

Phase II: Demonstration Project for the Protection and Enhancement
 of Delta In-Channel Islands (Construction and Monitoring)
Proposal Title: of Delta In-Channel Islands (Construction and Monitoring)
Applicant Name: Association of Bay Area Governments
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Amount of funding requested: \$ 3,138,670 for 4 years¹ year construction
 3 years monitoring

Indicate the Topic for which you are applying (check only one box).

- | | |
|---|---|
| <input type="checkbox"/> Fish Passage/Fish Screens | <input type="checkbox"/> Introduced Species |
| <input checked="" type="checkbox"/> Habitat Restoration | <input type="checkbox"/> Fish Management/Hatchery |
| <input type="checkbox"/> Local Watershed Stewardship | <input type="checkbox"/> Environmental Education |
| <input type="checkbox"/> Water Quality | |

Does the proposal address a specified Focused Action? yes no

What county or counties is the project located in? _____

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

- | | |
|---|---|
| <input type="checkbox"/> Sacramento River Mainstem | <input type="checkbox"/> East Side Trib: _____ |
| <input type="checkbox"/> Sacramento Trib: _____ | <input type="checkbox"/> Suisun Marsh and Bay |
| <input type="checkbox"/> San Joaquin River Mainstem | <input type="checkbox"/> North Bay/South Bay: _____ |
| <input type="checkbox"/> San Joaquin Trib: _____ | <input type="checkbox"/> Landscape (entire Bay-Delta watershed) |
| <input checked="" type="checkbox"/> Delta: _____ | <input type="checkbox"/> Other: _____ |

Indicate the primary species which the proposal addresses (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> San Joaquin and East-side Delta tributaries fall-run chinook salmon | <input checked="" type="checkbox"/> Spring-run chinook salmon |
| <input checked="" type="checkbox"/> Winter-run chinook salmon | <input checked="" type="checkbox"/> Fall-run chinook salmon |
| <input checked="" type="checkbox"/> Late-fall run chinook salmon | <input checked="" type="checkbox"/> Longfin smelt |
| <input checked="" type="checkbox"/> Delta smelt | <input checked="" type="checkbox"/> Steelhead trout |
| <input checked="" type="checkbox"/> Splittail | <input checked="" type="checkbox"/> Striped bass |
| <input checked="" type="checkbox"/> Green sturgeon | <input checked="" type="checkbox"/> All chinook species |
| <input checked="" type="checkbox"/> Migratory birds | <input checked="" type="checkbox"/> All anadromous salmonids |
| <input checked="" type="checkbox"/> Other: <u>Special Status Plants</u> | |

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

"Increase the area of midchannel and shoal habitat" (Vol 1, p. 103); "Restore midchannel islands and shoals in the Delta..." (Vol 1, p. 128); "Develop and begin implementation of action plans for restoring..." (Vol 1, p. 128); "Maintain existing channel islands and restore...high-value islands..." (Vol 2, p. 98)

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

- | | |
|---|---|
| <input type="checkbox"/> State agency | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit |
| <input checked="" type="checkbox"/> Local government/district | <input type="checkbox"/> Private party |
| <input type="checkbox"/> University | <input type="checkbox"/> Other: _____ |

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

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> Planning | <input checked="" type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input type="checkbox"/> Education |
| <input type="checkbox"/> Research | |

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 the 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 2.4) 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.

Eugene Y. Leone

Printed name of applicant



Signature of applicant

CALFED Grant Proposal

**Phase II: Demonstration Project for the Protection and Enhancement of Delta
In-Channel Islands (Construction and Monitoring)**

April 16, 1999

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Participants and Collaborators:

Applicant - Association of Bay Area Governments for the San Francisco Estuary Project

Collaborators - U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency Region 9, CA Department of Fish and Game, CA Department of Water Resources, CA Department of Boating and Waterways, State Lands Commission, Delta Protection Commission, land owners, reclamation districts, environmental and boating groups, engineering firms.

Type of Organization and Tax Status:

ABAG is a Joint Powers State Agency - Council of Governments.

Tax Identification Number: 94-2832478

EXECUTIVE SUMMARY

Delta in-channel islands provide habitat for many special status species and are an important component of many native fish and wildlife species' life history requirements. In-channel islands (aka midchannel islands) also provide valuable recreational, aesthetic and levee protection benefits. One of CALFED's goals in the Ecosystem Restoration Program Plan is to "protect existing mid-channel islands and shoals in order to provide high-quality habitat for fish and wildlife dependent on the Bay-Delta". Consequently CALFED funded the Delta In-Channel Island Workgroup (DCI) in 1997 to design and obtain environmental clearance for a demonstration project utilizing appropriate, engineered biotechnical methods to protect four of these islands and provide habitat for priority fish and wildlife species (Phase I). The CALFED Category III Technical Panel deferred funding for project construction and monitoring (Phase II) to a future funding cycle pending completion of design work. DCI and its consulting team have completed project design work and are nearly finished with permitting and environmental documentation. Based on this work, and with the complete cooperation of the landowners, we are requesting funding for project construction.

CALFED's 1999 Project Solicitation Package (PSP) is based on the goals and objectives in the Ecosystem Restoration Program Plan (Volumes I & II, February 1999) and the Strategic Plan for Ecosystem Restoration (December 1998). This proposal for in-channel island habitat protection and restoration in the Central Delta responds to the ERPP's vision for "Midchannel Islands and Shoals" habitat that contains a short-term objective to "develop and implement protection strategies for existing and restored shallow water habitat in those channels" (page 128, Vol. 1). The project proposes to "install structures, such as floating booms, to weaken the force of waves to reduce midchannel erosion in sensitive areas" (page 129, Vol. 1). This project will generate reference site information for in-channel islands that may ultimately be used to develop models for in-channel island protection Delta-wide. The ERPP's long-term restoration target for midchannel islands and shoals is to restore and maintain 50-200 acres of high quality habitat.

Generally, the in-channel islands constitute an important remnant component of the Delta's once vast network of tidal wetlands, mudflats and riparian scrublands which provide habitat for resident fish species; Bay-Delta aquatic food web organisms; shorebird and wading bird guild; waterfowl; upland game species; and neotropical migratory bird guild. The Strategic Plan for Ecosystem Restoration identifies a goal of protecting and restoring the functionality of several habitat types addressed by this proposal including: mid-channel islands and shoals; tidal perennial aquatic habitat; shaded riverine aquatic; and emergent marsh. The selected biotechnical methods are intended to protect these habitat types associated with in-channel islands. The Strategic Plan identifies many endangered and target species that will benefit from this action including migrating and rearing Chinook salmon (fall, winter and spring runs), Delta smelt, longfin smelt, steelhead, striped bass, green sturgeon, anadromous lampreys and Sacramento splittail. In-channel island preservation will also benefit several other priority animal species including the western pond turtle, California black rail and the giant garter snake. The upper tidal zone of many of the in-channel islands supports sensitive plants including Mason's lilaecopsis, Suisun marsh aster and rose-mallow.

The demonstration project consists of installing various biotechnical methods to control erosion and attenuate wave energy adjacent to four selected, eroding in-channel islands in the Delta. The approach is a comparative demonstration project using several different types of promising biotechnical methods, and evaluating their potential to provide protection from the above forces. A 3-year monitoring plan will evaluate the effectiveness of the various construction techniques and the increased use by fish and wildlife. Three islands are located near Webb Tract in Contra Costa County; one island is in San Joaquin County. These sites represent a wide range of field conditions focusing on both habitat and engineering considerations. A total of 5,500 linear feet of shoreline will be treated, protecting a total of 11.4 acres of in-channel island habitat.

This project has two main objectives. The first is to demonstrate that the erosion of in-channel islands can be slowed, stopped or reversed using biotechnical erosion control methods. The primary biological objective is to demonstrate that biotechnical erosion control methods can be successfully installed with positive effects on important/priority fish and wildlife. Testable hypotheses support each of these objectives, and will ultimately be used to adaptively manage the project for improved performance. These objectives are discussed in greater detail in this proposal.

Additionally, biotechnical methods will be evaluated for sediment accretion potential with the goal of enhancing the aerial extent of the project islands and diversifying shallow water habitat. The proposed project design identifies and addresses the primary stressors at each site, including dredging activities, invasive aquatic plants, disturbance caused by commercial and recreational boating, and loss of shallow water habitat due to channel form changes.

The consulting team selected to design and hopefully build the demonstration project is multidisciplinary and consists of six companies that have developed an unprecedented record of experience in the Sacramento-San Joaquin Delta. The principals of this team have extensive experience and knowledge of the Delta and over 110 years of combined professional first-hand work experience with the unique parameters functioning in the Delta. This work includes channel maintenance, levee safety, biological resources, alternative technologies, water conveyance, water quality, flood hydrology and geomorphology. The team consists of principals and support staff with expertise in unique characteristics of the Delta considering engineering design, fluvial processes, substrate stability, biological conditions, biotechnical alternatives, permitting, construction, restoration implementation and scientific monitoring. Qualifications for each team member will be discussed later in this proposal.

The total project cost for construction and 3 years of monitoring is \$3,138,670.

The project has no identified adverse or third party impacts. There has been extensive coordination with State and federal agencies and landowners. Support for in-channel island work has been broad; 18 groups, agencies and reclamation districts have signed a "Coordination of Efforts" document.

PROJECT DESCRIPTION

Location and Geographic Boundaries of the Project

The Delta In-Channel Island Workgroup has selected four demonstration project sites located within the Delta. Each of these sites is subject to substantial erosive forces caused by waterflow, wind and boat wakes, requiring various degrees of protective treatment. The following text describes each in-channel island's recommended treatment and is supplemented with a schematic drawing. FIGURES 1 through 6 illustrate the location of the project sites.

Webb Tract In-Channel Islands are located in Contra Costa County. The demonstration project will install a variety of techniques on three islands with differing elevation and vegetation type to evaluate cost, ease of installation and effectiveness. Site 1 is a submerged island composed of tules (0.043 acres); Site 2 is an emergent island with scirpus (5.19 acres); and Site 3 has scrub, shrub and palustrine forest (1.26 acres). The Webb Tract Islands are owned by California Dept. of Fish and Game; written permission for the demonstration project is included in the packet.

Little Tinsley Island is located in San Joaquin County. The demonstration project covers 3.5 acres on the eastern portion of the island with 1,500 linear feet of shoreline. Installation of a series of protective measures side-by-side will allow a comparison of the cost, ease of installation, and effectiveness of bioengineering construction techniques. The project will help protect the entire 4.94 acres of Little Tinsley Island. The Noble Yacht Group owns the island; written permission for the demonstration project is included in the packet.

Proposed Scope of Work

All construction work will be completed in one construction season and during the in-water work "windows" (late summer, fall). Plants will be grown in a local nursery, and built elements assembled off-site and installed on the islands. Construction will include some work on the islands; much will be done from boats. FIGURE 7 illustrates cross sections of the biotechnical methods used on the project sites. TABLE 1 describes specifications of biotechnical methods used in this project.

For specific tasks, deliverables and phases of the project see TABLE 2. All proposed project components are worthy of funding because they represent a spectrum of physical attributes and varied environmental conditions within which these islands must persist in the Delta. However, if limited available funding requires a prioritization of project components, DCI and the MBK project team feel that funding for project-work on Webb Tract Site 3 and Little Tinsley Island should be preserved because of the diversity of existing habitats supported at these sites and easier installation parameters. Webb Tract Sites 1 and 2 involve more complex and difficult installation conditions because of the lower elevation of the sites. However, substantial delays in protecting sites 1 and 2 may result in their complete loss.

Webb Tract Site 1 (Submerged Shoal)- This site is extremely vulnerable to erosion by flows in the Stockton Deep Water Ship Channel and the dredged channel adjacent to Webb Tract. The work at this site will attempt to halt the underwater erosion and create areas of calm water where sediment from the water column can accumulate. Floating breakwaters of planted log-boxes will be installed along the north side of the shoal; these structures will reduce surface wave impacts on the channel side during high tides. Vegetation in the log-boxes will create a taller breakwater and the roots will grow through the box and hang in the water column providing cover for small fish. The log-boxes will be grouped (three on the east shoal and five on the west shoal) to allow a side-by-side comparison of effectiveness of the methods. A peaked stone dike will be placed behind the floating breakwater at the minus 3 to minus 4-foot contours along the north side of the shoal to dissipate the sub-surface wave energy generated by passing boat traffic. The dike will include an opening to water movement to promote growth of vegetation and create fish foraging habitat. Addition of 5-gallon ballast bucket units will aid in the spread of aquatic vegetation. The vegetation should capture sediments in the newly created shallow-water habitat promoting enlargement of the shoals.

Webb Tract Site 2 (Emergent Shoal) This site is also subject to erosion from water flows in Old River and boat wakes. The northeastern side and both ends of this shoal will be protected from erosive forces generated by weather and passing boats in two ways. Outboard protection will be floating breakwaters of planted log-boxes. The log-boxes will be grouped (five at the south half of the shoal and three at the north half of the shoal) to allow a side-by-side comparison of effectiveness. Inboard protection will be provided by anchored root wads behind the floating breakwater to disrupt the sub-surface wave energy. Root wads will provide woody debris habitat for fish and will create areas of calm water. There will be gaps in the root wad line to allow fish and waterfowl easy access to calm water areas. A single ballast bucket will be installed on each root wad to establish vegetation. Some areas between the root wads will be planted with 5-gallon ballast bucket units, some with planted coconut fiber mattresses, and some areas will be left unplanted. The planting will aid in the establishment of aquatic vegetation, and the variation of rates of vegetation spread between the different techniques will be monitored.

Webb Tract Site 3 (Peat Island) - This site is subjected to water flows from False River and wind generated waves from Franks Tract. Stone groins will be built at the four "corners" of the island to deflect currents in False River. Three root wad structures will be installed along the west side of the island to deflect current eddies generated by the stone groins. Where feasible, 6-inch ballast buckets will be embedded in the tidal zone on the inboard side of the groins to vegetate the inner edge of each groin and to provide shallow water habitat for fish. Five-gallon ballast bucket units would be embedded between the groins will act as centers of revegetation in the shallows. On the west side of the island, a floating breakwater of planted log-boxes will be installed to counteract the surface impact of waves generated over the 2,000-foot fetch of Franks Tract. Root wads will be anchored at the north and south ends of the island to act as breakwaters and to create areas of sheltered water and woody debris habitat. Five-gallon ballast bucket units will be embedded between every fourth root wad to aid the establishment of aquatic vegetation and a single ballast bucket unit would be installed on each root wad.

Little Tinsley Island (Site 4) – The Noble Yacht Group recently protected the west end of the Island from wind and water flow generated erosion by placing rock riprap along 500 linear feet. The project site is located at the eastern end of the island which is also subject to erosion from the Stockton Deep Water Ship Channel, as well as water flows in the San Joaquin River and winds. Multiple lines of protection will be provided around the eastern point of the island. At the minus 4-foot contour, A floating breakwater of planted log-boxes will counteract the surface impact of waves generated over the 2,000-foot fetch of the Stockton Deep Water Ship Channel. Inboard protection will be provided by stacked 20-inch diameter fiber rolls installed on the minus 2-foot contour to dissipate the sub-surface wave energy generated by boat traffic and underwater erosion. On the north side of the point, 10-to 12-inch in diameter live willow wattling rolls will be installed along the plus 2-foot contour, overlapping the end of the fiber roll, to protect the toe of the bank. A gap will be left between the fiber roll and the willow wattling to allow fish and wildlife access to the shallow water habitat and to promote tidal flow. On the south side of the point, root wads will be anchored on the minus 2-foot contour, with 5-gallon ballast bucket units and planted fiber mattresses embedded between root wads. Extending west from the root wad portion of the breakwater will be a line of 20-inch high brush boxes along the minus 2-foot contour. The breakwater will continue as a line of 20-inch high brush boxes extending west along the plus 2-foot contour to the end of the existing riprap. Six-inch diameter ballast buckets will be imbedded in these brush boxes or placed between the brush box and the bank to aid in the establishment of native vegetation. Stacked 12-inch rock rolls and a 20-inch fiber roll on the minus 2-foot contour will overlap the end of the line of brush boxes and extend west across the cove. On the west side of the cove a second line of fiber/rock rolls along the plus 2-foot contour will overlap the first line to complete the breakwater west to the existing riprap. The overlap areas between the fiber/rock roll lines will contain planted fiber mats. Five-gallon ballast bucket units will be embedded behind the breakwaters to aid the establishment of aquatic vegetation.

ECOLOGICAL/BIOLOGICAL BENEFITS

Ecological/Biological Objectives

As stated in the Strategic Plan for Ecosystem Restoration, the CALFED Bay-Delta Program mission is to develop a long-term, comprehensive plan that will restore ecosystem health and improve water management for the Delta system (p. 27). Contained within this framework are overall goals and vision statements for individual habitat types and species, several of which directly address midchannel islands (i.e. in-channel islands) and shoals or their associated habitats and species. The U.S. Fish and Wildlife Service (USFWS) states, in the executive summary of the Sacramento-San Joaquin Delta Native Fishes Recovery Plan, that threats to the Delta ecosystem include the loss of shallow-water habitat caused by dredging, diking, and filling (USFWS 1995, pg. i). The first action item recommended to aid in the recovery of the species discussed in this report is the restoration of habitat in the Sacramento-San Joaquin Delta.

The proposed project is intended to demonstrate and compare the effectiveness of various biotechnical approaches to shoreline stabilization and erosion control. Traditional methods of erosion control such as bank armoring with riprap, or placement of dredge spoils are offer a single layer of protection from erosive forces. Due to this, they often negatively impact important shallow water habitat since it has usually been filled and is therefore not available to native fish and wildlife species of concern. A three tiered approach has been developed for this project that will solve the same problem and create higher quality habitat. The first step is the installation of the structural components (root wads, floating breakwaters, etc). The second step is to enhance these structures by extensively planting them (and the protected areas behind the structures) with native vegetation appropriate for the habitat. The third step, which should occur naturally as vegetation becomes established, is the accretion of sediments to create more shallow water habitat.

The project sites support four vegetation types listed here in order of their elevation requirements from lower to higher: 1) a riverine aquatic bed dominated by pondweeds; 2) a riverine emergent habitat dominated by tules; 3) a palustrine emergent habitat dominated by tules and cattails; and 4) a palustrine forest habitat dominated by willows, white alder, and an assemblage of shrub species including twinberry, dogwood, and button bush. Fish species such as the Delta smelt, Sacramento splittail, and longfin smelt rely on these habitats, typically found at the periphery of in-channel islands, for some if not all of their life histories. In fact, the entire project area lies within the area designated as critical habitat for the Delta smelt by the U.S. Fish and Wildlife Service (FR 1994). Continued loss of this shallow water habitat, primarily through erosive forces, is detrimental to the Delta smelt and other species.

The primary benefit of this project will be the protection and enhancement of over 11 acres of in-channel island habitat from erosion resulting from wind-generated waves, boat wakes, and currents. The project will create complex aquatic and terrestrial habitats at all locations thereby benefiting fisheries and wildlife resources throughout the Delta. In the baseline fishery

evaluation conducted for this project by the Department of Fish and Game, the islands with more complex habitat yielded more fish species overall, and more importantly more species of native fish (Kjeldsen et al. 1997). The protection, enhancement, and creation of this habitat will make more area available for establishment of submerged aquatic vegetation. These vegetation beds are expected to provide foraging habitat, cover, or spawning habitat for species such as Delta smelt, Sacramento splittail, and longfin smelt. The placement of large woody debris will provide much needed refuge areas for small fish such as juvenile chinook and steelhead to escape from larger predators like Sacramento squawfish, largemouth bass, striped bass, and bluegill. Other refuge may be provided near the water surface by roots that will eventually grow through the floating breakwaters (Rieger et al. 1998). The project will also increase available habitat for harvestable non-native fish, aquatic vegetation, and terrestrial plants. Additionally, the planting of native vegetation is expected to increase the available foraging and nesting habitat for neo-tropical songbirds. Shallow water habitat will either be planted or protected from erosive forces by project installations (or both protected and planted) enough to allow vegetation recruitment. At some point, vegetation may become well enough establish to provide suitable cover for foraging Virginia rails and sora or nesting habitat for red-winged or tricolored blackbirds. The creation of protected, shallow water habitat may also provide foraging area for wintering migratory waterfowl.

To preserve and restore in-channel island habitat throughout the Delta (CALFED's goal is 50-200 acres), it is essential to understand methodologies that work most effectively in different situations. The evaluation of physical and biological parameters over time should allow the comparison of the techniques proposed for this project. These results would allow other parties to select an appropriate biotechnical solution to a specific erosion problem.

It is expected that the structural parts of the project will last for at least 15 years. This should be long enough to allow for vegetation establishment and sediment accretion to be evident. Once vegetation is established the project will be self-sustaining. Additionally, the information regarding effectiveness of the various techniques over the course of time will be usable well into the next century.

Linkages

This proposal represents Phase II of an ongoing, CALFED-funded project to demonstrate the potential for various biotechnical erosion control techniques to protect and enhance habitat values associated with the Delta's in-channel islands. Phase I, funded by CALFED in 1997, included project design, monitoring design and environmental documentation. Phase I is largely complete; the environmental document and some permits are in preparation with completion expected in June 1999.

CALFED's ERPP specifically identifies in-channel island protection and restoration in Volume I, page 129. Additionally, the ERPP's Strategic Plan for Ecosystem Restoration outlines strategic goals and objectives to be achieved by the plan. This project proposal addresses Goal 2: Ecosystem Processes and Biotic Communities: Manage channels in the Delta and Suisun Marsh in ways that allow natural processes to create and maintain in-channel islands and shallow

water habitat. This project is designed to work with, rather than against, the natural hydrodynamic and fluvial processes that nurture in-channel islands. The resultant project links with ecological processes in the Delta, the protection and enhancement of aquatic and terrestrial habitat, the protection of important/priority fish and wildlife, and stressors related to the erosive forces of wave energy in the Delta's channels.

It is assumed that findings of this pilot project will be put into widespread application to meet CALFED's long term goals for midchannel islands and shoal restoration.

System-Wide Ecosystem Benefits

Anadromous Fish: Chinook salmon and steelhead migrate through the Delta during certain phases of their lives. Historically, the Delta provided vast areas for migrating fish to feed, rest and seek protection from predation. The conversion of these marsh lands to agricultural uses eliminated much of this valuable refuge. This project will demonstrate methods by which to protect the last remnants of this tidal marsh habitat and potentially result in the accretion of new sediment to enhance the in-channel islands. This project will compliment efforts being made in other parts of the Delta's tributary watersheds (fish passage, screening and spawning improvement projects) to improve in-stream conditions for anadromous fish.

Migratory Birds: Terrestrial habitat supported by in-channel islands provides important habitat for many Pacific Flyway birds and neo-tropical migratory songbirds. Protection of in-channel island habitat will compliment other CALFED-funded efforts to improve similar habitat in the CALFED solution area.

Compatibility with Non-Ecosystem Objectives

In-channel islands provide more than biological benefits to the Delta's ecosystem. In-channel islands provide protection for Delta levees by providing physical interference to boat wakes and wind generated waves. Hydrodynamic forces created from these two sources cause serious levee erosion capable of undermining even armored levees. The additional levee protection that will be provided by in-channel islands will contribute towards CALFED's levee system integrity component. The primary beneficiaries of levee protection and stability are agriculture, municipalities, public and private infrastructure, and recreation.

TECHNICAL FEASIBILITY AND TIMING

Alternatives Considered

The basic criteria for this project, to demonstrate the effectiveness of biotechnical erosion control approaches to stabilize the Delta in-channel islands, automatically eliminated many traditional approaches that are not biotechnical such as rip-rap and sheet pile walls. Certain purely biotechnical treatments were eliminated from consideration because they would not stand up to the high levels of prevailing erosive wave and current forces. These include plantings and seedlings with no protection, and use of less durable materials (compared with coconut fiber) for protective rolls and matting such as jute, straw, burlap, and excelsior. Biotechnical treatments intended for slopes and upper shorelines such as plant rolls, crib streambank "lunker" structures, plant revegetations, willow layering, and reed-trench terracing were rejected because upper banks of the in-channel islands are either lacking (as in Webb Tract #1) or are stable and well vegetated (as in Little Tinsley). The selected treatments are intended as breakwaters and structures for stabilizing undercut shorelines at the lower tidal levels. Virtually every known biotechnical treatment for lower shoreline or offshore applications are being used for this demonstration project with the following exceptions: single log booms as breakwaters were rejected because they would float too low in the water to be effective; and floating pre-manufactured modular islands were rejected as too expensive compared with other equally effective treatments.

An extensive site selection was undertaken by the Work Group, including site visits. The sites were selected to provide a range of representative sites in respect to elevation and vegetation.

Environmental Compliance

This project requires compliance with CEQA and NEPA. A draft of the Initial Study has been completed which will be used to satisfy the CEQA and NEPA environmental disclosure requirement; it is assumed a mitigated negative declaration will be required. Completion date is estimated to be June 1999, followed by a 30-day circulation period.

An application for a Section 404 Clean Water Act Permit has been submitted to the Army Corps of Engineers. Pursuant to the Federal Endangered Species Act, consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service was initiated and concluded with letters of permission to proceed. To finalize the 404 permit, a water quality certification or waiver is required from the Regional Water Quality Control Board. The Initial Study will provide the necessary information to the Board to make a determination. We expect this task to be resolved within one month, followed by a Letter of Permission from the Corps of Engineers.

This project is being designed with guidance from staff from CA Department of Fish and Game to insure compliance with their statutory regulatory mandates. This project is also being coordinated with the State Lands Commission. Staff from the Commission has been involved in every aspect in this project's development. DCI will obtain a letter of approval to proceed with any work than occurs in areas subject to their authority.

MONITORING AND DATA COLLECTION METHODOLOGY

CALFED has identified the protection of Delta in-channel islands as a short-term objective of the Ecosystem Restoration Program Plan. Delta in-channel islands comprise some of the only remaining tidal wetland habitat in the Delta and, consequently, provide important aquatic and terrestrial habitat for sensitive plant and animal species, and reference ecosystems for determining and evaluating present and future Delta management and restoration decisions.

The Delta In-Channel Island Workgroup (DCI) has obtained Category III funding to implement an in-channel island protection and enhancement demonstration project at four sites in the Delta. DCI has, with a competitive Request for Qualifications bidding process, hired a team of engineers, hydrologists, geomorphologists and biologists to design the demonstration project using appropriately engineered, biotechnical methods for erosion control and sediment accretion.

The monitoring plan describes project monitoring objectives, testable hypotheses, monitoring parameters and data evaluation techniques

This project has two primary objectives. The first is to demonstrate that the erosion of in-channel islands can be slowed, stopped or reversed using biotechnical methods. The second is to demonstrate that biotechnical erosion control methods can be successfully installed with positive effects on important/priority fish and wildlife while minimizing impacts to existing ecological values on site.

TABLE 3 outlines the monitoring plan, including testable hypotheses, monitoring parameters and data evaluation techniques. Additional detail will be added to this monitoring plan when funding for the project is awarded.

LOCAL INVOLVEMENT

The Delta In-Channel Work Group (DCI) was created as a regional group to implement the goals of the San Francisco Estuary Project's Comprehensive Conservation and management Plan adopted in June 1993. The DCI includes representatives of local, state and federal agencies, nonprofit groups, landowners and special districts in the Delta. The DCI selected protection and enhancement of Delta In-Channel Islands as a program. The project has been conceived, debated, and designed as a collaborative project with participation of many groups and individuals reflecting many scientific and policy areas.

The Phase I project included notification of the adjacent landowners and the general public. The Phase II project will continue early and complete communication and disclosure of the proposed project:

Permission of Property Owners: The three islands around Webb Tract are owned by the Department of Fish and Game; permission to go forward with the project is in hand (Attachment 1); final construction of the project is subject to Department review of the engineering drawings. Little Tinsley Island is owned by the Noble Yacht Group; written permission is in hand (Attachment 2). Any property interests held by State Lands Commission in the project sites are addressed in a separate document.

Adjacent Property Owners: Will be notified by mail upon receipt of funding to implement Phase II. List of Adjacent and Nearby Property Owners will be developed from lists of legal property owners, and will include: Reclamation Districts; Port of Stockton; and tenants (to the extent possible). The Webb Tract Reclamation District and landowners are aware of the proposed project and in support due to the beneficial aspects the islands provide protecting the Districts's levees from erosive forces. There are no known adverse third party impacts.

Local Government: Local governments have been notified of the grant application through a letter to the Planning Directors of Contra Costa and San Joaquin County and to the Board of Supervisors of Contra Costa and San Joaquin Counties (Attachments 3, 4, 5 and 6). Additionally, the Delta Protection Commission was notified of the grant application through a letter to the Executive Director (Attachment 7).

Coordination with Watershed Groups or Local Conservancies: Notification will be sent to the Audubon Society Local Chapters and Delta Keeper; no other watershed groups or local conservancies have been identified. There is no known opposition to the proposed project.

Notification and Involvement of the General Public/Outreach: The mailing list of the Delta In-Channel Work Group includes approximately 350 persons; they receive notice of each DCI and minutes of each meeting outlining actions of DCI. In addition, DCI has sent press releases to a list of approximately 25 printed, radio and television contacts to disseminate information about the project to the general public throughout the Bay Area. A site visit is planned for the start of work for Phase II for regulatory agencies, dignitaries and members of the press. The site visit will be via boats.

COST

Total estimated costs for tasks and subtasks in the Scope of Service are described in TABLE 4. For a project schedule, see Scope of Service TABLE 2. It is estimated that the construction tasks will take place in the first quarter. Monitoring and maintenance tasks will be completed thereafter.

The Association of Bay Area Governments (ABAG) has a federally approved indirect cost rate, which is attached TABLE 5. The Work Group already has provided one time only funds for project definition, site selection, and site inventory. The voluntary, consensus-based Work Group also has provided in kind services for participation in committees, review of materials and field trips—about \$160,000 overall. It is estimated an additional \$100,000 plus will be provided as in-kind services by the Work Group for the construction/monitoring phase of this project. ABAG will provide 2.5% in-kind staff services (\$76,000) and the San Francisco Bay Regional Water Quality Control Board will provide administrative support in the amount of \$19,000.

COST-SHARING

The Delta In-Channel Island Work Group includes representatives of local, state and federal agencies, nonprofit groups, landowners and special districts in the Delta. These people contribute their time toward achieving the group's goals.

Additional cost sharing comes from the Delta Flood Protection Program (AB 360). Program goals of AB 360 include the overall enhancement of wildlife and fisheries habitat in the Delta. AB 360's program manager has agreed to cost share a portion of the project construction cost in return for proportional habitat enhancement credits to be applied to that program. An exact contribution has not yet been determined.

In coordination with its ongoing habitat mitigation and enhancement monitoring efforts pursuant to the AB 360 program, Region 2 Department of Fish and Game staff have agreed to provide boat transportation to the project sites and staff to assist with the fisheries, wildlife and vegetation data collection components of the overall monitoring plan.

APPLICANT QUALIFICATIONS

This proposal will be managed at two levels: 1) general oversight and guidance from the DCI work group and the Association of Bay Area Governments (ABAG)/San Francisco Estuary Project (SFEP) and; 2) construction and other on-the-ground tasks performed and managed by a multi-disciplinary team of consultants headed by Murray, Burns and Kienlen engineers (MBK). Kent Nelson, staff to the Department of Water Resources (DWR) and a member of DCI, will act as the Project Coordinator. With eight years of experience working with complex environmental issues in the Bay-Delta region, Mr. Nelson holds the position of Recreation and Wildlife Resources Advisor with DWR. As Project Coordinator, Mr. Nelson will act as liaison between the consulting team and the DCI work group, and insure that the project tasks proceed on schedule and according to the proposed plan.

ABAG is owned and operated by the cities and counties of the San Francisco Bay Region. It was organized in 1961 under the Joint Exercise of Powers Act [California government Code Section 6500 et seq.]. ABAG is governed by a General Assembly representing city and county officials, and has a 38-member Executive Board of county supervisors, mayors and city council members. The Executive Board provides policy direction to its committees and staff between meetings of the General Assembly. ABAG works cooperatively through interagency agreements and memoranda of understanding with other regional and state and federal agencies.

The San Francisco Estuary Project (SFEP) is a joint state/federal/local partnership that was established in 1987 under the Clean Water Act's National Estuary Program to develop and implement the Comprehensive Conservation and Management Plan (CCMP) for the Bay-Delta Estuary. SFEP's purpose is to develop effective management, restore water quality and natural resources, while maintaining economic vitality through the implementation of the CCMP. The CCMP's nine program areas and 145 actions recognize the Estuary's environmental value and the need to manage habitats within the sub-watersheds from an ecosystem perspective.

Members of the DCI work group include biologists, regulators, engineers and administrators from many interested agencies including the Association of Bay Area Governments, the San Francisco Estuary Project, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, CA Department of Fish and Game, CA Department of Water Resources, State Lands Commission, Delta Protection Commission, landowners, environmental and boating groups, engineering firms and other interested parties.

The MBK Project Team

The project team consists of six companies, which have developed an unprecedented record of experience in the Sacramento-San Joaquin Delta. The work effort of the principals, supported by experienced staff, has been primarily devoted to the Delta and the immediate environs. TABLE 6 provides a brief biosketch of each of the principals. TABLE 7 illustrates the structure of the project team.

The Delta is a unique system with physical, biological, environmental, and political features that distinguish the Delta from any other system in the world. The principals of this project team

have extensive experience and knowledge of the Delta and over 110 years of combined professional first-hand work experience with the unique parameters functioning in the Delta. Their work experience has involved the entire legal Delta and the surrounding area. This work includes channel maintenance, levee safety, biological resources, alternative technologies, water conveyance, water quality, flood hydrology and geomorphology. This experience includes the Delta under severe adverse conditions and serene conditions. The project team consists of principals and support staffs with expertise in unique characteristics of the Delta considering engineering design, fluvial processes, substrate stability, biological conditions, biotechnical alternatives, permitting, construction, restoration implementation and scientific monitoring.

Experience

As stated above, the Delta is a unique feature not duplicated anywhere in the world. As such, experience in the Delta proper is more valuable than any theory in understanding and solving complex problems. The MBK project team staffs have been dealing with the Delta for many years. One staff member has 50 years experience in the Delta.

The MBK project team couples this Delta experience with equally impressive biotechnical erosion control experience. In addition to the expanse of its biotechnical projects, the MBK project team has designed, built and monitored biotechnical erosion control projects in the Delta. The results of these projects are currently being evaluated and catalogued. This post-project documentation is invaluable in approaching the objectives of this project. Every aspect of this project: in-channel island stabilization, habitat enhancement, post-project monitoring and evaluation has been performed successfully in the Delta by the MBK project team.

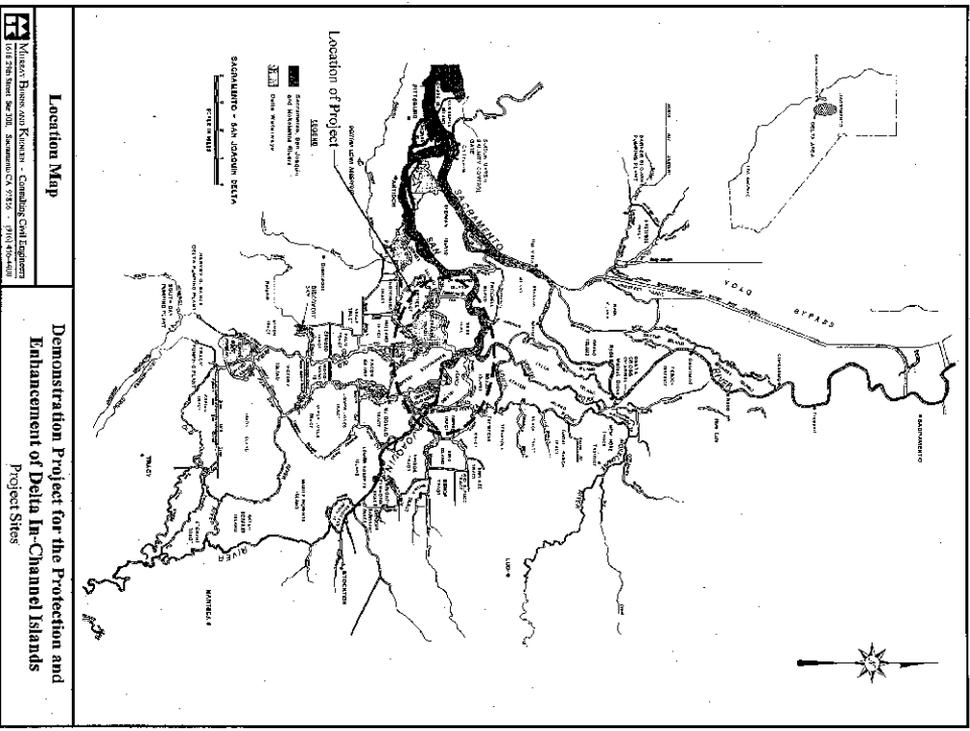
Familiarity with Project Sites

The proposed project sites around Webb Tract and Little Tinsley Island are not strangers to the MBK project team. Team members have worked on the waterways of both islands for many years. The MBK project team has also been involved in the pre-project biological and physical evaluations which led to the selection of the sites by the DCI Workgroup and Phase I project design work funded by CALFED.

Innovation

Over the last 40 years, the Delta has experienced significant change physically, biologically and politically. MBK project team members have survived and prospered during this change; a testimony to their innovation. This innovation will have a significant effect on the MBK project team's approach to the in-channel island protection project.

Figure 1. Regional Project Location Map



1 - 0 1 4 9 2 3

1-014923

Figure 2. Class-Room Project Location Map

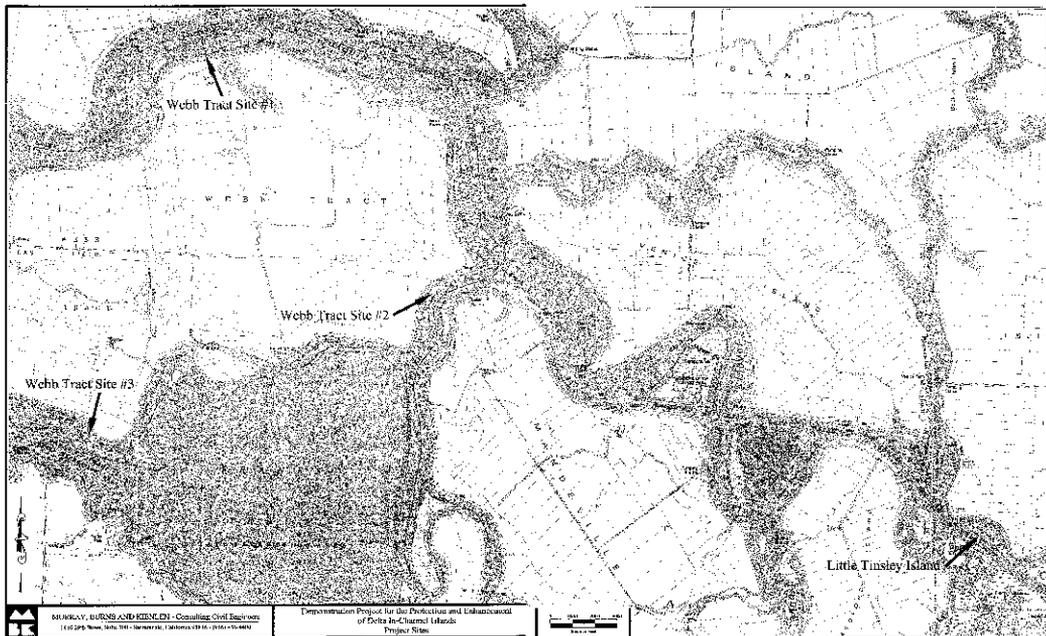
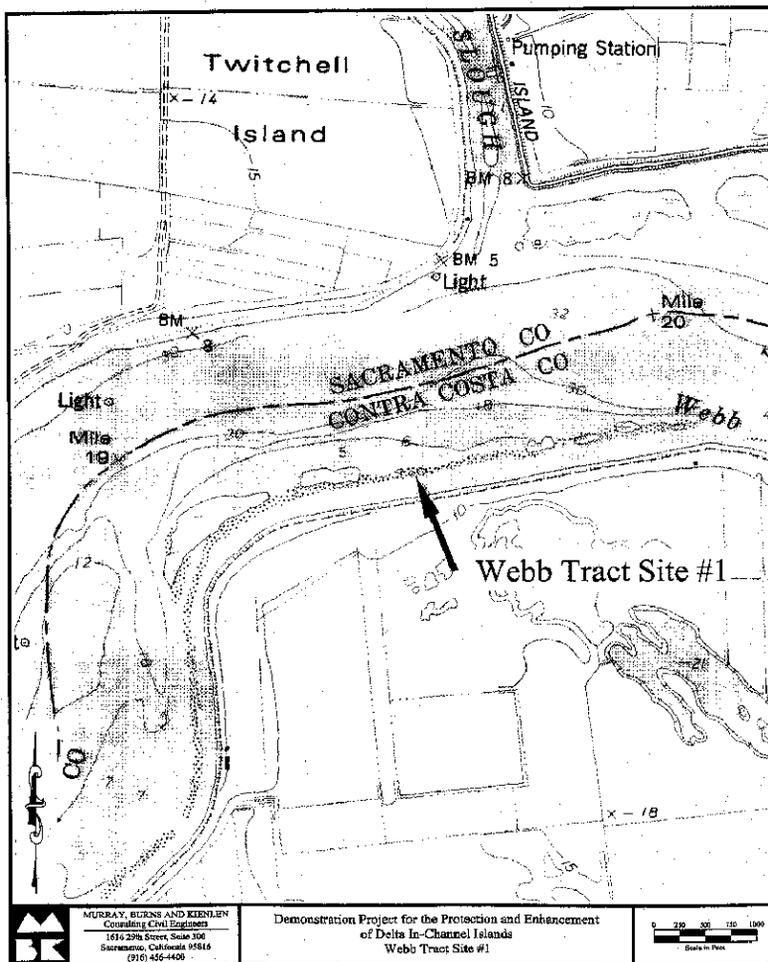


Figure 3. Webb Tract Site #1

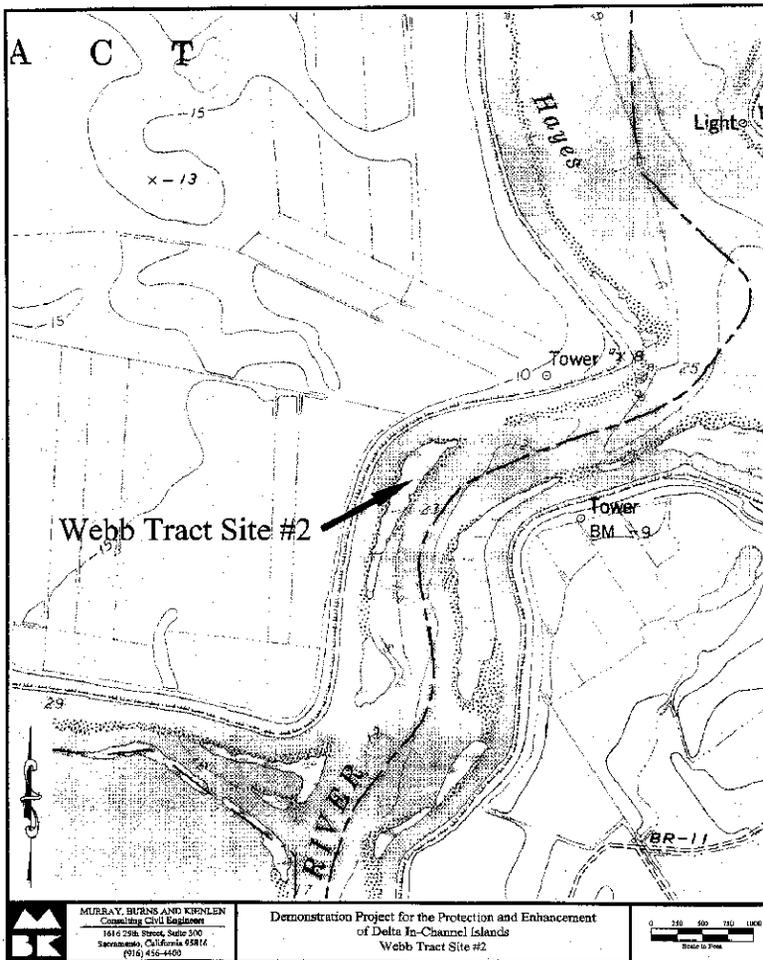


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Demonstration Project for the Protection and Enhancement
of Delta In-Channel Islands
Webb Tract Site #1



Figure 4. Webb Tract Site #2



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San Francisco, California 94116
(916) 436-4400

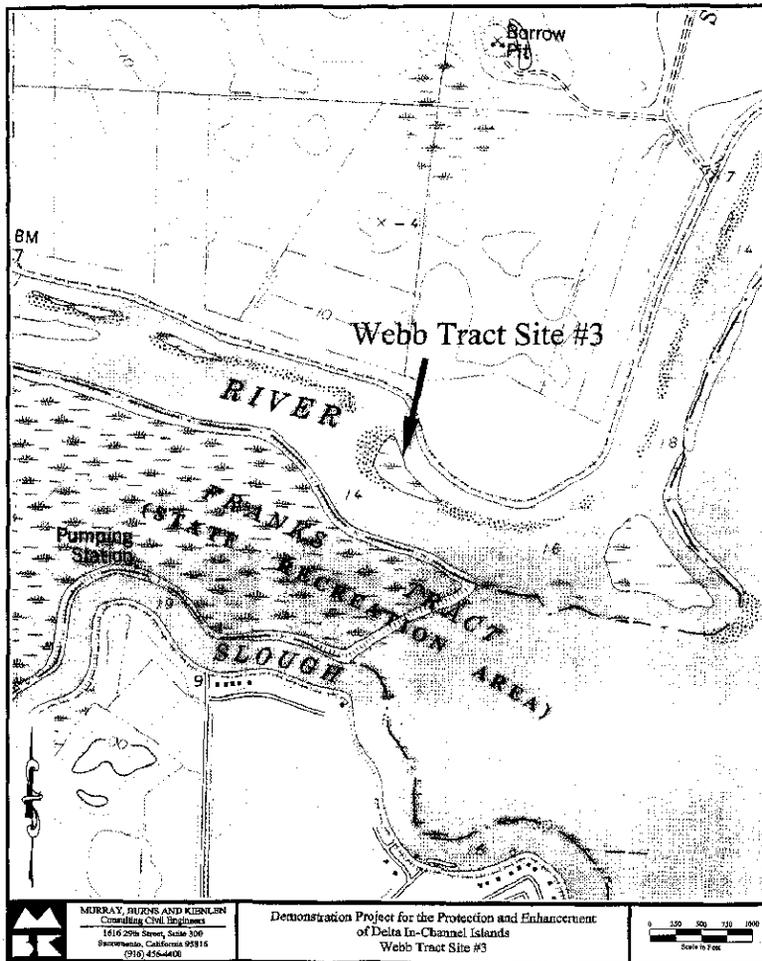
Demonstration Project for the Protection and Enhancement
of Delta In-Channel Islands
Webb Tract Site #2



I - 0 1 4 9 2 6

I-014926

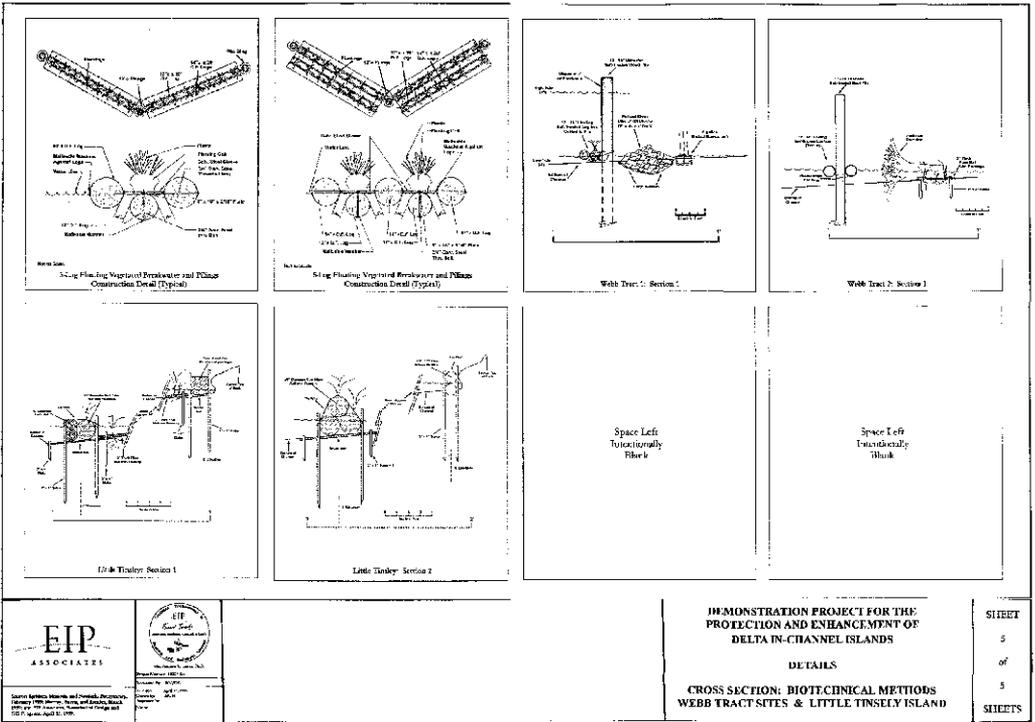
Figure 5. Webb Tract Site #3



I - 0 1 4 9 2 7

I-014927

Figure 7. Biostructural Methods: Cross-Sections



1-014930

Table 1: Bioengineering methodology for the various treatments under consideration for the proposed Delta In-channel Island Habitat Restoration Project.

| General Type | Sub-Type | Construction Techniques |
|--------------|--------------------------------|--|
| Pilings | | The vertical members are to be 12 to 14 inches in diameter salt-treated wood pilings sunk into the substrate to a depth sufficient for anchoring log-booms and boxes. There should be enough freeboard remaining to keep the booms and boxes from coming free of the piling during combined peak storm and tide events. |
| Breakwaters | Floating Vegetated Breakwaters | <p>These units come in two separate widths; 3 and 5 log. They are constructed in the same manner and from the same materials (20 feet long and 12 to 14 inches in diameter salt-treated wood pilings). A 3-log unit is constructed by placing two 14-inch-diameter logs parallel to each other and a 12-inch-diameter log is placed below them to form a V-shape. Care is taken to ensure that a 4-inch gap is left between the upper and lower logs. The entire assembly is then bolted together with threaded rods placed on 5-foot centers. In the space between the two upper logs a custom-built planted fiber roll is installed and anchored in place. The entire unit is attached to the vertical piling with a rolled angle pile ring that allows the log-boxes to rise and fall with the tide changes.</p> <p>A 5-log unit (or a double box) is constructed in a similar manner as discussed above except that three 14-inch and two 12-inch-diameter logs are used to create a W-shape on which two rolls of fiber and plants are installed.</p> |
| | Peak stone dike | The peak stone dike is to be constructed from -24 stone (rocks approximately 24 inches by 12 inches by 12 inches). To achieve a proper slope of 1:2 and a 2-foot final vertical elevation, the base of the dike must be 8 feet wide. A fiber mat may be placed below the peak stone dike or a gabion type structure may be used to keep the stone from sinking too far into the substrate. The peak stone dike is to be constructed at approximately the minus 5-to 4-foot contour so that the peak of the dike just breaks the surface at mean low tide. |
| | Rock groin | The rock groin construction details are still under design. |
| | Root Wads | Root wads will be obtained from a local source (fruit or nut orchard) and are expected to be several feet in diameter with a segment of trunk remaining. The exact dimensions will vary and depend on the source. All root wads are to be placed so that the trunks are pointed towards the island. It will be necessary to place pilings periodically that will allow the root wads to be cabled together and anchored in place. As specified in the various drawings there are to be gaps in the row of root wads. At these locations, the ends of the two rows should overlap. |

1-014930

| General Type | Sub-Type | Construction Techniques |
|----------------------------|-----------------------|--|
| Breakwaters (continued) | Rock and fiber rolls | <p>At either side of the proper contour level, two rows of stakes, 31 inches apart, are driven into the substrate on 2-foot centers to a depth of 6 feet and let sit for 30 minutes before installing rolls. Stakes made from 8-foot-long 2-by 6-inch lumber with a point nail barbs cut at one end. These stakes also hold in place two 3-foot by 16-foot brush matress, set side by side, that extend approximately 2 feet in front of the roll assembly to prevent undercutting.</p> <p>One of the treatments involves stacking two rock rolls and a fiber roll in form a pyramid. Installation would involve placing a rock roll between the rows of stakes as far from the island as possible. The fiber roll would be placed on the island side of this rock roll. The second level would be another rock roll placed on top of the rock and fiber rolls. The entire assembly is then wired to the stakes and the fiber roll is planted.</p> <p>The other treatment involving rolls, does not use any rock rolls. This is a stack of three 20-inch-diameter fiber rolls. Essentially installation is the same as discussed above with the minor difference that the two rows of stakes need to be 40 inches apart.</p> <p>The brush mats to be used are manufactured by Bestmann Green Systems under the name BestLift Brush-Mat™. They come in a single standard size: 3 feet wide by 16 feet long by 0.8 inches thick.</p> <p>The rock rolls to be used are manufactured by Bestmann Green Systems under the name BestTee Rock-Roll™. The size required for this project are 12 inches in diameter and come in 6-foot lengths. Due to the weight of the full roll, over 110 pounds per linear foot, power equipment is required for installation.</p> <p>The fiber rolls to be used are manufactured by Bestmann Green Systems under the name ArmAFlo Fiber-Roll™. The size required for this project are 20 inches in diameter and come in 10-foot lengths.</p> |
| Breakwaters (continued) | Brush boxes | <p>The brush used to create the brush boxes is to be obtained from a local source such as orchard prunings. The brush can be wired into small bundles (4 to 6 inches in diameter) off site. The brush bundles are placed between parallel rows of stakes and wired in place. Stakes made from 4-foot-long 2-by 6-inch lumber with a point and barbs cut at one end. At the proper contour level (minus 2 feet), two rows of stakes, 18 inches apart, are driven into the substrate on 2-foot centers to a depth of 6 feet and let sit for 30 minutes before installing the pre-bundled brush. These stakes also hold in place a 2-foot by 16-foot brush matress that extend approximately 2 feet in front of the brush box to prevent undercutting. The bundles are then packed as densely as possible between the stakes to achieve the desired total height of approximately 2 feet. Once the desired elevation is reached, wire is used to tie the bundles in place. This is done by running wire between the stakes directly across from each other and to those on diagonal. Bundles should be placed so they overlap and no vertical seams are created.</p> |
| Plantings | Small ballast buckets | <p>These are a biodegradable fiber pot that is 6 inches in diameter by 16 inches tall and partially filled with scoria, soil, and plant material. Sometime prior to installation these are planted with the appropriate species for their destination. These small buckets are intended to be placed within the rock groins if possible where the stones will hold them in place. They will also be placed behind or within the nearshore brush boxes on Little Tinsley.</p> |

| General Type | Sub-Type | Construction Techniques |
|--------------------------|--------------------------|--|
| Plantings (continued) | Large ballast buckets | The large ballast buckets are made from three 5-gallon biodegradable fiber pots wired together. They are filled and planted in a manner similar to the 6-inch pots, (soils, soil, and plant material) and planned prior to installation. These units are to be staked into the substrate with a single center stake to a depth of approximately half their height. |
| | Fiber mats | The fiber mats to be used are manufactured by Bestmat Green Systems under the name ArmaFiber Fiber Mat SM . The factory cut dimensions are 16 feet by 3 feet by 2 inches but they can be cut on-site to the required size. These mats are to be located as specified in the site treatment on the island side of the breakwaters (peak slope dike or root wad wall). Stakes (4-foot 2-by 4-inch lumber with a point and berbs cut at one end) are to be driven through the mat and into the substrate as far as possible and let sit for 30 minutes before installing plants on the mat. It may be necessary to tie the mat between stakes with wire or other suitable material. In some instances the mats may be attached to nearby root wads. Regardless of how they are fixed to the ground, the mats will then be planted with the appropriate vegetation. |
| | Live willow wadding | Live willow cuttings are to be assembled into bundles for installation. These bundles are generally 1 to 2 feet longer than the longest cutting. They are tied in 10-to 12-inch diameter bundles every 12 to 15 inches on center. A row of stakes (8-foot 2-by 6-inch lumber with a point and berbs cut at one end) is installed every 2 feet on center. The first wadding bundle is then placed into a shallow trench (or pushed into the substrate) that is approximately 4 to 6 inches deep and covered with soil. The second bundle is placed on top of the first and waded to the stakes. |

Table 2. Specific Tasks, Deliverables and Phases

Task I. Construction

Subtask A. Administrative/Technical Support for Work Group

Work group members and the Project Coordinator will develop and distribute meeting agendas, materials, summaries; assist with writing quarterly reports, final reports, and decision memoranda; preparation of draft and final contracts; prepare final design and construction specifications; assist with preparation of presentations to CALFED and other appropriate audiences on the progress of the demonstration project; and provide oversight of construction contractors, facilitate concerns between work group and contractors. Engineering consultants will provide oversight of construction sites.

| | |
|---|--|
| Schedule: Meeting organization and distribution of materials (at least 6 meetings annually) | July 1999 - Jan. 2001 |
| Completion of contracts and subcontracts, submitted for review to CALFED | July 1999 - June 2000 |
| Prepare final design and construction specifications | July - September 1999 |
| Preparation of quarterly/final reports | Oct. 1999; January, April, July, Oct. 2000; Feb 2001 |
| Presentations to CALFED and others | July 1999 - June 2003 |
| Construction and Project oversight | July 1999 - July 2001 |
| Accounting and Technical Support | July 1999 - Jan. 2003 |

Deliverables: Meetings, meeting materials and summaries; monthly accounting reports, draft and final contracts, draft and final subcontracts, final designs and specifications, quarterly and final reports; presentations to CALFED and others as requested.

Subtask B. Little Tinsley Island

This larger in-channel island is currently experiencing erosion primarily due to boat wakes and wind wave forces, although tidal current erosion and weathering of the peat soils are also contributing to bank losses. The demonstration project proposes to use and evaluate several bioengineering alternative techniques such as floating breakwaters and woody plant material along a 600 linear foot shoreline. These techniques will be designed to arrest erosion, protect existing habitat values, and create new habitat areas. Because of its size and other features, Little Tinsley will allow for side-by-side comparisons of a number of techniques, including riprap (that has already been installed by the owner, independent of this demonstration project).

Schedule: Install bioengineering techniques August - November 1999

Deliverables: Installation of demonstration projects, plans, photos.

Subtask C. Webb Tract Site 1

This submerged shoal is extremely vulnerable to erosion by flows in the Stockton Deep Water Ship Channel and the dredged channel adjacent to Webb Tract. Methods being explored for this island includes floating breakwaters, plant materials, a peaked stone dike behind the floating breakwater and other units to promote growth of vegetation and fish foraging habitat.

Schedule: Install bioengineering techniques August 1 - Nov. 30, 1999

Deliverables: Installation of demonstration projects, plans, photos.

Subtask D. Webb Tract Site 2

This emergent shoal is also subject to erosion from water flows in Old River and boat wakes. Outboard protection will be floating breakwaters of planted log-boxes that will be grouped to allow a side-by-side comparison of effectiveness. Anchored root wads behind the floating breakwater will disrupt the sub-surface wave energy. Coconut fiber mattresses and planting will aid the growth of aquatic vegetation.

Schedule: Install bioengineering techniques

August 1 - Nov. 30, 1999

Deliverables: Installation of demonstration projects, plans, photos.

Subtask E. Webb Tract Site 3

This peat island is subjected to water flows from False River and wind generated waves from Franks Tract. A combination of stone groins, root wads, ballast buckets, planted log-boxes will be installed to counteract the wind and boat generated waves.

Schedule: Install bioengineering techniques

August 1 - Nov. 30, 1999

Deliverables: Installation of demonstration projects, plans, photos.

Estimated Budget:

| Project Phase & Travel Task | Direct Labor Hours | Direct Salary & Benefits | Overhead Labor (General Admin & Fee) | Service Contracts | Materials & Acquisition | Misc. Travel, Printing, Supplies | Cost |
|-----------------------------|--------------------|--------------------------|--------------------------------------|-------------------|-------------------------|----------------------------------|-------------|
| Task I Construction | | \$140,000 | \$60,270 | \$2,438,400 | | | |
| Task I Subtotal | 2550 | | | | | | \$2,638,670 |

Task II. Monitoring

Subtask A. Little Tinsley and Webb Tract Islands Monitoring

The three-year adaptive monitoring plan will emphasize habitat monitoring, but will be carried out per the permitting and CMARP requirements. Monitoring elements will include 1) physical/technological evaluations of the different stabilizing methods and biological assessments of vegetation, fauna and special status species. The monitoring of the installed projects will evaluate effectiveness of methods used, cost comparisons, ease of implementation, suitability, benefits to species and habitat (physical and biological monitoring). Monitoring reports will be submitted for three years.

Schedule: Monitor projects

July 1, 1999 - Dec. 10, 2004

Compile and analyze monitoring data

July 1, 1999 - Dec. 10, 2004

Submit reports to CMARP, IEP, etc.

Annually

Deliverables: Annual data/monitoring reports for three years.

Estimated Budget:

| Project Phase & Travel/Task | Direct Labor Hours | Direct Salary & Benefits | Overhead Labor (General Admin & Fee) | Service Contracts | Materials & Acquisition | Misc. Travel, Printing Supplies | Cost |
|-----------------------------|--------------------|--------------------------|--------------------------------------|-------------------|-------------------------|---------------------------------|-----------|
| Task II. Monitoring | | | | \$250,000 | | | |
| Task I. Subtotal | | | | | | | \$250,000 |

Task III. Maintenance**Subtask A. Maintenance/Contingency Fund - Four Islands**

Installed projects on all islands will be maintained in good, working order for three years. A contingency fund of ten percent is needed for unanticipated costs due to delays and needed maintenance materials.

Schedule: Maintain all biotechnical installations

Dec. 1999 - Dec. 2003

Deliverables: Document maintenance, report.

Subtask B. Maintenance of Demonstration Projects on all Islands

Maintenance monitoring will be performed on a regular basis, reports compiled and submitted for work group review.

Schedule: Make site visits and schedule appropriate maintenance

Dec. 1999 - Dec. 2004

Deliverables: Well maintained projects.

Estimated Budget:

| Project Phase & Travel/Task | Direct Labor Hours | Direct Salary & Benefits | Overhead Labor (General Admin & Fee) | Service Contracts | Materials & Acquisition | Misc. Travel, Printing Supplies | Cost |
|-----------------------------|--------------------|--------------------------|--------------------------------------|-------------------|-------------------------|---------------------------------|-----------|
| Task III. Maintenance | | | | \$250,000 | | | |
| Task I. Subtotal | | | | | | | \$250,000 |

Table 3. Monitoring Plan

Objective 1: To demonstrate that the erosion of the Delta's in-channel islands can be slowed, stopped or reversed using appropriately engineered biotechnical methods.

| Hypothesis | Monitoring Parameter | Data Evaluation |
|---|---|---|
| 1A: Hydrodynamic energy can be dissipated by installing appropriate biotechnical methods along shorelines. | Empirical observations and water current measurements. | Visual and photographic documentation of wave or current dissipation on treated and untreated areas. Pre- and post- project current measurements & evaluation of impact on surrounding areas. |
| 1B: In-channel island substrate can be conserved and/or accreted using biotechnical methods. | Field mapping | Changes in elevation will be compared with adjacent untreated sites. ANOVA analysis to determine significance. |
| 1C: Biotechnical methods offer stable, longterm protection against erosion. | Empirical observation | Visual documentation from fixed photopoints comparing treated and untreated areas over time. |
| 1D: Site specific hydrodynamic conditions will dictate biotechnical treatment prescriptions. | Evaluate performance of alternative biotechnical methods in similar hydrodynamic environments. | ANOVA evaluation of differences in vegetative cover and elevation in adjacent alternative treatments. |
| 1E: Site specific biotechnical design criteria will prevent erosion and facilitate accretion. | Comparison of sediment loss or accretion, wave attenuation, affect on current regime, rate and amount of vegetation colonization. | Pre- and post- mapping, current measurements and vegetation analysis. |
| 1F: Site specific plantings as a part of a biotechnical design and structure will enhance habitat and sediment retention. | Comparison of sediment accretion or loss. | Pre- and post- measurements of sediment regime. |

Objective 2: To demonstrate that biotechnical erosion control methods can be successfully installed with positive effects on important/priority fish and wildlife.

| Hypothesis | Monitoring Parameter | Data Evaluation |
|---|---|--|
| 2A: Biotechnical erosion control methods, and the habitat they protect, will benefit priority fish species. | Pre and post-project fisheries monitoring will be performed using appropriate methods approved by regulatory agencies. | Seasonal census of priority fish populations associated: 1) around the project islands and 2) within the biotechnical structures and vegetation. |
| 2B: Biotechnical methods will protect and possibly benefit terrestrial biota. | Pre and post-project monitoring of selected terrestrial biota using appropriate methods. | Differences in percentages of native vegetative cover. ANOVA to determine significance. |
| 2C: Vegetation establishment along island edges will be enhanced by biotechnical erosion control methods. | Vegetation succession: Riverine emergent, riverine aquatic bed, shaded riverine aquatic habitat quantification and qualification. | Pre- and post- project analyses of vegetation populations. |
| 2D: Non-native invasive plant or animal species will not benefit from the biotechnical erosion control methods. | Pre and post-project monitoring of non-native invasive species. | Change in non-native plant or animal species composition. |

Table 4. Costs

**Task I. Construction
Estimated Budget:**

| Project Phase & Travel Task | Direct Labor Hours | Direct Salary & Benefits | Overhead Labor (General Admin & Fee) | Service Contracts | Materials & Acquisition | Misc. Travel, Printing Supplies | Cost |
|-----------------------------|--------------------|--------------------------|--------------------------------------|-------------------|-------------------------|---------------------------------|-------------|
| Task I. Construction | | | | | | | |
| Subtask A. Admin/Tech | 2550 | \$140,000 | \$60,270 | | | | \$200,270 |
| Project Coord. | | | | \$100,000 | | | \$100,000 |
| Project Const. Management | | | | \$94,000 | | | \$94,000 |
| Final Design/Specs | | | | \$30,000 | | | \$30,000 |
| Design Inspection | | | | \$40,000 | | | \$40,000 |
| Const. Inspection | | | | \$64,200 | | | \$64,200 |
| Subtask B. Little Tinsley | | | | \$270,000 | | | \$270,000 |
| Subtask C. Webb Tract 1 | | | | \$150,000 | | | \$150,000 |
| Subtask D. Webb Tract 2 | | | | \$1,350,000 | | | \$1,350,000 |
| Subtask E. Webb Tract 3 | | | | \$340,000 | | | \$340,000 |
| Task I. Subtotal | 2550 | \$140,000 | \$60,270 | \$2,438,400 | | | \$2,638,670 |

Estimated Work Group Share Task I - Support provided by work group members for technical review/advice attendance at least 12 meetings by 12 members (\$60/hr X 576 hrs = \$34,560), Administrative in-kind @\$1000 X 18 mo by SF Bay RWQCB plus postage (\$19,000), ABAG in-kind acct/manag support (\$16,258). **Total \$70,000.**

**Task II. Monitoring
Estimated Budget:**

| Project Phase & Travel Task | Direct Labor Hours | Direct Salary & Benefits | Overhead Labor (General Admin & Fee) | Service Contracts | Materials & Acquisition | Misc. Travel, Printing Supplies | Cost |
|---|--------------------|--------------------------|--------------------------------------|-------------------|-------------------------|---------------------------------|-----------|
| Task II. Monitoring | | | | | | | |
| Subtask A. Monitoring 4 islands (for 3 years) | | | | \$250,000 | | | |
| Task II. Subtotal | | | | | | | \$250,000 |

Estimated Work Group Share Task II - Support provided by work group members for technical review/ advice.
Total \$2,500.

**Task III. Maintenance
Estimated Budget:**

| Project Phase & Travel Task | Direct Labor Hours | Direct Salary & Benefits | Overhead Labor (General Admin & Fee) | Service Contracts | Materials & Acquisition | Misc. Travel, Printing Supplies | Cost |
|--|--------------------|--------------------------|--------------------------------------|---------------------------------------|-------------------------|---------------------------------|-----------|
| Task III. Maintenance | | | | | | | |
| Subtask A. Maintenance /Contingency Fund | | | | \$214,000 (10% of construction costs) | | | \$214,000 |
| Subtask B. Maintenance Monitoring | | | | \$36,000 | | | \$36,000 |
| Task III. Subtotal | | | | \$250,000 | | | \$250,000 |

Estimated Work Group Share Task III - Support provided by work group members for technical review/ advice.
Total \$2,500

Total Work Group Share \$ 195,000

Total amount requested from CALFED \$ 3, 138,670

Table 5. ABAG Indirect Costs

Sheet 1

| Association of Bay Area Governments Proposed Indirect Cost Plan for FY 99-00 | | | | | | | |
|---|-------|---------------|------------------|----------------------------|------------------|---------------|------------------|
| General | | | | Information System Support | | Combined | |
| Personnel Costs | Rate | Hours | Amount | Hours | Amount | Hours | Amount |
| Adair, C. | 25.48 | 1,000 | 25,480 | | | 1,000 | 25,480 |
| Buratzynsky, T. | 66.76 | | | 600 | 40,057 | 600 | 40,057 |
| Chan, J. | 71.31 | 900 | 64,177 | | | 900 | 64,177 |
| Edgerton, P. | 36.03 | 1,700 | 61,256 | | | 1,700 | 61,256 |
| Fieds, D. | 33.20 | 1,300 | 69,159 | | | 1,300 | 69,159 |
| Ishiyama, M. | 22.05 | 950 | 20,945 | | | 950 | 20,945 |
| Jones, P. | 65.49 | 400 | 26,195 | | | 400 | 26,195 |
| Kemrick, S. | 30.90 | | | 200 | 6,160 | 200 | 6,160 |
| Lewis, K. | 31.25 | 1,300 | 40,620 | | | 1,300 | 40,620 |
| Loos, M. | 52.69 | 1,100 | 37,954 | | | 1,100 | 37,954 |
| Mier, J. | 28.09 | 1,000 | 28,087 | | | 1,000 | 28,087 |
| McDaniel, M. | 25.77 | | | 400 | 10,308 | 400 | 10,308 |
| Samar, B. | 36.96 | | | 1,600 | 58,812 | 1,600 | 58,812 |
| Shaw, S. | 44.71 | 1,000 | 44,710 | 500 | 22,355 | 1,500 | 67,065 |
| Sullivan, A. | 38.91 | 300 | 11,674 | | | 300 | 11,674 |
| Tse, H. | 27.87 | 1,100 | 30,660 | | | 1,100 | 30,660 |
| Williams, A. | 47.48 | 400 | 18,990 | 1,300 | 61,718 | 1,700 | 80,708 |
| Clerical | 27.00 | 1,000 | 27,000 | 50 | 1,350 | 1,050 | 28,350 |
| Iniera | 10.00 | | | 300 | 3,000 | 300 | 3,000 |
| Total Personnel | | 13,450 | \$26,906 | 4,950 | 203,761 | 18,400 | 730,669 |
| Other Direct Expenses | | | | | | | |
| Consultants-Systems | | | 28,000 | | | | 28,000 |
| Travel | | | 1,000 | | | | 1,000 |
| Temporary Personnel | | | 4,000 | | | | 4,000 |
| Printing-outside | | | 6,000 | | | | 6,000 |
| Conferences & Meetings | | | 2,000 | | | | 2,000 |
| Equipment Maintenance | | | 30,000 | | | | 30,000 |
| Office Supplies | | | 55,000 | | 32,000 | | 87,000 |
| Subscriptions & Memberships | | | 1,700 | | | | 1,700 |
| Computer Processing | | | 3,500 | | | | 3,500 |
| Depec.-Furniture & Auto | | | 70,000 | | | | 70,000 |
| Depec.-Computers | | | 0 | | 147,000 | | 147,000 |
| Depec.-Office Building | | | 134,000 | | | | 134,000 |
| Asset Fees | | | 30,000 | | | | 30,000 |
| Building Maintenance | | | 174,000 | | | | 174,000 |
| Utilities | | | 45,000 | | | | 45,000 |
| Space Rentals | | | 6,000 | | | | 6,000 |
| Automobile Expense | | | 8,000 | | | | 8,000 |
| Mailing | | | 48,000 | | | | 48,000 |
| Telephone | | | 50,000 | | | | 50,000 |
| Public Information | | | 2,000 | | | | 2,000 |
| Insurance | | | 65,000 | | | | 65,000 |
| Recruiting | | | 5,000 | | | | 5,000 |
| Labor Relations | | | 6,000 | | | | 6,000 |
| Staff Training & Development | | | 15,000 | | | | 15,000 |
| Software Development | | | 50,000 | | | | 50,000 |
| Carry-over From Prior Year | | | 121,189 | | | | 121,189 |
| Miscellaneous | | | 1,500 | | 1,000 | | 2,500 |
| Total Other Direct | | | 961,889 | | 180,000 | | 1,141,889 |
| Rental Income | | | 0 | | | | 0 |
| Mailing Label Charges | | | | | 25,000 | | 25,000 |
| Copying Charges | | | | | 22,000 | | 22,000 |
| Total Overhead | | | 1,498,793 | | 336,761 | | 1,825,556 |
| Direct Labor Cost | | | 4,287,599 | | 4,287,556 | | 4,287,596 |
| Indirect Cost Rate | | | 34.72% | | 7.85% | | 42.58% |

Page 1

Table 6. MEK Project Team - Qualifications

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| <p>GILBERT COSIO, JR. Murray, Burns & Kienlen</p> | <p>Mr. Cosio is a principal engineer and vice president of Murray, Burns & Kienlen. He is a registered professional engineer (civil). He began his 18-year career at Bechtel Power Corporation as a civil/structural design engineer in charge of concrete and steel design, and has been an employee of Murray, Burns & Kienlen since 1984 at which time he began working in the Delta. Mr. Cosio has experience in flood control, hydrology, hydraulics, water resource planning, drainage water supply, surveying and levee maintenance. Mr. Cosio is currently principal-in-charge of all Delta levee reclamation district work for Murray, Burns & Kienlen. Mr. Cosio coordinates levee inspections, levee maintenance and rehabilitation projects, competitive bid plans and specification preparation, and contract administration for Delta reclamation districts. He also oversees maintenance planning, funding application and claims, regulatory coordination, environmental assessments, CEQA documentation, and reports and presentations to respective reclamation district boards of trustees. Mr. Cosio's Delta work has also led to testimony at public hearings, Reclamation Board hearings and workshops, and State Water Resources Control Board hearings. Mr. Cosio has coordinated levee work and claims with county, state and federal agencies in charge of disaster assistance. Mr. Cosio is a member of the Delta Coalition, which is a committee involved with developing legislation of importance to the Delta. Mr. Cosio is also a member of the Delta Levees and Habitat Advisory Committee set up to administer the mitigation element of the Delta Levee Subventions.</p> |
| <p>KENNETH L. KJELDSSEN Kjeldsen, Sinnock & Neudeck</p> | <p>Mr. Kjeldsen has over 30 years experience in the field of civil engineering with emphasis in the planning, design and construction of municipal, public works and water resource related projects. As a principal in the firm of Kjeldsen, Sinnock & Neudeck, Inc., Mr. Kjeldsen is responsible for managing the projects undertaken by the firm, coordinating with the client and consultants, and reviewing all technical calculations and design decisions. Mr. Kjeldsen's previous assignments have provided him the background and experience to undertake all phases of project development from initial planning through operation and maintenance of the completed project.</p> <p>Mr. Kjeldsen currently serves as the District Engineer for the Woodbridge Sanitary District and as District Engineer for numerous Reclamation Districts in the Sacramento-San Joaquin Delta. He has also served as City Engineer for the City of Escalon. Mr. Kjeldsen has served as the Project Manager on numerous public works projects, ranging from sanitary, water supply, and transportation systems to reclamation engineering. Mr. Kjeldsen's extensive experience has included major treatment plant and collection system expansions in several Central Valley communities, including Escalon, San Andreas, Jamestown, Croveland, and Woodbridge.</p> |
| <p>CHRIS K. KJELDSSEN, PH.D. Kjeldsen and Kjeldsen Biological Consultants</p> | <p>Dr. Kjeldsen has over thirty years of professional experience in the study of California flora ranging from aquatic plants and fungi to terrestrial plants. He was a member of the Sonoma County Planning Commission and Sonoma County Board of Zoning Adjustments (1972 to 1976). He has over 25 years of experience in managing and conducting environmental projects involving impact assessment and preparation of compliance documents, biological assessments, DFG Habitat Assessments, DFG SB 34 Mitigation projects, COE mitigation projects, and State Parks and Recreation biological resource studies. His experience includes conducting special-status surveys, jurisdictional wetland delineations, general biological surveys, Section 404 and Section 1601 and 1603 permitting, and consulting on various projects. Dr. Kjeldsen has six years of administrative experience at the university level. He spent two years working for the federal government in Washington, DC managing programs for the Department of Energy.</p> <p>Responsibilities: Senior technical lead, botanical fieldwork, and report preparation.</p> |

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| <p>RICHARD NICHOLS EIP Associates</p> | <p>Mr. Nichols serves as Director of Natural Resources for EIPs, San Francisco office. He has 20 years of experience as a professional biologist and range manager, including seven years of federal agency service. Mr. Nichols holds an M.S. in Range Management from the University of California, Davis and a B.A. in Biological Sciences from California State University, Chico. His responsibilities include preparation of environmental analyses for infrastructure and private development plans and projects. He is especially skilled in biochemical erosion control, revegetation, and stabilization of disturbed sites on steep slopes. As an example, Mr. Nichols provided state of the art biochemical erosion control planning for difficult sites on the Petaluma River Habitat Restoration Project, the Pitkin Reservoir Channel Stormwater Pollution Prevention Plan Project, the Lake Fremont Mining Reclamation Project, the North Airport Pipeline Restoration Project, and the Troomane Meadows Sovee Replacement SWPPP. All of these projects have been successfully implemented using two or more innovative biochemical methodologies including use of cocconut fiber rolls and blankets, brush boxes, contour watering, live willow staking, brush matting, willow check dams, and native plant plugging and seeding. Mr. Nichols has also recently prepared plans and specifications for similar approaches and will soon be overseeing implementation erosion control installation for the Carter Hill East Pipeline Project, San Pedro Tank Project, and Del Norte Project. He also conducts wetland mitigation and restoration planning and implementation (such as the Lower Crystal Springs Dam Habitat Mitigation Project for the City of San Francisco and the Pilarcitos Creek Fisheries Restoration Plan for the Coastside Water District), making reclamation, endangered species investigations, wetland delineation and assessment, and mitigation monitoring. Mr. Nichols conducts field inventories, literature reviews, research, and monitoring to assess impacts from development projects and formulates/evaluates feasible and successful mitigation measures. Mr. Nichols is experienced at preparing CEQA/NEPA documents and mitigation management plans to evaluate and mitigate impacts from water and transportation projects, industrial and residential development, and mining on wetlands, riparian corridors and other sensitive habitats.</p> |
| <p>JEFFREY A. HART, PH.D. Habitat Assessment & Restoration Team, Inc.</p> | <p>Dr. Hart, President of the Habitat Assessment and Restoration Team, Inc. (H.A.R.T.) will serve as the restoration contractor. He has had more than 30 years field biology experience on several continents with the last ten years in the Sacramento area. He is a recognized expert in the areas of restoration ecology, resource analysis and conservation. He has had considerable experience and success in designing and/or implementing many local restoration projects (e.g., Stone Lakes National Wildlife Refuge, Grizzly Slough, Decker Island) through funding projects (e.g., Dry Creek, Lower American River), and riparian and wetland resource studies (e.g., Cosumnes River, Lower American River). His clients include mostly government agencies and non-profit organizations such as the Sacramento Area Flood Control Agency, Sacramento County Water Resources Division, Ducks Unlimited, California Department of Water Resources, and The Nature Conservancy. Located in the Delta on Grand Island, H.A.R.T.'s specialty is the restoration of river and Delta wetland and riparian environments. The company includes a nursery, a corporate yard, and an office.</p> |
| <p>ANDREW T. LEISER, PH.D. EIP Associates</p> | <p>Dr. Leiser, Consultant to EIP Associates, is Emeritus Professor of Environmental Horticulture and Emeritus Horticulturist in the Experiment Station of the University of California, Davis, California. He has completed a course on the functional uses of plants and taught courses in taxonomy of ornamental plants. He has a B.S. degree in Agriculture and M.S. in Horticulture from Washington State University and a Ph.D. in Horticulture from U.C.L.A. He was a faculty member (Horticulture) at Purdue University, West Lafayette, Indiana for four years. At Purdue he did research on woody ornamental plants and taught a plant taxonomy course. Three and a half years were spent at the W.R. Grace research laboratories at Clarksville, MD. As a Supervisor of Agricultural Research, his responsibilities were directing research on controlled release fertilizers with an emphasis on revegetation problems on sand dunes, along highways and forestation as well as horticultural (nursery and landscape applications) uses.</p> |

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| | <p>Dr. Leiser is a renowned expert in biotechnical erosion control. He has been involved with many of the most successful projects and theories in existence today. With Dr. Don Gray, University of Michigan, he has co-authored a book on slope protection and erosion control and revegetation methods.</p> <p>His work at Davis has included research on revegetation of campgrounds, riparian sites (levees), reservoir shorelines and difficult highway sites throughout California and especially in the Sierra Nevada. This research has involved considerable work on the propagation, nutrition and culture of wood plants, including California natives.</p> |
| <p>GILBERT R. LABRIE, AIA DCC Engineering</p> | <p>With over 20 years experience in planning, permitting, engineering and design issues within the Sacramento-San Joaquin Delta and Bay areas, Mr. Labrie has an intimate knowledge of applicable codes and regulatory matters and has been instrumental in the coordination and development of several projects throughout the Bay-Delta area. He is also considered an expert with regards to Delta land use and regulation and has been called upon for input to several regional and State initiated study panels. Mr. Labrie is an active participant of the Delta Protection Commission, the Bay Planning Coalition, the California Central Valley Flood Control Association, the Habitat Advisory Committee.</p> |
| <p>ROY LEIDY EIP Associates</p> | <p>Mr. Leidy is a Senior Scientist specializing in fish and wildlife management. His responsibilities include senior technical review and guidance of natural resource studies and regulatory permitting and compliance. Mr. Leidy holds a B.S. in Forestry and Resource Management from the University of California, Berkeley, and has undertaken advanced studies at the University of Washington, Colorado State University, University of Arkansas and U.C. Davis. Mr. Leidy has broad technical expertise based on his 27 years as a fish and wildlife biologist and regulatory specialist. His technical experience includes fish and wildlife impact assessments using HRP, WHR and IFIM, wetlands delineations and assessments, endangered species surveys and impact evaluations, HCP/HMP planning, river-reservoir ecosystem modeling, water quality modeling and analysis, stream channel stability and watershed assessments, and fish passage and screening design. Mr. Leidy is intimately familiar with CEQA and NEPA compliance procedures and regulations as well as the California Fish and Game Code and Forest Practice Rules. He possesses extensive knowledge of California and Nevada resource management issues and has served as an expert witness on a variety of fish and wildlife topics. Mr. Leidy formerly spent twelve years with the US Forest Service, US Geological Survey and US Fish and Wildlife Service working with many local, state and federal agencies. His work with the US Army Corps of Engineers included such diverse projects as fish screening on the Columbia River, bank protection projects, 404 permitting, flood control projects, aquatic ecosystem modeling, and reservoir fisheries management. Projects with the US Bureau of Reclamation have included fish and wildlife habitat enhancement planning and assessing the impacts of CVP operational changes on reservoir fisheries. Mr. Leidy is a Certified Fisheries Scientist and a Registered Environmental Assessor with the State of California.</p> |
| <p>JOSEPH D. COUNTRYMAN Murray, Burns & Kienlen</p> | <p>Mr. Countryman is principal engineer and president of Murray, Burns & Kienlen. He is a registered professional engineer (civil) and a registered professional hydrologist with 32 years of experience. Mr. Countryman gained much of this experience through his 21 years with the US Army Corps of Engineers prior to joining Murray, Burns & Kienlen in 1988. He has held high-level positions in both planning and design capacities at the Corps, including Chief of the 150-plus employee Civil Design Branch. At the Corps of Engineers, Mr. Countryman supervised many projects that are important to the Delta. Among these were oversight of the Sacramento River Bank Protection Project which constructs erosion protective works from Collinsville to Colusa. In addition, he managed system flood control operation studies for the San Joaquin River, and flood control studies of the Sacramento-San Joaquin Delta. These studies involved the analysis of flood threats, alternative flood control solutions and geomorphology. Mr. Countryman also supervised flood operations for the Corps during the 1983 and 1986 flood events, including reservoir operations and post flood</p> |

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| | <p>design and reconstruction of damaged or destroyed levees. He also provided oversight of the Sacramento and American River flood system analysis in the vicinity of Sacramento, as well as management of design studies and plans and specifications for Sacramento and Stockton Deep Water Ship Channel projects.</p> <p>At Murray, Burns and Kienlen, Mr. Countryman has performed numerous flood control and planning studies for clients. In this capacity, he has performed numerous studies in regard to fluvial processes, including the Mokelumne River within the Delta. He is experienced with various computer models including HEC-1, HEC-2, HEC-6, DWOPER, UNET and MODFLOW. In addition to his technical expertise, Mr. Countryman is also an expert in water resources policy. Mr. Countryman has also reviewed and advised the State Department of Water Resources on the North Delta Flood Plan. For the past several years, Mr. Countryman has served as a consultant to the Sacramento Area Flood Control Agency. In this capacity, he has advised the agency on regional flood control solutions, geomorphology, and policy issues for this large, complex project. As a member of the MBK team, Mr. Countryman would provide engineering, regional flood control and policy consulting expertise to the team.</p> |
| <p>GEORGE BURWASSER EIP Associates</p> | <p>Mr. Burwasser is a geologist with over 25 years experience in geological and soil analysis. He holds a M.S. in Quaternary Geology from the University of Saskatchewan and a B.A. in Geology from Case Western Reserve University. He is responsible for the soil support, slope stability and seismic safety components of EIP's environmental studies. Mr. Burwasser conducts site investigations and literature searches to compile, analyze and evaluate information related to soil and slope stability, landslide potential, soil and rock erosion, land subsidence, flooding susceptibility and earthquake hazard, as well as managing projects where these issues are of concern to EIP's clients.</p> <p>Mr. Burwasser has prepared erosion control and slope restoration sections for EIR's throughout coastal California where hillside stability is of special concern. He has designed bio-technical erosional control plans for water supply pipelines, sewer mains and water tanks, near the cities of Pacifica, Half Moon Bay, and San Francisco, as well as in the highly sensitive Tuolumne Meadows area of Yosemite Park. In San Mateo County, he coordinated EIP's restoration study of the streambed habitat in the upper reaches of Pilarcitos Creek, where two local agencies were involved in restoring the steelhead fishery. In Alameda, Santa Cruz, San Luis Obispo and Ventura Counties, he has worked closely with project engineers to develop rehabilitation plans for quarries being converted to commercial and residential land uses. In the City of Palo Alto, Mr. Burwasser mapped and analyzed the erosional conditions and flooding potential along San Francisquito Creek for the Sand Hill Road realignment and several adjacent Stanford University development projects. For the East Bay Municipal Utility District, he evaluated the liquefaction, floatation and flooding issues associated with the Mokelumne Aqueduct Security Plan. In Sonoma, Contra Costa, and San Mateo counties, Mr. Burwasser analyzed slope and soil stability conditions for several road widening, grade separation, and overcrossing projects adjacent to scenic waterways. His project experience in the Benicia area includes preparing the soils and geology sections for several clean-fuels projects at the nearby refineries; and analysis of slope conditions at Sky Valley, Southampton, and in the Northern Area Sphere of Influence Study Area.</p> |
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1-014944

MITCHELL SWANSON
Mitchell Swanson Hydrology
and Geomorphology

Mr. Swanson has over eighteen years of consulting experience in hydrology, hydraulic studies, geologic hazards, and geomorphology related to restoration and resource management in rivers, streams, coastal estuaries, and wetlands. This experience includes the development, management and completion of comprehensive technical and planning studies for a full range of private and public sector clients. Mr. Swanson specializes in the development of technically and environmentally sound management and

restoration plans for rivers, estuaries and watersheds. These studies often involve the coordination of many disciplines by Mr. Swanson including biological sciences, hydraulic engineering, land use planning, economics, landscape architecture and environmental planning. In the present era of conflict between environmental regulation and society's need for flood control and utilization of water resources, Mr. Swanson has become a recognized expert in conflict resolution between governmental agencies, and public and private interests. Mr. Swanson has brought international expertise and management techniques used by public water resources agencies in England and Germany to help resolve problems faced by flood control engineers.

Mr. Swanson has extensive expert witness experience having appeared before the California State Water Resources Control Board and Board staff, California Superior Court, and the U.S. Congress. Mr. Swanson has testified with regards to hydrology, flood control, reservoir operation, hydraulics, geomorphology, and environmental impacts.

Mr. Swanson's technical expertise includes historical geomorphic and hydrologic studies for geologic hazards assessments and in determining the causes and effects of human modification on sediment transport measurement, geomorphic mapping and surveying in rivers, watersheds and estuaries. Mr. Swanson has conducted hydraulic and hydrologic analyses using the HEC-RAS, HEC-6 and IITEC-1 computer simulation programs.

Mr. Swanson is Principal of Mitchell Swanson Hydrology and Geomorphology, with an office in Santa Cruz.

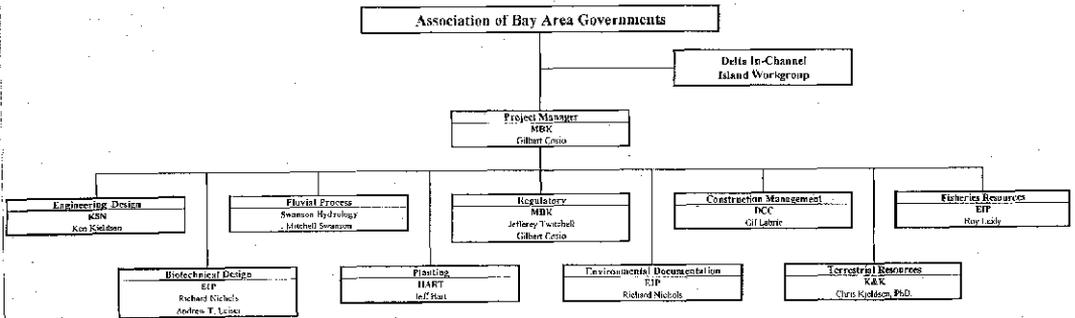
I-014945

I-014945

Table 7. Project Management Team Structure

Demonstration Project for the Protection and Enhancement of Delta In-Channel Islands Organizational Chart

1-014946



1-014946

Memorandum

To : Mrs. Margit Aramburu, Chair
San Francisco Estuary Project
In-Channel Work Group
c/o Delta Protection Commission
14215 River Road
Walnut Grove, California 95690

Date : December 24, 1997

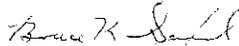
From : Department of Fish and Game

Subject: Webb Tract Channel Islands Project

We continue to support the San Francisco Estuary Project's (SFEP) proposal at Webb Tract. Representatives or contractors of the SFEP may continue to enter our property for planning purposes. We retain the right to review plans and specifications before any physical work is started to ensure compatibility with management plans for these properties.

I have directed staff to complete their review of the coordination memorandum. I probably will sign it.

For further discussions you may contact Mr. Ed Littrell of my staff at 916-358-2924.


Banky E. Curtis
Regional Manager

NOBLE YACHT GROUP, INC.

Philip R. Schaefer, Permit Co-Ordinator
3109 Jackson Place
Antioch, CA 94509
925-754-1872

12 March 1999

Delta In-Channel Islands Committee
C/O Kent Nelson
Department of Water Resources
3251 "S" Street
Sacramento, CA 95816

Dear Kent,

As requested by Margit Aramburu, I am sending this letter of Permission to you for the demonstration project that has been discussed. This letter was actually written about two years ago but evidently got misplaced.

As the Past President, and Permit Co-Ordinator of the Noble Yacht Group, Inc., a non-profit organization, it is our pleasure to allow the Delta In-Channel Islands Committee, to use our island as a demonstration project, for the purposes of determining the best methods, including hard and soft fixes, to use to protect the Delta In-Channel Islands from deterioration.

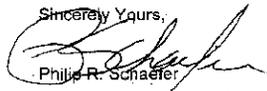
Our island is known as "Little Tinsley Island" and is located on the Stockton Deep Water Channel, between Light 11 and 13. The group owns the island known on the San Joaquin County records as parcel no. 071-020-0, comprising approximately 6.5 Acres (as recorded).

It is understood that the Committee is recommending that "Soft" fixes will be utilized on the Deep Water Channel side of the island and on the Eastern point, that consists of Brush Boxes, Coconut Rolls, and other types of Bio procedures. The area at the western end of the island has been protected using Rip-Rap. This was done in 1997, by Dutra Dredging.

We would be happy to lend assistance to the committee to help in accomplishing this task.

I will be the contact person in the event anyone needs access to the island or needs any information on the island including pictures and drawing.

Sincerely Yours,



Philip R. Schaefer

DELTA IN-CHANNEL ISLANDS WORK GROUP

Kent Nelson, Project Manager
c/o Department of Water Resources, Central District
3251 S Street, Sacramento, CA 95816
(916) 227-7549

March 22, 1999

Dennis Barry, Community Development Director
Contra Costa County
Community Development Department
651 Pine Street
4th Floor-North Wing
Martinez, CA 94553

Subject: Proposed Application for CALFED Funds for a Project in the Jurisdiction of
Contra Costa County

Dear Mr. Barry:

I am writing to inform you that the Delta In-Channels Work Group is filing an application for funding from CALFED for Phase II of the pilot project to develop and evaluate techniques to protect and enhance Delta in-channel islands from erosion. The application will be filed by the Association of Bay Area Governments (ABAG). ABAG serves as the contracting agency on behalf of the Delta In-Channel Islands Work Group.

As you know, the in-channel islands are remnants of the natural Delta wetland and riparian habitats. Due to a variety of erosive forces, these remnant islands are being lost. While projects to protect and enhance the in-channel islands using rock riprap have been successful, current resources management policies are urging development of alternative protection techniques.

The proposed project will fund the installation and evaluation of a variety of "cutting edge" techniques, designed by an outstanding team of scientists and engineers who have a thorough understanding of the Delta and its natural environment. The project will include work on three small islands around Webb Tract, in Contra Costa County, and on Little Tinsley Island in the Deep Water Ship Channel in San Joaquin County.

We look forward to the funding of Phase II, the construction and monitoring phase, of this exciting project and will keep the County informed as work progresses.

Sincerely,

A handwritten signature in black ink, appearing to read "K. Nelson", written in a cursive style.

Kent Nelson
Project Manager

DELTA IN-CHANNEL ISLANDS WORK GROUP
Kent Nelson, Project Manager
c/o Department of Water Resources, Central District
3251 S Street, Sacramento, CA 95816
(916) 227-7549

March 22, 1999

Clerk of the Board of Supervisors
Contra Costa County
651 Pine Street, Room 106
Martinez, CA 94553

Subject: Proposed Application for CALFED Funds for a Project in the Jurisdiction of
Contra Costa County

Honorable Members of the Board:

I am writing to inform you that the Delta In-Channels Work Group is filing an application for funding from CALFED for Phase II of the pilot project to develop and evaluate techniques to protect and enhance Delta in-channel islands from erosion. The application will be filed by the Association of Bay Area Governments (ABAG). ABAG serves as the contracting agency on behalf of the Delta In-Channel Islands Work Group.

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We look forward to the finding of Phase II, the construction and monitoring phase, of this exciting project and will keep the County informed as work progresses.

Sincerely,



Kent Nelson
Project Manager

DELTA IN-CHANNEL ISLANDS WORK GROUP
Kent Nelson, Project Manager
c/o Department of Water Resources, Central District
3251 S Street, Sacramento, CA 95816
(916) 227-7549

March 22, 1999

Ben Hulse, Director
Community Development Department
1810 E. Hazelton Avenue
Stockton, CA 95205

Subject: Proposed Application for CALFED Funds for a Project in the Jurisdiction of
Contra Costa County

Dear Mr. Hulse:

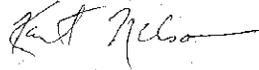
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We look forward to the finding of Phase II, the construction and monitoring phase, of this exciting project and will keep the County informed as work progresses.

Sincerely,

A handwritten signature in cursive script that reads "Kent Nelson". The signature is written in black ink and includes a long horizontal flourish at the end.

Kent Nelson
Project Manager

DELTA IN-CHANNEL ISLANDS WORK GROUP

Kent Nelson, Project Manager
c/o Department of Water Resources, Central District
3251 S Street, Sacramento, CA 95816
(916) 227-7549

March 22, 1999

Clerk of the Board of Supervisors
San Joaquin County
222 E. Weber Avenue, Room 701
Stockton, CA 95292

Subject: Proposed Application for CALFED Funds for a Project in the Jurisdiction of
San Joaquin County

Honorable Members of the Board:

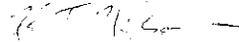
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We look forward to the finding of Phase II, the construction and monitoring phase, of this exciting project and will keep the County informed as work progresses.

Sincerely,



Kent Nelson
Project Manager

DELTA IN-CHANNEL ISLANDS WORK GROUP
Kent Nelson, Project Manager
c/o Department of Water Resources, Central District
3251 S Street, Sacramento, CA 95816
(916) 227-7549

March 22, 1999

Margit Aramburu, Executive Director
Delta Protection Commission
P.O. Box 530
Walnut Grove, CA 95690

Subject: Proposed Application for CALFED Funds for a Project in the Jurisdiction of the
Delta Protection Commission

Dear Ms Aramburu:

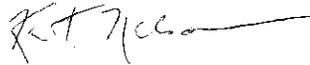
I am writing to inform you that the Delta In-Channels Work Group is filing an application for funding from CALFED for Phase II of the pilot project to develop and evaluate techniques to protect and enhance Delta in-channel islands from erosion. The application will be filed by the Association of Bay Area Governments (ABAG). ABAG serves as the contracting agency on behalf of the Delta In-Channel Islands Work Group.

As you know, the in-channel islands are remnants of the natural Delta wetland and riparian habitats. Due to a variety of erosive forces, these remnant islands are being lost. While projects to protect and enhance the in-channel islands using rock riprap have been successful, current resources management policies are urging development of alternative protection techniques.

The proposed project will fund the installation and evaluation of a variety of "cutting edge" techniques, designed by an outstanding team of scientists and engineers who have a thorough understanding of the Delta and its natural environment. The project will include work on three small islands around Webb Tract, in Contra Costa County, and on Little Tinsley Island in the Deep Water Ship Channel in San Joaquin County.

We look forward to the funding of Phase II, the construction and monitoring phase, of this exciting project and will keep the Commission informed as work progresses.

Sincerely,

A handwritten signature in black ink, appearing to read "Kent Nelson", with a long horizontal flourish extending to the right.

Kent Nelson
Project Manager

**NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY
BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS**

STATE OF CALIFORNIA)
) ss
COUNTY OF Alameda)

Eugene Y. Leong , being first duly sworn, deposes and
(name)
says that he or she is Executive Director of
(position title)
Association of Bay Area Governments
(the bidder)

the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

DATED: 4/12/99

By Eugene Y. Leong
(person signing for bidder)

Subscribed and sworn to before me on
4-13-99

Suzan L. Ryder
(Notary Public)



(Notarial Seal)

U.S. Department of the Interior

Certifications Regarding Debarment, Suspension and
Other Responsibility Matters, Drug-Free Workplace
Requirements and Lobbying

Persons signing this form should refer to the regulations referenced below for complete instructions:

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions - The prospective primary participant further agrees by submitting this proposal that it will include the clause titled, "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions. See below for language to be used; use this form for certification and sign; or use Department of the Interior Form 1954 (DI-1954). (See Appendix A of Subpart D of 43 CFR Part 12.)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions - (See Appendix B of Subpart D of 43 CFR Part 12.)

Certification Regarding Drug-Free Workplace Requirements - Alternate I. (Grantees Other Than Individuals) and Alternate II. (Grantees Who are Individuals) - (See Appendix C of Subpart D of 43 CFR Part 12)

Signature on this form provides for compliance with certification requirements under 43 CFR Parts 12 and 18. The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of the Interior determines to award the covered transaction, grant, cooperative agreement or loan.

PART A: Certification Regarding Debarment, Suspension, and Other Responsibility Matters -
Primary Covered Transactions

CHECK IF THIS CERTIFICATION IS FOR A PRIMARY COVERED TRANSACTION AND IS APPLICABLE.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
 - (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

PART B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion -
Lower Tier Covered Transactions

CHECK IF THIS CERTIFICATION IS FOR A LOWER TIER COVERED TRANSACTION AND IS APPLICABLE.

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

D-2018
March 2015
E-File form available 05/19/15, 01/19/14,
01/14/15, 01/15/14 and 01/11/13.

I - 0 1 4 9 6 0

I-014960

PART C: Certification Regarding Drug-Free Workplace Requirements

THIS CERTIFICATION IS FOR AN APPLICANT WHO IS NOT AN INDIVIDUAL.

Alternate I. (Grantees Other Than Individuals)

A. The grantee certifies that it will or continue to provide a drug-free workplace by:

- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
- (b) Establishing an ongoing drug-free awareness program to inform employees about--
 - (1) The dangers of drug abuse in the workplace;
 - (2) The grantee's policy of maintaining a drug-free workplace;
 - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
- (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --
 - (1) Abide by the terms of the statement; and
 - (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
- (e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employees of convicted employees must provide notice, including position title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notices shall include the identification number(s) of each affected grant;
- (f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted --
 - (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
 - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;
- (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a) (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

Check if there are workplaces on file that are not identified here.

PART D: Certification Regarding Drug-Free Workplace Requirements

THIS CERTIFICATION IS FOR AN APPLICANT WHO IS AN INDIVIDUAL.

Alternate II. (Grantees Who Are Individuals)

- (a) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant;
- (b) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to the grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.

PART E: Certification Regarding Lobbying
Certification for Contracts, Grants, Loans, and Cooperative Agreements

CHECK IF CERTIFICATION IS FOR THE AWARD OF ANY OF THE FOLLOWING AND
THE AMOUNT EXCEEDS \$100,000: A FEDERAL GRANT OR COOPERATIVE AGREEMENT,
SUBCONTRACT, OR SUBGRANT UNDER THE GRANT OR COOPERATIVE AGREEMENT.

CHECK IF CERTIFICATION IS FOR THE AWARD OF A FEDERAL
LOAN EXCEEDING THE AMOUNT OF \$100,000, OR A SUBGRANT OR
SUBCONTRACT EXCEEDING \$100,000, UNDER THE LOAN.

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

As the authorized certifying official, I hereby certify that the above specified certifications are true.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL



TYPED NAME AND TITLE Cary Binger, Deputy Director

DATE 4/15/99

1-014964

OMB Approval No. 0348-0041

BUDGET INFORMATION -- Construction Programs

NOTE: Certain existing assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case you will be notified

| COST CLASSIFICATION | | a. Total Cost | b. Costs Not Allowable for Participation | c. Total Allowable Costs (Column a-b) |
|--------------------------------------|---|---|--|---------------------------------------|
| 1. | Administrative and legal expenses | \$ 330,270 | \$ | \$ 330,270 |
| 2. | Land, structures, rights-of-way, appraisals, etc | \$ - | \$ | \$ - |
| 3. | Relocation expenses and payments | \$ - | \$ | \$ - |
| 4. | Architectural and engineering fees | \$ 30,000 | \$ | \$ 30,000 |
| 5. | Other architectural and engineering fees | \$ - | \$ | \$ - |
| 6. | Project inspection fees | \$ 168,400 | \$ | \$ 168,400 |
| 7. | Site work | \$ - | \$ | \$ - |
| 8. | Demolition and removal | \$ - | \$ | \$ - |
| 9. | Construction | \$2,110,000 | \$ | \$2,110,000 |
| 10. | Equipment | \$ - | \$ | \$ - |
| 11. | Miscellaneous | \$ - | \$ | \$ - |
| 12. | SUBTOTAL | \$2,638,670 | \$ | \$2,638,670 |
| 13. | Contingencies | \$ 214,000 | \$ | \$ 214,000 |
| 14. | SUBTOTAL | \$2,852,670 | \$ | \$2,852,670 |
| 15. | Project (program) income | \$ - | \$ | \$ - |
| 16. | TOTAL PROJECT COSTS (subtract #15 from #14) | \$2,852,670 | \$ | \$2,852,670 |
| * Does not include monitoring costs. | | | | |
| 17. | Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share). Enter the resulting Federal share. | Enter eligible costs from line 16c Multiply X | % | \$ |

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Standard Form 424C (Rev. 4-92)
Prescribed by OMB Circular A-102

1-014964

INSTRUCTIONS FOR THE SF 424C

Public reporting burden for this collection of information is estimated to average 180 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0041), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

This sheet is to be used for the following types of applications: (1) "New" (means a new [previous included] assistance award); (2) "Continuation" (means funding in a succeeding budget period which stemmed from a prior agreement to fund); and (3) "Revised" (means any changes in the Federal government's financial obligations or contingent liability from an existing obligation). If there is no change in the award amount there is no need to complete this form. Certain Federal agencies may require only an explanatory letter to the effect minor (no cost) changes. If you have questions please contact the Federal agency.

Column a—If this is an application for a "New" project, enter the total estimated cost of each of the items listed on lines 1 through 16 (as applicable) under "COST CLASSIFICATIONS."

If this application entails a change to an existing award, enter the eligible amounts *approved under the previous award* for the items under "COST CLASSIFICATION."

Column b—If this is an application for a "New" project, enter that portion of the cost of each item in Column a, which is not allowable for Federal assistance in determining the allowability of specific costs.

If this application entails a change to an existing award, enter the adjustment (+ or -) to the previously approved costs (from column a) reflected in this application.

Column c—This is the net of lines 1 through 16 in columns "a" and "b."

Line 1—Enter estimated amounts needed to cover administrative expenses. Do not include costs which are related to the normal functions of government. Allowable legal costs are generally only those associated with the purchase of land which is allowable for Federal participation and certain services in support of construction of the project.

Line 2—Enter estimated site and right(s)-of-way acquisition costs (this includes purchase, lease, and/or easements).

Line 3—Enter estimated costs related to relocation advisory assistance, replacement housing, relocation payments to displaced persons and businesses, etc.

Line 4—Enter estimated basic engineering fees related to construction (this includes start-up services and preparation of project performance work plan).

Line 5—Enter estimated engineering costs, such as surveys, tests, soil borings, etc.

Line 6—Enter estimated engineering inspection costs.

Line 7—Enter estimated costs of site preparation and restoration which are not included in the basic construction contract.

Line 9—Enter estimated cost of the construction contract.

Line 10—Enter estimated cost of office, shop, laboratory, safety equipment, etc. to be used at the facility, if such costs are not included in the construction contract.

Line 11—Enter estimated miscellaneous costs.

Line 12—Total of rows 1 through 11.

Line 13—Enter estimate, contingency costs. (Consult the Federal agency for the percentage of the estimated construction cost to use.)

Line 14—Enter the total of lines 12 and 13.

Line 15—Enter estimated program income to be earned during the grant period, e.g., salvaged materials, etc.

Line 16—Subtract line 15 from line 14.

Line 17—This block is for the computation of the Federal share. Multiply the total allowable project costs from line 16, column "c," by the Federal percentage share (this may be up to 100 percent, consult Federal agency for federal percentage share) and enter the product on line 17.

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ASSURANCES - CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET, SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant I certify that the applicant

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States, and if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title, or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal interest in the title of real property in accordance with awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progress reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the intergovernmental Personnel Act of 1970 (42 U.S.C. Secs. 4728-4763) relating to prescribed standards for merit systems for programs funded under one of the nineteen statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. Secs. 4801 et seq.) which prohibits the use of lead based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. Secs. 1681-1683, and 1685-686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. Secs. 794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. Secs. 6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1973 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) Secs. 323 and 327 of the Public Health Service Act of 1917 (42 U.S.C. 290-323 and 299-327), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. Secs. 3601 et seq.), as amended, relating to non-discrimination in the sale, rental or financing of housing; (i) any other non-discrimination provisions in the specific statute(s) under which application for Federal assistance is being made, and (j) the requirements of any other non-discrimination Statute(s) which may apply to the application.

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11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provides for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. Secs. 1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. Secs. 276a to 276a - 7), the Copeland Act (40 U.S.C. Secs. 276c and 18 U.S.C. Sec. 874), the Contract Work Hours and Safety Standards Act (40 U.S.C. Secs. 327-333), regarding labor standards for federally assisted construction subagreements.
14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. Secs. 1451 et seq.); (f) conformity of Federal actions to State (Clear Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. Secs. 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended, (P.L. 93-523); and (h) protection of endangered species under the Endangered Species Act of 1973, as amended, (P.L. 93-205).
16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. Secs. 1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. Sec. 470), EO 11393 (identification and preservation of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a-1 et seq.).
18. Will ensure to be performed the required financial and compliance audits in accordance with the Single Audit Act of 1984.
19. Will comply with all applicable requirements of all other Federal laws, Executive Orders, regulations and policies governing this program.

| | |
|--|----------------------------------|
| SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL  | TITLE <i>Deputy Director</i> |
| APPLICANT ORGANIZATION <i>AEAG</i> | DATE SUBMITTED <i>4-16-99</i> |

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