acres of salt ponds are included in both acquisition and enhancement; as with other acquisitions, this assumes a willing seller. 2. The San Francisco/San Mateo wetland acreages appear as TBD or "To Be Determined," since they have not been estimated. This subregion was not part of the Goals Project.

Table 7-2
Average Cost Rates for the San Francisco Bay Joint Venture Implementation Strategy

	Bay Habitats	Seasonal Wetlands	Creeks and Lakes
Suisun Subregion			
Acquire	\$5,000 per acre	\$5,000 per acre	ND ²
Restore	\$5,000 per acre	\$900,000 per 100 acres	\$40,000 per acre
Enhance	\$1,000 per acre	\$1,000 per acre	\$20,000 per acre
North Bay Subregion			
Acquire	\$5,000 per acre	\$5,000 per acre	ND ²
Restore	\$5,000 per acre	\$900,000 per 100 acres	\$20,000 per acre
Enhance	\$1,000 per acre	\$1,000 per acre	\$10,000 per acre
Central Bay Subregion			
Acquire	\$5,000 per acre	\$5,000 per acre	ND ²
Restore	\$5,000 per acre	\$900,000 per 100 acres	\$52,500 per acre
Enhance	\$1,000 per acre	\$1,000 per acre	\$26,000 per acre
South Bay Subregion			
Acquire	\$5,000 per acre	\$5,000 per acre	ND ²
Restore	\$5,000 per acre	\$900,000 per 100 acres	\$46,000 per acre
Enhance	\$1,000 per acre	\$1,000 per acre	\$23,000 per acre
San Francisco/San Mateo Coast¹			
Acquire	TBD	TBD	ND ²
Restore	TBD	TBD	\$20,000 per acre
Enhance	TBD	TBD	\$10,000 per acre

Source: SFBJV (1999)

Notes: 1. The San Francisco/San Mateo wetland acreages appear as TBD or “To Be Determined,” since they have not been estimated. This subregion was not part of the Goals Project. **2.** ND = Not Determined. Costs for riparian acquisition are too variable; it was also assumed for the sake of practicality that protection strategies focus on conservation easements for riparian buffers, which can be procured without cost in some instances.

goals contained in the Implementation Strategy is roughly \$1,668,000,000 or \$83,400,000 per year for 20 years. The total cost estimate rises to \$3.8 billion if a less conservative wetlands restoration cost average of \$20,000 per acre is used.

played in **Table 7-2**. These computations reflect a conservative estimate for construction costs, and were reviewed by resource managers and scientists with extensive experience in restoration and enhancement.

Assumptions and Average Unit Costs

Estimating and compiling the cost of an Implementation Plan intended to last at least 20 years is not a simple calculation, and it is important to note the many assumptions that were made while estimating the costs of the SFBJV Implementation Strategy. The average rates for unit costs of acquisition, restoration, and enhancement projects for each of the three habitat categories within each subregion are dis-



Salt marsh harvest mouse

TOM TUTT



With knowledgeable guidance, volunteers can reduce costs and increase “community ownership” of creek projects.

JOHN STEERE

Acquisition. Land acquisition costs vary greatly in the Bay Area, with an average range of \$1,000 to \$15,000 per acre in 1999. For the purposes of this document, an average rate of \$5,000 per acre was used for the acquisition of both bay habitats and seasonal wetlands. This estimate is merely a calculation tool, recognizing that actual land costs will vary from project to project and from year to year. This rate remains constant regardless of a parcel’s location within the Bay, its current level of development, and fluctuations of land value from one reach of the Bay to another. This estimate does not account for conservation easements, where only the development rights of a property are purchased, usually creating a far less expensive alternative to outright acquisition. Acquisition costs for creek and lake habitats were not calculated, given the practical consideration that creek corridors rarely correspond to parcels, but generally bisect or border larger parcels.

Restoration. Restoration costs can vary widely, and are largely determined by the target wetland type to be restored. The simplest restorations can cost as little as \$2,750 an acre, while more complex restorations can cost tens of thousands of dollars per acre.

For the purposes of this document, we chose to use a conservative average of \$5,000 per acre for region-wide tidal wetlands restoration costs. This rate incorporates a conservative level of permitting, planning, and engineering costs. However, this estimate does not account for variations caused by sediment removal and regrading. If these factors are considered, a more typical average would be \$20,000 per acre.

The estimated cost for seasonal wetland restoration is \$900,000 per 100 acres. It is important to note that this figure represents large-scale restoration. A simple reduction to cost per acre would not account for the effects of economies of scale. This figure includes such services as excavation, revegetation, permitting, planning, and engineering.

The estimated cost of creek and lake habitat restoration is fairly complex, and ranges from \$20,000 per acre to \$52,500 per acre. The primary consideration was the habitat’s location within the Joint Venture’s geographic scope. A project’s location describes an approximate level of development, which in turn, specifies the possible project width. Two riparian corridor widths were used: 1) 40 meters for all riparian zones in rural and suburban areas (see page 24 in Chapter 3 for discussion of how this average was determined); and 2) 50 feet for



Workers remove *Arundo donax*. This giant cane is particularly invasive and can overtake riparian zones.

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urban riparian corridors. The wider corridor was assumed for all of the North Bay and Suisun subregions and for one-half of the South Bay and San Francisco/San Mateo subregions. The 50-foot corridor was used for the other half of the South Bay and San Francisco/San Mateo subregions and all of the highly urbanized Central Bay subregion.

Enhancement. The cost for enhancement of Bay habitat and seasonal wetlands is estimated to be \$1,000 per acre. This rate remains constant regardless of location within the Estuary, and includes such individual costs as revegetation, exotics removal, limited irrigation, and moderate management.

The process of calculating enhancement costs for creek habitat is comparable to that for restoration estimates in its complexity. The same considerations of location, levels of development, and riparian corridor are accounted for in the estimated averages for enhancement. Creek enhancement is assumed to include such services as native revegetation and exotics removal, maintenance of existing channel meanders, bank stabilization, and erosion control. Factors that can add to the general cost of a project, such as earth moving, extensive irrigation, and long-term management are not included.

Monitoring. While long-term monitoring is an essential component of any restoration or enhancement project, it was not factored into the projections shown in Table 7-1. Monitoring varies individually from project to project, making it difficult to estimate the total cost for an effort like the San Francisco Bay Joint Venture. One method of approximating long-term monitoring costs uses a cost per acre per a number of years (e.g., \$550 per acre for five years). Another common method is to create a long-term “monitoring endowment” from an equivalent of three percent of the construction costs. If the three percent rule were applied to the estimates in Table 7-1, the total cost for the Implementation Strategy

would rise by \$50 million to approximately \$1,718,000,000.

Roles of Partners in Implementation

If the San Francisco Bay Joint Venture is to be successful in meeting its habitat goals, the roles and responsibilities must be shared by its partners. With this intent member agencies and organizations of the Joint Venture have committed to participate actively in fulfilling the acreage goals set forth in the Implementation Strategy.

Each partner’s projected roles toward realizing the habitat acreage goals are shown in **Table 7-3**. The list of organizations does not recognize the many individuals and organizations that contributed to the development of this plan, nor the many entities who will help to implement specific projects, as it is limited to the members of the Joint Venture Management Board. See the first section of Chapter 4 for a listing of specific organizations and agencies that will be involved in public and private lands programs by subregion, i.e., for purchase of fee title (public lands) and/or conservation easements (private lands).



Monitoring birds at Remillard Pond

Table 7-3
Agency and Organization Involvement in SFBJV Goals Implementation

San Francisco Bay Joint Venture Partner	Funding		Project Implementation ¹		Outreach and/or Advocacy ³	Education ³	Monitoring and Evaluation ⁴
	Acquisition ²	Restoration/ Enhancement	Acquisition ²	Restoration/ Enhancement			
Federal (F) and State/Regional (S/R) Agencies							
Bay Conservation and Development Commission	X	X					
California Coastal Conservancy (S)	X	X	X	X			X
California Department of Fish and Game (S)	X	X	X	X		X	X
Coastal Region, Mosquito and Vector Control District (R)		X	X	X			X
National Fish and Wildlife Foundation (F)	X	X					
National Marine Fisheries Service (F)		X		X			X
Natural Resource Conservation Service (F)		X		X		X	X
Regional Water Quality Control Boards, SF Bay (S)				X			X
Resource Conservation Districts (R)		X		X		X	X
SF Estuary Project (R)				X		X	X
U.S. Army Corps (F)	X	X	X	X			
U.S. Environmental Protection Agency (F)	X	X		X		X	X
U.S. Fish & Wildlife Service (F)	X	X	X	X		X	X
Wildlife Conservation Board (S)	X	X	X				
Nongovernmental Organizations (includes affiliates of organizations)							
Bay Area Open Space Council					X		
Bay Planning Coalition	X	X	X	X	X		X
Citizens Committee to Complete the Refuge					X	X	
Ducks Unlimited, Inc.		X	X	X	X	X	X
National Audubon Society/Bay Area Audubon Council	X	X	X	X	X	X	X
Point Reyes Bird Observatory			X	X	X	X	X
Save the Bay				X	X	X	
Sierra Club					X	X	
The Bay Institute			X	X	X	X	X
The Conservation Fund			X		X		
Urban Creeks Council				X	X	X	
Private Industry	X	X	X	X	X		X

Source: SFBJV (1999)

Notes: **1.** Refers to staff time and other in-kind technical support for implementation. **2.** Includes both public lands and private lands programs—for acquiring fee title and for conservation easements. **3.** Both governmental and nonprofit organizations may conduct outreach, which includes education, communication of goals, enlistment of additional partners, and the solicitation of funding sources. Governmental entities that do “outreach” are listed in the “education column of the table. **4.** Activities designed to track success of restoration/enhancement projects (see Chapter 5).