

Attachment H

COVER SHEET (PAGE 1 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Proposal Title: Petaluma Marsh Expansion Project - Marin County
 Applicant Name: Marin Audubon Society
 Mailing Address: 48 Ardmore Road, Larkspur, CA 94939
 Telephone: (415)924-6057
 Fax: (415)924-6057

Amount of funding requested: \$ 352,135 for 2 years

Indicate the Topic for which you are applying (check only one box). Note that this is an important decision: see page __ of the Proposal Solicitation Package for more information.

- Fish Passage Assessment
- Floodplain and Habitat Restoration
- Fish Harvest
- Watershed Planning/Implementation
- Fish Screen Evaluations - Alternatives and Biological Priorities
- Fish Passage Improvements
- Gravel Restoration
- Species Life History Studies
- Education

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Delta
- Suisun Marsh and Bay
- San Joaquin River Mainstem
- Landscape (entire Bay-Delta watershed)
- Sacramento Tributary: _____
- East Side Delta Tributary: _____
- San Joaquin Tributary: _____
- Other: _____
- North Bay: Petaluma Marsh

Indicate the primary species which the proposal addresses (check no more than two boxes):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Indicate the type of applicant (check only one box):

- State agency
- Public/Non-profit joint venture
- Local government/district
- University
- Federal agency
- Non-profit
- Private party
- Other: _____

Indicate the type of project (check only one box):

- Planning
- Monitoring
- Research
- Implementation
- Education

By signing below, the applicant declares the following:

- (1) the truthfulness of all representations in their proposal;
- (2) the individual signing the form is entitled to submit the application on behalf of the applicant (if applicant is an entity or organization); and
- (3) the person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section II.K) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

(Signature of Applicant)

President

Marin Audubon Society

I.

a. Project Title: PETALUMA MARSH EXPANSION PROJECT - MARIN COUNTY

b. Applicant:

Marin Audubon Society (MAS)
c/o Barbara Salzman
48 Ardmere Rd.
Larkspur, CA 94939
(415) 924-6057
Fax (415) 927-3533

Contact Persons: MAS - Barbara Salzman, address, phone same as above

c. Type of Organization: The Marin Audubon Society is a non-profit, tax exempt 501 (c)(3) organization

d. MAS Tax ID Number: 94-6076664

e. Collaborators:

CA Department of Fish and Game (DFG), Redwood Landfill Inc., USA Waste, US Fish and Wildlife Service (USFWS), State Coastal Conservancy, California Department of Transportation (Caltrans), San Francisco Bay Joint Venture, Marin County Board of Supervisors, Marin County Open Space District

Supporting organizations: Sierra Club Marin Group, Environmental Forum of Marin, Marin Baylands Advocates, Trout Unlimited, Sonoma County Resource Conservation District

II. Executive Summary

a. Project Title: Petaluma Marsh Expansion Project - Marin County

Applicants: Marin Audubon Society (MAS)

b. Project Description and Primary Biological/Ecological Objectives

The project will acquire 181.46-acres of baylands west of the Petaluma River at the Marin-Sonoma border, restore 109.72 acres of diked marsh on the site to tidal marsh, and permanently protect the entire site in the ownership of the California Department of Fish and Game. 71.74 acres are already tidal marsh. The Marin Audubon Society will develop the restoration plan, acquire the site, implement the restoration plan, and then donate it to Department of Fish and Game. \$352,135 is requested for this proposal.

The primary ecological objective is to restore and permanently protect tidal marsh as part the 2,000 acre Petaluma Marsh, the largest undiked tidal marsh remaining in the Bay. The project will directly benefit Chinook salmon, Steelhead Trout, Longfin Smelt, Splittail, Green and White Sturgeon, and various special status species including the Black Rail, California Clapper Rail, Salt Marsh Yellowthroat, San Pablo Song Sparrow, and migratory shorebirds and waterfowl. Removing the levee also will restore the currently fragmented floodplain habitat and channel meanders. The project will provide increased and enriched foraging opportunities for fish and birds on-site and downstream, and will benefit the Petaluma River watershed.

c. Approach/Tasks/Schedule

The project uses a collaborative partnership approach between state and federal agencies, a non-profit organization, and private industry, to reduce costs and facilitate the project. The present owner of the site, Redwood Landfill Inc. is willing to sell the 181 acres for the purpose of restoration and permanent protection.

The project design will be developed by PWA, consultants in hydrology. The principal on the project, Dr. Jeffrey Haltiner, has had extensive experience restoring marshes throughout the Bay and elsewhere in California. Biologists from the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and other wildlife agencies will also participate in development of the plan. The Marin Audubon Society will manage the project and the State Coastal Conservancy will accept the funds from Caltrans and oversee the project.

The tidal marsh restoration will be accomplished by removing the levee that was placed around the 109.72 acres in the 1960's. Reintroducing tidal waters will allow the site to restore to tidal marsh naturally. Tidal waters will enter the site and drop sediments which will raise the elevations sufficiently for marsh plain to restore itself. Sediment rates in this area are very high, and marsh vegetation will colonize naturally as sediments containing native plant seeds are deposited. Historic channel meanders will also reform naturally. Tidal marsh ponds will be restored and seasonal wetlands created. The plan will provide for protection of the existing railroad tracks.

The restoration plan will be completed by September 1998; acquisition will be accomplished by January 1999, and completion of construction by November 1999, after which the site will be donated to the Department of Fish and Game. Applications for regulatory agency permits have been made by Caltrans.

d. Justification for Project and Funding by CALFED

This project will address the high priority stressor: the lack of tidal wetlands. Over 82% of the historic tidal wetlands in the Bay-Delta have been lost to diking or filling.

The project will contribute to the CALFED vision of restoring large areas of wetlands to assist in the recovery of special status fish populations and to

provide high quality aquatic habitat for other fish and wildlife that are dependent on the Bay-Delta. This is an opportunity that must be acted upon promptly or it could be lost. Should the landfill be sold or the management change, there could be renewed attempts to expand the landfill onto the site. Restoring and permanently protecting these resources is essential for the preservation and enhancement of the Bay and Delta system.

e. Budget Costs and Third Party Impacts

The total budget for the project is \$736,000. The California Department of Transportation (Caltrans) will provide \$486,635, for half of the design planning, acquisition, restoration as mitigation for an earthquake retrofit project on the Sonoma Creek bridge. MAS will seek the other half. In addition, Caltrans is also funding a hazardous material and cultural resources survey, appraisal and post-project monitoring. The Marin Audubon Society has obtained grants of \$25,000 from the U.S. Fish and Wildlife Service and \$1,000 from the State Coastal Conservancy. Marin Audubon will contribute \$22,000 of its own funds as well as administrative services and is seeking funding in the amount of \$352,135 from Calfed for the portion of the project not funded by Caltrans and other entities. The property owner is contributing aerial photographs and an appraisal. Funds are also being sought from other sources including the Marin Community Foundation and Wildlife Conservation Board.

The project will benefit the Department of Fish and Game's 2,000-acre Petaluma Marsh Wildlife Area and eliminate the potential for conflicting uses adjacent to the landfill and the marsh. The project design will ensure protection of the railroad line west of the site. There will be no adverse impacts to other adjacent property owners.

f. Applicant Qualifications

The Marin Audubon Society, under the direction of Barbara Salzman, has successfully completed four major marsh restoration/enhancement projects involving removal of fill and restoration of tidal marshes, as well as other smaller enhancement projects. A fifth enhancement project at an approximately 300 acre marsh in northern Marin County is expected to be completed this summer. The Marin Audubon Society has implemented these projects using grants and funding from many sources including the State Coastal Conservancy, Marin Community Foundation, and Administrative Civil Liability in-lieu of fine monies administered by the Regional Water Quality control Board.

g. Monitoring and Data Evaluation

A five-year Monitoring Program will measure at least the following: fish and bird use, sedimentation, channel formation, recolonization of vegetation.

h. Local Support/Coordination with other Programs/Compatibility with CALFED Objectives

Protection and restoration of the site is a high priority for the Marin County Board of Supervisors and the Marin County Open Space District. Many environmental organizations and agencies support the restoration and permanent protection of the site, as does the property owner. The project is also supported by the Sonoma Resource Conservation District which is developing a Watershed Plan for the Petaluma River and is supported by the San Francisco Estuary Project's Comprehensive Conservation and Management Plan.

The project complies with all applicable plans for the area. The Marin Countywide Plan contains policies supporting the protection and restoration of wetlands, migratory and special status species, and enhancing biodiversity. The solid waste plan does not show this site as part of the landfill.

The project will advance the CALFED objectives of restoring saline emergent tidal wetlands and seasonal wetlands for the support of fish and other wildlife species of concern.

IV. Project Description**a. Description and Approach**

The project will expand the California Department of Fish and Game owned Petaluma Marsh Complex by acquiring 181.46 acres of tidal and diked bayland, restoring 109.72 acres of the diked bayland to tidal marsh, and expanding habitat for endangered species. The site will be acquired by the Marin Audubon Society which will implement the marsh restoration plan and then donate the site to the California Department of Fish and Game for management as part of the Petaluma Marsh Complex. The project consists of three phases: Phase 1: Acquisition, design of the restoration project and environmental review; Phase 2: Implementation of the restoration, and Phase 3: Monitoring.

The project is utilizing a collaborative approach among state and federal agencies, private industry and non-profit organizations that recognize the critical need to address habitat loss by permanently protecting and restoring this site. This partnership approach is an excellent model to accomplish habitat restorations because it conserves government resources and reduces costs. Half of the restoration will be funded by the California Department of Transportation (Caltrans) as mitigation for retrofitting the bridge over Sonoma Creek for earthquake safety. The State Coastal Conservancy, U.S. Fish and Wildlife Service and the Marin Audubon Society have contributed funds, the Coastal Conservancy has contributed technical expertise and coordination. Funding is also being sought from the Marin County Open Space District and the Marin Community Foundation. Marin Audubon Society will manage the project.

The project is also part of a larger program by Marin environmental organizations, and federal and state agencies to protect, restore or enhance where possible, diked baylands in Marin County.

b. Proposed Scope of Work

Phase 1: Acquisition, Development of the Restoration Plan, Environmental Review. The Marin Audubon Society and the State Coastal Conservancy are negotiating price and terms for the acquisition of the property. The plan for the project design will be completed by August 1998. Because there is a willing seller, project design and permitting can proceed while acquisition negotiations are underway. Acquisition costs are anticipated to be approximately \$510,000 based upon a recent appraisal. Acquisition will be completed by January 1999. The preliminary design for the marsh restoration will be completed by August 31, 1998 to meet Caltrans NEPA deadline.

The scope of work for preparation of the marsh restoration plan includes:

- Historical and existing site condition: Existing maps and aerial photos, supplemented by ground surveys as needed, will be gathered. These data will be used to develop a base map of existing site conditions and the draft and final project design. This task will be completed by September 1998.
- Opportunities and constraints analysis: Existing and historic conditions will be identified and habitat goals define. Sedimentation estimates and assessment of feasibility of developing tidal ponds and pannes will be developed based on analysis of the site grades and sediment data from the area.
- Conceptual design and draft design drawings: Anticipated sedimentation rates will be calculated to help estimate the elapsed time between construction and establishment of a mature marsh.
- Final construction drawings necessary to obtain permits and construct the project.

The preliminary project design will include the following components:

- 1) Lowering of the outboard levee to restore historic marshplain: The outboard levee will be excavated to the elevation of the existing marsh plain to allow maximum uniform tidal flow from San Antonio Creek. Experience at other marsh restoration sites indicates that given a nearby seed source for native wetland plants, as exists here, wetland plants will colonize naturally within one to five years. Sediment rates in this area are high which will promote the deposition of seeds.
- 2) Channel Excavation: Channels will be excavated through the outboard levee at the location of historic sloughs to allow tidal inundation which will facilitate natural restoration of historic slough patterns.
- 3) Recreation of historic marsh ponds and seasonal wetlands: The project will demonstrate methods to restore tidal ponds, historic features that once existed in many marshes throughout the Bay but now only remain in the adjacent Petaluma Marsh. These shallow ponds will also replace seasonal wetlands currently on the site. No other project has attempted to recreate these unique features. The ponds will be restored at historic locations as shown on old aerial photos. Seasonal wetlands will be included in the design.

A unique feature of the site is an artisan spring that will be preserved as part of the project design. On a July 22, 1997, site visit over 100 sandpipers were observed feeding in this small fresh water area which also supported a sizable brine fly population.

- 4) Protection of Railroad levee: The project design will ensure the adjacent railroad tracks will be protected. The characteristics of the protective embankment will be defined by the engineering study.
- 5) Seeds of native plants will be scattered on bare upland areas. Where possible the plan will include restoration of the historic tidal marsh-upland interface.

Phase 2: Implementation of Restoration Plan: The plan to restore 109 acres to tidal marsh will be implemented by the Marin Audubon Society by November 1999. A construction firm experienced with marsh restoration projects will be hired by MAS. Project engineers will be responsible for pre-construction staking, construction supervision, and post-construction surveys.

All tasks must be completed in order for the project to be successfully implemented. As mentioned above, funds have been obtained from Caltrans, the Coastal Conservancy, MAS and the USFWS. Funds are being sought from sources other than Calfed for many of the tasks. So far, other potential funding sources include the Marin County Open Space District, Marin Community Foundation, and the Wildlife Conservation Board/Department of Fish and Game.

Phase 3: Monitoring: Monitoring will be undertaken for at least five years.

c. Location and Geographic Boundaries

The site is on the northern boundary of Marin County. It is located within the Petaluma River watershed, west of the river along San Antonio Creek. The western boundary of the site borders the railroad line and a dairy ranch owned by the Corda family. To the east is San Antonio Creek, a tributary of the Petaluma River, and the 2,000-acre Petaluma Marsh. San Antonio Creek and a dairy ranch also form the northern border. Redwood Landfill, Marin County's major landfill, is south.

d. Expected Benefits

Mission: The project will make a significant contribution to the attainment of the CALFED mission of restoring ecological health...for beneficial uses. It will contribute to the recovery of special status fish populations and to

provide high quality aquatic habitat for endangered, special status and other fish and wildlife species dependent on the Bay-Delta.

Stressors: The primary stressors the project will address is isolation of marshplain and loss of tidal emergent wetlands through levee construction. To address these stressors, the project will restore over 100 acres of saline emergent wetland habitat (tidal), a priority habitat type. The historic marshplain will be reconnected with the tidal waters of San Antonio Creek and the hydrologic functions that were lost when the 100 acres were diked in the 1960's will be restored. The project also will eliminate habitat fragmentation, restore historic tidal channels and marshplain. Other expected benefits of removing the levee and other project objectives will be the natural reformation of historic channel meanders. Channels will increase the complexity of the Petaluma Marsh, provide shallow water habitats improving refuge and foraging for fish and wildlife, as well as connections with adjacent habitats.

Priority Species: The project will benefit first tier species: Winter and Spring-run Chinook Salmon, Steelhead Trout, and Green Sturgeon. Secondary species that would benefit include migratory birds, Striped Bass, and American Shad. The restoration also will benefit endangered and other special status species.

Fish Benefits: The project will expand and protect habitat for three first tier fish species of concern. Restoration will expand feeding and resting habitat for outmigrating Spring Run Chinook Salmon. All salmon runs use the marshes along the lower Petaluma River and San Antonio Creek to forage, rest and hide from predators during their movement to the ocean. Having a larger area of marsh available as a nursery will enable young fish to increase in size and will enhance their survival.

The restored marsh will also expand nursery habitat for outmigrating Steelhead fry. Foraging and resting habitat, spawning grounds in upstream tributaries on the Petaluma River would also be enhanced. The Petaluma River is historic spawning habitat for Splittail, and spawning has occurred in the upper part of the River in recent years. Green Sturgeon also use the lower Petaluma River marshes. These bottom feeders will forage in the channels of the restored marsh.

Second tier species that would benefit include Splittail, Longfin Smelt, White Sturgeon, and the non-native Striped Bass. Expanding brackish tidal marshes will increase tules and rushes, which are spawning habitat as well as foraging habitat for Splittail. Longfin Smelt will have open shallow water habitat in restored sloughs.

Migratory Birds: Restoration of the site to its historic tidal condition will allow populations of migratory waterfowl and shorebirds to expand. Foraging habitat for waterfowl and shorebirds in sloughs and tidal ponds will improve because there will be expanded fish and invertebrate populations with the increased intertidal habitat and nutrients.

Migratory waterfowl such as Northern Pintail, American Widgeon, Gadwall and Mallard, will benefit. Migratory diving ducks including Canvasback and Scaup, will also feed and rest in the restored sloughs. Habitat for resting and foraging migratory shorebirds, such as Willet, will expand in the tidal marsh, and other shorebirds such as Dunlin, Dowitcher and Long-billed Curlew will flourish in the intertidal mudflat, tidal pond and seasonal wetland habitats.

Special Status Species: Many special status species will benefit from this project: the state-listed threatened and federally listed species of concern, Black Rail, Salt Marsh Yellowthroat and San Pablo Song Sparrow. The adjacent Petaluma Marsh is an important habitat for many of these species. Population estimates for Black Rails in the Petaluma Marsh are as high as 7,438 individuals (Evens, Page, Stenzel, Warnock, 1986) and estimates of San Pablo Song Sparrow (SF Bay Bird Observatory, 1986) are 27 breeding pair. This project would expand habitat for these species thereby enabling the

populations to increase.

The endangered California Clapper Rail and Salt Marsh Harvest Mouse also inhabit the Petaluma Marsh. Surveys estimate the Petaluma Marsh Clapper Rail (Collins, Evens, Grenwell, 1994) population as 19 pairs. These endangered species also will benefit from the additional 100+ acres of tidal marsh and their populations are expected to expand.

Other Ecosystem and non-Ecosystem Benefits: The restored marsh will make an important contribution to species richness and diversity. Restoration will enrich food chain support. Nutrients from the restored marshes will contribute to productivity within the marsh and will be exported to support invertebrates in the Petaluma River and Bay mudflats, and to support fish in the open water habitats of the Bay. Increased productivity will enrich foraging for shorebirds, fish and waterfowl and increase their populations. The value of the expanded habitat will be enhanced because the site is remote and conflicts between these species and other beneficial uses will be avoided.

The project will also benefit water quality. The restored marsh will trap sediments and absorb pollutants. In addition, the restored marsh will make a significant contribution to the integrity of the critical Petaluma Marsh watershed ecosystem.

d. Background and Biological/Technical Justification

Need: Approximately 85% of the Bay-Delta tidal wetlands have been lost through diking or filling. This site was diked off from tidal action in the mid-1960's. The project is needed to restore this lost habitat and to remove forever the threat of even more permanent loss in the future. The site currently consists of approximately 71.74 acres of ancient tidal marsh and 109.72 acres of diked historic marsh. Permanently protecting and restoring these resources is essential for the preservation and enhancement of the Bay and Estuary.

A previous owner, who established the landfill, attempted to move the landfill operations onto this property but was thwarted by opposition from environmental organizations and agencies. Therefore, although owned by Redwood Landfill Inc., the site has never been used for solid waste disposal. Redwood Landfill Inc and its parent company, USA Waste, have offered to sell and supports the restoration to tidal action. This is an opportunity that must be acted upon promptly or it could be lost. Should the landfill management change, attempts to expand the landfill onto the site may resume.

Comparison with other approaches: It may be that acquisition could have been accomplished with funds from all private or all public sources, however, funding is not available for these options. Also, single-source funding would eliminate the public-private partnership benefits of this joint approach, and would not generate broad support and involvement.

Using dredged material to speed the restoration was considered and rejected because it would require dredging San Antonio Creek for access by barges. Dredging would result in damage to the adjacent tidal marshes. If small barges were used to avoid dredging, the project would be cost prohibitive. Another alternative considered was simply breaching the levee in several spots and leaving the rest of the levee in place. This was rejected because channel formation would be inhibited by uneven tidal flows and water would be diverted by the borrow channels.

Expected Benefits: Project benefits will be based on natural processes to restore the site, and on the technical and scientific expertise of the experienced project team, including hydrologist Jeff Haltiner, Ph.D., PWA. Dr. Haltiner has extensive experience restoring marshes throughout the Bay Area and State of California. The biological expertise of wildlife agencies, including the U.S. Fish and Wildlife Service and the California Department of Fish and Game, has been and will continue to be integral to the restoration.

Permanence: The benefits will be durable and permanent. Benefits will be permanent because they rely on natural processes and not complicated management schemes. The site will be donated to the Department of Fish and Game for management as part of the Petaluma Marsh Unit. The project is not sensitive to climatic changes. The tidal slough and marshplain habitat restoration will persist and evolve in response to global warming.

Current Status: Federal and state regulatory agencies have approved use of a portion of the project by Caltrans as mitigation for seismic retrofitting of the bridge over Sonoma Creek. At least 50 acres of habitat suitable for the endangered Clapper Rail is required and will be provided by this project. Caltrans has applied for federal permits (Army Corps of Engineers) for the retrofit project and the permits will be issued based on submittal of an acceptable design plan for this project. Caltrans funding to implement its portion of the project will flow through the Coastal Conservancy to the Marin Audubon Society. The Coastal Conservancy Board approved its participation in the project at its June 25, 1998, Board meeting. Using grant funds already obtained for the project, PWA has begun work on the project design in order to ensure Caltrans August 31, 1998 deadline is met.

MAS and the Coastal Conservancy are in negotiations with the property owner for acquisition of the site. The restoration will be implemented by the Marin Audubon Society which is also responsible for securing funding for the other half of the project. So far, \$48,000 has been secured from the US Fish and Wildlife Service, the Coastal Conservancy and the Marin Audubon Society. Other funding is being sought from the Marin Community Foundation, the Marin County Open Space District, and the Wildlife Conservation Board/DFG.

Caltrans and the County of Marin Open Space District currently are securing appraisals. Both agencies are required to secure their own appraisals before contributing funding to acquire sites. Caltrans has completed hazardous materials and cultural resources surveys on the site. No hazardous materials or cultural resources were found.

CVPIA: The project meets the objectives of the Anadromous Fish Program of the CVPIA because it will help to double the natural production of anadromous fish in the system over the average production during 1967 through 1991 by increasing nursery habitat for outmigrating salmon and steelhead thereby enhancing their survivability.

Specific ERPP Objectives addressed by the project:

- Tidal Perennial Aquatic Habitat Objective, (Vol.I, page 82): "...increase the area of shallow-water and intertidal mudflat habitat to improve conditions that support increased primary and secondary productivity; provide rearing and foraging habitat, and escape cover for fish; and provide foraging and resting habitat for water birds."
- Saline Emergent Wetlands (Vol.I, page 97): "...increase the area of saline emergent wetlands...(to) provide high-quality habitat for waterfowl, shorebirds and other associated wildlife; provide rearing habitat, foraging habitat and escape cover for fish, and expand the populations and range of associated special status State and federally listed plant and animal species."
- Seasonal Wetlands (Vol.I, page 104): "...restore and manage this habitat type to restore and maintain the ecological health of the aquatic resources in and dependent on the Delta." Target for North San Francisco Bay Ecological Zone is 7,000 acres.
- Tidal Sloughs, (Vol.II, page 103): "...restore a portion of the historical distribution of sloughs in the Bay-Delta within tidally influenced saline or brackish emergent wetlands and mudflats."
- Longfin Smelt: (Vol.I, page 140-141): "...ensure the recovery of this species of special concern...."
- Splittail (Vol.I, page 144): "...ensure the recovery of this species of special concern which is proposed for listing under federal and State...."
- White and Green Sturgeon (Vol.I, page 148): "...restore the distribution and abundance of white sturgeon to historical levels...and ensure the recovery of green sturgeon, a DFG species of special concern."

- Chinook Salmon (Vol. I, page 153-154): "...ensure the recovery of Sacramento winter-run chinook....(and) ensure the restoration of Sacramento fall-run and spring-run chinook...."
- Steelhead Trout (Vol. I, page 160): "...ensure the recovery of this species which is proposed for listing under the federal Endangered Species Act."
- Striped Bass (Vol. I, page 165): "...restore population levels to those of 1960...."
- Black Rail (Vol. I, page 237): "... assist in the recovery of this State-listed threatened species....(by) increas(ing) the number of breeding pairs in the Bay-Delta(by) restoring the natural tidal action to aquatic habitats."
- Clapper Rail (Vol. I, page 235): "...assist in the recovery of this State-and federally listed endangered species....increase the numbers of breeding pairs of clapper rails in the Bay-Delta....(by) restor(ing) saline emergent wetland habitat in the Bay."
- Salt Marsh Harvest Mouse (Vol. I, page 251): "...assist in the recovery of this state and federally listed endangered species....(by) increas(ing) the area of salt marsh harvest mouse habitat adjacent to San Pablo Bay...."
- Shorebird and Wading Bird (Vol. I, page 256): "...maintain healthy populations...increase quantity and quality of overwintering and resting habitat...."
- Migratory Waterfowl (Vol. I, page 260): "...maintain healthy populations...."

f. Monitoring and Data Evaluation

A five (5) year Monitoring Program will be developed and implemented as required by agency permits for the seismic retrofit project. Monitoring objectives and indicators will be identified to measure the success of the project in restoring tidal marsh and increasing fish and bird habitat. The monitoring plan will measure at least the following: sedimentation rates and elevations, colonization of tidal marsh vegetation, channel formation, fish and bird use. Caltrans is providing full funding for its monitoring requirements. CALFED monitoring, peer review and evaluation requirements beyond those required of Caltrans will be added to the monitoring program and may necessitate additional funding.

g. Implementability

Obtaining matching funds is an urgent need to ensure Caltrans can proceed with the seismic retrofit project which is necessary for public safety. The restoration will be based on hydrologic and biological study of the marshes. Redwood Landfill is a willing seller and supports the restoration. Restoration should occur during the dry months of summer to avoid difficulties of working in bay mud during the rainy season and to avoid impacts to migratory species. No hazardous materials or cultural resources exist on site.

Protection and restoration of the marsh complies with all applicable plans for the area, and laws and regulations including the San Francisco Bay Basin Plan and Bay Plan. The project complies with wildlife, water quality, and wetland protection and restoration policies of the Marin Countywide Plan. The project will benefit the Petaluma River watershed and furthers the goals of the watershed plan being prepared by Sonoma County Resource Conservation District. The project also consistent with San Francisco Estuary Project and the San Francisco Bay Joint Venture. Caltrans has already initiated NEPA and CEQA review as part of its retrofit project.

This project is a model for public-private partnerships for other projects to promote environmental protection and restoration of the Bay-Delta. Such projects conserve public funds and other resources. The Marin Audubon Society contributes its project management and coordination free of charge and is contributing its own funds.

In addition to the project partners, the project is supported by the County of Marin, San Francisco Bay Joint Venture, Sonoma Resource Conservation District, environmental organizations: the Environmental Forum of Marin, Sierra Club, Marin Baylands Advocates, Marin Conservation League, and Trout Unlimited.

IV. Budget Costs

This application requests \$352,135 to partially fund development of a restoration plan, site acquisition and implementation of the marsh restoration project. It is anticipated that the project will be completed by December 1999.

All miscellaneous and direct costs are included in the budget presented below.

Caltrans will fund half of the acquisition, design plan and drawings for the marsh restoration and construction of the restoration project, and \$17,500 funding for overhead/administration by the State Coastal Conservancy. In addition, and not included in the project budget, Caltrans has funded hazardous materials and cultural resources surveys, and will be providing an appraisal.

In order to meet its environmental review schedule, Caltrans must have the restoration plan and drawings by August 31, 1998. This has necessitated PWA beginning work on developing the plan. Caltrans will advance funding for preparation of the restoration plan and design drawings in order to ensure this deadline is met. Construction funding is needed by August 1999 to begin construction in August/September of 1999.

In addition to the Caltrans funding, \$25,000 has been received from the US Fish and Wildlife Service, \$1,000 from the State Coastal Conservancy. These funds are being used to develop the marsh restoration plan and design drawings. The Marin Audubon Society has committed \$22,000 of its own funds which will be used for construction of the restoration project.

Marin Audubon is seeking funding from other sources including the California Department of Fish and Game/Wildlife Conservation Board, Marin Community Foundation and the Marin County Open Space District. Should funds be obtained from other sources, the CALFED request will be reduced.

The Marin Audubon Society is a volunteer organization and has no paid staff or office. It does not charge fees for services or overhead costs. Marin Audubon will contribute the following services in-kind: coordination and outreach, oversight, project preparation and construction, participation in project design and development, developing contracts, supervising construction, and coordinating monitoring and reporting. These contributions will significantly decrease project costs.

The project will be put out to bid if required, however, the preference is to contract directly with the two primary project consultants, PWA consultants in hydrology, and Cooper Crane and Rigging. As stated previously, PWA has needed to begin work on developing the restoration plan in order to meet the Caltrans deadline of August 31, 1998.

The preferred construction contractor is Cooper Crane and Rigging (CCR). CCR has extensive experience with marsh restoration in San Francisco Bay and elsewhere and is frequently hired by CDFG and USFWS for work on their wetlands. PWA, MAS and CCR have worked as a team on many marsh restoration projects including all projects on the attached list, and many additional projects implemented by others. It is MAS experience from implementing marsh restoration/enhancement projects, and observing many other marsh mitigation and other projects implemented by developers and others, that CCR can provide the most experienced, cost effective, skilled and environmentally sensitive services. Using CCR would also maximize cost effectiveness of the project because it is located very close to the restoration site. Therefore, there will be no mobilization costs.

Table 1 - Budget

<u>Project Phase and Task</u>	<u>Consultants/Contractors</u>	<u>Administration</u>	
<u>Phase 1:</u>			
Plan Development/ Design Drawings	\$ 109,270		
Acquisition	510,000		
Coastal Conservancy		17,750	
<u>Phase 2:</u>			
Construction	151,000		
Engineering Oversight	30,000		
<u>Phase 3:</u>			
Post-Project Monitoring	60,000		

TOTAL	\$ 860,270	17,750	878,020

Table 2 Budget Status:

	<u>FUNDING OBTAINED</u>	<u>FUNDING NEEDED</u>
<u>Phase 1</u>		
Plan Development/ Design Drawings	80,635	28,635
Administration	17,750	
<u>Phase 2</u>		
Acquisition	255,000	255,000
Construction & Oversight	112,500	68,500
<u>Phase 3</u>		
Monitoring	60,000	0

TOTAL	\$ 525,885	352,135
TOTAL REQUESTED FROM CALFED		\$ 352,135

b. Schedule Milestones

Project plan and design drawings will be completed by September 1998.
Acquisition will be completed by January 1999.
Permit applications have already been submitted by Caltrans.
Environmental Review will be completed by May 1999.
Project construction will be completed by October 1999.
Transfer to the Department of Fish and Game by January 2000.
Monitoring will be conducted until 2005.

c. Third Party Impacts

There are four adjacent landowners: Redwood Landfill Inc., a dairy family, the Department of Fish and Game, and the Golden Gate Bridge District and the Sonoma/Marin Rail Authority and managed by the Golden Gate Bridge District.

The Department of Fish and Game supports the project and will own the site.

Redwood Landfill supports the project, is willing to sell the site and allow the restoration planning to proceed before the actual acquisition. Cuts in the levee will be made in locations that will not risk the structural integrity of the landfill perimeter levee which extends around the entire landfill site. This perimeter levee prevents out-migration of leachate.

Contact has been made with the Golden Gate Bridge District which provides the staff for the Northwestern Pacific Rail Authority which owns the adjacent rail line. The District has been included in early planning for the project improvements to ensure the rail line is not impacted and is protected as part of the restoration project.

The adjacent dairy ranch owners, the Corda family, can now graze their dairy cows on the wild grasses once a year, which will no longer be able to occur. The Corda's are aware the project is being planned and have not raised objection.

Enhancing and improving fish and wildlife populations and water quality will increase recreational opportunities including fishing and bird watching. The site will be available for recreational use as part of the Petaluma Marsh. However, because of its remoteness, it is not expected to attract a level of use that will present a significant disturbance to wildlife. The Petaluma Marsh is accessible by boat.

The project will contribute to the economy by enhancing recreational uses and food production both of which would provide jobs. The project, along with other projects, will contribute to increased survival of fish populations and increased bird populations thereby enhancing recreational as well as commercial fishing opportunities.

Improved water quality will also benefit residents of the Bay Area by reducing health risks.

There are some dilapidated uninhabited fishing shacks along a section of the site's perimeter levee. The only access is via boat. Notification of the pending project will be posted. The shacks on the site will be removed per request of the Department of Fish and Game.

V. Applicant Qualifications

Marin Audubon Society will manage the project, will provide services identified in "IV. a." above and will contract with the dredger and provide supervision during construction. PWA is responsible for technical aspects of the project including developing the restoration plan, design drawings, grading plan, specifications, pre- and post-construction surveys and construction supervision.

Marin Audubon Society Qualifications: MAS has considerable experience and an excellent performance record implementing marsh restoration and enhancement projects such as this. In the last fifteen years MAS has completed four marsh restoration and/or enhancement projects using funds from many sources: Administrative Civil Liability funds through the Regional Water Quality Control Board fine program, from the Marin Community Foundation, USFWS, USEPA, and the State Coastal Conservancy. An enhancement project at Rush Creek and Cemetery Marshes is scheduled to be completed in 1998.

1. REDWOOD HIGH SCHOOL MARSH ENHANCEMENT PROJECT - In 1986, grants from the SCC and the Marin Community Foundation enabled MAS to develop and implement an enhancement plan for this 12 acre diked salt marsh located at Redwood High School and is owned by the School District. The project deepened and widened channels to improve water circulation and fish habitat, constructed a tide gate to improved water management in the marsh. In 1995, several channels were widened and ditches created to eliminate mosquito breeding areas.

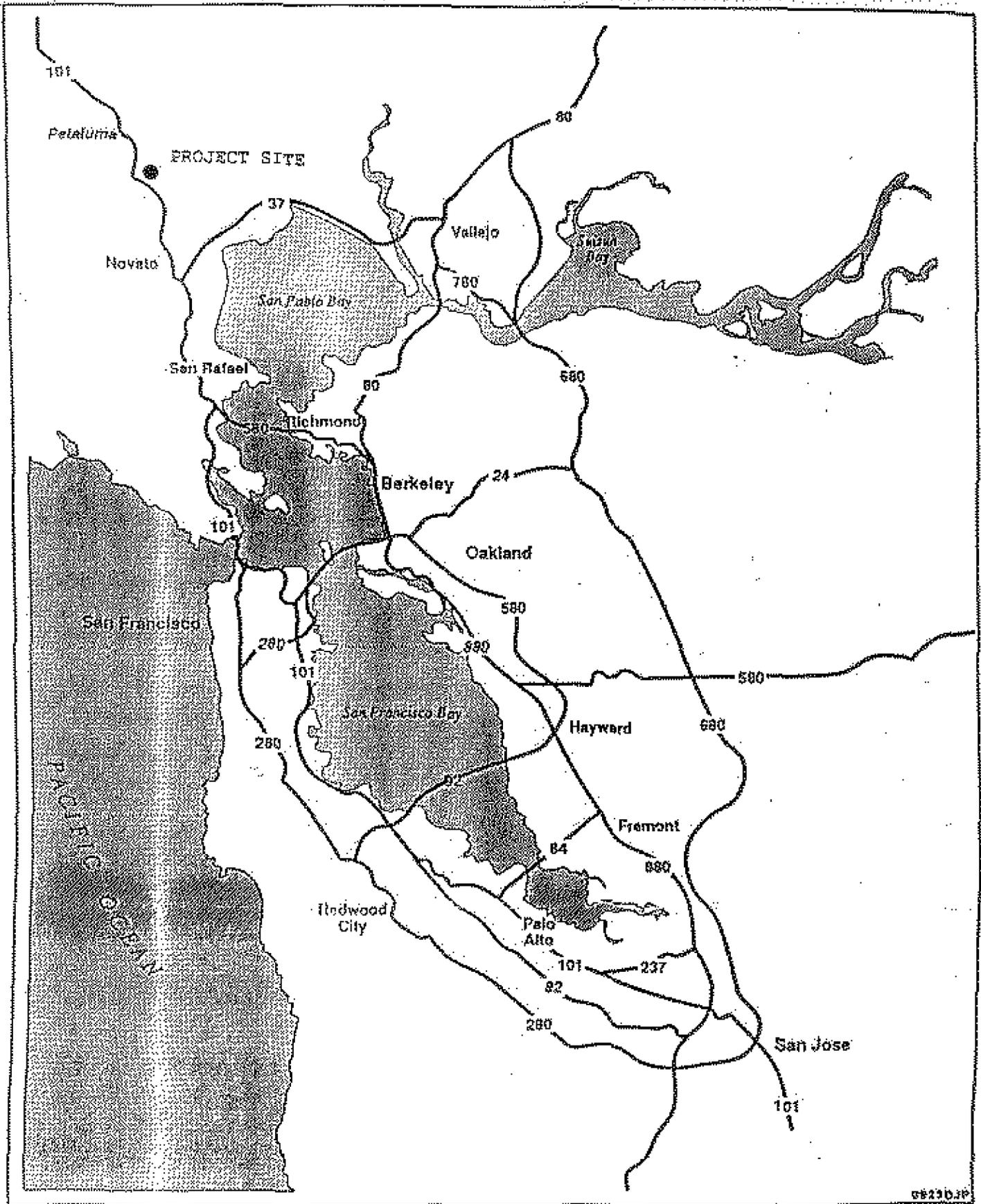
2. CORTE MADERA ECOLOGICAL RESERVE ENHANCEMENT/RESTORATION PROJECT - This project restored filled land to tidal action and created a habitat island for Clapper Rails and Black Rails at the Department of Fish and Game owned Corte Madera Ecological Reserve. ACL fines levied against two local jurisdictions for sewage spills funded the successful implementation. Construction was completed in 1990. A five year monitoring requirement was completed which confirmed that the site was restoring to tidal marsh.

3. GALLINAS CREEK RESTORATION (in 3 Phases) - This project also was implemented with ACL fines for sewage spills in San Rafael. MAS obtained a grant from the SCC to develop a restoration/enhancement plan for the entire site. The site is owned by the State Lands Commission and was leased by the Department of Fish and Game for the purpose of allowing this project to be implemented. Phase 1 was completed in 1992, Phase 2, also with ACL monies, in 1993, and the third and final phase of this project was completed in January 1997 with funding from the Marin Community Foundation, USFWS and the USEPA. Tidal and seasonal marsh were restored.

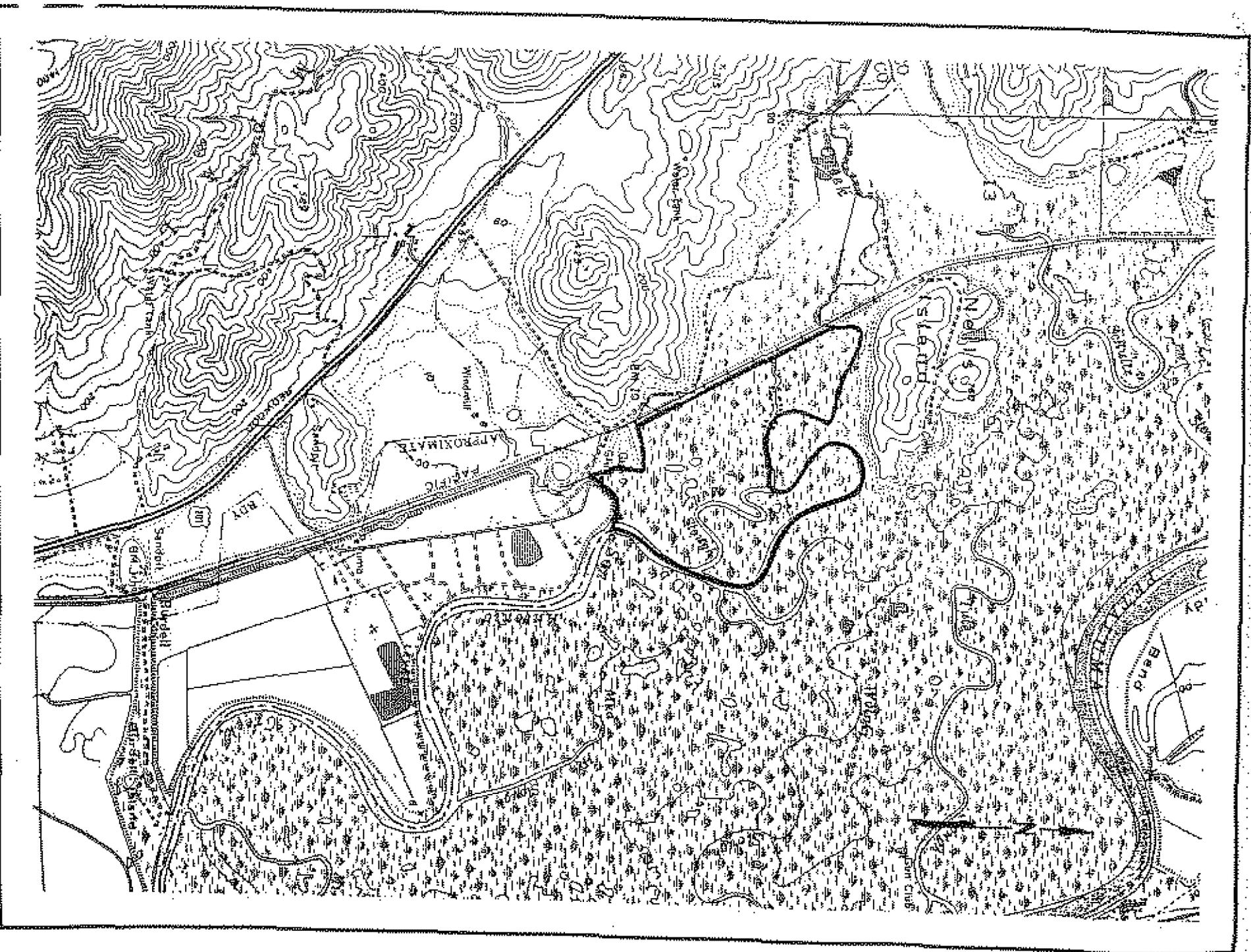
4. MILL VALLEY RESTORATION PROJECT - ACL fines also funded this 1992 project on a site owned by the Marin County Open Space District. Part of an old levee and a collapsed culvert were removed to restore an area of tidal marsh, isolate a section of levee for a high tide refuge for shorebirds, and to improve circulation to the adjacent tidal marsh.

5. Rush Creek/Cemetery Marsh Project - Marin Audubon will be implementing an enhancement project in 1998 to improve circulation and water quality in the 230 acre Rush Creek Marsh and 50 acre Cemetery Marsh. This project will benefit migratory birds and the public.

Barbara Salzman, who has managed all of the above projects, has won many awards for her environmental activities, including Save the Bay Founders Award, the Marin Green Award from the Marin Conservation League, and the first Environmentalist of the Year Award given by the Marin Environmental Alliance. Ms Salzman has participated by invitation in U.S. Environmental Protection Agency and National Audubon Society seminars and conferences on watershed and marsh protection and restoration. The restoration projects have been recognized in the National Audubon Society AUDUBON magazine, and in the Coastal Conservancy's CALIFORNIA COAST AND OCEAN magazine.



PETALUMA MARSH EXPANSION PROJECT - MARIN COUNTY
 LOCATION MAP



SCALE: 1" = 2000'

PETALUMA MARSH EXPANSION PROJECT - MARIN COUNTY

1-009155



PETALUMA MARSH EXPANSION PROJECT - MARIN COUNTY